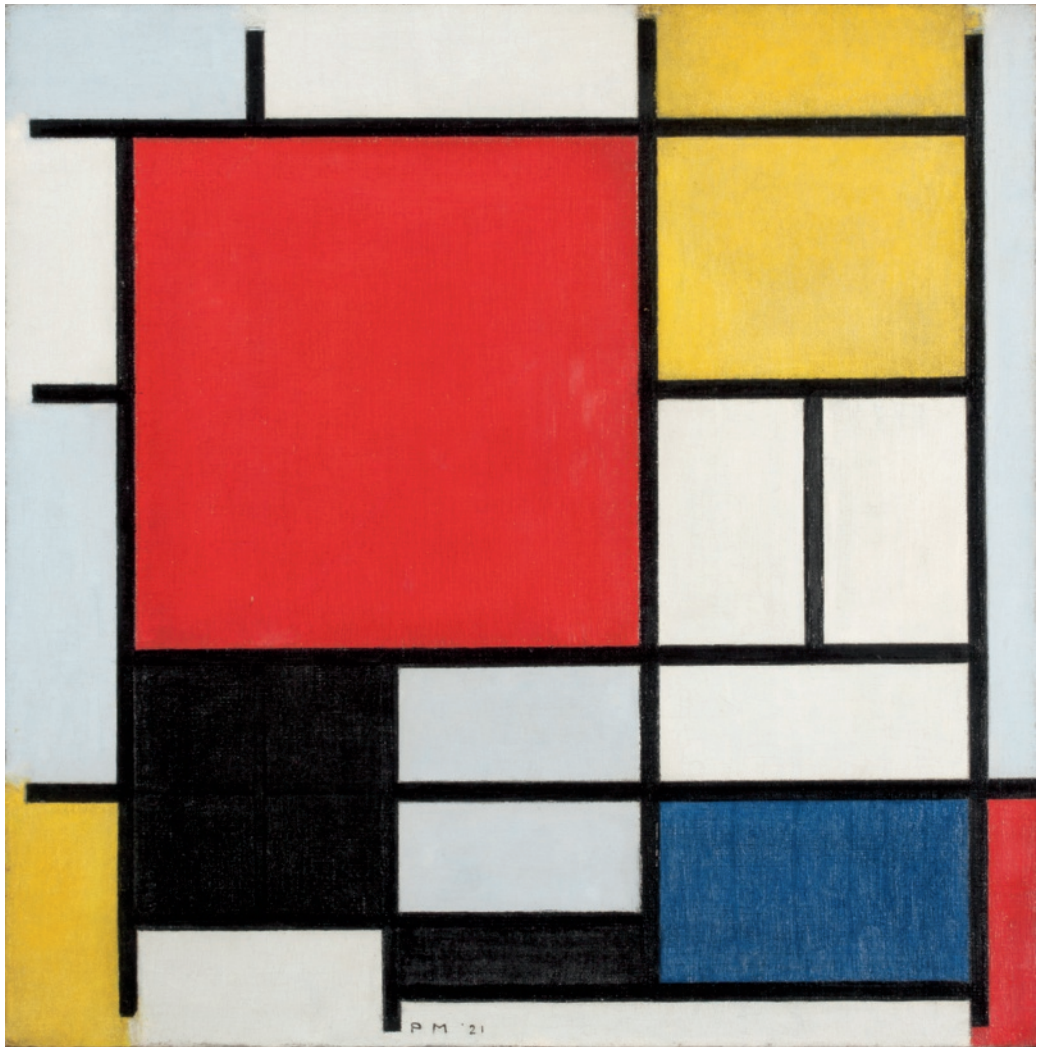

What does this painting have to do with math?

Piet Mondrian reduced his subjects to colorful geometric shapes. In this painting, bold, black horizontal and vertical lines frame the colorful squares and rectangles in red, black, yellow, and more. Do any of the shapes seem similar? Do you notice that the smaller shapes are added together to create bigger shapes? How many shapes do you see in total?

On the cover

Composition with Large Red Plane, Yellow, Black, Gray and Blue, 1921
Piet Mondrian, Dutch, 1872–1944
Oil on canvas
Kunstmuseum Den Haag, The Hague, Netherlands

EUREKA MATH²

Great Minds® is the creator of *Eureka Math*®,
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Published by Great Minds PBC.
greatminds.org

Printed in the USA
B-Print

1 2 3 4 5 6 7 8 9 10 XXX 25 24 23 22 21

ISBN 978-1-64497-149-9

EUREKA MATH²

A Story of Units®

Part–Part–Total ▸ K

TEACH

Before This Module

Kindergartners do not need prior experiences with *Eureka Math* or any preschool curriculum to be successful at the beginning of this module.

However, many modules from prekindergarten directly support the work in this module. They prepare students to successfully count groups of 0 to 10 objects and find or write the matching numeral. They also set the foundation for using one-to-one correspondence as a way to determine whether there are enough.

Overview

Counting and Cardinality

Topic A

Classify to Make Categories and Count

Classifying objects into groups by attribute creates a natural context for counting and working with numbers. Students are introduced to four core ideas about counting, which are collectively referred to as the number core. (See the *Why* section.)

Topic B

Answer *How Many* Questions with Up to 5 Objects

Students integrate the elements of the number core while considering different ways and reasons to count. They learn three strategies to help them count accurately regardless of configuration: touch and count, move and count, and mark and count.

Topic C

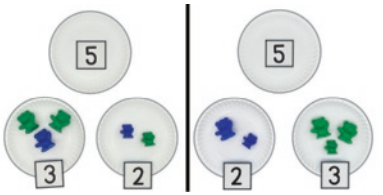
Write Numerals and Create Sets of Up to 5 Objects

Students begin to write numerals and experience more complex counting situations, like counting sounds and words that can be heard but not seen. They count out objects to match a given number. They also count to find out whether they have enough of something.

Topic D

Decompose Numbers

Students explore number relationships. This begins with the familiar context of sorting and then moves to story problems. Students begin to use number sentences like 5 is 2 and 3. These early experiences with problem solving set the stage for work with addition and subtraction concepts in modules 4 and 5.



Topic E

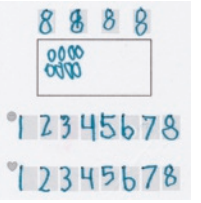
Answer *How Many* Questions with Up to 10 Objects

Topic E builds on the work of topic B as students apply number core concepts to sets of 6 to 10 objects. As the size of the group gets larger, tracking the count becomes more challenging. Students consider how to choose an accurate counting strategy.

Topic F

Write Numerals and Create Sets of Up to 10 Objects

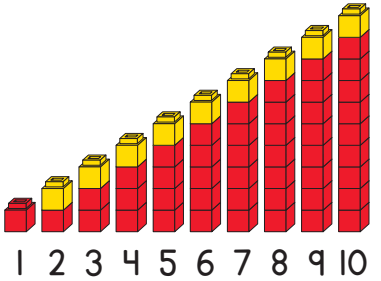
Topic F provides space to practice counting while students learn to write 6, 7, 8, 9, and 10. Students count things that happen over time, like a person's jumps or the runs in a baseball game, and see that writing numbers is a good way to record and remember that information.



Topic G

Analyze the Count Sequence

Students analyze the count sequence focusing on the ideas that each successive number is 1 more when counting forward and 1 less when counting backward. The number stairs model clearly illustrates these patterns.



After This Module

Kindergarten Module 2

Students apply their ability to isolate and sort by attributes, including number, as they analyze and compare shapes in module 2. They count sides and corners as they name, compare, model, and compose shapes.

Contents

Counting and Cardinality

Why

Counting and Cardinality

What is the number core? How is it tied to counting?

In this module, children have sustained interaction with four core ideas for describing the number of objects in a group. These ideas are collectively referred to as the number core.

- **The number word list**—Students say numbers in the appropriate count sequence (1, 2, 3, ...).
- **One-to-one correspondence**—When counting, students pair one object with one number word, being careful not to count any objects twice or skip any objects.
- **Cardinality**—Students say a number to tell how many are in a group. They may be able to tell how many by subitizing, counting, or matching to group of known quantity. When counting, students recognize that the last number said represents the number of objects in the group.
- **Written numerals**—Students read and write the symbols used to represent numbers. They also connect the written numeral with the number of objects in a set.

Students must integrate all aspects of the number core to count and use numbers fluently. The majority of kindergarten activities should involve three or more elements of the number core in conjunction. The number core components are not learned in isolation.

The number core plays a foundational role in work with number relations, operations, and place value understanding and is thus a critical start to the kindergarten year.

Students use one-to-one correspondence when they say one number word for each spider they touch.

Students show how many are in a set (cardinality) using written numerals.

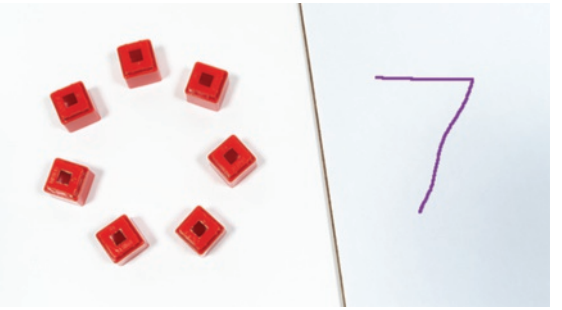
Why isn't there a lesson for each number from 1 to 10?

Module 1 focuses on strategies rather than specific numbers. When students learn strategies for counting accurately, they are able to apply them to different numbers arranged in different configurations.

For instance, when counting in a circular configuration, the challenging part is identifying the starting and stopping points so that every object is counted once and only once. Once a student has learned a strategy for marking the start, that strategy can be useful in successfully counting any number of objects in a circular configuration. The same strategy for marking the start can also be used to count the sides and corners of shapes.

As early as possible, we want students to approach problem solving with a strategy that allows them to be accurate and efficient. When a lesson focuses on a single number, students go into the counting task anticipating the total. Counting tasks in which students do not already know the total but genuinely want to know the total open them to the process of choosing a strategy to solve a problem (MP1). With good questioning, students can begin to evaluate whether their chosen strategy is effective.

A focus on strategies rather than specific numbers means that the size of a set can be varied to challenge individual students. This approach creates accessibility and engagement for kindergartners with a range of counting experiences.



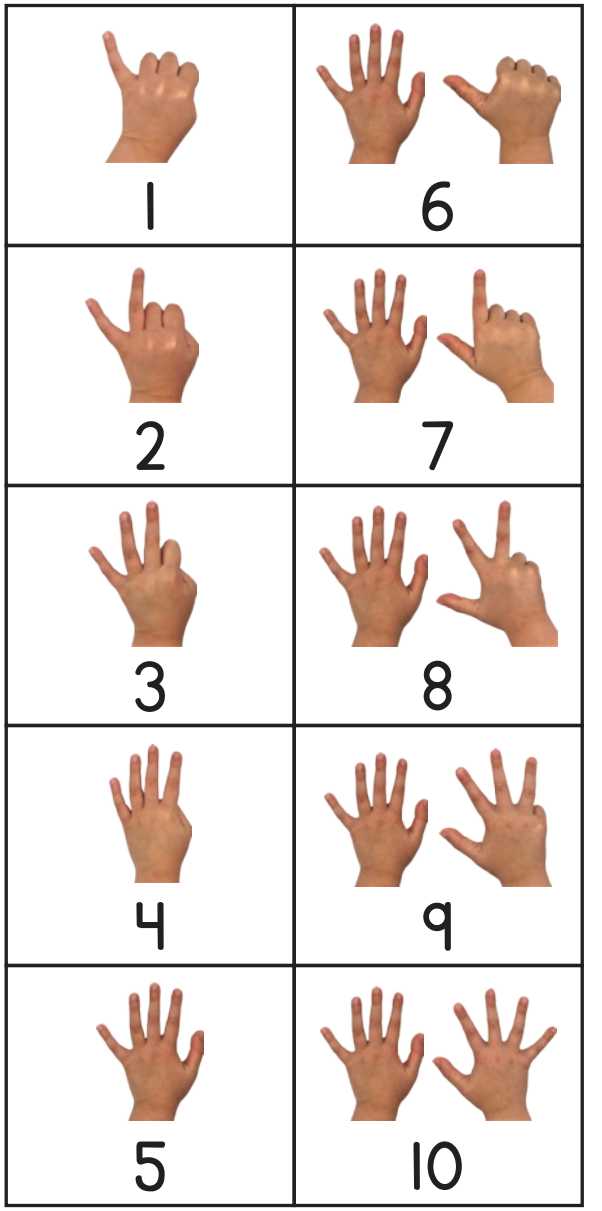
What is counting the math way? How does it affect later learning?

Fingers are familiar manipulatives that students have with them all day, every day, and if used intentionally, fingers can support conceptual understanding and problem solving throughout elementary school. Around the world, people use their fingers to represent numbers in many different ways. Depending on their cultural experiences, young children may begin counting on a thumb, pointer finger, pinkie, or even a section of a finger. Students learn to count the math way in module 1, starting with 1 on the left pinkie finger and continuing to 10 on the right pinkie finger.

The mathematical advantage of counting the math way is that students count from left to right without interruption, just as they do on the number path, and eventually, the number line. Students see and feel the quantity increase as they count forward. The steady increase in distance from the starting point is a physical and visual model for understanding the magnitude of a number.

Counting the math way has advantages for understanding number relationships that will be important in kindergarten and beyond.

- **Unitizing.** When students unitize, they make use of five as a whole instead of thinking of it as 5 individual pieces. The structure of our hands makes it easier for students to unitize 5 when they think about 6 as 5 and 1, 7 as 5 and 2, and so on. Unitizing is a key step to using Level 2 counting on strategies.
- **Partners to 10.** Fluency with partners to 10 is critical to Level 3 problem-solving strategies. When counting the math way, students can easily see that the raised fingers and the lowered fingers are partners to 10. Other ways of finger counting do not always keep the fingers representing each part next to one another.
- **Embedded numbers.** The ability to decompose a number into embedded parts is foundational to many Level 3 strategies. Showing parts within a total is easy when both parts are 5 or less. When modeling 2 + 3, a student can show one part on each hand. It is more challenging to see the parts when modeling 6 + 2. As fine motor skills develop, students can wiggle the fingers representing one part while holding the other part steady. Counting the math way creates consistency with how the embedded number looks inside the total.



This is a module about numbers to 10. Why do you suggest counting collections with as many as 25 objects?

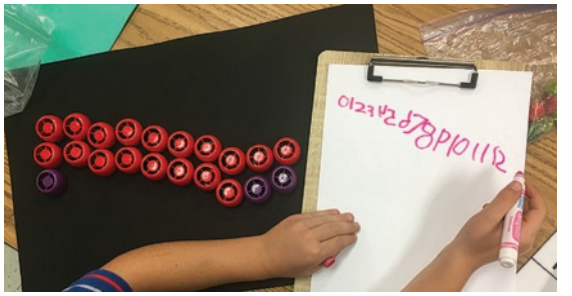
Counting collections are rich tasks that allow students to explore numbers and engage with the mathematical practices. They are also authentic assessment opportunities for teachers.

The first counting collection, which occurs in lesson 6, is a diagnostic assessment as much as it is an opportunity to introduce counting strategies. Young children with regular access to high-quality math experiences may walk into kindergarten with the ability to organize, count, and represent sets of 50 or more objects. Providing larger counting collections gives those students a chance to share the full range of their abilities so teachers can differentiate instruction to meet their needs.

We suggest beginning with collections of between 5 and 25 objects for the following reasons:

- Research indicates that students may count farther when counting objects than they do when asked to rote count.[1]
- When students cross into the twenties, we see whether they can use the repeated pattern of number names in English (e.g., saying twenty-one instead of twenty-eleven).
- Young students are good at choosing a collection that matches up with their counting abilities when the collections have fewer than 25 objects. With larger collections, students can't perceive the difference between collection sizes with enough accuracy to stay within a comfortable range.
- Experiencing success in early kindergarten activities is important to building students' self-confidence and the sense that they are mathematicians.

The number of objects in a collection should increase in subsequent lessons (lessons 19 and 33) if any student shows mastery through 25. Try 40 or 50 objects and slowly increase the number until you find the spot where the student begins to need help with the number word list, or with organizing to maintain one-to-one correspondence.



1 Carpenter, Thomas P., *Young Children's Mathematics*, p. 26

Achievement Descriptors: Overview

Counting and Cardinality

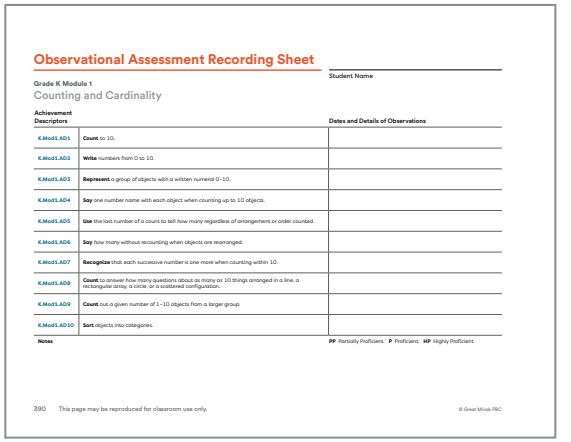
Achievement Descriptors (ADs) are standards-aligned descriptions that detail what students should know and be able to do based on the instruction. ADs are written by using portions of various standards to form a clear, concise description of the work covered in each module.

Each module has its own set of ADs, and the number of ADs varies by module. Taken together, the sets of module-level ADs describe what students should accomplish by the end of the year.

ADs and their proficiency indicators support teachers with interpreting student work on

- informal classroom observations (recording sheet provided in the module resources),
- data from other lesson-embedded formative assessments, and
- Module Assessments.

This module contains the 10 ADs listed.



Observational Assessment Recording Sheet

Student Name

Grade K Module 1
Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		PP Partially Proficient P Proficient HP Highly Proficient

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K.Mod1.AD1

Count to 10.

K.CC.A.1

K.Mod1.AD2

Write numbers from 0 to 10.

K.CC.A.3

K.Mod1.AD3

Represent a group of objects with a written numeral 0–10.

K.CC.A.3

K.Mod1.AD4

Say one number name with each object when counting up to 10 objects.

K.CC.B.4.a

K.Mod1.AD5

Use the last number of a count to tell *how many* regardless of arrangement or order counted.

K.CC.B.4.b

K.Mod1.AD6

Say *how many* without recounting when objects are rearranged.

K.CC.B.4.b

K.Mod1.AD7

Recognize that each successive number is one more when counting within 10.

K.CC.B.4.c

K.Mod1.AD8

Count to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.

K.CC.B.5

K.Mod1.AD9

Count out a given number of 1–10 objects from a larger group.

K.CC.B.5

K.Mod1.AD10

Sort objects into categories.

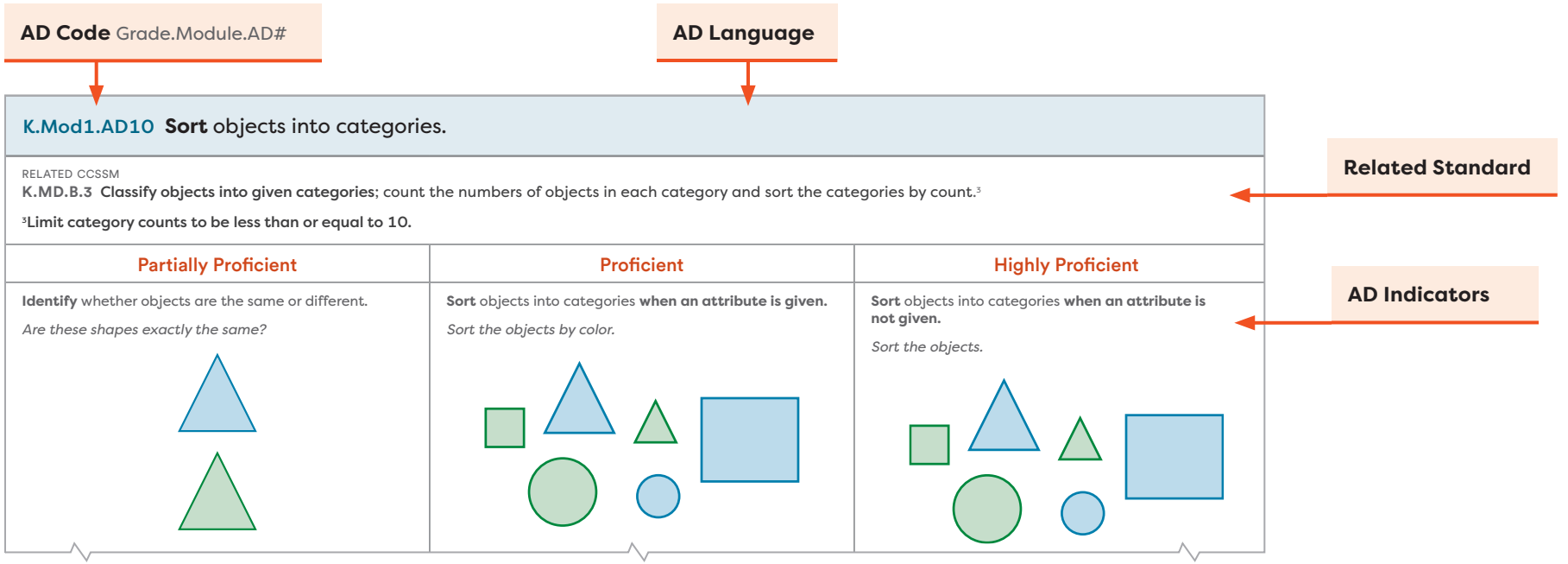
K.MD.B.3

The first page of each lesson identifies the ADs aligned with that lesson. Each AD may have up to three indicators, each aligned to a proficiency category (i.e., Partially Proficient, Proficient, Highly Proficient). While every AD has an indicator to describe Proficient performance, only select ADs have an indicator for Partially Proficient and/or Highly Proficient performance.

An example of one of these ADs, along with its proficiency indicators, is shown here for reference. The complete set of this module's ADs with proficiency indicators can be found in the Achievement Descriptors: Proficiency Indicators resource.

ADs have the following parts:

- **AD Code:** The code indicates the grade level and the module number and then lists the ADs in no particular order. For example, the first AD for grade K module 1 is coded as K.Mod1.AD1.
- **AD Language:** The language is crafted from standards and concisely describes what will be assessed.
- **AD Indicators:** The indicators describe the precise expectations of the AD for the given proficiency category.
- **Related Standard:** This identifies the standard or parts of standards from the Common Core State Standards that the AD addresses.



Topic A
Classify to Make Categories and Count

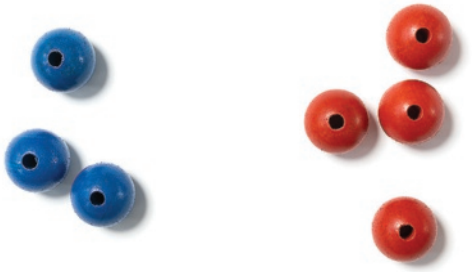
Topic A capitalizes on the energy and excitement of young students as they enter kindergarten by offering playful, active experiences with mathematics. The lessons provide the time students need to explore the tools and procedures of math during the first days of school.

Two fundamental math concepts intertwine in this topic: classification and the number core. For kindergarten students, classification involves identifying the attributes of an object, using attributes to sort objects, and discussing sorting strategies and rules: *This bead goes in the red group. I'm sorting by color.* These basic concepts of classification are foundational to working with geometry, data, and operations during the kindergarten year and beyond.

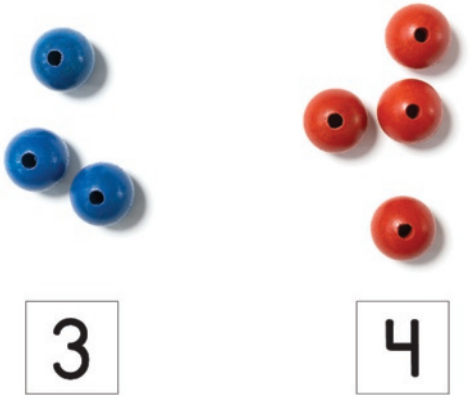
Sorting objects into groups creates a natural context for counting: *How many blue beads are in this group? How many red beads are in that group?* Sorting contexts provide a meaningful way to introduce four core ideas about counting, collectively referred to as the number core:

- The number word list (the counting sequence—i.e., 1, 2, 3, ...)
- One-to-one correspondence (one object paired with one number word)
- Cardinality (how many in a set)
- Written numerals

Throughout module 1, students have experiences that help them make critical connections between these four understandings. In module 3, students extend this learning by comparing the count in each group: *Which group has more beads?*



Students first sort objects into groups based on a single attribute.

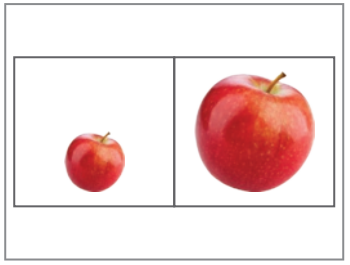


Then they apply the number core to count each group.

Progression of Lessons

Lesson 1

Compare objects based on their attributes.



The apples are the same color but different sizes.

Lesson 2

Classify objects into two categories.

I sorted by color.

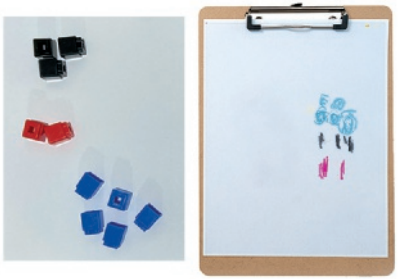
Lesson 3

Classify objects into two categories and count.

I sorted by size. There are 5 small rocks and 3 big rocks.

Lesson 4

Classify objects into three categories and count.



I sorted by color. I drew 3 black, 2 red, and 5 blue.

Lesson 5

Classify objects into three categories, count, and match to a numeral.

I sorted by name. I put a number next to each group.

1

LESSON 1

Compare objects based on their attributes.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1
Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
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K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

In this lesson, students consider multiple attributes to compare objects. If all the attributes are the same, the objects are *exactly the same*. If some attributes are the same but some are different, students use *the same but ...* to describe the similarities and differences. Attention to attributes is foundational to sorting throughout this topic.

Key Question

- What are some ways that things can be the same?

Achievement Descriptor

K.Mod1.AD10 **Sort** objects into categories. (K.MD.B.3)

Agenda

Fluency 10 min

Launch 10 min

Learn 20 min

- Exactly the Same or the Same But ...
- Problem Set

Land 10 min

Materials

Teacher

- Right-hand number glove
- Computer or device*
- Projection device*
- Teacher edition*

Students

- Two-Hands Mat (in the student book)
- Two-color beans (5)
- Resealable plastic bag

** These materials are only listed in lesson 1. Prepare these materials for every lesson in this module.*

Lesson Preparation

- Consider how to incorporate routines and procedures into the lesson. Extra time has been allotted to each component of the lesson to make room for these routines and procedures.
- Prepare bags of 5 two-color beans for each student. Save the bags of beans for use in later lessons.
- Create number gloves. Start with the right-hand glove. Write numbers on the fingertips, beginning with 1 on the pinkie finger and ending with 5 on the thumb. Continue with the left-hand glove, beginning with 6 on the thumb and ending with 10 on the pinkie finger. Save the gloves for use in later lessons.
- Consider tearing out the Two-Hands Mat and placing it in a personal whiteboard. The Two-Hands Mat will be used many times throughout the module.
- Create two-color beans by spray-painting one side of the beans red.

Fluency

10

Counting with Movement to 10

Students count with body movements to develop fluency with number names and one-to-one correspondence.

Let's clap 5 times and count our claps. Ready?

Count and clap from 1 to 5 slowly at first, emphasizing that one number is said for each clap. Repeat until most students are clapping, counting, or ideally, clapping and counting.

Repeat the process, this time stomping and counting to 5.

Now let's clap 10 times and count our claps. Ready?

Count and clap from 1 to 10 along with the students.

Repeat the process, this time stomping and counting to 10.

Counting on the Number Glove Within 3

Materials—T: Right-hand number glove

Students count on the number glove to develop numeral recognition and familiarity with counting the math way.

Watch my number glove and count out loud. Ready?

Begin with a closed fist, and then show the pinkie finger, followed by the ring finger, and then the middle finger.

1, 2, 3

Stay here at 3. Let's count back down to 1. Ready?

Hold your 3 fingers up, and then put down the middle finger and then the ring finger.

3, 2, 1

Number glove viewed from the students' perspective

UDL: Engagement

Adjust Counting with Movement to 10 to engage as many students as possible. Consider their physical abilities, cultural background, and interests when choosing movements. The following is a small sample of movements that can be easily counted:

- blinks
- head nods
- drumbeats
- frog hops
- basketball dribbles

Offer more practice counting from 1 to 3 and back down to 1.

Now you're ready for something harder! This time we'll count up and down, like a wave. Watch my number glove and count out loud.

Use the number glove to show the following sequence while students count aloud.

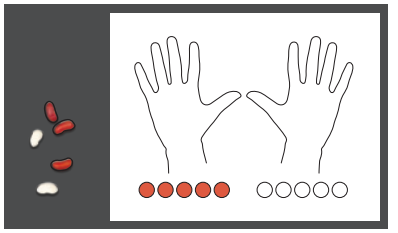
1	2	3	2	1	2	1	2	3	2

3	2	3

Beans and Hands Mat

Materials—S: Two-Hands Mat, two-color beans

Students learn routines and procedures to prepare for distribution, care, and collection of materials.



- **Distribute materials:** Establish an efficient procedure for distributing the beans and mats. Teach and practice the procedure. Anticipate problems before they occur. Stop to correct and troubleshoot immediately.
- **Care of materials:** Interactively model storage and appropriate handling of beans.
- **Freely explore materials:** Allow students time to inspect, handle, talk about, and possibly count the materials without instructional goals.
- **Collect materials:** Reverse the distribution process.

Teacher Note

Take care not to count along with students. Students may learn to mimic the teacher rather than focus on number order.

Control the pace of the count with your hands. Remember to listen to student responses, and be mindful of errors, hesitation, and lack of full-class participation. If needed, adjust the tempo or sequence of numbers.

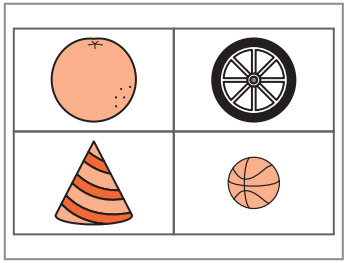
Launch 10

Students identify attributes in a set of pictures and isolate one attribute to select what doesn't belong.

Display the set of pictures for the Which One Doesn't Belong? routine.

With your eyes, look at the picture that doesn't belong. Think about which one doesn't go with the other pictures.

Inside your head, think about why that picture doesn't belong with the other pictures. What is different about that picture?



Establish routines that allow time for all students to formulate their own ideas. After sufficient think time, point to the picture of the wheel.

If you think the wheel doesn't belong with the rest of the pictures, stand up.

Gather the standing students around you and whisper to them, asking why they think the wheel doesn't belong. Elicit as many reasons as you can in an efficient way. Be sure everyone in the group whispers. Have students return to their seats. Summarize the small group's reasoning to the whole group.

Our friends said the wheel doesn't belong with the other pictures because it isn't orange.

Repeat these steps for each of the pictures that students choose.

- Color – The wheel doesn't belong because it's not orange.
- Size – The basketball doesn't belong because it's smaller than the others.
- Shape – The hat doesn't belong because it's not round.
- Use – The orange doesn't belong because you can eat it and you can't eat the other things.

Transition to the next segment by framing the work.

You were good at using things like color and size to tell about objects. Today, we will use words to compare more things.

Teacher Note

In the first days of school, it is important to practice management routines that allow for maximum student learning. Two examples are written in Launch.

Beginning sentences with quiet reminders like "With your eyes" or "Inside your head" fosters think time for all students.

Whispering in a group will engage those not in the group because they will inherently try to listen to the "secret" being discussed in the group.

Language Support

Consider using strategic, flexible pairings throughout the module based on students' mathematical and English language proficiency.

- Pair students who have different levels of mathematical proficiency.
- Pair students who have different levels of English language proficiency.

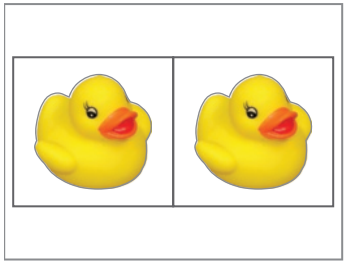
As applicable, complement any of these options by pairing students who speak the same native language.

Learn 20

Exactly the Same or the Same But ...

Students use attributes to establish whether two objects are exactly the same or the same but a little different.

Display the picture of the two ducks.



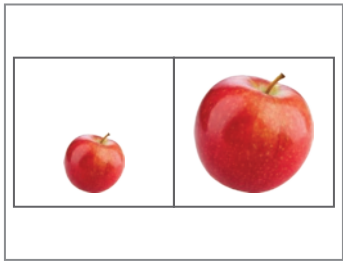
Look at the two ducks. Are they the same? How do you know they are the same?

Yes. They are both yellow.

They are the same size.

Everything about them is the same. We can say they are exactly the same.

Show the picture of the apples.



Look at the two apples. Are they exactly the same?

No.

What is the same about both apples? Turn and talk to your neighbor about the things that are the same about both apples.

They are both red.

They are both round.

Promoting the Standards for Mathematical Practice

Students attend to precision (MP6) when they use the phrases *exactly the same* and *the same but ...* to describe two objects. They precisely communicate common attributes among the objects rather than simply describing them as the same or different.

Observational Assessment

☑ Listen to student responses during turn and talks. Can students describe the attributes that are the same and different?

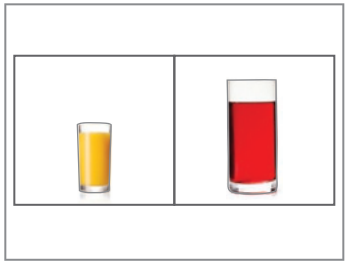
What's not the same? What's different about them? Turn and talk to your neighbor about how the apples are different.

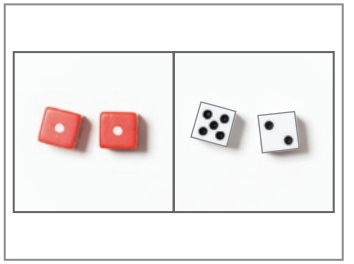
One is big and one is small.

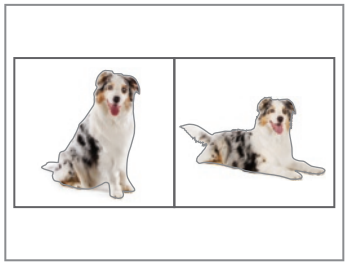
They are the same because they are both red, round apples, but they are different because one is big and one is small. We can say they have the same name and are the same color and shape, but they are different sizes.

Repeat with each picture: the glasses of juice, the dice, and the dogs. To support students, summarize their thoughts by using a repetitive sentence structure.

- Everything about them is the same. They are exactly the same.
- They are the same because _____ but different because _____.
- They are the same _____ but different _____.







Problem Set

Problem Sets are normally set aside for students to work independently on the day's objective. There is no independent practice for lesson 1. Use this time to establish transitions and routines so that, on subsequent days, students move around the classroom and handle materials, such as the student book, efficiently.

Providing opportunities for students to practice and show what they have learned through independent in-class work is an integral part of *A Story of Units*®. In kindergarten, that practice may take the form of hands-on experiences, games, or written work.

Gradual introduction of Problem Sets builds kindergarten students' capacity to represent their work through drawing and writing. Problem Sets are not part of every kindergarten lesson.

Teacher Note

The images are sequenced to first establish the meaning of *same* and *different* and then challenge students to consider various attributes that can be compared.

The last pair may be particularly tricky because the same dog is in different positions. Why introduce this complexity? The idea that an object keeps its name regardless of its position or orientation will be important in module 2 when students consider the attributes of shapes. The triangles below are the same shape but in different positions.

Language Support

Young children are learning to produce complex sentences independently. Revoicing student responses by using a repetitive sentence structure provides a language model that students can emulate.

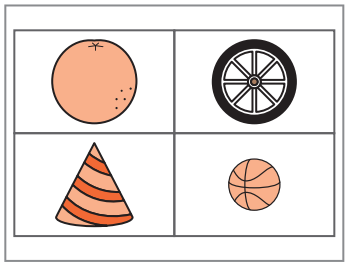
Students may use two simple sentences instead. "It's the same dog. What's different is one shows the dog sitting and the other shows the dog lying down."

Land 10

Debrief 10 min

Objective: Compare objects based on their attributes.

Display the set of pictures from Launch.



Which pictures are the same but a little bit different?

The orange and the wheel are round, but you can't eat a wheel.

The orange, the basketball, and the hat are the same because they are all orange but different because they are all different things.

I heard you say that the orange, the basketball, and the hat were the same because they are all orange. They are all the same ...

Color

What are some other ways that things can be the same?

Size, name, shape, number

2

LESSON 2

Classify objects into two categories.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	

Notes

PP Partially Proficient **P** Proficient **HP** Highly Proficient

Lesson at a Glance

Once students can compare objects based on a specific attribute, they can create groups of objects that share an attribute (classification). At first the groups are sorted by simple, obvious attributes like color. In this lesson, students choose a way to sort objects and use words to share how they sorted. This lesson introduces the term *sort.*

Key Question

- What are some ways you can sort?

Achievement Descriptor

K.Mod1.AD10 **Sort** objects into categories. (K.MD.B.3)

Agenda

Fluency 10 min

Launch 5 min

Learn 25 min

- Sort
- Name a Way to Sort

Land 10 min

Materials

Teacher

- Right-hand number glove
- Unifix® Cubes (5)
- Chart paper
- Sorting bag
- Puppet or stuffed animal

Students

- Two-Hands Mat
- Two-color beans (3)
- Sorting bag
  (1 per student or student pair)
- Work mat
  (1 per student or student pair)

Lesson Preparation

- Prepare the bags of 5 two-color beans from lesson 1, so there are now 3 beans in each bag.
- Place 3 red and 2 blue Unifix Cubes in a bag.
- Decide whether students will work individually or in pairs. Assemble sorting bags for each student or pair of students. Create sorting bags so that objects can be sorted into two categories. See the Materials section in the module resources for more information about how to prepare a differentiated set of sorting bags.
- The work mat can be a personal whiteboard, the back of the Two-Hands Mat, or a piece of construction paper—anything that delineates the workspace.
- A puppet or stuffed animal is used multiple times throughout the year. Consider choosing something that can be used multiple times for familiarity.

Fluency

10

Counting with Movement to 10

Students count with body movements to develop fluency with number names and one-to-one correspondence.

Let's clap 5 times and count our claps. Ready?

Count and clap from 1 to 5 slowly at first, emphasizing that one number is said for each clap. Repeat until most students are clapping, counting, or ideally, clapping and counting.

Repeat the process, this time stomping and counting to 5.

Now let's clap 10 times and count our claps. Ready?

Count and clap from 1 to 10 along with the students.

Repeat the process, this time stomping and counting to 10.

Counting on the Number Glove Within 3

Materials—T: Right-hand number glove

Students count on the number glove to develop numeral recognition and familiarity with counting the math way.

Watch my number glove and count out loud. Ready?

Begin with a closed fist, and then show the pinkie finger, followed by the ring finger, and then the middle finger.

1, 2, 3

Stay here at 3. Let's count back down to 1. Ready?

Hold your 3 fingers up, and then put down the middle finger and then the ring finger.

3, 2, 1

Number glove viewed from the students' perspective

Teacher Note

Fluency activities like Counting with Movement to 10 may be repeated throughout the lesson or school day whenever students need to move. This can be especially helpful during transitions from independent work to class discussion or in lessons that have a heavy emphasis on discussion. The choral counting grabs student attention, and the movement gets blood flowing to the brain. At the end of the count, student attention is on the teacher to hear next steps.

Offer more practice counting from 1 to 3 and back down to 1.

Now you're ready for something harder! This time we'll count up and down, like a wave. Watch my number glove and count out loud.

Use the number glove to show the following sequence while students count aloud.

1	2	3	2	1	2	1	2	3	2

3	2	3

Beans and Hands Mat

Materials—S: Two-Hands Mat, two-color beans

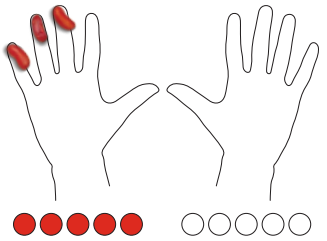
Students match 1 bean to 1 finger to develop one-to-one correspondence.

Pointer finger up! Touch the red dots at the bottom of your mat.

Open your bags just like we practiced.

Put 1 bean on 1 dot. 1 bean, 1 dot. Keep going until you run out of beans.

Pause as students place the 3 beans on 3 of the red dots.



Pick up 1 bean. Hold it up! Put it on the pinkie finger.

Students place 1 bean on the pinkie finger on the Two-Hands Mat.

Pick up 1 bean. Hold it up! Put it on the next finger.

Students place 1 bean on the ring finger on the Two-Hands Mat.

Continue the process with the third bean placed on the middle finger on the Two-Hands Mat.

Now let's put the beans back on the dots. 1 bean, 1 dot. Say it with me as you go.

1 bean, 1 dot. (*Slides 1 bean down to a dot.*)

Repeat the process of moving the 3 beans from dots to fingertips and back.

Launch 5

Materials—S: Sorting bag, work mat

Students examine objects and consider their attributes.

Begin this segment with students in the place where they will do their independent work. They will move to a central location at the beginning of Learn.

Invite students to pour the contents of their bags onto their mats. Allow a moment for free exploration—examining, noticing, arranging, talking about the objects, possibly counting.

Are the things in your bag exactly the same?

Well, these are the same color, but they are different sizes.

Mine are all food, but they are different colors.

I have lots of animals but not the same kind of animals.

Guide the discussion to bring out potential attributes for sorting. If students do not mention them, it may be necessary to elicit—are they all the same size or color or shape? Do they all have the same name?

Transition to the next segment by framing the work.

Today, we will think about how things are the same and different to help us make groups.

Learn 25

Sort

Materials—T: Unifix Cubes; S: Sorting bag

Sort objects into two groups based on one attribute.

Bring students to a central location in the room away from their sorting bags. Make sure students can clearly see the set of Unifix Cubes in a bag (3 red, 2 blue). Take the cubes out of the bag.

I have some things too. Watch how I sort them into two groups.

One by one, separate the red and blue cubes into two distinct groups. Point to the red cubes.

What name would you give this group?

The red group

Repeat with the blue group.

I sorted by color. All the things in this group are red. *(Gesture.)* All the things in this group are blue. *(Gesture.)* When we sort, we put things into groups.

Now it's your turn. Sort your things into two groups. You don't need to sort by color as I did. You can choose what makes sense for your things.

Have students move back to their workspaces and begin to sort. If they need prompting, be direct. Tell them to sort objects by color or size or name. Give examples if necessary or explicit instructions, such as "Make a group of purple things."

Language Support

Action is key to helping students understand new terminology like *sort.* Do not explain the activity at length. Instead, help students understand sorting by encouraging them to watch and reason as you model. Then let them try their understanding and refine it through their own sorting activity. It is easier to use and define math terminology like *sort* after having the sorting experience. At the end of the lesson, students will make a list of various ways to sort.

Observational Assessment

☑ Listen to student responses to "What name would you give this group?" Observe students while they are independently sorting. Can they name the way they are sorting when asked?

Select a few students to share their sort in the next segment. Look for an obvious or likely sort and an unusual or unexpected sort.

Tell students to stand up when they are finished. The simple act of standing provides a clear indicator of completion and creates a sense of urgency, as well as a welcome opportunity for movement. Early finishers can think of another way to sort their objects or get another sorting bag.

Name a Way to Sort

Materials—T: Chart paper

Share and chart the attribute used to sort.

Once most students are standing, refocus the class by asking students to clasp their hands behind their backs.

Facilitate sharing by asking selected students how they sorted. Help them identify and name the attribute they used. For example, respond to "I sorted by yellow and green" with "You sorted by color!"

Chart each new response. Be open to any reasonable response with justification, including personal preferences such as "things I think are pretty and things I don't think are pretty."

Our chart shows different ways to sort.

Let's think of pictures to help us remember these ways to sort.

Each class chart will be unique, based on student responses.

Use student ideas to add simple pictures that support prereaders. The class will add to this chart in subsequent lessons.

Promoting the Standards for Mathematical Practice

Students reason abstractly **(MP2)** when they choose an attribute to sort by, name that attribute, and come up with a symbol to represent it.

Land 10

Debrief 10 min

Materials—T: Sorting bag, puppet or stuffed animal

Objective: Classify objects into two categories.

Select a student sorting bag. Introduce a puppet or stuffed animal who will silently sort the objects.

Begin having Puppet sort the objects into two groups. Introduce think–pair–share so students can discuss how they think Puppet is sorting.

First, have students think.

Inside your head, think about how Puppet is sorting.

Then have students pair and talk to each other.

Turn to your partner and tell how Puppet sorted.

Invite one or two students to share their responses.

How did Puppet sort?

Puppet made a group of big rocks and a group of small rocks.

Puppet sorted by size.

Teacher Note

The puppet or stuffed animal is used throughout the year to help students summarize and synthesize ideas. Puppet can take on a peer role that teachers cannot. For example, Puppet can make mistakes that students can correct. Students may also use their words to teach Puppet about what they learned.

3

LESSON 3

Classify objects into two categories and count.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

In this lesson, students continue to classify objects into groups with a focus on challenging attributes. They also ask and answer a natural question after creating a group—How many are in the group? One-to-one correspondence and an understanding of cardinality are the subject of discussion and practice. This lesson formalizes the term *count*.

Key Question

- What can we do to count correctly?

Achievement Descriptors

K.Mod1.AD8 **Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration. (K.CC.B.5)

K.Mod1.AD10 **Sort** objects into categories. (K.MD.B.3)

Agenda

Fluency 10 min

Launch 10 min

Learn 20 min

- Count Each Group
- Sort and Count

Land 10 min

Materials

Teacher

- Right-hand number glove
- Unifix® Cubes (5)
- Sorting bag
- Number Path (in the teacher edition)
- Ways to Sort chart
- Puppet or stuffed animal
- Sorted objects

Students

- Two-Hands Mat
- Two-color beans (5)
- Sorting bag (per student or student pair)
- Number Path (per student or student pair)

Lesson Preparation

- Prepare the teacher sorting bag to have a pencil, marker, pen, fork, spoon, and chopsticks.
- Use the Ways to Sort chart from lesson 2. Continue adding to it instead of creating a new one.
- Create student sorting bags prior to the lesson. Sorting bags should contain objects that can be sorted into two categories. Refer to the Materials section in the module resources for examples of sorting bags.
- Prepare the bags of 3 two-color beans from lesson 2, so there are now 5 beans in each bag.

Fluency

10

Counting on the Number Glove Within 5

Materials—T: Right-hand number glove

Students count on the number glove to develop numeral recognition and familiarity with counting the math way.

Watch my number glove and count out loud. Ready?

Begin with a closed fist, and then show the pinkie finger, followed by the next fingers in order.

1, 2, 3, 4, 5

Stay here at 5. Let's count back down to 1. Ready?

Hold your 5 fingers up, and then put down the thumb, followed by the next fingers in order.

5, 4, 3, 2, 1

Now let's count up and down, like a wave. Watch my number glove and count out loud.

Use the number glove to show the following sequence while students count aloud.

1	2	3	2	1	2	1	2	3	4

3	4	5	4	5	4	3

If students have difficulty with the sequence within 5, return to a sequence within 3, and then gradually build up to 5.

Beans and Hands Mat

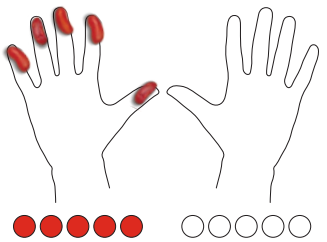
Materials—S: Two-Hands Mat, two-color beans

Students match 1 bean to 1 finger and say the number of beans to develop one-to-one correspondence and an understanding of cardinality.

Pointer finger up! Touch the red dots at the bottom of your mat.

Open your bags just like we practiced.

Put 1 bean on 1 dot. 1 bean, 1 dot. Keep going until you fill up all the red dots.



Pause as students place the 5 beans on the red dots.

Pick up 1 bean. Hold it up! Put it on the pinkie finger. How many fingers have a bean?

1

Pick up 1 bean and put it on the ring finger. How many fingers have a bean now?

2

Continue the process to 5, and then back down to 1. Omit 0 until the concept has been introduced.

If students subitize, or know how many without counting, do not insist that they touch and count. Insisting on touch and count may cause them to think they've made a mistake and keep them from trusting their ability to "just see" how many.

Whisper–Shout Counting

Materials—T: Unifix Cubes

Students count to tell the number of objects with a focus on the last number name said to develop an understanding of cardinality.

This activity uses changes in voice level to draw attention to the last number word said. Establish what is meant by whisper–shout before starting.

Let me hear you whisper 1, 2, 3. Make it just loud enough so I can hear you. *(Emphasize with a finger to your lips.)*

1, 2, 3 *(in a whisper voice)*

Great! Now let me hear you shout 1, 2, 3. Make it an "indoor shout" so we don't disturb the other classes. *(Emphasize with cupped hands around your mouth, and a corresponding facial expression.)*

1, 2, 3 *(shouting)*

Display a stick of 3 Unifix Cubes. Using a dry-erase marker, make a dot on the last cube.

I'll touch, and you'll count. We'll whisper, but when you get to the last one *(point)*, shout the number!

1 *(whisper)*, 2 *(whisper)*, 3 *(shout)*

Repeat the process with a stick of 5 cubes.

1 (whisper)

2 (whisper)

3 (shout)

Launch 10

Materials—T: Sorting bag

Students sort by use, which is a new attribute.

Show one of the objects.

What do we do with this?

Invite students to act out, or demonstrate actions corresponding to the objects' use—eating, writing, or drawing. Do this for a few of the objects. This simple question provides immediate access, drawing in students of all levels of mathematical understanding, and primes them to think about use.

I'm going to sort my things. See if you can tell how I'm sorting them.

Make a group of drawing tools and a group of eating utensils.

What is the same about everything in this group?

We draw with them.

Good. Let's say it another way. Tell what we use them for. We use them ...

We use them to draw!

Repeat with the eating utensils. Add *use* to the Ways to Sort chart from lesson 2.

Transition to the next segment by framing the work.

I wonder how many things are in each group. Today, we will count to find out.

Differentiation: Challenge

Challenge students by asking them to consider other ways that the items in the bag are the same and different. In the sample shown here, most of the objects have a similar shape (long and stick-like) and can be held in the hand.

Learn 20

Count Each Group

Materials—T: Sorting bag, Number Path

Students count a group, focusing on using one-to-one correspondence and cardinality.

Use the eating utensils and drawing tools to model how to count each group by using the number path. By carefully placing each item on the number path, students practice one-to-one correspondence.

We count to find how many are in each group. The number path is a tool that can help us count. Let's count the things we use to draw as we put them on the number path, like this.

Demonstrate saying only one number as you move each item onto the number path.

Teacher Note

The number path supports one-to-one correspondence because there is 1 space for each object. It also encourages students to move and count, which helps them keep track of what has been counted.

In lesson 5, there is a formal introduction to numerals. The numerals on the number path are exposure for the formal introduction.

I moved each object to make sure I only counted it once. We said one number for each object. When we do this, let's call it move and count.

Let's move and count again, but this time let's whisper and shout like we did earlier. Who remembers when we shout?

On the last number

Clear the number path. Move each drawing tool to the number path as students count.

Turn and tell your partner how many drawing tools there are. Say a complete sentence like this: There are _____ drawing tools in all. *(Wave hand over drawing tools.)*

There are 3 drawing tools in all.

Repeat with the group of eating utensils, stopping after students count to confirm students' understanding.

You counted 1, 2, 3, 4. Which number tells how many?

The number 4

The last number you said

The last number I said, 4, tells me how many. What do we have 4 of?

4 things we use to eat

Yes. 4 tells us about all the things we use to eat, the whole group.

Why do you think it might be important to know how many things are in a group? Why would you want to count them?

To see if there is enough for everyone

So you know if you lost some

Teacher Note

With small quantities, some students will touch and count, while others may subitize (know how many without counting), or use the number path to find how many.

If students subitize, do not insist that they touch and count. Insisting on touch and count may cause them to think they've made a mistake and keep them from trusting their ability to "just see" how many.

Sort and Count

Materials—T: Ways to Sort chart; S: Sorting bag, Number Path

Students sort objects into two groups and count each group.

Distribute sorting bags and number paths to individual students or student pairs. Invite them to sort the objects in their bags into two groups and count each group. Allow time for students to consider differences between the objects and choose a way to sort. Support students by providing a way to sort only if necessary.

When circulating, ask partners to answer questions about their groups. Encourage students to name the unit when telling how many are in a group: "5 rocks" instead of "5."

How did you sort your groups?

How many are in that group? How do you know?

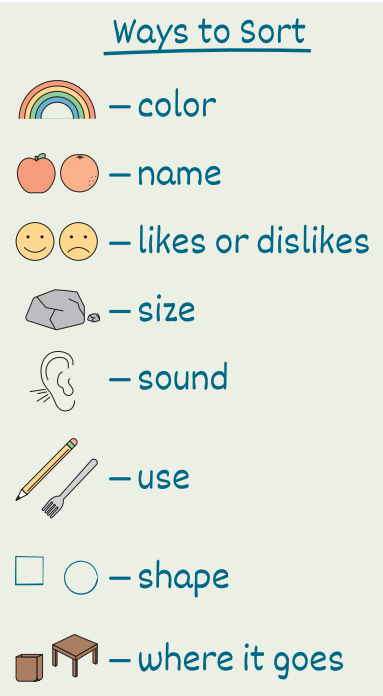
I counted: 1, 2, 3, 4, 5.

I can just see.

The number path is filled all the way to 5.

Tell students to stand up when they are finished. Early finishers can think of another way to sort their objects or get another sorting bag.

If any students found a new way to sort, invite them to share and add to the Ways to Sort chart started in lesson 2.



Differentiation: Support and Challenge

If students are struggling to understand cardinality, provide support as they count their groups. Place a sticky note under the last object to remind students to shout that number.

To provide a challenge, ask students to show how move and count works without using the number path.

Observational Assessment

☑ Watch students as they transition to counting objects independently. Are they keeping track of their count by touching or moving their objects? Are they using the number path or a different method of organization?

Promoting the Standards for Mathematical Practice

Students look for structure **(MP7)** when they identify attributes shared by objects and choose a way to sort. Identifying the relationships between objects builds a foundation for seeing relationships and structure in numbers and expressions.

Land 10

Debrief 10 min

Materials—T: Puppet or stuffed animal, sorted objects

Objective: Classify objects into two categories and count.

Bring students together in a place where they can all see Puppet and a set of sorted objects.

Watch Puppet count. See if you can catch the mistake.

Demonstrate a common error in one-to-one correspondence: skip over an object, touch an object more than once, or slide Puppet's hand quickly while counting. Have students think–pair–share about Puppet's mistake.

Inside your head, think about Puppet's mistake.

Turn to your partner and tell about Puppet's mistake.

Invite one or two students to share their responses.

What mistake did Puppet make?

There's 4 not 5.

Puppet counted that one twice.

Have students clearly articulate the error. "There's 4 not 5" is an incomplete response. Prompt students to precisely note the behavior that led to the mistake.

Everyone makes mistakes sometimes. That's part of learning. What can Puppet do to count correctly?

Slow down the counting.

Use the number path to count.

Count each thing one time.

Have Puppet count again by using student suggestions.

Teacher Note

Students generally watch their teacher for cues about accuracy and precision. When teachers deliberately make errors, students sometimes misunderstand and repeat the error. Students may also be uncomfortable correcting an adult.

When a puppet or stuffed animal makes a mistake, students are more likely to understand that an error has been made. They may find it easier to describe the error and how it can be corrected.

1	2	3	4	5

6	7	8	9	10

4

LESSON 4

Classify objects into three categories and count.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1
Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	

Notes

PP Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

After some experience with classification, students are able to sort into more than two groups. In this lesson, students sort into three groups and count the number of objects in each group. They also record their sort on paper, an early example of modeling with mathematics (MP4).

Key Question

- What does it mean to sort into groups?

Achievement Descriptors

K.Mod1.AD1 **Count** to 10. (K.CC.A.1)

K.Mod1.AD10 **Sort** objects into categories. (K.MD.B.3)

Agenda

Fluency 10 min

Launch 5 min

Learn 30 min

- Sort
- Name the Sort
- Problem Set

Land 5 min

Materials

Teacher

- Right-hand number glove
- Unifix® Cubes (5)
- Ways to Sort chart
- Transportation Pictures (in the teacher edition)
- Chart paper

Students

- Two-Hands Mat
- Two-color beans (5)
- Sorting bags (1 per student or student pair)
- Student book

Lesson Preparation

- Display the Ways to Sort chart.
- Select images that show three ways students can get home from school or after-school care (e.g., bus, car, walk, bike, train). Be sure that every student can be included in one of the three categories.
- Create a transportation sorting chart with three headings to match the images.
- Adjust the sorting bags used in previous lessons so that the objects can be sorted into three categories (e.g., add erasers to a bag with pencils and crayons). None of the categories should have more than 5 items.

Fluency

10

Counting on the Number Glove Within 5

Materials—T: Right-hand number glove

Students count on the number glove to develop numeral recognition and familiarity with counting the math way.

Watch my number glove and count out loud. Ready?

Use the number glove to show the following sequence while students count aloud.

1	2	3	2	1	2	1	2	3	4

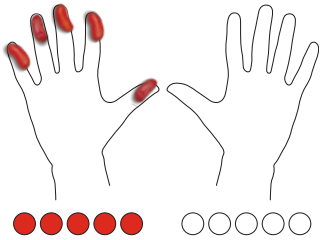
3	4	5	4	5	4	3

If students have difficulty with the sequence within 5, return to a sequence within 3, and then gradually build up to 5.

Beans and Hands Mat

Materials—S: Two-Hands Mat, two-color beans

Students match 1 bean to 1 finger and say the number of beans to develop one-to-one correspondence and an understanding of cardinality.



Pointer finger up! Touch the red dots at the bottom of your mat.

Put 1 bean on 1 dot. 1 bean, 1 dot. Keep going until you fill up all the red dots.

Pause as students place the 5 beans on the red dots.

Pick up 1 bean. Hold it up! Put it on the pinkie finger. How many fingers have a bean?

1

Pick up 1 bean and put it on the ring finger. How many fingers have a bean now?

2

Continue the process to 5, and then back down to 1. Omit 0 until the concept has been introduced.

Whisper–Shout Counting

Materials—T: Unifix Cubes

Students count to tell the number of objects with a focus on the last number name said to develop an understanding of cardinality.

This activity uses changes in voice level to draw attention to the last number word said. Establish what is meant by whisper–shout before starting.

Let me hear you whisper 1, 2, 3. Make it just loud enough so I can hear you. *(Emphasize with a finger to your lips.)*

1, 2, 3 *(in a whisper voice)*

1 (whisper)

Great! Now let me hear you shout 1, 2, 3. Make it an "indoor shout" so we don't disturb the other classes. *(Emphasize with cupped hands around your mouth, and a corresponding facial expression.)*

1, 2, 3 *(shouting)*

2 (whisper)

Display a stick of 3 Unifix Cubes. Using a dry-erase marker, make a dot on the last cube.

I'll touch, and you'll count. We'll whisper, but when you get to the last one *(point)*, shout the number!

1 *(whisper)*, 2 *(whisper)*, 3 *(shout)*

3 (shout)

Repeat the process with a stick of 5 cubes.

Launch 5

Materials—T: Ways to Sort chart

This activity introduces sorting into three categories and encourages students to consider how objects are sorted.

Be sure that the Ways to Sort chart is visible. Show students the image of a set of rocks sorted into three groups. Then have students think–pair–share about the following.

How do you think these rocks were sorted?

By how they feel

Small, medium, large

Support students to explain their thinking by using the image. Use the rocks to clarify any obviously incorrect answers, such as sorting by color.

Transition to the next segment by framing the work.

Today, we will sort into three groups.

Teacher Note

This type of open-ended group discussion is an opportunity to teach kindergarten students what is mathematically relevant and what is not. Gently rein in their responses, especially personal stories, when they do not fit the math discussion.

Learn 30

Sort

Materials—T: Transportation Pictures, transportation sort chart

Students sort the class according to a single attribute (how they get home), and count each category.

Show students the paper representing three ways to get home from school or after-school care. Put the transportation pictures in an open area of the room spaced a few feet apart.

Invite students to sort themselves by moving to the picture that shows how they get home. As students move, anticipate uncertainty about where to stand as well as overlap of the three groups' space. Elicit ideas about how to organize the students and make it easier to see each group.

What do you notice about our three groups?

There are a lot of people who walk.

The people who ride the buses and the trains are too close.

I wonder how many people are in each group. How could we find out?

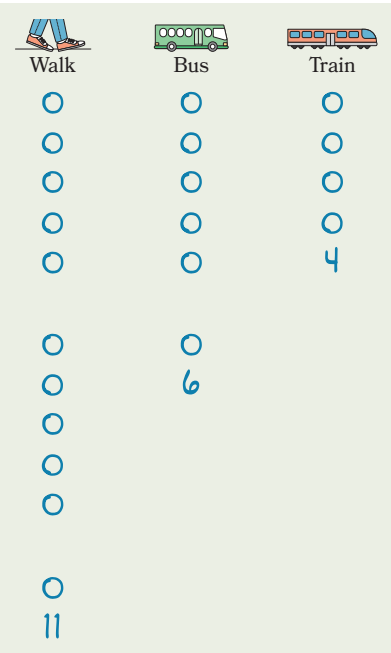
(Starts) 1, 2, 3, 4, ...

We could count.

If students haven't already suggested lining up within each group, ask them to do so now. Remind them of the helpful move and count strategy used for counting in previous lessons.

Use the following steps for each group. Select the group with the fewest students first.

- Move students into a straight line so they can count off one-by-one.
- As each person counts off, draw a circle on the chart under the appropriate heading. Support student counting, especially if a group has more than 10 students.
- Have the whole class count the circles together, making sure that they match the group.
- Write the numeral on the chart.



Teacher Note

This is an opportunity to talk about making a simple math drawing. "It would take a long time to draw each person. Instead I'll make a math drawing and use a circle to show each person."

Name the Sort

Students name the attribute used for the sort.

Engage students in a conversation about the sort. Refer back to the Ways to Sort chart or add to it as needed.

How did we sort into groups?

Train, bus, and walking

We sorted by how we get home.

Yes. We sorted by how we get home from school or after-school care.

Add a title to the chart: How We Get Home.

Why would we want to know how many people are in each group?

So you can tell that most people walk.

You can count to make sure all the walkers leave when they are called.

We want everyone to get home safely.

Problem Set

Materials—S: Sorting bag

Distribute sorting bags to individual students or pairs. Make number paths available for students who want to use them for counting.

Invite students to sort the objects in their bags into three groups. Allow time for them to consider the differences between the objects in a bag and develop their own sorting rule. Support students by providing a way to sort only if necessary.

When circulating, ask partners to answer questions about their groups. The following dialogue shows sample questions and sentence stems.

How did you sort into groups?

We sorted by ...

Language Support

As students share, revoice their responses by using precise terminology (e.g., sort, group, rule), but do not expect students to generate the terms independently.

For example, if a student says, "Train, bus, and walking," revoice the idea and point to the relevant parts: "Yes, the class sorted into three groups. The groups were train riders, bus riders, and walkers."

Promoting the Standards for Mathematical Practice

When students draw their sort and compare their drawing to the physical objects, they are modeling with mathematics **(MP4)**.

Observational Assessment

- ☑ Watch for students who sort into two groups and those who sort into three groups. (classify)
- ☑ Listen for students saying the number sequence in standard order when counting their groups. (number sequence)

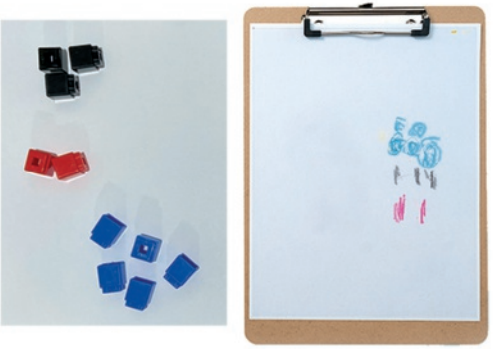
How did you decide where to put this? *(Holding object.)* Why didn't it fit into the other group(s)?

It fits in this group because ...

It doesn't fit in that group because ...

How many are in that group?

If time permits, invite students to draw their groups on the Problem Set page after they have sorted and counted.



Land 5

Debrief 5 min

Objective: Classify objects into three categories and count.

Bring students to a central location and use think–pair–share to begin a discussion.

What does it mean to sort into groups?

It means you put some things in one group and some things in another group.

You think about a way to sort, like by how you go home. Then you think about which group things go in.

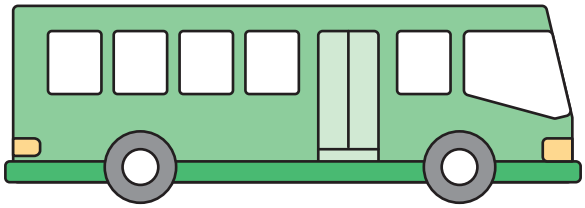
Can you think of other times when sorting helps us answer important questions?

How you get to school

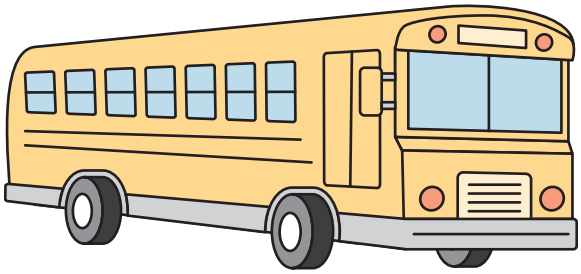
The lunch count—some people bring lunch and some people get lunch from the cafeteria.

UDL: Action & Expression

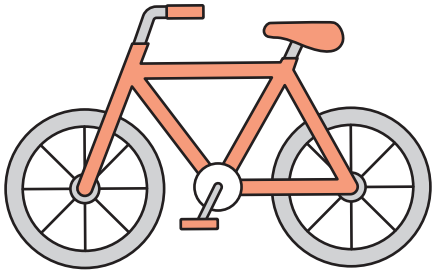
Students may want to write a numeral to record how many are in each group. Suggest that they use the number path or Hide Zero cards as examples if needed. Formal instruction on numeral writing begins in lesson 11.



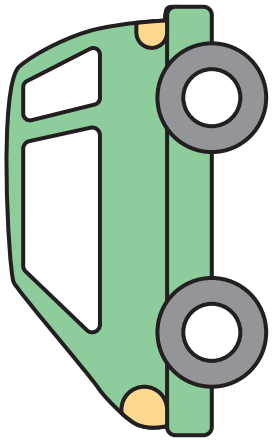
Bus



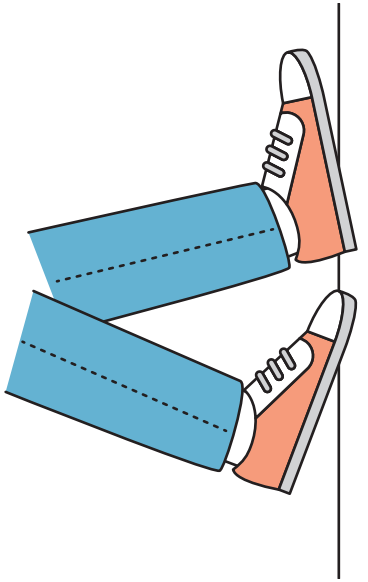
School Bus



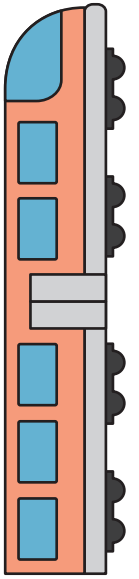
Bike



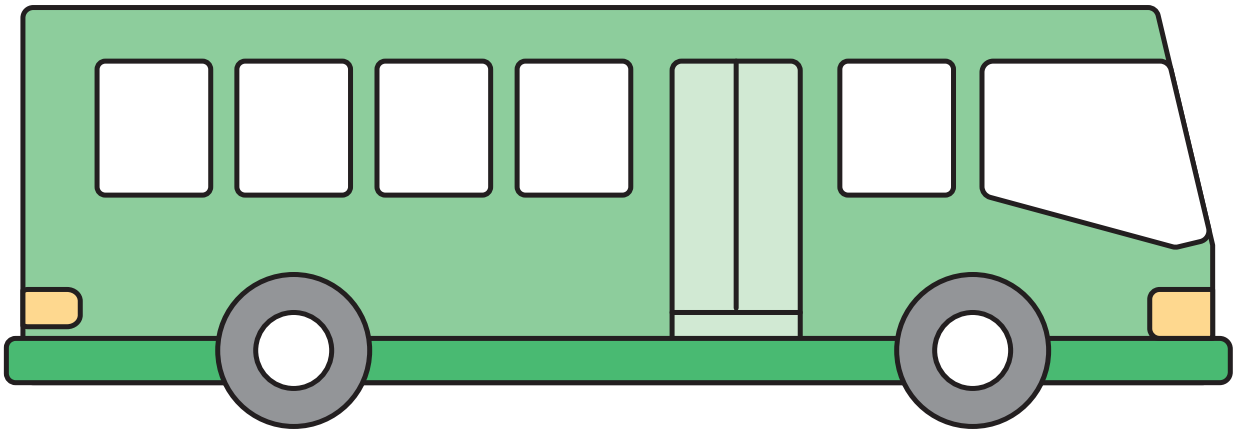
Car



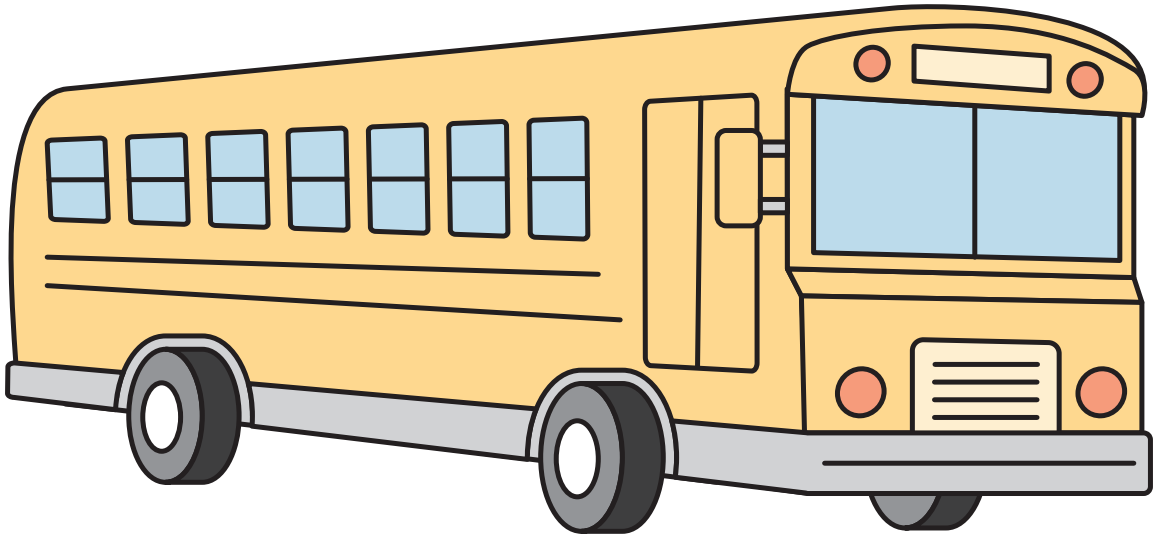
Walk



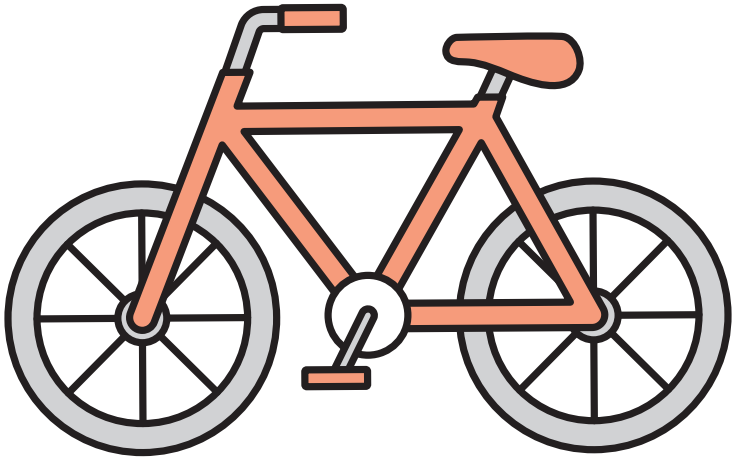
Train



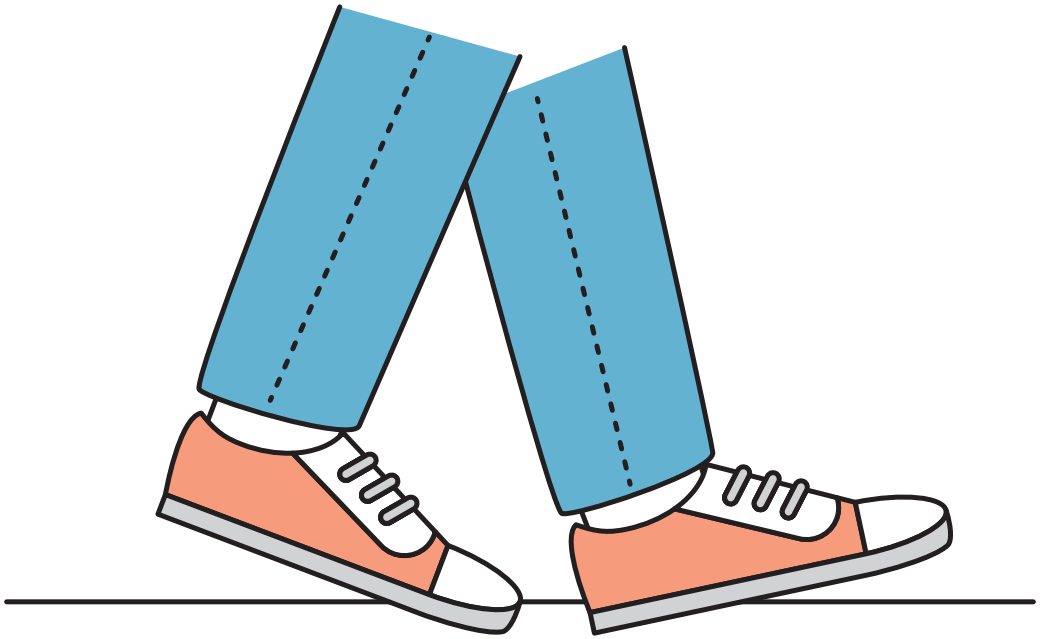
Bus



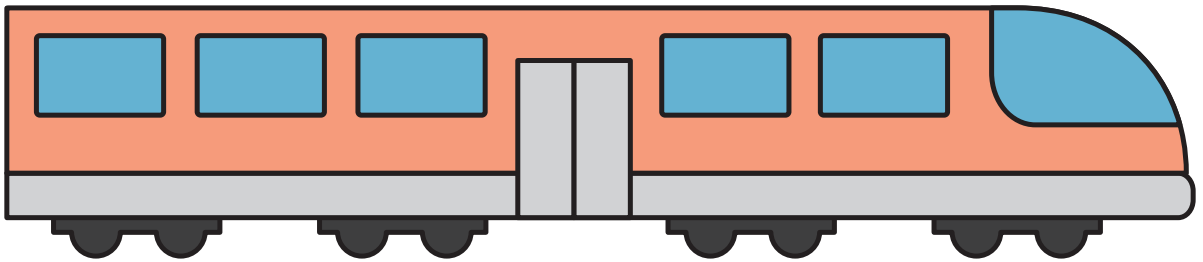
School Bus



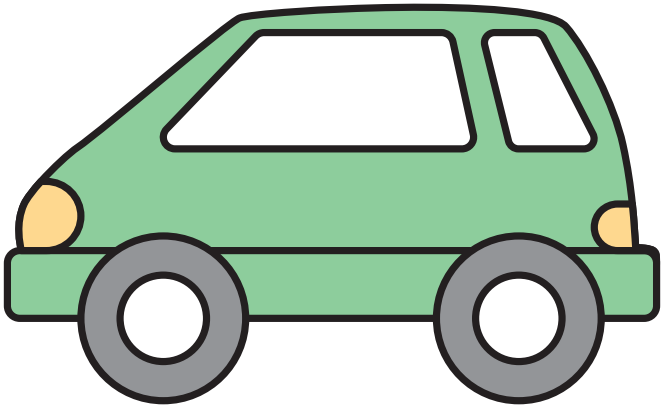
Bike



Walk



Train



Car

5

LESSON 5

Classify objects into three categories, count, and match to a numeral.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Students are exposed to written numerals during the first four lessons, but they are formally introduced in lesson 5. Students sing "I Can Count", a song that may be familiar from prekindergarten, to name the numerals and associate each with a quantity. They continue to sort and count objects, now matching a numeral to each group. This lesson introduces the term *number.*

Key Question

- How can numbers help us?

Achievement Descriptors

K.Mod1.AD3 **Represent** a group of objects with a written numeral 0–10. (K.CC.A.3)

K.Mod1.AD10 **Sort** objects into categories. (K.MD.B.3)

Agenda

Fluency 10 min

Launch 10 min

Learn 25 min

- Guess My Rule
- Count and Match
- Problem Set

Land 5 min

Materials

Teacher

- Right-hand number glove
- Unifix® Cubes (5)
- "I Can Count" song lyrics (in the teacher edition)
- I Can Count cutouts (in the teacher edition)
- Classroom toys
- Hide Zero® cards, demonstration set (1–5)
- Puppet or stuffed animal
- Set of sorted objects

Students

- Two-Hands Mat
- Two-color beans (5)
- Hide Zero® cards (1 set of 1–5 per student or student pair)
- Sorting bag (1 per student or student pair)
- Student book

Lesson Preparation

- Assemble a set of classroom toys that can be sorted into three categories. Each category should have 1–5 items so students can match the numerals that are formally introduced. Ideally, the set of toys can be sorted in more than one way.*
- Set the "I Can Count" song lyrics aside for reference in Launch.
- Take out and prepare cards 1–5 from the Hide Zero cards demonstration set.
- Take out and prepare cards 1–5 from the Hide Zero cards student set.

**See Materials section in the module resources for sorting bag examples.*

Fluency 10

Counting on the Number Glove Within 5

Materials—T: Right-hand number glove

Students count on the number glove to prepare for matching a numeral to a set.

Watch my number glove and count out loud. Ready?

Use the number glove to show the following sequence while students count aloud.

1	2	3	2	1	2	1	2	3	4

3	4	5	4	5	4	3

If students have difficulty with the sequence within 5, return to a sequence within 3, and then gradually build up to 5.

Beans and Hands Mat

Materials—T: Right-hand number glove; S: Two-Hands Mat, two-color beans

Students say and show how many fingers to develop numeral recognition and familiarity with counting the math way.

Show 1 finger on the number glove.

How many fingers?

1

Match me! Put 1 bean on exactly the same finger.

Point to the hands mat. As needed, support students in placing a bean on the pinkie of the left hand.

Show 2 fingers on the number glove.

How many fingers?

2

Match me!

Watch for students to place a bean on the ring finger of the left hand.

Continue to 5, and then back down to 1.

Whisper–Shout Counting

Materials—T: Unifix Cubes

Students count to tell the number of objects with a focus on the last number name said to develop an understanding of cardinality.

This activity uses changes in voice level to draw attention to the last number word said. Establish what is meant by whisper–shout, before starting.

Let me hear you whisper 1, 2, 3. Make it just loud enough so I can hear you. *(Emphasize with a finger to your lips.)*

1, 2, 3 *(in a whisper voice)*

1 (whisper)

Great! Now let me hear you shout 1, 2, 3. Make it an "indoor shout" so we don't disturb the other classes. *(Emphasize with cupped hands around your mouth, and a corresponding facial expression.)*

1, 2, 3 *(shouting)*

2 (whisper)

Display a stick of 3 Unifix Cubes. Using a dry-erase marker, make a dot on the last cube.

I'll touch, and you'll count. We will whisper, but when you get to the last one *(point)*, shout the number!

1 *(whisper)*, 2 *(whisper)*, 3 *(shout)*

3 (shout)

Repeat the process with a stick of 5 cubes.

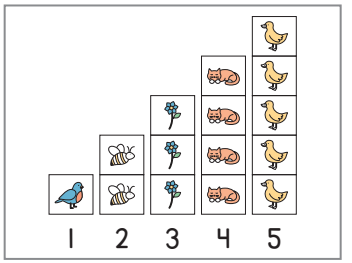
Launch 10

Materials—T: "I Can Count" song lyrics

Students associate the counting word sequence with numerals on the number path.

Display the I Can Count visual and have the lyrics to "I Can Count" ready.

Sing the first two verses of "I Can Count" (through 5), advancing the image as you sing. At the end of the first verse, touch the flowers as you sing, "1, 2, 3." Do the same with the ducks at the end of the second verse, "1, 2, 3, 4, 5."



Show the numeral 1.

This is the number 1. Point to the group that has 1 thing in it.

Invite a student to point out the group with 1 thing (the bluebird) and count to prove that there is 1 bluebird. Place the numeral below the bluebird column. Repeat with the other numerals in order.

Once all of the numerals are in place, touch and count the numerals as a class. If time permits, sing the song again, and gesture to the corresponding parts of the visual.

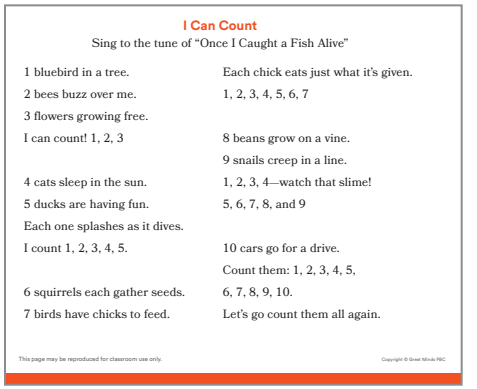
Transition to the next segment by framing the work.

Today, we will use numbers to show how many are in a group.

UDL: Representation

The I Can Count visual can be introduced as an interactive anchor chart. It can be made by using I Can Count Cutouts 1–10, chart paper, and double-sided tape.

Invite students to interact with it by strategically removing some numerals or images. As students locate the right spots for the "fallen" pieces, ask how they know where to put the pieces.



I Can Count

Sing to the tune of "Once I Caught a Fish Alive"

1 bluebird in a tree.
2 bees buzz over me.
3 flowers growing free.
I can count! 1, 2, 3

4 cats sleep in the sun.
5 ducks are having fun.
Each one splashes as it dives.
I count 1, 2, 3, 4, 5.

6 squirrels each gather seeds.
7 birds have chicks to feed.
Each chick eats just what it's given.
1, 2, 3, 4, 5, 6, 7

8 beans grow on a vine.
9 snails creep in a line.
1, 2, 3, 4—watch that slime!
5, 6, 7, 8, and 9

10 cars go for a drive.
Count them: 1, 2, 3, 4, 5,
6, 7, 8, 9, 10.
Let's go count them all again.

Learn 25

Guess My Rule

Materials—T: Classroom toys

Students reason about a set of sorted objects to tell how they were sorted.

Make sure students are seated so that they can clearly see the set of classroom toys. Tell students that they will have a chance to guess your sorting rule, or the way that you sorted. Establish a silent signal for students to show when they have a guess. Then begin to sort the set of classroom toys into three groups.

Have students think–pair–share about the following.

How do you think these toys were sorted? What was my sorting rule?

Things that move, things that are animals, and blocks

They go in different bins. You sorted by where they go.

Support students to explain their thinking by using attributes of the three groups. Use the objects to clarify any obviously incorrect answers, such as sorting by color.

I sorted by the type of toy. This is the vehicle group. *(Gesture.)* This is the animal group. *(Gesture.)* This is the block group. *(Gesture.)* They all have their own storage bin in our room.

Promoting the Standards for Mathematical Practice

When students name the sorting rule used for the toys and explain their thinking, they construct viable arguments **(MP3)**.

Count and Match

Materials—T: Classroom toys; S: Hide Zero cards

Students count each of the sorted groups and find the matching numeral.

I wonder how many are in each group. How could we find out?

Counting

Let's move and count the animals.

Lead students in a choral count of the first group, making sure the count matches the movement of each object into a line.

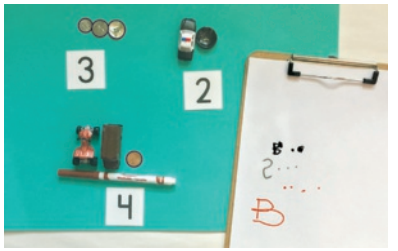
Have the class put the Hide Zero cards into order from 1–5. Invite a student to find the numeral that matches the first group and place it next to the group. Repeat with the other two groups.

Problem Set

Materials—S: Hide Zero cards and sorting bags

Distribute Hide Zero cards to individual students or pairs. Ask them to put the cards in order from 1–5 at the top of their workspace.

Distribute sorting bags. Invite students to sort the objects in their bags into three groups and match a number to each group.



When circulating, ask partners to answer questions about their groups, supporting with sentence stems as needed.

Create an exemplar of the Problem Set by using the sort from Guess My Rule. Before inviting students to draw their groups, share the model with students and explain that mathematicians draw simple math pictures instead of drawing detailed pictures. Post the model for students to refer to as they work.

Invite students to draw their groups on the Problem Set after they have sorted and counted. Remind students to draw a simple math picture by using dots, lines, or circles, instead of drawing detailed pictures of their objects.

Differentiation: Challenge

If students need a challenge, invite them to think of a new way to sort the toys. Their categories may be unique based on their personal experience, "This group has my favorite toys. These toys aren't my favorite." They may also create more than three categories, as in the example below where the student sorted by color.

Observational Assessment

- ☑ Are students matching the correct numeral to their sorted sets? Are they attending to the orientation of the numeral card? Is it upside down or sideways?
- ☑ Are students naming and sorting into three groups?

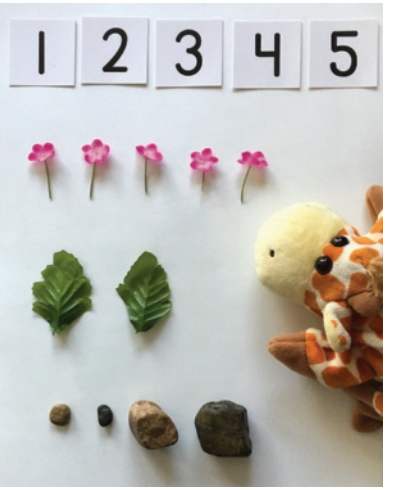
Land 5

Debrief 5 min

Materials—T: Puppet, sorted objects, Hide Zero cards

Objective: Classify objects into three categories, count, and match to a numeral.

Bring students together in a place where they can all see Puppet, a set of sorted objects, and Hide Zero cards 1–5. Have Puppet count one group correctly but forget what the number looks like.



Puppet sorted these things. How can Puppet find out which number is 5?

I know! Puppet can ask me.

Puppet could count the cards and pick the one that is 5.

You can turn over the cards and count the dots.

Have Puppet place the 5 card next to the group. Count and match a numeral to the other groups.

Hide the objects in one group, but leave the numeral showing.

How many are in this group? How can you tell? You can't see the group.

You can see the number 4.

How can numbers help us?

You can see the number and know how many there are.

You don't have to count again. You just look at the number.

I Can Count

Sing to the tune of "Once I Caught a Fish Alive"

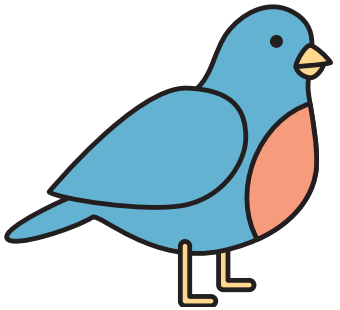
1 bluebird in a tree.
2 bees buzz over me.
3 flowers growing free.
I can count! 1, 2, 3

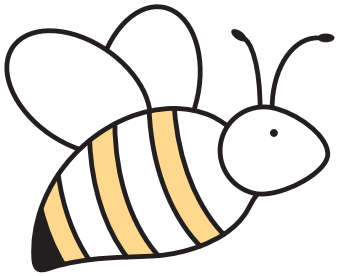
4 cats sleep in the sun.
5 ducks are having fun.
Each one splashes as it dives.
I count 1, 2, 3, 4, 5.

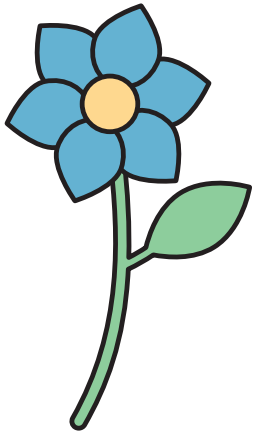
6 squirrels each gather seeds.
7 birds have chicks to feed.
Each chick eats just what it's given.
1, 2, 3, 4, 5, 6, 7

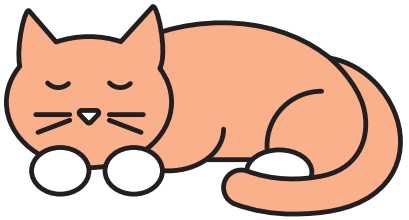
8 beans grow on a vine.
9 snails creep in a line.
1, 2, 3, 4—watch that slime!
5, 6, 7, 8, and 9

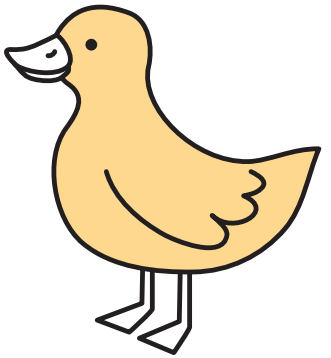
10 cars go for a drive.
Count them: 1, 2, 3, 4, 5,
6, 7, 8, 9, 10.
Let's go count them all again.











Topic B
Answer *How Many* Questions with Up to 5 Objects

Topic B builds on previous work with the number core. Students practice by using the number word list, one-to-one correspondence, cardinality, and written numerals together in a variety of authentic contexts. They build a toolbox of counting strategies that includes the following:

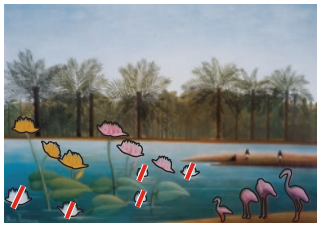
- Touch and count (one number word said as object is touched)
- Move and count (one number word said as object is moved)
- Mark and count (one number word said as object is marked)

Students consider when and why each of these strategies is effective. For example, touch and count works well when objects are already in a line or other configuration that provides a clear counting path. It can be an effective strategy for both concrete objects and pictures. Move and count works well to track which objects have been counted and which have not, especially when objects are scattered. However, move and count does not work for objects in pictures. The mark and count strategy allows students to track the count of scattered objects in pictures. They cross off or place a counter on top of each object as it is counted. As sets get larger in the coming topics, counting and organizing strategies will become increasingly important for efficiency and accuracy.

In topic A, students began thinking about how counting is useful in sorting contexts. In topic B, they continue to ask, *Why do we need to count? How it is helpful?* They find that counting allows them to play a game and ensure that there are enough game pieces for everyone in the group. These questions will continue to be a theme throughout module 1.

Touch and count

Move and count



Mark and count

Students also have experiences in which they know how many are in a set without counting. Working with small quantities allows them to subitize, or know the number of objects in a set without counting. Students experiment with conservation of number by counting a set, moving the objects, and telling how many. This work strengthens the idea that there is more than one way to find the cardinality of, or number of objects in, a set. It also confirms that the number of objects in a set is the same regardless of their arrangement or the order in which they are counted (K.CC.B.4.b).

Progression of Lessons

Lesson 6

Organize, count, and represent a collection of objects.

There are 8 blocks. We touched them to count.

Lesson 7

Practice counting accurately.

I counted to match the cards.

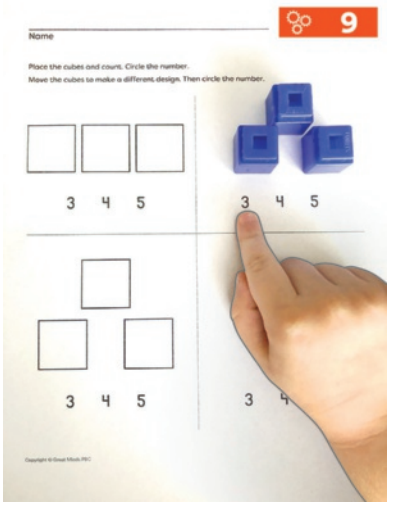
Lesson 8

Count sets in linear, array, and scattered configurations.

We used mark and count for the white flowers so we wouldn't miss any.

Lesson 9

Conserve number regardless of the arrangement of objects.



I know there are still 3 cubes after I moved them. If there were 3 before, that means there will still be 3.

6

LESSON 6

Organize, count, and represent a collection of objects.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1
Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

This lesson is an opportunity to gather formative assessment data as students use a counting collection to explore ways to count and represent a group of items. Students decide how to count, observe how others count, and discuss accurate counting strategies. This lesson introduces the term *strategy.*

Key Question

- What are some strategies, or things we can do, to help us count?

Achievement Descriptors

K.Mod1.AD1 **Count** to 10. (K.CC.A.1)

K.Mod1.AD4 **Say** one number name with each object when counting up to 10 objects. (K.CC.B.4.a)

K.Mod1.AD5 **Use** the last number of a count to tell *how many* regardless of arrangement or order counted. (K.CC.B.4.b)

K.Mod1.AD8 **Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration. (K.CC.B.5)

Agenda

Fluency 5 min

Launch 10 min

Learn 30 min

- Organize, Count, and Record
- Share, Compare, and Connect

Land 5 min

Materials

Teacher

- Unifix® Cubes (5)

Students

- Counting collection (1 per student pair)
- Organizing tools
- Work mat
- Student book

Lesson Preparation

- Count and bag collections (see Materials section in the module resources).
- Decide whether students will work in pairs or individually. The lesson is written for pairs but can be adjusted for students to work alone.
- Select organizing tools that students can choose to organize their count, such as 10-frame cartons, number paths (in teacher edition), or 10-frames (in teacher edition).
- Place the observational assessment checklist on a clipboard for observational notes.

Fluency 5

Finger Flash: The Math Way to 3

Students say how many fingers they see to develop the ability to subitize quantities shown the math way.

I am going to show you some fingers the math way, but only for a second. You will tell me the number you see. You will really have to be looking, or you are going to miss it!

Lean in, establish eye contact, pause dramatically, and then briefly show 3 fingers the math way. Hide them.

How many fingers did you see?

3

Get ready. Here comes the next one.

Continue with the following sequence:

1	3	1	2	2	2	3	3	3	2	3	2

Hold students' interest and create a playful feel with dramatic pauses, false starts, and repeats.

Whisper–Shout Counting

Materials—T: Unifix Cubes

Students count to tell the number of objects with a focus on the last number name said to build an understanding of cardinality.

Let me hear you whisper 1, 2, 3. Make it just loud enough so I can hear you. *(Emphasize with a finger to your lips.)*

1, 2, 3 *(in a whisper voice)*

Great! Now let me hear you shout 1, 2, 3. Make it an "indoor shout" so we don't disturb the other classes. *(Emphasize with cupped hands around your mouth and a corresponding facial expression.)*

1, 2, 3 *(shouting)*

Display a stick of 3 Unifix Cubes. Using a dry-erase marker, make a dot on the last cube.

I'll touch, and you'll count. *(Point to the last cube.)* We will whisper, but when you get to the last one, shout the number!

1 *(whisper)*, 2 *(whisper)*, 3 *(shout)*

How many cubes?

3

Repeat the process a few times with 3 cubes and then 5 cubes.

Whisper 1.

Whisper 2.

Shout 3.

Launch

10

Materials—S: Counting collection, work mat, organizing tools

Students learn the procedure for and explore the features of a counting collection.

Briefly orient students to the counting collection materials and procedure:

- Partners will collaborate to count a collection.
- Partners will make individual recordings of their work to show how the pair counted.

Point out organizational tools students may choose to use. Tools such as a number path, 10-frame carton, or 10-frame will support one-to-one correspondence and may be beneficial.

Pair students. Invite them to choose a collection and find a workspace.

Teacher Note

While a work mat is not required, it supports students in two important ways. The mat establishes a clear workspace to keep each pair's collection contained. It also provides boundaries that influence the way that students organize their collection, particularly when lining up objects.

Teacher Note

In a counting collection lesson, students organize, count, and record all the items in a set. Each set is called a counting collection. Each class needs a variety of counting collections made of everyday materials. For this lesson, each counting collection should have 5–25 objects.

Students may want to organize their counts by using tools such as cups, number paths, or 10-frames. These materials should be displayed and made available for students.

While collections are still bagged, invite partners to plan how they will work together to count the whole collection. Ask a few pairs with reasonable plans to share their thinking with the class. Use questions and sentence stems such as the following.

How are you going to count your collection with your partner?

We will count by ...

What is your job? What is your partner's job?

My job is ..., My partner's job is ...

If necessary, model partner work that helps students understand mathematics as a collaborative activity. As you model, take care to stay neutral about how to count so that students' decisions remain valid. Throughout the lesson, look for and praise examples of strong partner work.

Transition to the next segment by framing the work.

Today, we will count all the objects in our collection and show our work on paper. You and your partner may begin counting.

Teacher Note

Plan for what student pairs should do when they finish counting and recording their collections:

- Try another way to organize and count.
- Switch collections with another student pair, and count to confirm the total.
- Explain their recording to another student pair.
- Clean up and get another collection.

Learn 30

Organize, Count, and Record

Materials—S: Counting collection, work mat, organizing tools

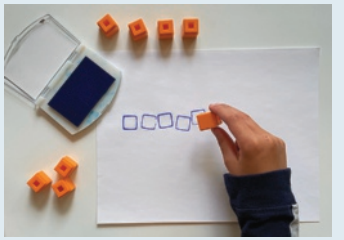
Students use their own strategies to count objects and record their process.

Circulate and observe how students organize, count, and record.

- Because of the recent focus on sorting, some student pairs may sort their collections before counting. Remind them to count all the items in their collection. Organizing strategies may include touch and count or move and count through different configurations (linear, array, or scattered).
- Recordings may include drawings, stamps, or numbers.

UDL: Action & Expression

Some young students choose large collections and find them easy to count but harder to record. Fine motor development may not have caught up with counting skills. Consider giving these students a stamp and an ink pad to represent the objects in their collection.



Use the following prompts and questions to assess and advance student thinking:

- Show or tell me what you did.
- Is your plan working? Is there something else you could try?
- How did you keep track of what you already counted and what you still needed to count?
- Can you write or draw something on your paper to show me how you counted?

Select a few pairs to share their counting work in the next segment. Look for samples that demonstrate accurate ways to track the count, such as touch and count and move and count. Take photographs to project if possible. If not, set aside selected work for sharing.

Have students clean up if they are not sharing their work. Collect written representations to review as a formative assessment after the lesson.

Observational Assessment

☑ Watch students as they count. Are they:

- moving objects to keep track of each object they have counted (one-to-one)?
- saying the correct number sequence?
- saying the last number in their count to tell the total (cardinality)?

Share, Compare, and Connect

Materials—T: Student work samples;
S: Counting collection

Students discuss counting strategies.

Gather the class to view and discuss the selected work samples. Invite each selected student pair to share their counting process. Name the counting strategies each pair used.

Use the examples below to guide your class discussion.

Promoting the Standards for Mathematical Practice

When students count a collection of objects, they make sense of problems and persevere in solving them (MP1). They plan how to count a collection, carry out the plan, and adjust the plan as needed.

Touch and Count (Oscar and Audrey's Way)

Invite a pair who used a touch and count strategy to demonstrate, using their collection or a photo of their work. When the pair are finished counting, help the class discuss their strategy.

How many blocks are in their collection? How do you know?

8

The last number was 8.

What did Oscar and Audrey do to be sure they counted all the blocks?

They touched all the blocks.

They didn't miss any numbers.

We have a lot of ways to make sure we count correctly. Let's call those ways strategies. Oscar and Audrey used the touch and count strategy to make sure they said one number for each block.

Oscar and Audrey, how did lining up your blocks help you count?

We started at the bottom and went up.

So the line helped you know where to start counting and stop counting?

Yes.

Move and Count (Alaina and Campbell's Way)

Invite a pair who used a move and count strategy to demonstrate. Stop the pair after they count about 5 items and ask the following question.

I see that some of your alligators are in a line. *(Point to the line.)* Some of your alligators are in a pile. Why?

These are the ones we counted. We didn't count the ones in the pile yet.

Ah. You are moving the alligators as you count them.

Allow the pair to finish counting, uninterrupted.

How did the move and count strategy help Alaina and Campbell find out how many alligators are in their collection?

They only counted each alligator once.

They knew what they already counted.

Land 5

Debrief 5 min

Objective: Organize, count, and represent a collection of objects.

Assign students a new partner for the debrief. Consider using a partnering strategy that involves movement, so students are reenergized for the conversation.

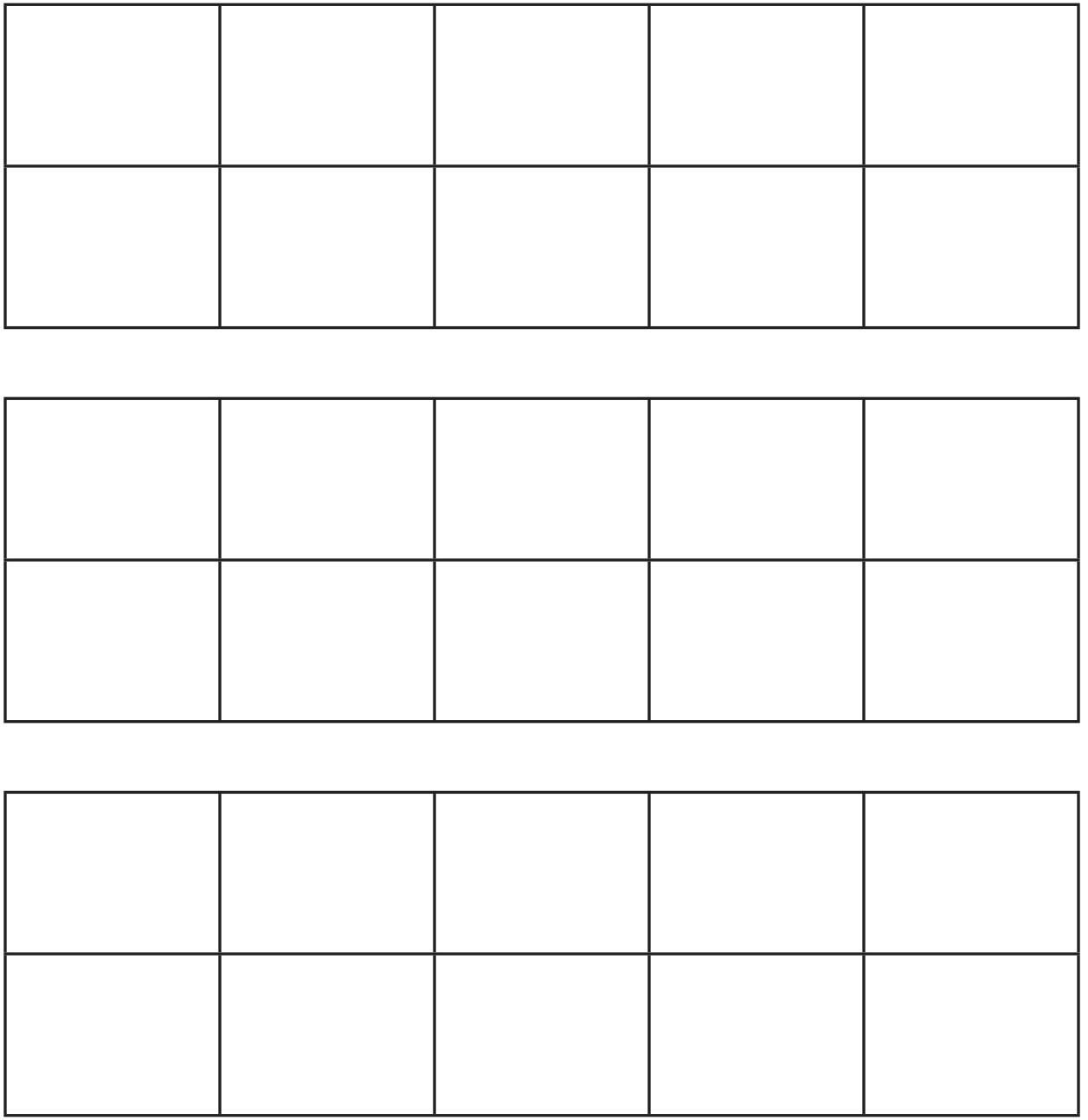
Continue to display student work from Share, Compare, and Connect. Invite students to refer to the work as they think-pair-share about the following question.

What are some strategies, or things we can do, to help us count?

Count each thing one time. Don't miss any.

We can line them up.

We can move and count.



1	2	3	4	5

6	7	8	9	10

7

LESSON 7

Practice counting accurately.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Young students need plenty of practice to integrate number core components and to count accurately. Throughout this module, students will consider reasons to count and use numbers. The games in this lesson provide counting practice and reinforce the idea that counting is both useful and fun. This lesson introduces the term *enough*.

Key Question

- How do you know you have counted correctly?

Achievement Descriptors

K.Mod1.AD3 **Represent** a group of objects with a written numeral 0–10. (K.CC.A.3)

K.Mod1.AD4 **Say** one number name with each object when counting up to 10 objects. (K.CC.B.4.a)

K.Mod1.AD5 **Use** the last number of a count to tell *how many* regardless of arrangement or order counted. (K.CC.B.4.b)

K.Mod1.AD8 **Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration. (K.CC.B.5)

Agenda

Fluency 5 min

Launch 10 min

Learn 30 min

- Bear Game
- Match Game

Land 5 min

Materials

Teacher

- Right-hand number glove

Students

- Bag of teddy bear counters (1 per student group)
- Bear Game board (1 per student pair, in the student book)
- Teddy bear counters (2 per student pair)
- Two-color beans (5 per student pair)
- Cup (1 per student pair)
- Match cards (1 set per student pair)

Lesson Preparation

- Prepare bags of 3–5 teddy bear counters. On each bag, write how many counters there are. The number of counters in each bag shouldn't always match the number of students in each group.
- Tear out the Bear Game board.
- The Match cards have a set of pictures on one side and a numeral on the other. Only use cards with numerals and configurations of 1–5. Save sets of cards for use in lesson 9.

Fluency

5

Counting on the Number Glove Within 5

Materials—T: Right-hand number glove

Students count on the number glove to build numeral recognition and familiarity with counting the math way.

Watch my number glove and count out loud. Ready?

Use the number glove to show the following sequence while students count aloud.

1	2	3	2	1	2	1	2	3	4

3	4	5	4	5	4	3

If students have difficulty with the sequence within 5, return to a sequence within 3, and then gradually build up to 5.

Counting with Movement to 10

Students count with body movements to build fluency with number names and one-to-one correspondence.

Let's clap 5 times and count our claps. Ready?

Count and clap from 1 to 5 slowly at first, emphasizing that one number is said for each clap. Repeat until most students are clapping, counting, or ideally, clapping and counting.

Repeat the process, this time stomping and counting to 5.

Now let's clap 10 times and count our claps. Ready?

Count and clap from 1 to 10 along with the students.

Repeat the process, this time stomping and counting to 10.

Launch

10

Materials—S: Bag of teddy bear counters

Students count to see whether there are enough to emphasize the importance of counting accurately.

Seat students in groups of 3–5. Display the bags of counters with the numerals showing. Tell students you want each group to take a bag. Ask students to count how many children are in their group.

How does counting how many students are in your group help you know which bag to pick?

We want everyone to have a bear.

Now we know how many bears we need.

Have one student from each group select a bag. Invite each group to check whether there are enough bears in the selected bag. If a group ends up with too few or too many bears, ask them to consider how many more bears they need or how many they can return.

Having enough means that everyone gets 1 bear. What did you do to find out if there are enough bears for every student in your group?

We passed them out and everyone got a bear.

I know there are enough because we have 5 students and there are 5 bears.

Transition to the next segment by framing the work.

Counting is useful for making sure we have enough. That means each person gets one of something. Counting is also useful when we play games. Today, we will practice counting.

Teacher Note

This lesson presents more material than most classes can meaningfully use in 50 minutes. There are a few ways to adapt the lesson:

- Demonstrate and play one game.
- Demonstrate both games, and let students choose one to play.
- If a classroom aide is available, divide the class in two, and have each adult teach a different game. Then have students switch.
- Play the Match Game as a whole class.

Once students are familiar with the games, they can play independently in centers.

Language Support

The focus in Launch is on the word *enough*. However, there may be opportunities to use *not enough* and *more than*. Here are some examples:

- Not everyone got a bear. There are *not enough* bears.
- Everyone got a bear and we still have more. There are *more* bears *than* we need.

Students will have more time to develop language for these concepts in lesson 13.

Learn 30

Bear Game

Materials—S: Bear Game board, teddy bear counters, two-color beans, cup

Students practice counting sets to play a game.

Project the game removeable. Select a student, and model how to play the bear game.

- Partner A spills the cup of beans and counts only the red beans. She moves her bear counter the same number of bear paws as the red beans. For example, if the spill results in 2 red beans and 3 white beans, move the bear counter 2 bear paws.
- Partner B spills the cup of beans and counts the red beans. He moves his bear counter the same number of bear paws as red beans.
- Continue playing until one player reaches the honey. The partner that gets to the honey first wins.

Give students time to play with a partner. Walk around the room, and observe students counting as they play. Notice students who are counting accurately by doing the following:

- using one-to-one correspondence,
- understanding that the last number said tells how many,
- beginning the count with the next bear paw on the path and not counting the bear paw they are already on, and
- counting only the red beans and not turning over some of the white beans to make more red.

Differentiation: Support and Challenge

To support students working within 3, reduce the number of beans.

Add challenge by including the white beans in the rules: bears may move forward the number of red beans and backward the number of white beans.

Teacher Note

While it might be easier to use dice or a spinner for the Bear Game, using two-color beans or discs provides a richer math experience. Students create two groups every time they drop the beans (they see a group of 5 white beans as 5 white and 0 red), and then sort out the red beans. This experience will support their work with decomposition and embedded numbers in topic D.

Observational Assessment

☑ Watch students play the Bear Game.

- Are students moving their bear by touching rather than hovering over each paw? (one-to-one)
- Do students stop when they have reached their target number?

Match Game

Materials—S: Match cards

Students practice counting sets and matching a numeral to a set.

Shuffle the cards. Display six cards in two rows of three, making sure that some show objects and some show numerals.

Look at the cards. Let's find two cards that match.

Ask a student to select a card, modeling how to touch and count each object.

How many insects?

3

Can you find another card with the same number of objects?

Select another student to find a card that matches.

How can we be sure that the two cards match?

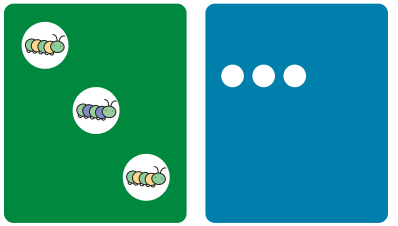
We can count them again.

There are numbers on the back. We can look to see if the numbers are the same.

Turn the cards over to display the numbers. Ask students to confirm that the numbers are exactly the same. Fill in the empty spaces with cards from the deck. Continue playing until all matches are found.

Pair or group students and give them a set of cards. Support groups as they lay out cards in two rows of three. As students play, take note of their ability to count by using all of the number core components.

Two rows of three



First match

Second match

Observational Assessment

☑ Watch students play the Match Game.

- Do students say the last number in the count to tell the total? (cardinality)
- Do students match numerals to the correct quantities? (number symbol)

Promoting the Standards for Mathematical Practice

When playing the Match Game, students reason abstractly and quantitatively **(MP2)** by recognizing that real-world objects, arrays of shapes, and numerals are different representations of the same number.

Differentiation: Challenge

Consider any of the following game adaptations to increase the challenge as students are ready:

- Lay out eight cards in two rows of four to build students' ability to sort through more visual information.
- Include 0.
- Use two sets of cards for numbers 1–10. Limit the deck to 20 cards for ease of use.
- Invite students to find cards that make 5.

Land 5

Debrief 5 min

Objective: Practice counting accurately.

Are you getting better at counting? How can you tell?

Yes. In the Match Game, I counted the number of things on the cards and looked at the numbers on the back. I got them all right.

Think about how we use our bodies to count. Do you use your belly button when you count?

No!

What about your fingers? How can you use your fingers to count?

Yes, I point and touch each thing with my finger.

What about your eyes? How can you use your eyes to count?

I look at each thing as I count and point.

Sometimes I can just look and know how many there are.

How do you know that you have counted correctly?

I can count the squares and then turn the card over to check if I'm right.

My partner and I each counted the beans. We got the same number.

8

LESSON 8

Count sets in linear, array, and scattered configurations.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

In this lesson, students explore ways to count pictures when objects are in linear, array, or scattered configurations. They use the touch and count strategy and learn an alternative strategy called mark and count for when objects cannot be moved. This lesson introduces the terms *line* and *notice*.

Key Question

- What strategies can you use to count correctly?

Achievement Descriptor

K.Mod1.AD8 **Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration. (K.CC.B.5)

Agenda

Fluency 10 min

Launch 5 min

Learn 25 min

- Touch and Count
- Mark and Count
- Problem Set

Land 10 min

Materials

Teacher

- Problem Set (digital download)
- Unifix® Cubes (5)

Students

- Unifix® Cubes (5)
- Number Path (in the student book)
- Work mat
- Student book

Lesson Preparation

Copy or print the Problem Set to be represented as an example to guide students through the lesson.

Fluency

10

Finger Flash: The Math Way to 5

Students say how many fingers they see to develop the ability to subitize quantities shown the math way.

I am going to show you some fingers the math way, but only for a second. You will tell me the number you see. You will really have to be looking, or you are going to miss it!

Lean in, establish eye contact, pause dramatically, and then briefly show 3 fingers the math way. Hide them.

How many fingers did you see?

3

Get ready. Here comes the next one.

Continue with the following sequence:

1	3	4	4	4	5	5	5	3	3	3	4

Offer more practice with subitizing, emphasizing the quantities 3, 4, and 5.

Hold students' interest and create a playful feel with dramatic pauses, false starts, and repeats.

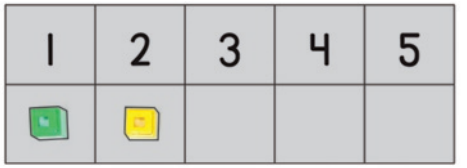
Number Path Parking Lot

Materials—S: Work mat, Number Path, Unifix Cubes

Students organize and count cubes on a number path to build fluency with one-to-one correspondence and numeral recognition.

Wave your magic wand (pencil, marker, or finger) over your cubes. Say some magic words.

Abracadabra … poof!



They are no longer cubes. Now they are cars! "Drive" them around.

Give students time to move Unifix Cubes around the mat and make car sounds.

And … stop! To start the engine, you have to touch each car.

Demonstrate briefly touching each "car," and then invite students to start their cars by doing the same.

To drive the car into its parking space you say "vroom" and go like this. *(Demonstrate sliding a cube into the space on the number path.)* Your turn!

Vroom, vroom, vroom *(Pair each sound with 1 car.)*

Reset! Move the cars out of the parking lot. This time let's count the cars as we park them. Say the number as you drive it into the space, like this. *(Demonstrate.)*

1, 2, 3 *(Pair each number word with each car.)*

Repeat the process with 4 and 5 cubes, starting from 1 each time.

Launch

5

Students study a piece of artwork and notice objects that can be counted.

Display Henri Rousseau's *The Flamingos* (1907). Projecting the artwork with a document camera will make it easier to use the cubes in Learn. Use the painting to begin a discussion.

What do you notice, or see, in this painting?

I see people.

I see flamingos.

I see pink, yellow, and white flowers.

Guide students to wonder about the art. Model wonder statements that are mathematically relevant. Expect simple statements and questions about the painting.

When I look at the things in the painting, I wonder how many flowers there are. What is something you wonder about the picture?

I wonder what the people are doing.

I wonder how many flamingos there are.

I wonder which flower is the longest.

Generate excitement by telling students that they will learn a new strategy to count the things in the painting.

Language Support

This is the first use of the term *notice*. Support understanding by using the term *notice* to revoice what you see: "You may notice, or see, the pink, yellow, and white flowers."

Learn 25

Touch and Count

Students count objects in linear configurations.

Continue displaying Henri Rousseau's *The Flamingos* (1907).

Someone wondered how many flamingos are in the painting. Let's count the pink flamingos. How can we count them? What strategy could we use?

We can touch and count.

Touch the flamingos slowly while students count. Invite them to point and track along with you.

Show me your counting finger. *(Hold up a pointer finger.)* How does your counting finger help you count?

It helps us touch all the things while we count.

The flamingos are in a line. Where did we start our count? Which flamingo did we touch and count first?

The little one on the end

Which one did we count last?

The big one at the other end

We moved in a line across the picture, so we didn't miss any flamingos or count any flamingos twice. *(Demonstrate by moving your finger across the flamingos.)*

Invite students to search the artwork for other objects that are in a line, such as the people or pink flowers. Touch and count those objects as a group.

Mark and Count

Materials—T: Unifix Cubes

Students count objects in scattered configurations.

Focus student attention on the white flowers. Point out that the white flowers are not in a line, so it could be hard to touch and count them.

I am going to mark each flower with a cube as we count. Let's start at the first white flower and keep going until they are all counted.

Place a cube on each white flower as you count it.

How many white flowers are there?

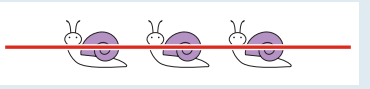
5

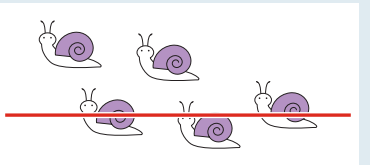
We just used the mark and count strategy to find out that there are 5 white flowers.

UDL: Representation

Consider providing multiple examples and nonexamples of objects in a straight line to ensure that students can differentiate between various configurations.

Use thumbs-up and thumbs-down or a similar technique to gauge student understanding. Reinforce the touch and count strategy when things are in a line, and the mark and count strategy for keeping track when things are not in a line.





Demonstrate crossing out objects as another way to mark and count. Repeat the same process and questioning from above.

Why did we use mark and count to count the flowers?

We might miss some if we use our fingers because the flowers are not in a line.

So we don't skip any flowers or count them more than once

Why did we count the flamingos a different way than we counted the white flowers?

Because we can use our fingers when things are in a line

The flowers are not in a line. We don't want to miss any, so we cross them out to keep track.

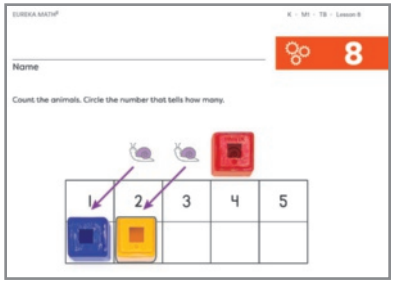
Problem Set

Materials—S: Unifix Cubes

Transition to this segment by practicing your routine for passing out the student book and finding the correct page.

Prompt students to look at the first group of snails. Demonstrate by using cubes to mark and count the snails. Invite students to do the same.

Move the cubes from the snails to the number path while counting again. Pause and have students do the same.



How many snails are there?

3

How do we know there are 3?

We used our cubes to count and there are 3 cubes.

There are 3 cubes on our number path.

Prompt students to circle the numeral 3. If time permits, they may color in the squares on the number path.

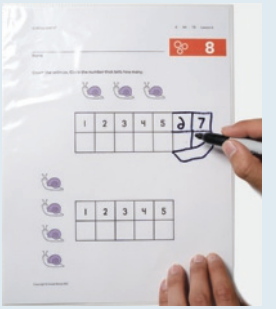
Teacher Note

This Problem Set is designed for systematic modeling. In the first problem, the teacher models the counting process with interactive questioning, some choral response, and talk such as, "What did Monique say?" After completing the first problem collectively, students try the problem at the bottom of the page independently.

Continue to use systematic modeling for Problem Sets throughout module 1 until students become comfortable working with pencil and paper.

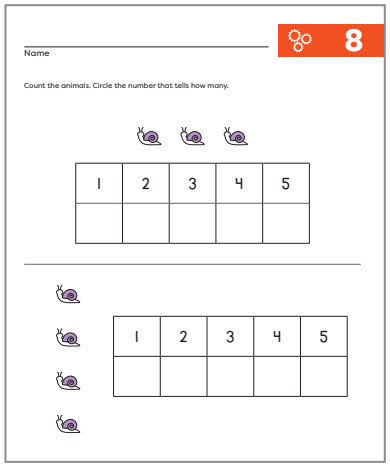
Differentiation: Challenge

Students who need more challenge may count all the animals on the page. Challenge them to represent their count. In the sample below, the student added to the number path.



Invite students to complete the next problem independently.

Use systematic modeling (see Teacher Note) for the second Problem Set page, but this time demonstrate crossing out the butterflies. Allow students to complete both problems on the third practice page independently if they are ready. Encourage use of their preferred counting strategy.

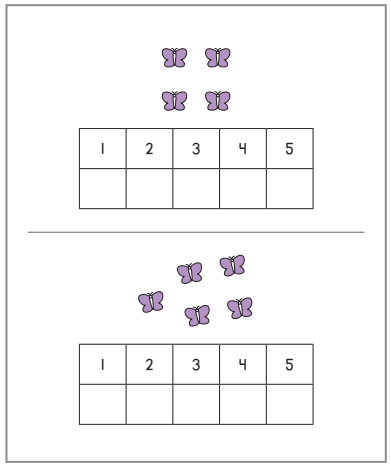

Name

8

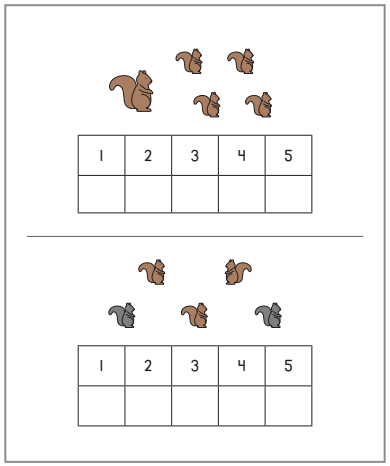
Count the animals. Circle the number that tells how many.

1	2	3	4	5

1	2	3	4	5


1	2	3	4	5

1	2	3	4	5


1	2	3	4	5

1	2	3	4	5

Observational Assessment

☑ How are students keeping track of their count?

- Marking objects that cannot be moved by crossing them off
- Placing counters on objects so they can be moved to count
- Using the numbers on the number path

Promoting the Standards for Mathematical Practice

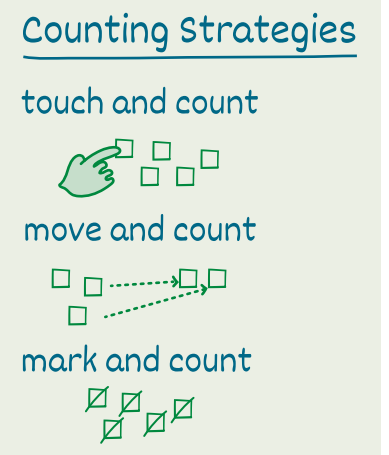
Students reason abstractly and quantitatively **(MP2)** during the Problem Set when they decontextualize to cubes instead of the animals and then recontextualize to recognize that the number of cubes is the same as the number of animals.

Land 10

Debrief 10 min

Objective: Count sets in linear, array, and scattered configurations.

Gather students near a blank sheet of chart paper. During the discussion, write the counting strategies on the chart paper as they are mentioned. If time permits, add an illustration for each strategy. If not, leave space to draw later.



When we were counting our collections, what were some of the counting strategies we used?

You can use your counting finger to touch all the things.

That strategy is called touch and count. What other strategies did we use to count things that can be moved?

Move and count, like with the cars in the parking lot

When we count things in a picture, they cannot be moved. What strategies can we use to make sure we count them correctly?

Touch and count

We can cross them out when we count.

Mark and count

Invite students to think–pair–share about the following question.

When you count a picture of things in a line, which strategy would you use? Why?

If time permits, invite a few students share their ideas.

Teacher Note

The counting strategies chart will be useful throughout the module. In coming lessons, encourage students to name their counting strategy and explain why they chose it. The anchor chart may be used as a point of reference when discussing counting strategies.

9

LESSON 9

Conserve number regardless of the arrangement of objects.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1
Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

In this lesson, students consider whether to recount a group of objects after they are moved. Repeated experiences of this type help students understand conservation, that the number of objects in a group stays the same regardless of their arrangement.

Key Question

- Do I have to count again when a group is moved?

Achievement Descriptor

K.Mod1.AD6 **Say** *how many* without recounting when objects are rearranged. (K.CC.B.4.b)

Agenda

Fluency 15 min

Launch 10 min

Learn 20 min

- Should We Count Again?
- Problem Set

Land 5 min

Materials

Teacher

- Hide Zero® cards, demonstration set (1–5)
- Unifix® Cubes (5)

Students

- Match cards (1 set per student pair)
- Unifix® Cubes (5)
- Student book

Lesson Preparation

- Prepare the sets of Match cards with numerals and configurations of 1–5 from lesson 7.
- Prepare cards 1–5 from the Hide Zero cards demonstration set.

Fluency

15

Match: Sets and Numerals

Materials—S: Match cards

Students count sets and match a numeral to a set to build fluency with one-to-one correspondence and an understanding of cardinality.

Have students form pairs. Distribute a set of cards to each pair and have them play the game according to the following rules. Consider doing a practice round with students.

- Lay out six cards.
- Partner A selects cards that match.
- Partner B checks their work and gives a compliment (e.g., "Nice work!"), or a suggestion (e.g., "Try using touch and count.").
- Place the matched cards to the side and replace them with two new cards from the pile.
- Continue until all cards are matched, alternating roles at each turn.

Circulate as students play the game and provide support as needed. For example, partners may need some coaching on appropriate suggestions. If this is the case, ask if the partner has a suggestion, such as using the touch and count strategy.

Differentiation: Challenge

Consider any of the following game adaptations to increase the challenge as students are ready:

- Lay out eight cards in two rows of four to build students' ability to sort through more visual information.
- Include 0.
- Use two sets of cards for numerals 1–10. Limit the deck to 20 cards for ease of use.
- Invite students to find cards that make 5.

Counting with Movement to 10

Students count with body movements to build fluency with number names and one-to-one correspondence.

Let's clap 5 times and count our claps. Ready?

Count and clap from 1 to 5 slowly at first, emphasizing that one number is said for each clap. Repeat until most students are clapping, counting, or ideally, clapping and counting.

Repeat the process, this time stomping and counting to 5.

Now let's clap 10 times and count our claps. Ready?

Count and clap from 1 to 10 along with the students.

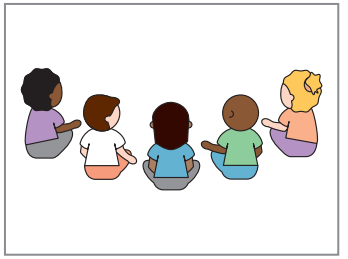
Repeat the process, this time stomping and counting to 10.

The chant-like cadence of rote counting can lull students into a relaxed cognitive state. Try varying the pace to nudge students back to alertness and invite play.

Launch 10

Count a set that is arranged in a line, and then consider how many there are after the set is rearranged (i.e., conservation).

Display the picture of children watching a movie.



How can we find out how many friends are watching the movie?

We can count them.

Let's count them together. I am going to touch and count each friend starting at the beginning of the line. Let's say one number for each friend we count.

Count together. Reinforce the cardinal principle by asking how many at the end of the count.

Display children sitting in a circle.

What are our friends doing now?

They are telling stories.

They are at recess.

UDL: Engagement

Adjust Counting with Movement to engage as many students as possible. Consider their physical abilities, cultural backgrounds, and interests when choosing movements. The following is a small sample of movements that can be easily counted:

- blinks
- head nods
- drumbeats
- frog hops
- basketball dribbles

These are the same friends that were watching the movie. No one left, and no new friends joined them. I wonder how many there are now.

Close your eyes, and secretly tell yourself how many friends you think there are now. With your fingers show me how many you think.

Invite a student who shows 5 fingers to explain their answer. Count as a group to confirm for students who are not sure.

Transition to the next segment by framing the work.

Today, we will count all the objects in our collection and show our work on paper. You and your partner may begin counting.

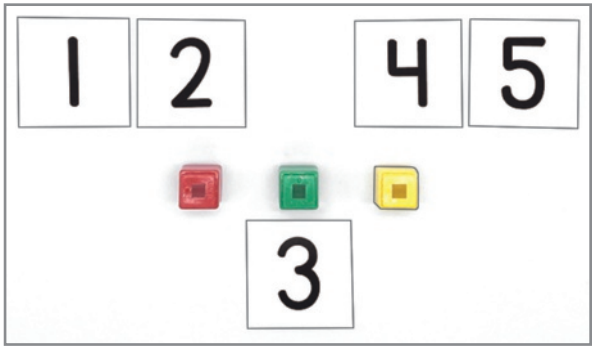
Learn 20

Should We Count Again?

Materials—T: Hide Zero cards, Unifix Cubes

Count and use numeral cards to describe a set before and after it is rearranged.

Display 3 Unifix Cubes in a linear configuration and cards 1–5.



How many cubes are there?

3

Which number card tells how many cubes there are?

The 3 card

Move the 3 card below the cubes.

Move the cubes slowly, deliberately letting students see you create a scattered configuration.

How many are there now? How do you know?

Promoting the Standards for Mathematical Practice

When students test that the number of items stays the same regardless of how they are changed and express this verbally, they look for and express regularity in repeated reasoning (MP8).

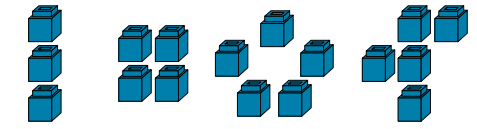
Some students will know right away that there are still 3 cubes. Others will need to count to make sure. Validate both strategies by calling on students to share how they know there are still 3 cubes.

I know there are still 3 because I counted them again.

I know there are still 3 cubes because I saw you move them. If there were 3 before, then that means there are still 3 now.

Which number card tells how many there are?

Repeat with 4 and 5 cubes. Consider using variations of the four configurations shown.



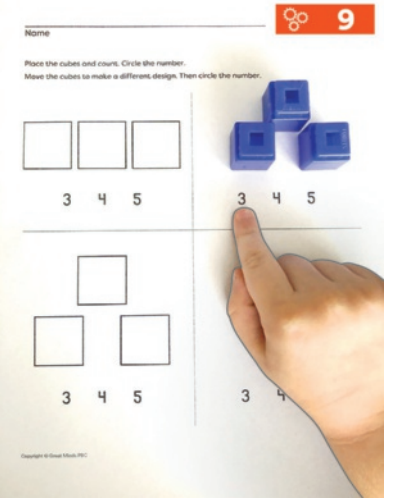
Problem Set

Materials—S: Unifix Cubes

Transition into this segment by practicing your routine for passing out the student book and finding the correct page.

It's your turn to count cubes and find the number that tells how many cubes you counted. Let's do the first one together.

Model placing square cubes in the outlines provided, counting, and circling the matching number. Then demonstrate moving the same cubes into a different arrangement in the space provided and circling the same number. If time and interest permit, invite students to trace or draw their new configuration of cubes.



Teacher Note

Do not exceed 5 cubes. With small quantities, some students will subitize, while others may touch and count.

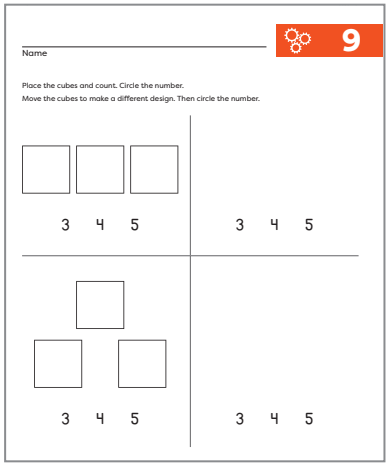
If a student subitizes, do not insist that they touch and count. They may think they made a mistake and will not learn to trust their ability to "just see" the number. Subitizing is important when it is time to learn to count on.

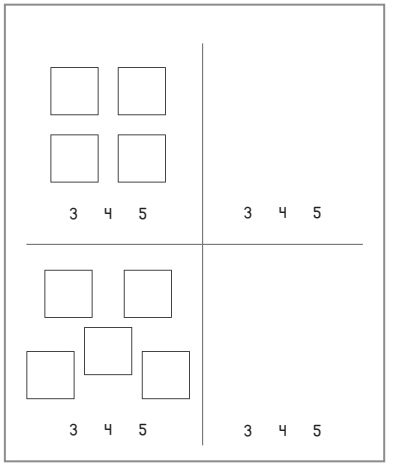
Teacher Note

This Problem Set is designed for systematic modeling (see lesson 8 for more detail). Continue to use systematic modeling for Problem Sets throughout module 1 until students become comfortable working with pencil and paper.

Observational Assessment

☑ Watch as students move their cubes into a different arrangement. Do they recount the cubes or simply circle the same number from the previous count?





Differentiation: Challenge

Encourage students who need a challenge to show several configurations for each problem. Ask them to share how they know the number of cubes without counting each time they change the configuration.

Land 5

Debrief 5 min

Materials—T: Unifix Cubes, Hide Zero cards

Objective: Conserve number regardless of the arrangement of objects.

Show 4 cubes in an array configuration as shown.

How many cubes are there?

4

Label the array with the 4 card. Move the cubes as shown.

How many cubes are there now?

4

Do I have to count again because I moved the cubes?

No, because you just moved the same cubes.

Do I have to change the number card?

No, there are still 4 cubes.

That's right. If I don't put any cubes on or take any off, the number of cubes will stay the same no matter how many times I move them.

Move the cubes a few more times and ask how many after each move. Consider trying linear, circular, scattered, and even silly configurations.

Can I move the cubes any way I want?

Yes! There are still 4 cubes.

Teacher Note

Not all students will demonstrate conservation of number at the end of this lesson. Conservation develops with experience over time. Students will have additional opportunities to practice conservation throughout the module.

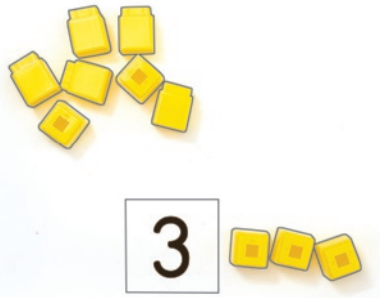
Topic C
Write Numerals and Create Sets of Up to 5 Objects

In topic C, students continue to integrate the elements of the number core and explore reasons to count. Students begin to write numerals and consider the question, *Why do we write numbers?*

Counting out a group is one new reason to count. Counting an existing group of objects to answer a *how many* question is different from counting out a given number of objects from a larger group. Counting out a group requires multitasking since students must remember the target number, say the number words in order, and attend to one-to-one correspondence all at the same time.

Counting things that can be heard but not seen, such as sounds or words, is another new reason to write numerals. Students practice drawing and writing numerals to represent the number of times they hear a word. *Fish, fish, fish, fish* can be represented by drawing 4 fish or writing the numeral 4. This work begins to uncover the efficiency of our written number system, which will become clearer as students deal with larger quantities. Drawing 100 fish is not a practical way to communicate a number in daily life.

Finally, students find that counting is useful to determine whether there are enough or not enough. If there are enough plates for each student at the table, you have counted correctly. If there are not enough or extras, you have made a counting error. These concepts are foundational to the comparison work of module 3.



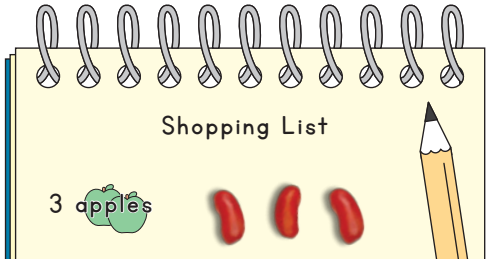
Students count out a group to match the numeral.

Students count words and represent them by using drawing and numerals.

Progression of Lessons

Lesson 10

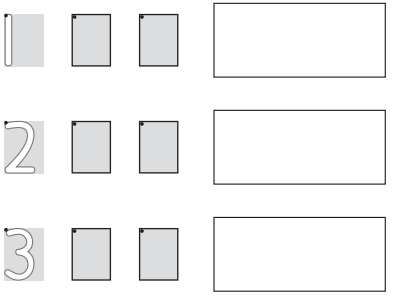
Count out a group of objects to match a numeral.



I counted out 3 apples.

Lesson 11

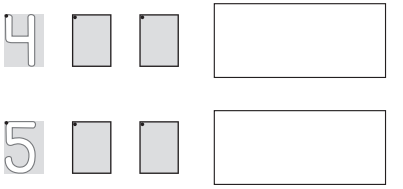
Write numerals 1–3 to answer *how many* questions.



I can write 1, 2, and 3.

Lesson 12

Write numerals 4 and 5 to answer *how many* questions.



I can write 4 and 5.

Lesson 13

Count out enough objects and write the numeral.

I know there are enough because there are 4 dots and 4 cubes.

10

LESSON 10

Count out a group of objects to match a numeral.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Once students can count a group to answer a *how many* question, they are ready to create a group with a specific number of objects. In this lesson, students explore a new reason for counting: to create a group of a specific size.

Key Question

- How can we remember when to stop counting?

Achievement Descriptor

K.Mod1.AD9 **Count** out a given number of 1–10 objects from a larger group. (K.CC.B.5)

Agenda

Fluency 10 min

Launch 5 min

Learn 25 min

- Count Out a Set
- Problem Set

Land 10 min

Materials

Teacher

- Hide Zero® cards, demonstration set (1–5)
- Puppet or stuffed animal
- Two-color beans (10)

Students

- Two-Hands Mat (in the student book)
- Two-color beans (11)
- Hide Zero® cards 1–5 (1 per student group)
- Plate (1 per student group)
- Student book

Lesson Preparation

- Prepare cards 1–5 from the Hide Zero cards demonstration set. Keep these cards out for use in lessons 11–13.
- Prepare cards 1–5 from the Hide Zero student cards for each group.
- Consider placing 11 beans in resealable bags for each student to allow for easy distribution.
- Review the menu provided in the digital resources for this lesson. Consider adjusting it to incorporate culturally familiar foods.

Fluency

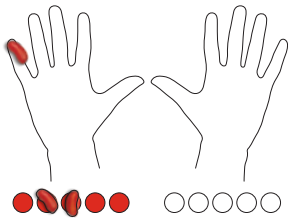
10

Show Me Beans to 3

Materials—T: Hide Zero cards; S: Two-Hands Mat, two-color beans

Students hear a number or see a numeral and count out a set to prepare for associating a numeral with a set.

Let's set up. Put 3 beans on the red dots at the bottom.



I say a number. You move that many beans to the fingernails. Remember to start with the pinkie just like we practiced. *(Wiggle pinkie for emphasis.)* Ready?

Show me 1.

Pause while students move a red bean to the pinkie finger of the left hand.

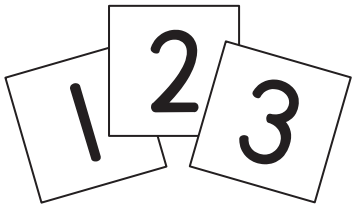
Quick! Show me 2.

Pause while students move a red bean to the ring finger of the left hand.

All right! Show me 3.

Pause while students move a red bean to the middle finger of the left hand.

Reset! Move all 3 beans back to the red dots at the bottom.



***(Hold up cards.)* This time, I will show you a number. You move that many beans to the fingernails. Remember to start with the pinkie just like before. *(Wiggle pinkie for emphasis.)* Ready?**

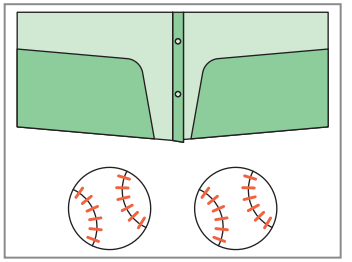
Show the 1 card and pause while students move a red bean to the pinkie finger of the left hand.

Repeat with the 2 and 3 cards while students place beans on the left ring and middle fingers.

Choral Response: Peek-a-Boo Counting Within 3

Students subitize small quantities to prepare for efficiently answering *how many* questions to 3.

Display the picture of the folder.



Peek-a-boo! *(Raise and lower the folder revealing 2 baseballs.)* Repeat a few times.

Some things are behind this folder. Did you see?

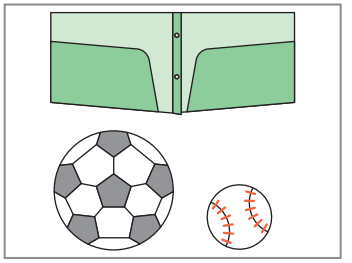
Raise and lower the folder quickly.

How many things did you see? Raise your hand when you know.

Wait until most students raise their hands, and then signal for students to respond.

2

Let's play peek-a-boo again. This time there could be 1 thing, 2 things, or 3 things.

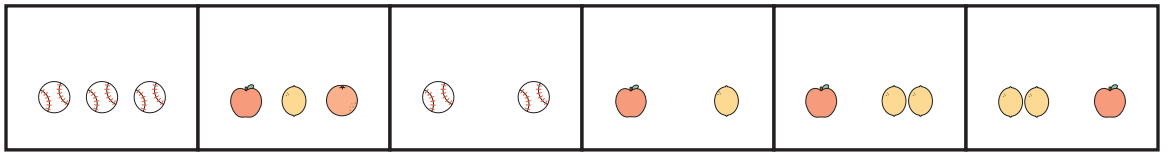


Display the picture of the folder. Raise and lower the folder to reveal a soccer ball and a baseball.

How many things did you see?

2

Repeat the process with the following sequence:



Teacher Note

Use hand signals to introduce a procedure for answering choral response questions. For example, cup your hand around your ear for *listen*, lift your finger to your temple for *think*, and raise your own hand to remind students to raise theirs.

Teach the procedure by using general knowledge questions, such as:

- What grade are you in?
- What is the name of our school?
- What is your teacher's name?

Launch

5

Materials—T: Hide Zero cards 2, 3, and 5

Students remember a target number while multitasking.

Playfully flash the 2 card long enough for students to recognize it, and then remove it from view.

Say the number.

2

Hold that number in your mind and hop until I say stop. Ready? Go!

Let students hop several times before saying stop. They should hop more than 2 times.

Stop! What was that number?

2

Let's check.

Hold up the card to verify the number and celebrate.

Give yourselves 2 claps for remembering the number was 2.

Repeat the process, this time having students remember the target number while moving that many times. For example, show the 3 card and have students hop 3 times.

Play a third round where students remember the target number while moving a different number of times. For example, use a target number of 5 and ask students to hop 3 times.

Transition to the next segment by framing the work.

Today, we will play restaurant to practice counting.

Teacher Note

Counting out a group requires multitasking. Students must remember the target number while saying the number words in order and attending to one-to-one correspondence. This exercise provides practice remembering a number despite increasingly complex distractions.

Throughout this lesson, students have the support of seeing a numeral while they get used to holding it in their head.

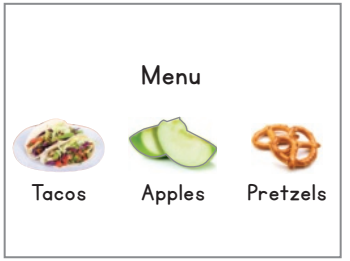
Learn 25

Count Out a Set

Materials—S: Hide Zero cards, plate, two-color beans

Students recognize numerals and count out a matching set.

Introduce a drive-thru restaurant scenario by modeling the roles of worker and customer.



Display the menu where all students can see it. The worker needs the beans (to represent the food) and a plate. The customer needs Hide Zero cards 1–5.

Consider using the following sequence.

The customer approaches the drive-thru window. The worker greets the customer and asks for their order.

How many tacos would you like?

The customer gives a Hide Zero card to the worker and says their order.

I'd like 4 tacos please.

The worker counts out 4 beans and places them on the plate. The customer counts to check. Prepare workers and customers to give gentle corrections if needed.

You asked for 2. This card says 5. Please try again.

That's not what I ordered. Please try again.

Pair students or make small groups to role-play. Switch roles from time to time so that every student has an opportunity to count out a set.

Circulate and observe. As needed, give concise corrections such as:

- Remember the number on the card. Stop counting when you get to that number.
- You have too many tacos; count again.
- You need 1 more to make 4 tacos.

Language Support

Support this role-play with sentence frames that are appropriate for the student. Connect the mathematics to the context by modeling and encouraging natural dialogue that students would use in the real world. The length of the sentence stem can be modified to meet the student's language goals.

- How many _____ would you like?
- How many _____?
- How many? *(Points to an item on the menu.)*
- I'd like 4 _____ please.
- 4 _____ please.
- 4 (*Points to an item on the menu.*)

Observational Assessment

☑ Watch as workers count out the requested amount. Does the target number match the food given to the customer? Does the worker need to recount once or twice?

Promoting the Standards for Mathematical Practice

Students reason abstractly and quantitatively **(MP2)** when they understand that the number word *four*, the numeral 4, and a set of 4 counters are all different representations of the number 4.

Problem Set

Materials—S: Two-color beans

Invite students to count out beans to correspond with the number of food items on the shopping list. If necessary, model how to place beans next to the picture of each food item.

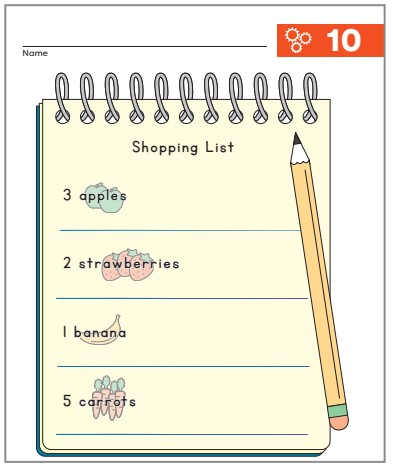
Be prepared to support students who miscount. Begin with questions that let them consider ways to revise their work.

You have 4 apples. Should you take some away or add more?

You drew too many apples. What can you do so you have 3 apples?

There aren't enough apples. How can you show 3 apples?

If time permits, encourage students to represent the food items by drawing, stamping, or tracing.



UDL: Engagement

The drive-thru restaurant and shopping list activities are intended to relate counting to familiar contexts and make real-world connections. Consider customizing the menu with students' favorite foods to further engage them in the lesson.

For more practice counting out a group, provide customized menus and shopping lists for students to choose from during centers.

Land 10

Debrief 10 min

Materials—T: Puppet or stuffed animal, Hide Zero card 3, two-color beans

Objective: Count out a group of objects to match a numeral.

Bring students together in a place where they can all see Puppet, the 3 card, and a pile of beans.

Puppet got an order for 3 apples. Watch Puppet count out the apples.

Have Puppet count beyond 3, stopping when all the beans are counted.

Uh oh. What is wrong?

There are too many!

Puppet didn't stop at 3.

Have students think–pair–share about how to help Puppet.

Inside your head, think about how Puppet could remember when to stop counting.

Turn to your partner, and tell what Puppet could do.

Invite one or two students to share their responses.

How can Puppet remember when to stop counting?

Puppet can look at the number on the card. If it says 3, stop at 3.

Puppet can hold the number the customer asked for in their head and stop counting there.

11

LESSON 11

Write numerals 1–3 to answer *how many* questions.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1
Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
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K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Students consider why people write numerals as they learn to write 1, 2, and 3. In this lesson, students count spoken words, something they cannot see or touch, and represent the number of words by writing a numeral.

Key Question

- Why do we write numbers?

Achievement Descriptor

K.Mod1.AD2 **Write** numbers from 0 to 10. (K.CC.A.3)

Agenda

Fluency 10 min

Launch 10 min

Learn 25 min

- Air and Carpet Writing
- Numeral Writing
- Beep Number

Land 5 min

Materials

Teacher

- Hide Zero® cards, demonstration set (1–5)
- Assorted kitchen toys or counters
- Puppet or ball for number writing
- Chart paper

Students

- Two-color beans (3)
- Two-Hands Mat
- Personal whiteboard
- Dry-erase marker
- Student book

Lesson Preparation

- Prepare cards 1–5 from the Hide Zero cards demonstration set. Keep these cards out for use in lessons 12 and 13.
- Counters can be used in place of assorted kitchen toys.
- This lesson requires audio and visual capabilities for taking food orders in Learn.
- Consider tearing out the numeral writing page and placing it in a personal whiteboard.

Fluency

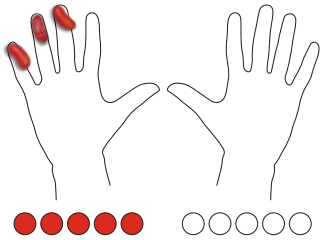
10

Show Me Beans to 3

Materials—T: Hide Zero cards; S: Two-Hands mat, two-color beans

Students hear a number or see a numeral and count out a set to develop fluency with associating a numeral with a set.

Let's set up. Put 3 beans on the red dots at the bottom.



I say a number. You move that many beans to the fingernails. Remember to start with the pinkie just like we practiced. *(Wiggle pinkie for emphasis.)* Ready?

Show me 3.

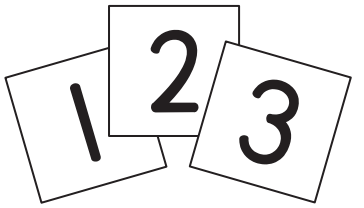
Pause while students move red beans to the pinkie, ring, and middle fingers of the left hand.

Repeat the process with the following sequence:

2	1	2	3	2	3	2	1	2

Notice which students must recount and which can adjust by adding or taking off a bean each time.

Reset! Move all 3 beans back to the red dots at the bottom.



***(Hold up cards.)* This time, I will show you a number. You move that many beans to the fingernails. Remember to start with the pinkie just like before. *(Wiggle pinkie for emphasis.)* Ready?**

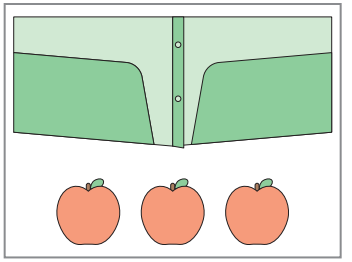
Show the 3 card and pause while students move red beans to the pinkie, ring, and middle fingers of the left hand.

Repeat the process, showing the cards in a similar sequence as before.

Choral Response: Peek-a-Boo Counting Within 5

Students subitize small quantities to prepare for efficiently answering *how many* questions to 5.

Display the picture of the folder.



Peek-a-boo! *(Raise and lower the folder revealing 3 apples.)*

Repeat a few times.

Some things are behind this folder. Did you see?

Raise and lower the folder quickly.

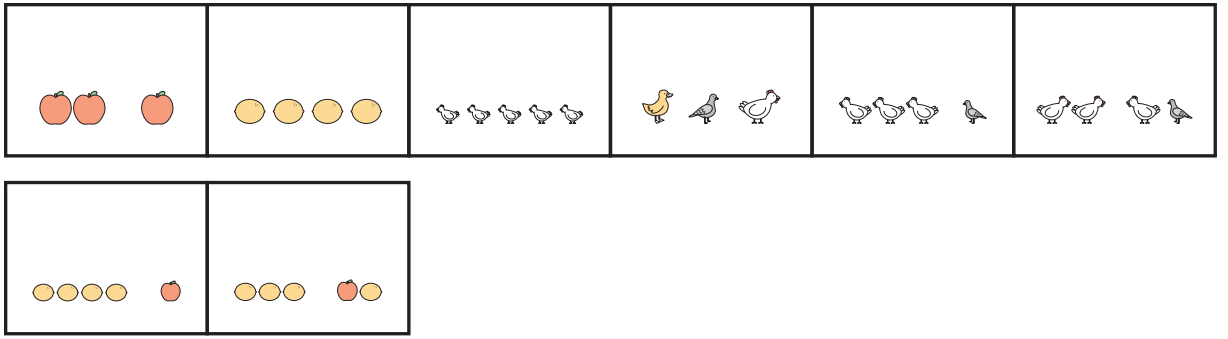
How many things did you see? Raise your hand when you know.

Wait until most students raise their hands, and then signal for students to respond.

3

Let's play peek-a-boo again. This time there could be 3 things, 4 things, or 5 things.

Repeat the process with the following sequence:



Launch 10

Materials—T: Assorted kitchen toys or counters

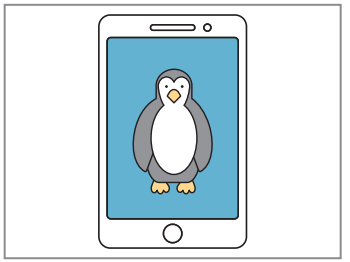
Students discuss ways to count things that can be heard but not seen.

Introduce a restaurant scenario where customers call in their orders. Choose a student to play the role of chef. Provide the chef with counters or kitchen toys.

Play the role of the server who takes phone orders. Display the picture of the penguin.

Thank you for calling the Kindergarten Restaurant. What would you like to order?

Play the audio of the penguin ordering 6 fish. Play the audio again if needed. Turn to the chef and repeat the order with a mistake.



I need fish, fish, fish, fish.

The chef may react in multiple ways. Facilitate class discussion by asking the following questions.

What was the problem with the order I gave the chef?

What would be an easier way to say the order?

How could I keep track of how many fish the customer ordered?

Transition to the next segment by suggesting that the class try some of the students' ideas.

Today, we will use drawings and numbers to help us get the orders right.

Teacher Note

Anticipate the class having difficulty remembering the food order. The long order is intentional to illustrate the importance of writing numerals.

Choose a student who will be comfortable playing the role of chef despite the uncertainty of the scenario. Consider preparing this student ahead of time.

Learn 25

Air and Carpet Writing

Materials—T: Puppet or ball

Students learn the basic strokes for writing numerals 1, 2, and 3.

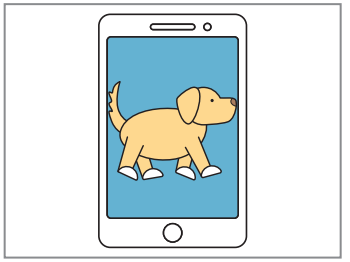
Invite students to play the role of servers. They will take phone calls from animal customers and write down their orders for the restaurant kitchen.

Display the picture of the dog and play the audio of the dog ordering a bone.

Play the audio again if needed.

How many times did the dog say *bone*?

1



Draw a picture of 1 bone, and then write the numeral 1.

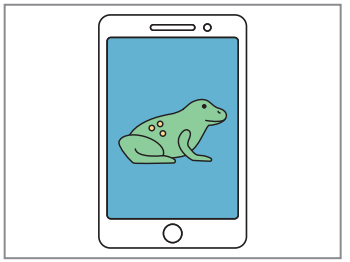
We can draw a picture of 1 bone to remember the order, or we can write the number 1. Use your counting finger to write the number 1 in the air with me. Follow the ball.

Use the ball to "write" the numeral in the air. Hold the ball high to start from the top. As you move the ball down, say the following rhyme.

Top to bottom, and then I am done. I just wrote the number 1.

Have students move their counting fingers to the carpet or another surface that provides tactile feedback. Repeat the rhyme while students write 1 on the new surface.

Display the picture of the frog and play the audio of the frog ordering 2 bugs.



Introduce writing 2 with the same process used for 1.

Half a moon, there's more to do. Slide to the right. I wrote a 2.

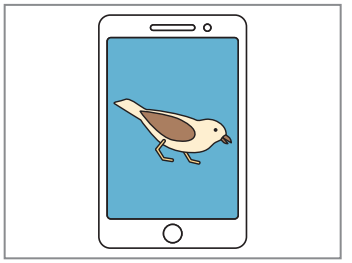
Teacher Note

Most of the time, teachers should make simple math drawings. In this lesson and the next, take your time with details when drawing the orders. The goal is to help students see that writing numerals is more efficient than drawing all the objects. This is the focus of Land in lesson 12.

Teacher Note

Starting numerals and letters from the top is an important habit for students to learn in kindergarten. It will help them keep up when the writing demands increase in later grades. Numerals 1–3 all begin at the top left.

Display the picture of the bird and play the audio of the bird ordering 3 worms.



As the numbers increase, anticipate some disagreement or uncertainty about how many words were said. Play the audio again and demonstrate how to use fingers to track each word as it is said.

Encourage students to use intuitive strategies for tracking counts, such as raising fingers or making tick marks on paper.

Introduce writing 3 with the same process used for 1 and 2.

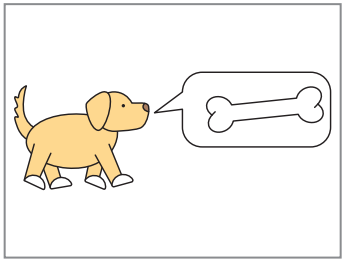
To the right and around the tree. Around again to make a 3.

Numeral Writing

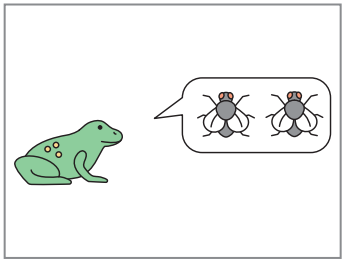
Materials—S: Numeral writing page

Students trace and write numerals 1, 2, and 3.

Distribute classwork and writing utensils. Display the picture of the dog and bone.

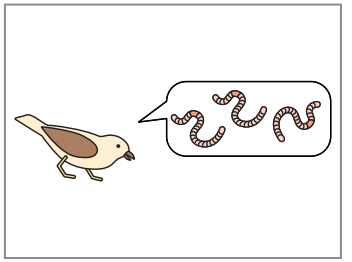


Invite students to find the number that matches the dog's order. When they have their fingers on the numeral 1, have students collectively say the rhyme while tracing the numeral with their fingers.



Demonstrate how to write 1. Then invite students to use a pencil or crayon to write 1 until the row is complete. If students finish quickly, suggest that they draw the dog's order inside the box.

Repeat with numerals 2 and 3 by using the pictures of the frog with bugs and the bird with worms, respectively.



Teacher Note

Consider tearing out the numeral writing page and placing it inside a personal whiteboard so students can reuse it for practice.

Teacher Note

The writing rectangle tool helps students write numerals systematically. Writing rectangles use a dot to show where to start the numeral. Students are less likely to reverse their numbers when they start from the dot and keep their writing inside the rectangle.

At first, students trace the numeral. Then they independently write the numeral inside the writing rectangle. Eventually, they write numerals without the writing rectangle, but this tool provides them with structure to form numerals correctly from the start.

Observational Assessment

☑ Observe students as they write. Do they start at the dot and stay inside the writing rectangle?

Beep Number

Students sequence numbers to 3.

Have students stand to play Beep Number.

Let's play Beep Number! I will count, but instead of saying one of the numbers, I am going to say *beep*. Raise your hand when you know the beep number. Ready?

1, 2, beep. *(Signal.)*

3

1, beep, 3. *(Signal.)*

2

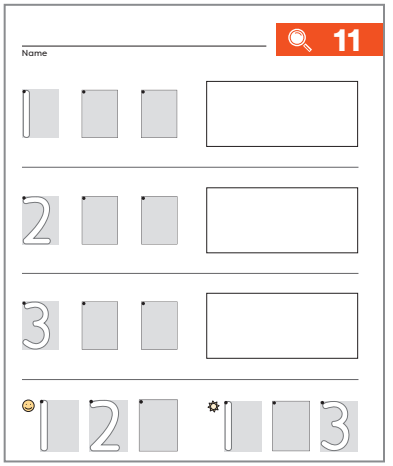
1, 2, beep, 4. *(Signal.)*

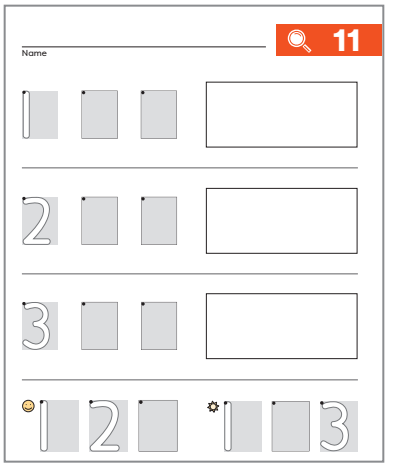
3

Beep, 2, 3. *(Signal.)*

1

If time permits, invite students to complete the number sequences at the bottom of the numeral writing page. Work through the first sequence together, as if playing Beep Number on paper. Track with a finger, saying the numbers that are shown. Say *beep* for the blanks.





Differentiation: Support

If students have trouble with the verbal sequencing in Beep Number, consider having them follow along on the number path with their fingers.

Promoting the Standards for Mathematical Practice

Students attend to precision (MP6) when they consider how using numbers can help us communicate more clearly, in this case by taking food orders. They initially express this verbally and by the end of the lesson are able to express this by carefully writing numerals.

Language Support

The word *order* has multiple meanings in this lesson. In the restaurant context, the students take food *orders*. In this number-sequencing activity, students put numbers in *order*.

If you use the word *order* in the sequencing activity, be mindful of student reactions. As needed, share both meanings, and invite students to think of other ways that we use *order*.

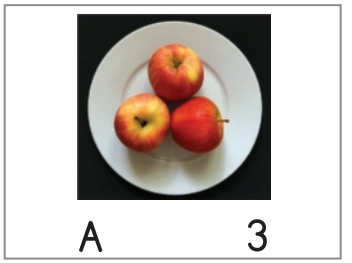
Land 5

Debrief 5 min

Materials—T: Chart paper

Objective: Write numerals 1–3 to answer *how many* questions.

Show the picture of 3 apples, the letter *A*, and the numeral 3.



Say the letter.

A

Say the number.

3

Which one tells us how many apples?

3 tells us how many.

The number 3 tells us how many apples are in the picture. The letter *A* helps us write the word *apple*.

Why do we write numbers? Let's make a chart of all the reasons people write numbers.

To remember how many things there are.

So you don't have to count again every time someone asks.

Display the chart where students can see it. Add to the chart as opportunities arise in subsequent lessons.

Why Do We Write Numbers?

- play restaurant
- remember the count
- make grocery list
- share your phone number
- faster than drawing
- make a calendar
- room numbers
- keep score
- play a game
- make a birthday card

The class chart will be unique based on student responses.

12

LESSON 12

Write numerals 4 and 5 to answer *how many* questions.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1
Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Students continue to explore reasons for writing numerals as they learn the formations for 4 and 5.

Key Question

- Why do we write numbers?

Achievement Descriptors

K.Mod1.AD1 **Count** to 10. (K.CC.A.1)

K.Mod1.AD2 **Write** numbers from 0 to 10. (K.CC.A.3)

Agenda

Fluency 10 min

Launch 5 min

Learn 30 min

- Air and Carpet Writing
- Numeral Writing
- Beep Number
- Problem Set

Land 5 min

Materials

Teacher

- Hide Zero® cards, demonstration set (1–5)
- Puppet or ball
- Chart from lesson 11

Students

- Two-Hands Mat
- Two-color beans (5)
- Personal whiteboard
- Dry-erase marker
- Student book

Lesson Preparation

- Prepare cards 1–5 from the Hide Zero cards demonstration set. Keep these cards out for use in lesson 13.
- This lesson requires audio and visual capabilities for taking food orders in Learn.
- Consider tearing out the numeral writing page and placing it in a personal whiteboard for future use.

Fluency

10

Feel the Number to 3

Materials—T: Hide Zero cards

Students finger trace and guess a numeral to develop kinesthetic memory for numeral formation.

Let's play Feel the Number.

Have students form pairs and stand one behind the other, both facing forward. The partner in the back is the writer. The partner in the front is the guesser.

Stand behind the class, facing students' backs, and show the 1 card.

Writers, turn and look at my number but don't say it. Keep it a secret! Write this number on your partner's back with your finger. Use your partner's whole back, so you write nice and big.

Guessers, can you tell what number your partner wrote?

1

Both partners, turn and look at my number. If you got it right, give me 1 clap!

Continue with 2, 3, and then numerals 1–3 in random order, celebrating with the corresponding number of claps. After some time, have partners switch roles.

Show Me Beans to 5

Materials—T: Hide Zero cards; S: Two-Hands Mat, two-color beans

Students hear a number or see a numeral and count out a set to develop fluency with associating a numeral with a set.

Let's set up. Put 5 beans on the red dots at the bottom.

I say a number. You move that many beans to the fingernails. Remember to start with the pinkie just like we practiced. *(Wiggle pinkie for emphasis.)* Ready?

Differentiation: Support

If writers need support, they can say the numeral formation rhyme as they trace.

If guessers need support, writers can write in the guessers' hands so that they can both feel and see the numeral. Adjust the seating arrangement as necessary.

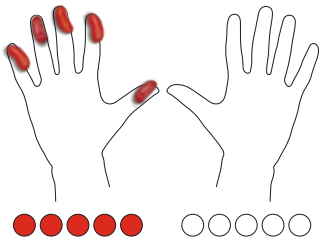
For any student uncomfortable with touch, this game can be played by having the writer write in the air or on the rug.

Show me 3.

Pause while students move red beans to the pinkie finger, ring finger, and middle finger of the left hand.

Quick! Show me 4.

Pause while students move a red bean to the index finger of the left hand.

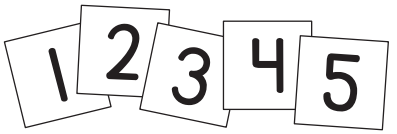


All right! Show me 5.

Pause while students move a red bean to the thumb of the left hand.

Reset! Move all 5 beans back to the red dots at the bottom.

***(Hold up cards.)* This time, I will show you a number. You move that many beans to the fingernails. Remember to start with the pinkie just like before. *(Wiggle pinkie for emphasis.)* Ready?**



Show the 3 card and pause while students move red beans to the pinkie, ring, and middle fingers of the left hand.

Repeat with the 4 and 5 cards while students place beans on the left index finger and thumb.

Finger Flash to 3

Students say how many fingers they see to develop the ability to subitize quantities in various configurations.

I am going to show you some fingers, but only for a second. You say the number you see. Watch closely!

Lean in, establish eye contact, pause dramatically, and then briefly show any 2 fingers. Hide them.

How many fingers did you see?

2

Get ready. Here comes the next one.

Continue with the following sequence:

 Any 2 fingers, on the other hand	 2 fingers, 1 finger on each hand	 3 fingers the math way	 Any 3 fingers, on the other hand	 2 fingers on one hand, 1 finger on the other

Offer more practice with subitizing by using various configurations of fingers to 3.

Hold students' interest and create a playful feel with dramatic pauses, false starts, and repeats.

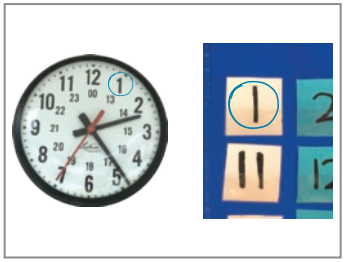
Launch 5

Students find numbers in their classroom.

Use your eyes to look around our classroom. Stop your eyes when you see a number.

After about 30 seconds of looking, invite students to walk to a numeral and point at it. Briefly name the different places in the room where students find numerals.

If the classroom search found a numeral written in more than one way, use those examples for the following questions (1, 4, and 9 are the most common examples). If not, gather the class and display the picture of the numeral 1 written two ways.



Point to each numeral and ask the students to name it.

Do these numbers look the same? Why?

No, one has a line on top.

They both have a line like this. *(Holds finger up and moves it straight down.)*

Teacher Note

Taro Gomi's *I Know Numbers!* connects well with this topic. Consider it as a read aloud option before or after this lesson.

The ones are written differently. They look different, but they both mean one.

Show me 1 finger. *(Pause.)* Show me 1 another way. *(Pause.)* There are different ways to write numbers, just as there are different ways to show numbers.

Transition to the next segment by framing the work.

You were good at finding numbers in our classroom. Today, we will open up our restaurant kitchen and write our animal customers' orders!

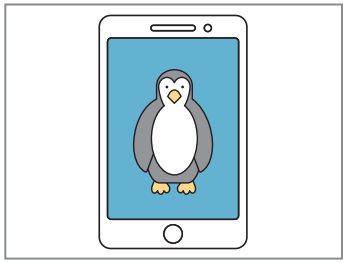
Learn 30

Air and Carpet Writing

Materials—T: Puppet or ball

Students learn the basic strokes for writing numerals 4 and 5.

Reintroduce the context from lesson 11. The class will take more calls from animal customers and write down their orders for the kitchen.



Display the picture of the penguin and play the audio of the penguin ordering 4 fish.

How many times did the penguin say *fish*?

Anticipate some disagreement or uncertainty about how many times the penguin said *fish*. Play the audio again and demonstrate how to use fingers to keep track of each word as it is said.

Draw a picture of 4 fish and have the class count them. Guide them to write the numeral 4 by using the following process.

Teacher Note

Starting to form numbers and letters from the top is an important habit for students to learn in kindergarten. It will help them keep up when the writing demands increase in later grades.

It may seem odd to start the 5 in the left corner and "add a hat" at the end. However, if students learn to start at the left corner, when in doubt they will be in the correct place for 7 out of 10 numerals (0, 8, and 9 are the exceptions). Starting 5 at the left corner reinforces this habit.

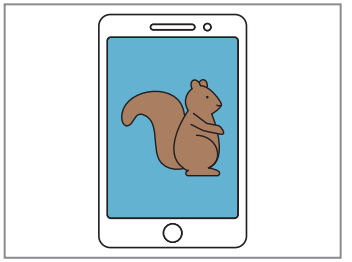
We can draw a picture of 4 fish to remember the order, or we can write the number 4. Use your counting finger to write 4 in the air with me. Follow along.

Use Puppet to "write" the numeral in the air. Hold Puppet high to write 4 starting from the top while saying the following rhyme.

A little line down, to the right some more. Now a big line down to make a 4.

Have students move their counting fingers to the carpet or another surface that will provide tactile feedback. Repeat the rhyme while students write 4 on the new surface.

Display the picture of the squirrel and play the audio of the squirrel ordering 5 nuts.



Introduce writing 5 with the same process used for 4.

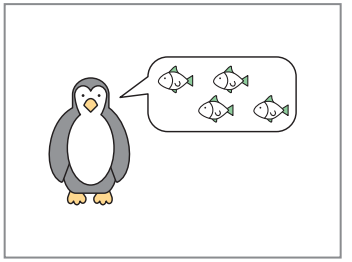
Down the side, around a hive. Give it a hat. I wrote a 5.

Numeral Writing

Materials—S: Numeral writing page

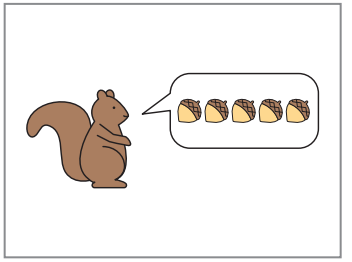
Students trace and write numerals 4 and 5.

Distribute classwork and writing utensils. Display the picture of the penguin with fish.



Invite students to find the numeral that matches the penguin's order. When they have their fingers on the numeral 4, have students collectively say the rhyme while tracing the numeral with their fingers.

Demonstrate how to write 4. Then invite students to use a pencil or crayon to write 4 until the row is complete. If students finish quickly, suggest that they draw the penguin's order inside the box.



Repeat with the numeral 5 by using the picture of the squirrel with nuts.

Teacher Note

Consider tearing out the numeral writing page and placing it inside a personal whiteboard so students can reuse it for practice.

Observational Assessment

- ☑ Can students form numerals accurately?
- ☑ Can students accurately fill in the missing numbers? (number sequence)

UDL: Action & Expression

Students may benefit from tracing numbers made from a variety of textures (e.g., puffy paint, sandpaper, or string) as they repeat the rhymes. This practice helps develop students' motor memory for each number formation.

Constructing numerals with dough also supports numeral formation and builds fine motor strength. Provide each student with dough and a shallow rectangular tray (children's shoe box tops work well). The rectangular tray mimics the writing rectangle and helps prevent reversals. Show a numeral and encourage students to make it in the tray by using the dough.

Beep Number

Students practice sequencing numbers to 5.

Have students stand to play Beep Number.

Let's play Beep Number. I will count, but instead of saying one of the numbers, I will say *beep*. Raise your hand when you know the beep number. Ready?

1, 2, 3, 4, beep. *(Signal.)*

5

1, 2, beep, 4, 5. *(Signal.)*

3

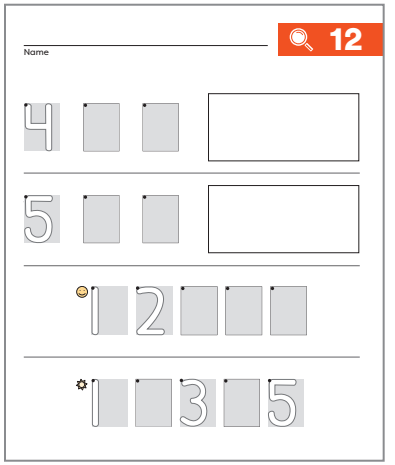
1, beep, 3, 4, 5. *(Signal.)*

2

Beep, 2, 3, 4, 5. *(Signal.)*

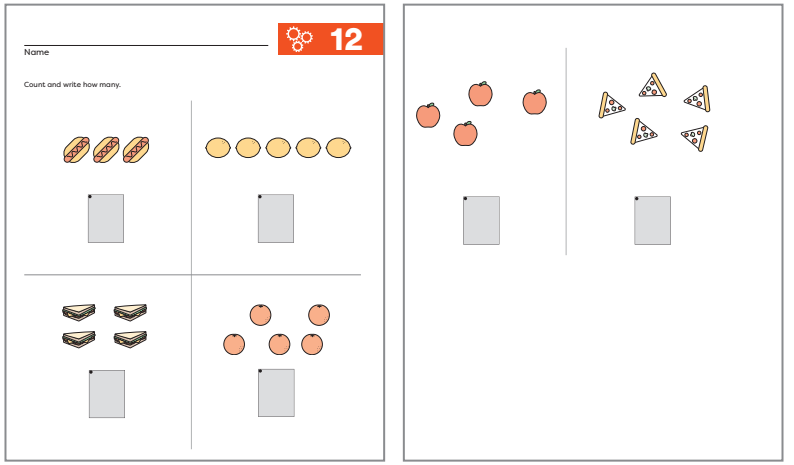
1

If time permits, invite students to complete the number sequences at the bottom of the numeral writing page. Work through the first sequence together, as if playing Beep Number on paper. Track with a finger, saying the numbers that are shown. Say *beep* for the blanks.



Problem Set

Today's practice provides an opportunity to notice and support students' strategies for answering *how many* questions including touch and count, mark and count, and subitizing. Use systematic modeling to get students started.



Teacher Note

This Problem Set is designed for systematic modeling (see lesson 8 for more detail). Continue to use systematic modeling for Problem Sets throughout module 1 until students become comfortable working with pencil and paper.

Promoting the Standards for Mathematical Practice

As students count the objects in the picture, write the corresponding numeral, and recognize that the numeral represents the cardinality of the set of objects, they reason abstractly and quantitatively (MP2).

Land 5

Debrief 5 min

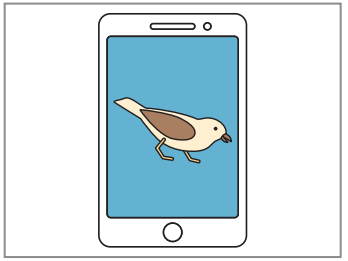
Materials—T: Puppet, chart from lesson 11

Objective: Write numerals 4 and 5 to answer *how many* questions.

Select one or two students who are confident writing the numeral 5. Set the context as follows.

> **The bird is back for more worms! Puppet will draw the bird's order. Kaliya is going to write the number.**

Display the picture of the bird and play the audio of the bird ordering 5 worms.



Have the class agree on the bird's order.

Signal for drawing and writing to begin. Use Puppet to draw detailed worms while the student writes 5. Be sure that the student writes much faster than Puppet.

Hmm ... which was easier: drawing 5 worms or writing 5?

Writing 5

Writing was faster.

Writing 5 is hard for me. I'd rather draw.

What if the bird ordered 100 worms? Would it make sense to draw that many worms for the kitchen?

No. That would take a long time.

That uses too much paper.

Why do we write numbers?

It's easier than drawing.

For taking orders

To make a calendar

Add any new ideas to the Why Do We Write Numbers? chart from lesson 11. Display the chart where students can see it. There will be opportunities to add to the chart when students learn to write numerals 6–10 in topic F.

Why Do We Write Numbers?

- play restaurant
- remember the count
- make grocery list
- share your phone number
- faster than drawing
- make a calendar
- room numbers
- keep score
- play a game
- make a birthday card

Teacher Note

Some students will still find drawing easier. If that's the case, point out that Puppet's drawing took a long time because Puppet included too much detail. Math drawings are much faster because they are simple.

With time and practice, writing numerals will become easier. As the counting groups become larger, students will see the efficiency of the written number system.

13

LESSON 13

Count out enough objects and write the numeral.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

In this lesson students think about the concept of *enough* and use it to see whether they have correctly counted out a group. Students pass out plates and serve pretend food to reason about making sure they have enough.

Key Question

- How did you know you counted out enough?

Achievement Descriptors

K.Mod1.AD4 **Say** one number name with each object when counting up to 10 objects. (K.CC.B.4.a)

K.Mod1.AD5 **Use** the last number of a count to tell *how many* regardless of arrangement or order counted. (K.CC.B.4.b)

Agenda

Fluency 10 min

Launch 10 min

Learn 25 min

- Are There Enough?
- Count Out Enough

Land 5 min

Materials

Teacher

- Hide Zero® cards, demonstration set (1–5)

Students

- Two-Hands Mat
- Two-color beans (5)
- Unifix® Cubes (10 per student pair)
- Dot plate
- Menu and order pad (1 per student pair, in the student book)
- Personal whiteboard
- Dry-erase marker
- Student book

Lesson Preparation

- Prepare cards 1–5 from the Hide Zero cards demonstration set.
- Students need plates with different dot configurations up to 5. Make one for each student (plus 6–8 extras) by using paper plates and a marker. See samples in Learn.
- Consider tearing out the menu and ordering pad and placing it in a personal whiteboard.

Fluency

10

Feel the Number to 5

Materials—T: Hide Zero cards

Students finger trace and guess a numeral to develop kinesthetic memory for numeral formation.

Let's play Feel the Number.

Have students form pairs and stand one behind the other, both facing forward. The partner in the back is the writer. The partner in the front is the guesser.

Stand behind the class, facing students' backs, and show the 3 card.

Writers, turn and look at my number, but don't say it. Keep it a secret! Write this number on your partner's back with your finger. Use your partner's whole back, so you write nice and big.

Guessers, can you tell what number your partner wrote?

3

Both partners, turn and look at my number. If you got it right, give me 3 claps!

Continue with 4, 5, and then numerals 1–5 in random order, celebrating with the corresponding number of claps. After some time, have partners switch roles.

Show Me Beans to 5

Materials—T: Hide Zero cards; S: Two-Hands Mat, two-color beans

Students hear a number or see a numeral and count out a set to develop fluency with associating a numeral with a set.

Let's set up. Put 5 beans on the red dots at the bottom.

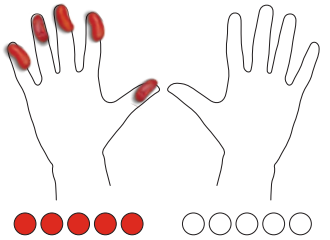
I say a number. You move that many beans to the fingernails. Remember to start with the pinkie just like we practiced. *(Wiggle pinkie for emphasis.)* Ready?

Show me 3.

Pause while students move red beans to the pinkie, ring, and middle fingers of the left hand.

Quick! Show me 4.

Pause while students move a red bean to the index finger of the left hand.



All right! Show me 5.

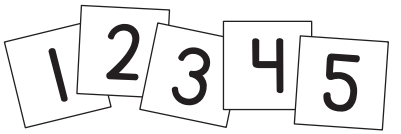
Pause while students move a red bean to the thumb of the left hand.

Continue with the following sequence.

4	3	4	5	4	3	2

Reset! Move all 5 beans back to the red dots at the bottom.

***(Hold up cards.)* This time, I will show you a number. You move that many beans to the fingernails. Remember to start with the pinkie just like before. *(Wiggle pinkie for emphasis.)* Ready?**



Show the 3 card and pause while students move red beans to the pinkie, ring, and middle fingers of the left hand.

Repeat the process, showing the cards in a similar sequence as before.

Finger Flash to 5

Students say how many fingers they see to develop the ability to subitize and recognize quantities in various configurations.

I am going to show you some fingers, but only for a second. You say the number you see. Watch closely!

Lean in, establish eye contact, pause dramatically, and then briefly show any 3 fingers. Hide them.

How many fingers did you see?

3

Get ready. Here comes the next one.

Continue with the following sequence:

 4 fingers the math way	 Any 4 fingers on the other hand	 4 fingers, 2 fingers on each hand
 Any 3 fingers	 3 fingers on one hand, 1 finger on the other	 3 fingers on one hand, 2 fingers on the other

Offer more practice with subitizing by using various configurations of fingers to 5.

Hold students' interest and create a playful feel with dramatic pauses, false starts, and repeats.

Launch

10

Students reason about whether there are enough objects in a set.

Show the picture of tables and chairs to set the scene of a restaurant.

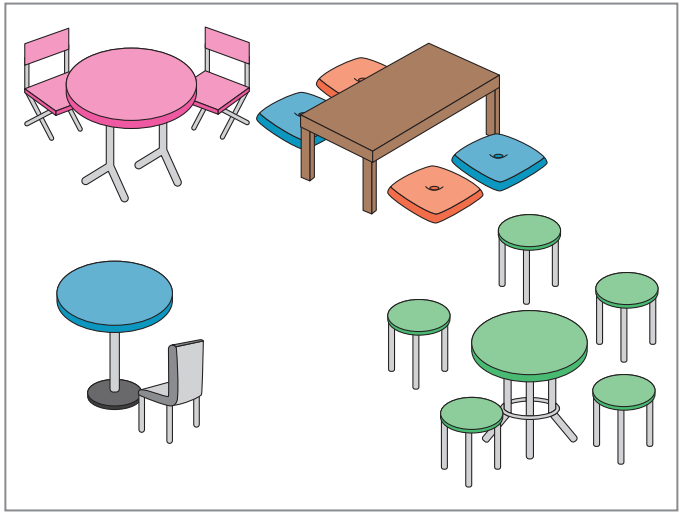
Look at the tables in this restaurant. The tables need to be set with plates.

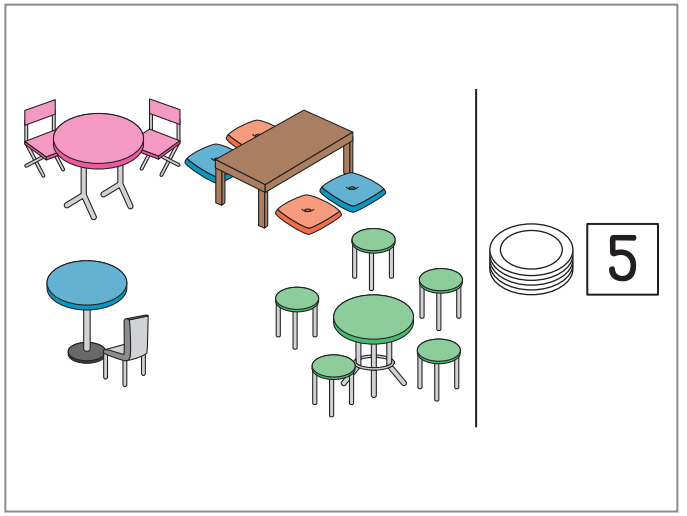
Show the picture with 5 plates.

Here are the plates. Do we need to count how many plates there are?

No, because the 5 card is there. There are 5 plates.

I wonder ... are there enough so that every seat in the restaurant gets a plate?





Have students think–pair–share about how to figure out whether there are enough plates. Listen for students to share ideas such as the following:

We can count the chairs to see if there are enough plates.

We can start passing out the plates to see if there are enough.

I can just see there aren't enough plates because there are more than 5 chairs.

For the next three questions, point to the picture as you ask about the tables. Allow think time for most students to count or subitize before inviting each answer.

Teacher Note

Throughout the lesson, some students may need to match objects by using one-to-one correspondence to find out whether there are enough. Some students may be ready to compare numbers: "5 is bigger than 3, so that's not enough."

As appropriate, provide language support by modeling math language: "5 is more than 3." Comparison language is a focus of module 3.

Are there enough plates for the pink table?

Yes.

Which table needs exactly 5 plates?

The green table

Are there enough plates for the pink table and the green table?

No.

There are not enough.

Transition to the next segment by framing the work.

Today, we will check to see if we have enough things while we work in our restaurant.

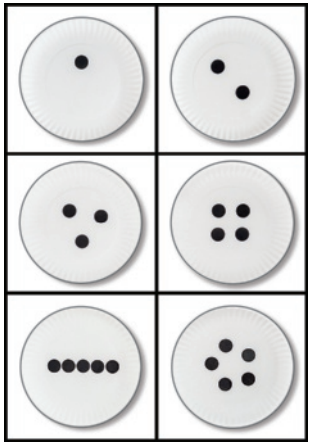
Learn 25

Are There Enough?

Materials—S: Dot plate

Students count out enough plates to set the table.

Make groups of three to four students (possibly by a table). Identify a helper for each group, and intentionally give them not enough plates to pass out to their group.



Let's get our classroom restaurant ready. Helpers, pass out the plates to your group.

Did your group have enough plates?

No.

We need more plates.

Let's try again. Please collect the plates and bring them back.

Talk with your group. How can you make sure that everyone gets a plate?

Invite ideas to start a class discussion. As needed, guide thinking toward counting the number of students in a group to emphasize that we can count to know how many is enough. Choose a new helper.

Count the people in your group. Send your new helper to get enough plates for everyone.

Have helpers pass out plates to their groups. Ask each group whether they have enough plates.

Now we have enough plates! We are ready to open our restaurant and take orders!

Count Out Enough

Materials—S: Unifix Cubes, dot plate, menu and order pad

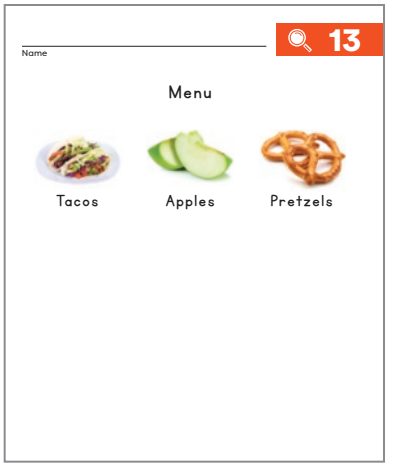
Students practice counting and writing numerals to match.

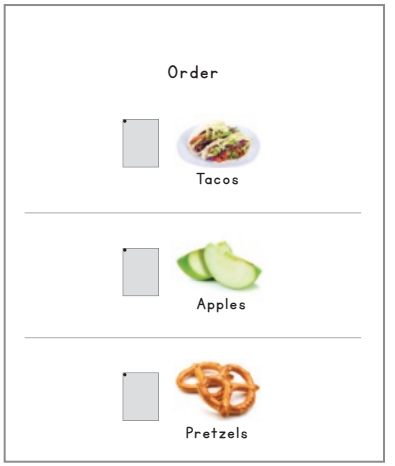
Make sure each student pair has a menu, an order pad page, and a set of 10 Unifix Cubes. Each student needs a dot plate.

Have students role play as a customer and a restaurant worker, as in earlier lessons. Pair students and assign each the role of customer or worker. Then display the menu.

Customers, look at the menu. Choose one item. Count the dots on your plate, and tell the worker you want that many _____.

Workers, use the order pad to write the number the customer says next to the item they want. Then count out that many cubes, and give them the "food."





Language Support

Connect the mathematics to the context by modeling and encouraging sentences that restaurant customers would use in the real world. Support this role play with sentence frames that are appropriate for the student.

- I'd like 4 _____ please.
- There are too many _____.
- There are not enough _____.

Observational Assessment

☑ Watch as customers match "food" to the dots on their plates. Ask customers how many tacos they have. Watch and listen to see whether they count again or just say the number.

Promoting the Standards for Mathematical Practice

Students construct viable arguments and critique the reasoning of others (MP3) when they match the cubes to the dots on their plate, notice that the worker gave the incorrect amount, and bring the problem to the worker's attention.

Customers, be sure the worker gives you the correct amount. Let the worker know if you do not have enough or if you have more than you ordered.

Reverse roles so each student has a chance to practice the different skills. Repeat as time allows, occasionally switching plates among partners and between pairs.

Problem Set

There is no Problem Set for this lesson. If time allows after role play, consider using the numeral writing page from lessons 11 and 12 to practice formation of numerals 1–5.

Land 5

Debrief 5 min

Objective: Count out enough objects and write the numeral.

How did you know you had enough plates? Food?

We counted the number of people in our group and got that many plates.

I matched the pretend food to the dots on the plate.

How did writing numbers help you when you were a worker?

It helped me remember how much food to get.

I looked at my order pad and then I counted the food to match the number.

Topic D
Decompose Numbers

In previous topics, students used numbers to count and answer *how many* questions. Topic D turns their attention to the relationships between numbers.

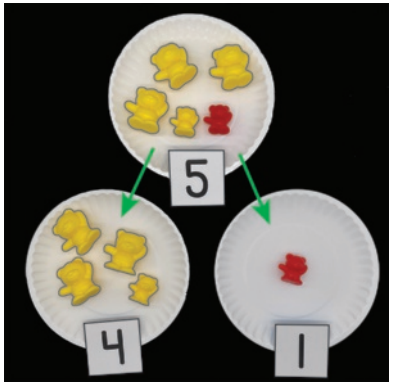
The topic opens with students considering the familiar relationship between something and nothing. Most children come into kindergarten with an informal understanding of this concept and can describe it by using words like *none*, *all gone*, or *no more*. With a solid understanding of numbers 1–5, they are ready to learn that a number, 0, describes a group of no objects.

Students also explore number relationships through decomposition. Decomposition is the process of breaking something—a group, a number, a shape—into parts. When students sort objects into groups, they are decomposing. Sorting activities in topic D differ from those in topic A in two ways:

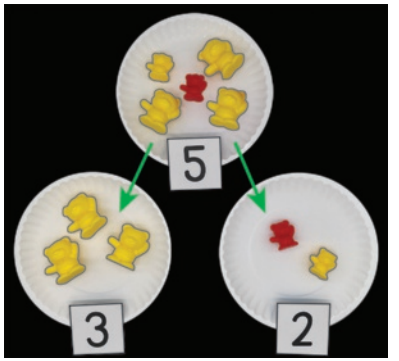
- Students count all the objects before sorting. They also find the number of objects in each group after sorting. *I sorted 5 bears. 4 are yellow and 1 is red.*
- Students sort objects more than once, using different attributes each time. *First, I sorted my bears by color. Then I sorted my bears by size.*

These factors encourage students to begin thinking about different ways to decompose, or break apart, numbers. They see that 5 can be broken into 4 and 1 as well as 3 and 2. Some students may even see 5 as 2 and 2 and 1.

Story problems provide context for thinking about decomposition and its inverse, composition. Composition is the process of putting things—groups, numbers, shapes—together. Story problems use students' intuitive ideas about composition and decomposition to explore addition and subtraction. The focus is on making sense of the problem rather than finding an answer or writing an equation. Students will learn to represent story problems with number bonds and number sentences in modules 4 and 5.



Sorting by color—5 is 4 and 1.

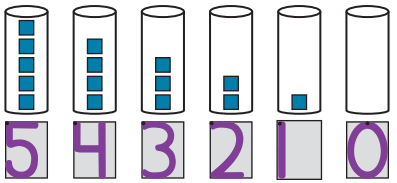


Sorting by size—5 is 3 and 2.

Progression of Lessons

Lesson 14

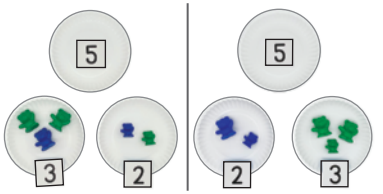
Understand the meaning of zero and write the numeral.



I can write 0. Zero means none.

Lesson 15

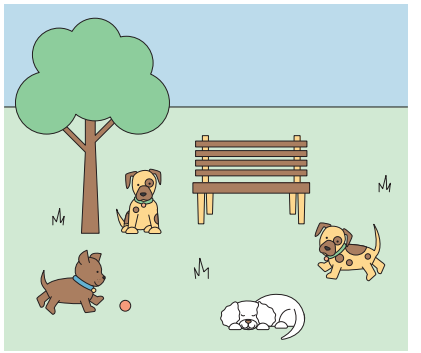
Sort the same group of objects in more than one way and count.



First, I sorted my bears by size. Then I sorted my bears by color.

Lesson 16

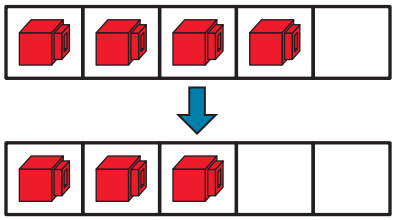
Decompose a set shown in a picture.



I see 2 dogs with spots and 2 dogs without spots. 4 is 2 and 2.

Lesson 17

Model story problems.



These are the 4 people on the bus. 1 person gets off the bus. Now there are 3 people.

Lesson 18

Model story problems and identify the numeral referents.

4 tells about the puppies that were there at first. 1 puppy came along. 5 tells about all the puppies together. 4 and 1 make 5.

14

LESSON 14

Understand the meaning of zero and write the numeral.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Students learn to use *zero* to describe a group with no objects. They watch a video that shows taking away one object at a time until there are no objects left and use beans to model what they see. Students also learn to write the numeral 0.

Key Question

- What does zero mean?

Achievement Descriptors

K.Mod1.AD2 **Write** numbers from 0 to 10. (K.CC.A.3)

K.Mod1.AD3 **Represent** a group of objects with a written numeral 0–10. (K.CC.A.3)

Agenda

Fluency 10 min

Launch 5 min

Learn 30 min

- Balloon Story
- Air and Carpet Writing
- Numeral Writing
- Beep Number
- Problem Set

Land 5 min

Materials

Teacher

- Puppet or ball
- Carrots (3)
- Plate

Students

- Two-Hands Mat
- Two-color beans (5)
- Student book

Lesson Preparation

- Consider placing the 5 beans in a bag or small cup for easy distribution.
- Consider tearing out the numeral writing page from the student book and placing it inside a personal whiteboard to reuse for practice.

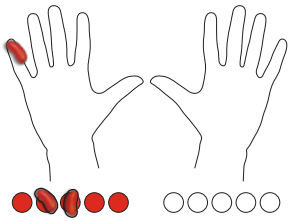
Fluency

10

Counting the Math Way to 3

Materials—S: Two-Hands Mat, two-color beans

Students transition from counting on the Two-Hands Mat to counting the math way.



Pointer finger up! Touch the red dots at the bottom.

Two hands up! Find out which of your real hands matches the one by the red dots.

Provide time for experimentation as students determine which hand should be placed on the mat. Students should place their left hand on top of the left hand on their mats.

Let's set up. Put 3 beans on the red dots at the bottom.

I say a number. You move that many beans to the fingernails. Remember to start with the pinkie just like we practiced. *(Wiggle pinkie for emphasis.)* Ready?

Show me 1.

Pause while students move a red bean to the left pinkie.

How many fingers have a bean?

1

Which finger is it?

Pinkie

Show me your real pinkie finger. This is the finger we will start counting with when we count the math way.

Teacher Note

Around the world, numbers are represented on hands in many different ways. The mathematical advantage of counting the math way is that students count from left to right without interruption, just as they do with the number path and eventually the number line. It also allows students to see and feel the quantity increase as they count forward.

Students will continue to use this method through grade 5 to model place value concepts and perform operations with whole numbers and decimal fractions.

Teacher Note

Students, whether they're looking at their own hands or your hands, will see a left-to-right progression. To you, the progression will appear in reverse.

Face the students and direct them to mirror you. Raise your right pinkie.

Show me your left pinkie. That is 1.

1

Put a bean on the next finger. How many fingers have beans on them now?

2

Show me which fingers have beans. Use your mat to help you. *(Circulate and support.)* Let's count to 2 the math way. Ready?

Raise your right pinkie and then your right ring finger; students raise their left pinkie and then their left ring finger.

1, 2

Put a bean on the next finger. How many fingers have beans on them now?

3

Show me which fingers have beans. Use your mat to help you. *(Circulate and support.)* Let's count to 3 the math way. Ready?

Raise your right pinkie, followed by your right ring finger and right middle finger; students raise their left pinkie, followed by their left ring finger and left middle finger.

1, 2, 3

See if you can do it without looking at the mat. Close it up. *(Show a closed fist.)* Ready?

Count to 3 the math way with the students, modeling the math way on your fingers.

Stay here at 3. Now count back down to 1. Ready?

Count from 3 to 1 the math way with the students, modeling the math way on your fingers.

Offer more practice counting the math way to 3.

Teacher Hands

Student Hands

UDL: Action & Expression

Students will not count, or show fingers, the math way at all times. Encourage them to continue by using fingers as they would naturally while adding counting the math way to their repertoire.

Representing numbers on hands in a variety of ways supports work with decomposition and conservation of number. The fluency activity Show Me Another Way: 2 and 3 is an example.

Differentiation: Support

Students with fine motor delays may find it easier to use their fingers when they lay their hands on the desk or floor. The flat surface helps them hold out the fingers they want raised and keep the others tucked.

Show Me Another Way: 2 and 3

Students represent a number on their fingers in different ways to prepare for work with decomposing numbers beginning in lesson 16.

Show me 2 the math way.

(Shows 2 on their fingers the math way)

Now show me another way to make 2, any way you want!

(Shows 2 on their fingers another way)

Close it up. Show me 2 another way.

Continue having students show 2 on their fingers in various ways a few more times.

Repeat the process with 3.

Launch

5

Materials—T: Puppet, carrots, plate

Students learn that *zero* is the math word for none.

Use a document camera to display carrots on a plate or other background. Gather students and ask them to listen to your story.

Puppet's mommy told Puppet to eat all the carrots before going outside to play. How many carrots does Puppet have to eat?

3

Have Puppet pretend to eat 1 carrot. Hide the carrot.

Can Puppet go outside now? Why?

No, Puppet still has carrots to eat.

Repeat with the second and third carrot. Then generate discussion by asking the following questions.

Can Puppet go outside now? Why?

Yes, because Puppet ate all the carrots.

How many carrots does Puppet have left to eat?

None

0

***Zero* is the math word for none. 0 is the number that tells how many carrots are left.**

Transition to the next segment by framing the work.

Today, we will watch a story and practice writing the number 0.

Learn 30

Balloon Story

Materials—S: Two-color beans

Students watch and act out a video that shows decomposing a number until there are 0 left.

Prepare to play the video, which shows Malik walking with balloons that the wind blows away one at a time.

Give each student 5 beans. Tell students that they will use their beans to act out the video. Briefly play the video, and then pause it to show Malik walking with 5 balloons.

How many balloons are there? Show the same number with your beans.

5

Continue to play the video. Pause after 1 balloon blows away.

What happened?

1 balloon blew away.

Tell students to show what happened with their beans.

How many balloons are there now? How do you know?

There are 4 balloons. I know because I counted my beans.

Continue playing the video and pausing after each balloon blows away. When the last balloon blows away, support students to use *zero* to describe the situation.

How many balloons are there now?

What is the math word for none?

Repeat after me: There are 0 balloons.

How many beans are left?

Air and Carpet Writing

Materials—T: Puppet or ball

Students learn the basic stroke for writing the numeral 0.

Invite the class to practice writing 0 in the air.

Use your counting finger to write 0 in the air with me. Follow Puppet.

Hold Puppet high in the air and write 0 starting from the top while saying the rhyme.

I start at the top, and around I go. I come back up to make 0.

Have students move their counting fingers to the carpet or another surface that provides tactile feedback. Repeat the rhyme while students write 0 on the new surface.

Promoting the Standards for Mathematical Practice

When students use the numeral 0 to represent *no balloons* and determine from the context that it means *none* or *nothing*, they reason abstractly and quantitatively **(MP2)**.

Numeral Writing

Materials—S: Numeral writing page

Students trace and write the numeral 0.

Distribute classwork and writing utensils. Demonstrate how to write 0 as students say the number rhyme.

Invite students to find 0 on their paper. Once they have their fingers on the numeral 0, collectively say the rhyme while they trace the numeral with a finger. Then invite them to use a pencil or crayon to write 0 until the row is complete.

Beep Number

Students practice sequencing numbers to 5, including 0.

Have students stand to play Beep Number.

Let's play Beep Number. I'll count, but instead of saying one of the numbers, I'm going to say *beep*. Raise your hand when you know the beep number. Ready?

3, 2, beep, 0 *(Signal.)*

1

3, 2, 1, beep *(Signal.)*

0

3, beep, 1, 0 *(Signal.)*

2

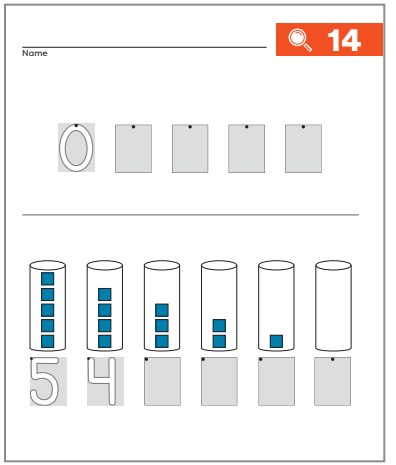
5, 4, 3, 2, 1, beep *(Signal.)*

0

If time permits, invite students to complete the number sequence at the bottom of the numeral writing page. Work through the first sequence together, as if playing Beep Number on paper. Track with a finger, saying the numbers that are shown. Say *beep* for the blanks.

Teacher Note

Consider tearing out the numeral writing page and placing it inside a personal whiteboard to reuse for practice.

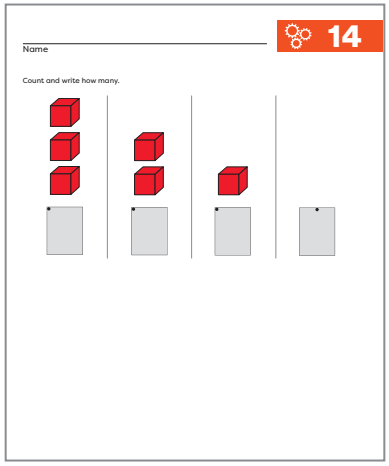


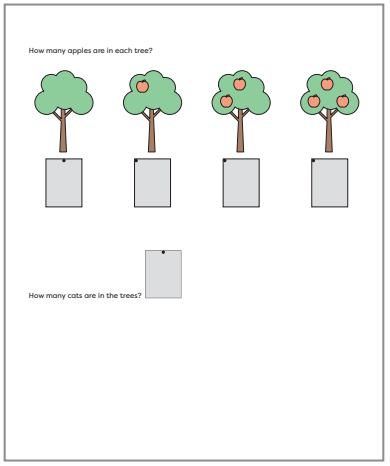
Teacher Note

Students see 0 as part of the sequence more easily when they count backward rather than when they count forward because they are used to starting with 1. Starting with 0 is tricky, especially if they are counting a group of objects.

Problem Set

Use systematic modeling to get students started on the Problem Set. Consider the best time to read the questions. It may be easier to read all directions to the group before releasing students for independent work.





Observational Assessment

- ☑ Do students understand that zero is a number that represents none?
- ☑ Do students correctly form the numeral 0?

Land 5

Debrief 5 min

Objective: Understand the meaning of zero and write the numeral.

Gather students and invite them to look around the room as you ask the following questions:

- How many rugs are in our room?
- How many windows?
- How many elephants?

Then use the following questions to help the class summarize the day's objective.

What new math word did we learn today?

Zero

What does zero mean?

None

Nothing

No more

Use your finger to write 0 in the air.

Math Past

If zero means nothing, why do we need it?

Did someone invent zero?

Was zero always drawn as 0?

Curious kindergartners may want to know more about zero. Provide them with some fun facts about the history of zero from Math Past: Zero.

Display the symbols for zero in ancient Mayan, Indian, and Arabic cultures. Ask students to compare the ancient symbols to the one they learned to write today.

15

LESSON 15

Sort the same group of objects in more than one way and count.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

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K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	

Notes **PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Students count to find the total number of objects in a set and then sort the set into groups. They express the relationship between the total and the groups (or parts) by using a number sentence, such as 5 is 4 and 1. Students sort their set of objects more than once, by using a different attribute each time. This lesson introduces the phrase *number sentence*.

Key Question

- Does sorting the same group a different way change the number of objects?

Achievement Descriptor

K.Mod1.AD10 **Sort** objects into categories. (K.MD.B.3)

Agenda

Fluency 10 min

Launch 5 min

Learn 30 min

- Bear Sort
- Share, Compare, and Connect
- Sort Another Way
- Problem Set

Land 5 min

Materials

Teacher

- 5-group™ cards, demonstration set (1–3)
- Unifix® Cubes (5)
- 5-Stick Puzzle (in the teacher edition)

Students

- Counting bears (5 per student pair)
- Paper plates (3 per student pair)
- Hide Zero® cards (1 set of 1–5 per student pair)
- Unifix® Cubes (5)
- Student book

Lesson Preparation

- Prepare cards 1–3 from the 5-group demonstration set.
- For each pair of students, prepare a bag of 5 bears by using two different colors and sizes. For example, one bag may contain 3 large yellow bears, 1 small yellow bear, and 1 small red bear.
- Create 5-sticks with the Unifix Cubes, one for each student and one for yourself.
- Consider tearing out the pages from the student book in advance to save time.
- Copy or print the 5-Stick Puzzle in the teacher edition.

Fluency

10

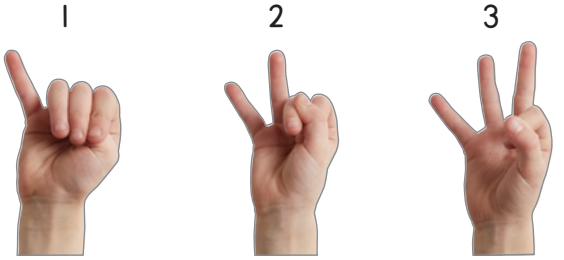
Counting the Math Way to 3

Students construct a number line with their fingers while counting aloud to develop a sense of quantity and order.

Let's count the math way.

Face the students and direct them to mirror you.

Counting the math way looks like this: 1, 2, 3. *(Demonstrate.)*



Teacher Hands

Raise your right pinkie.

Show me your left pinkie. That is 1.

Let's put up the very next finger.

Raise your right ring finger; students raise their left ring finger.

That is 2.

Let's put up the next one. That is 3.

Close it up!

Let's count to 3 the math way.

Student Hands

Show the math way on your own fingers while students count, but do not count aloud.

Have students count the math way from 1 to 3.

Stay here at 3. Now, count back down to 0. Ready?

Have students count the math way from 3 to 0, putting down all fingers to show 0.

Offer more practice counting the math way to 3.

Differentiation: Support

If students need support, return to the beans and hands mat used to introduce this activity in lesson 14.

5-Groups to 3

Materials—T: 5-group cards

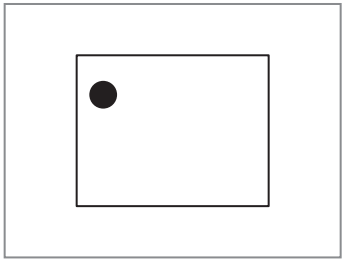
Students recognize a group of dots to develop the ability to subitize quantities shown with 5-groups.

The 5-group configuration will become familiar over time, and the familiarity will allow students to subitize. However, wait time is built into the routine to allow for counting if needed. Students who respond quickly benefit from holding a number in their mind and practicing self-regulation as they wait for others.

Remember to listen, think, raise your hand, and wait for the signal. *(Emphasize with gestures for each step.)*

Raise your hand when you know the answer to the question. Wait for my signal to say the answer.

Display the 5-group card that shows 1.

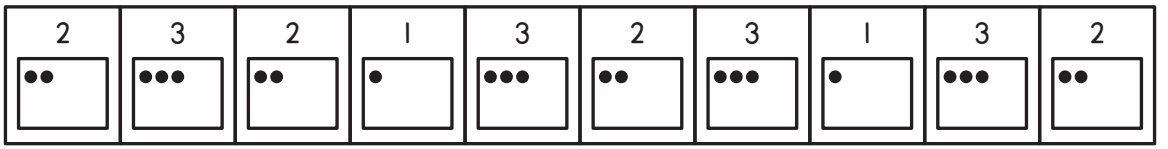


How many dots?

Wait until most students raise their hands, and then signal for students to respond.

1

Repeat the process with the following sequence:



As students are ready, challenge them to recognize the groups of dots more quickly by showing each card for a shorter time.

Teacher Note

Digital 5-group cards are convenient and easy for all to see. However, physical 5-group cards offer the flexibility to change the sequence based on student responses.

Counting with Movement to 10

Students count with a body movement to build fluency with number names and one-to-one correspondence.

Let's clap 5 times and count our claps. Ready?

Count and clap from 1 to 5 slowly at first, emphasizing that one number is said for each clap. Repeat until most students are clapping, counting, or ideally, clapping and counting.

Repeat the process, this time stomping and counting to 5.

Now let's clap 10 times and count our claps. Ready?

Count and clap from 1 to 10 along with the students.

Repeat the process, this time stomping and counting to 10.

The chant-like cadence of rote counting can lull students into a relaxed cognitive state. Try varying the pace to nudge students back to alertness and invite play.

Launch

5

Students consider attributes that could be used to sort.

Display the picture of 5 bears on a plate.

What do you notice about the bears?

They are blue and green.

There are 5 bears on a plate.

There are big bears and small bears.

Invite students to think–pair–share about the following question.

Language Support

Support language development by pointing to the bears when using words that students need to describe attributes. Do this when revoicing student ideas about how to sort. For example:

- This bear is blue. (*Point.*) This bear is green. (*Point.*) They are different colors.
- This bear is big. (*Point.*) This bear is small. (*Point.*) They are different sizes.

Think in your head: How could we sort these bears?

Tell your partner. Start like this: We could sort the bears by ...

Select a few students to share their ideas, making sure that size and color are mentioned.

Transition to the next segment by framing the work.

I wonder if the way I sort will change the number of things. Today, we will try different ways to sort and see what happens.

Learn 30

Bear Sort

Materials—S: Hide Zero cards, bag of bears, paper plates

Students sort bears and count how many are in each group.

Partner students and distribute materials to each pair.

Put your number cards in order from 1–5.

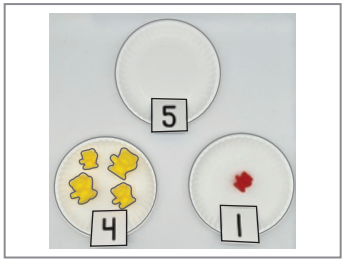
Once pairs have 1–5 in order, demonstrate how to place 0 before 1.

Then invite students to take the bears out of the bag, place them on one paper plate, and count how many.

Hold up the number card that tells how many bears.

Put that card on the plate.

Think about a way to sort your bears. Then sort them onto the two empty plates.



After students have sorted, have them count each group and find the matching Hide Zero card for the bears on each plate.

Observational Assessment

☑ Can students sort the bears at least one way, by size or by color?

Teacher Note

The paper plates make the part-total relationship visible. Students use number bonds to explore decomposition and composition in module 4. The paper plates serve as a preview of the number bond work to come, so their arrangement is important to model.

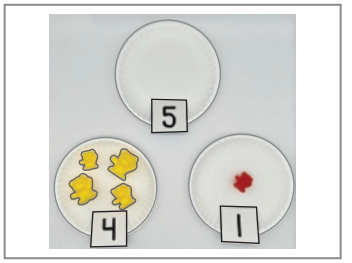
Select two pairs to share their sorts in the next segment. If possible, choose work samples that show one or both of the following:

- two different ways to sort, such as by color and by size
- two different ways to decompose 5, such as 5 is 4 and 1 and 5 is 3 and 2

Share, Compare, and Connect

Students discuss ways to sort and learn to make a number sentence.

Gather the class to discuss the selected work samples. Consider having students move away from their sorting materials to help focus their attention.



Sort by Color (Ainsley and Theo's Way)

Class, how did this group sort their bears?

They sorted by color.

How many bears are in the yellow group?

4 bears

How many bears are in the red group?

1 bear

How many bears did they have to start?

5 bears

They sorted the 5 bears into a group of 4 yellow and a group of 1 red.

We can say that in a number sentence: 5 is 4 and 1. *(Gesture to the corresponding bears as you say each number. Gesture to all the bears when saying 5.)*

Repeat after me: 5 is 4 and 1.

5 is 4 and 1.

Teacher Note

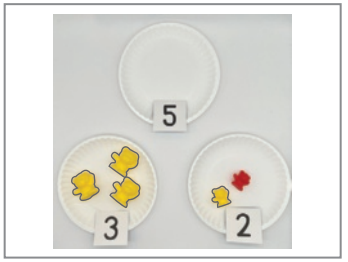
The sample student work shows common responses. Look for similar work from your students and encourage authentic conversations about the key concepts.

If students sort in a different way than shown here, help them name the chosen attribute and use the sort to say a number sentence.

Promoting the Standards for Mathematical Practice

As students use number sentences like 5 is 4 and 1 to describe sorts and are careful to say each number once and in the correct order, they attend to precision **(MP6)**.

Sort by Size (Sammy and Rosie's Way)



Class, how did this group sort their bears?

They sorted by size.

How many are in the group of big bears?

3 bears

How many are in the group of little bears?

2 bears

How many bears did they have to start?

5 bears

They sorted the 5 bears into a group of 3 big bears and a group of 2 little bears.

Let's say that as a number sentence. Repeat after me: 5 is 3 and 2. *(Gesture to the bears as you say each number.)*

5 is 3 and 2.

Direct student pairs to move back to their sorts and to formulate number sentences.

Look at your sort. It's your turn to tell about your bears by using numbers: 5 is ...

Walk around and listen as students say their number sentences to each other.

Sort Another Way

Students sort their bears in a new way and say the corresponding number sentence.

Put your bears back together on the plate next to the 5. With your partner, think of a different way to sort.

Pairs sort again, count how many are in each group, and label with the Hide Zero cards. When pairs are finished, encourage them to say the corresponding number sentence to each other.

Teacher Note

A student-friendly description of *number sentence* is introduced in lesson 18. At that point, students have explored number sentences in different contexts and have a richer understanding of their use.

Problem Set

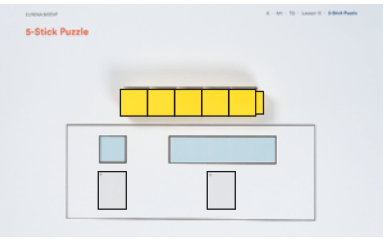
Materials—T: 5-Stick Puzzle, Unifix Cubes; S: Unifix Cubes

Gather students, display the 5-Stick Puzzle, and hold up a stick of 5 Unifix Cubes.

How many cubes?

5

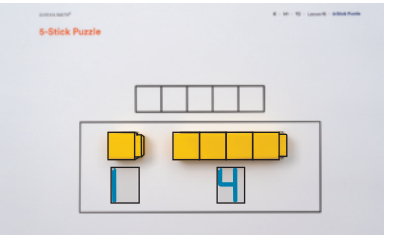
Place the stick of cubes on top of the 5-stick outline on the puzzle.



I need to break the 5-stick so it fits the blue puzzle.

Break the stick into 2 and 3. Try to place the parts over the puzzle. Engage students in a discussion about how the stick could be broken so it fits.

Break the stick into 1 and 4. Place the single cube and 4-stick on the puzzle.



How many cubes are here? *(Point to the single cube.)*

1

Write 1 in the gray box below the cube.

How many cubes are in this stick? *(Point to the 4-stick.)*

4

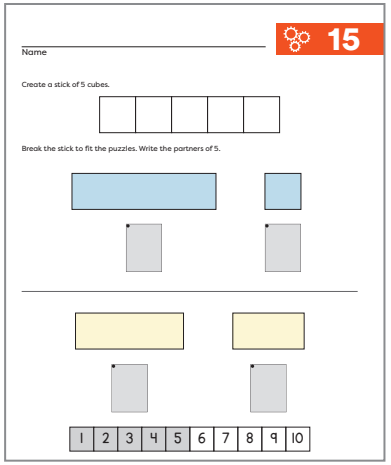
Write 4 in the gray box below the 4-stick.

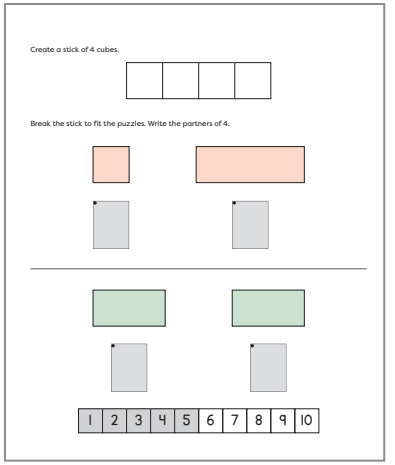
We broke 5 into 1 and 4. Finish my number sentence: 5 is ... *(Gesture to each stick to prompt students to say the numbers.)*

1 and 4

Give students a 5-stick and invite them to break it apart to fit the puzzles in their Problem Set. Encourage them to say a number sentence for each puzzle.

If students are ready for more independence, show them how to begin with a stick of 4 cubes on the next page so they can work at their own pace.



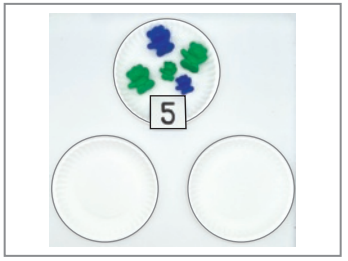


Land 5

Debrief 5 min

Objective: Sort the same group of objects in more than one way and count.

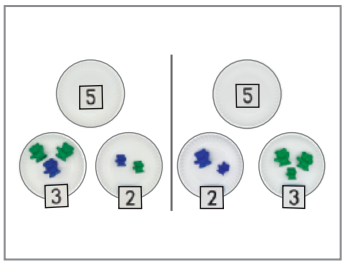
Display the picture of 5 bears and 3 plates.



Puppet sorted the bears we saw earlier. How many bears did Puppet have at the start?

5 bears

Display the picture of 5 bears sorted by size.



First, Puppet sorted by size. Finish my number sentence: 5 is ... *(Gesture to each plate to prompt students to say the numbers.)*

3 and 2

Show the second sort.

Next, Puppet sorted by color. Finish my number sentence: 5 is ... *(Gesture to each plate to prompt students to say the numbers.)*

2 and 3

Invite students to think–pair–share about the following question.

Does sorting the bears a different way change how many bears Puppet has?

I'm not sure. That picture has 3 and 2. The other picture has 2 and 3.

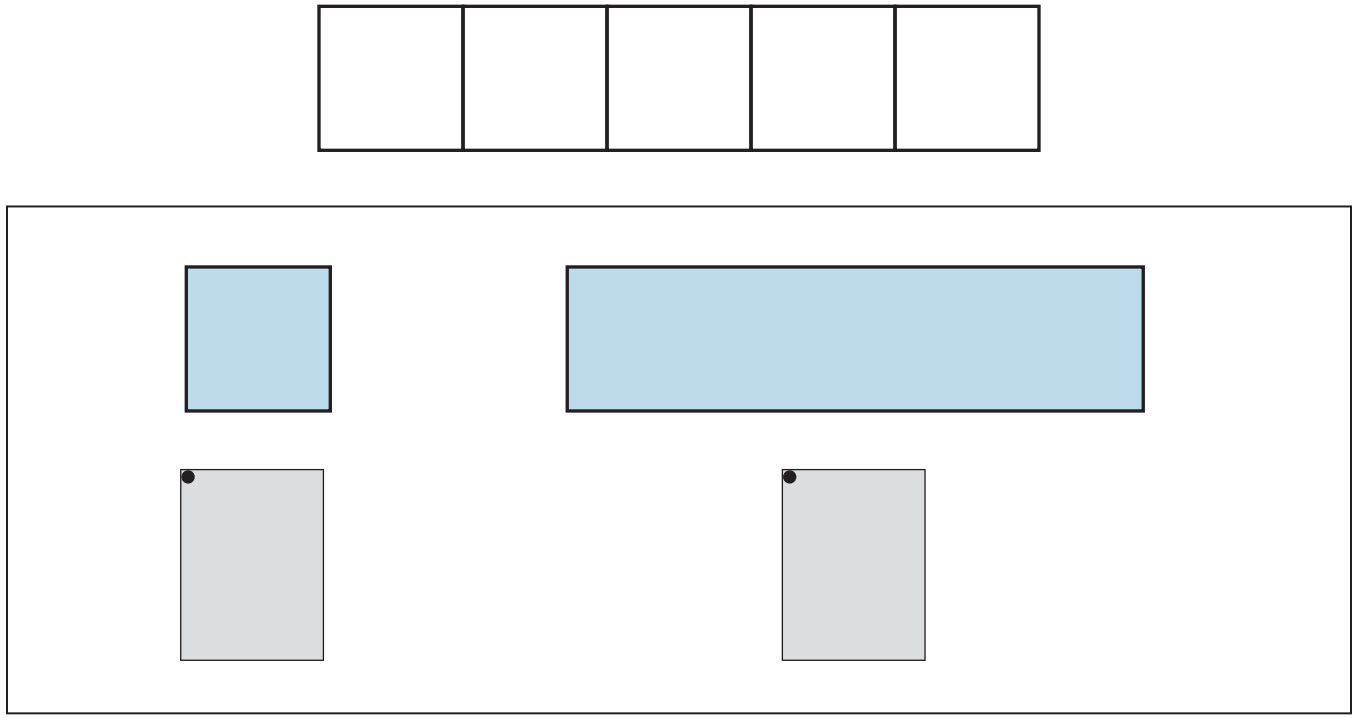
No. Puppet started with 5 both times.

No. There are 5 bears in both pictures.

Teacher Note

At the end of this lesson, not all students will see that the total number of bears stays the same regardless of how they are sorted. This understanding develops with experience over time. Students will have additional opportunities to explore this idea throughout the topic and in module 4.

5-Stick Puzzle



16

LESSON 16

Decompose a set shown in a picture.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Students sort objects in pictures by selecting an attribute and describing how many objects fit into each group. This is a new layer of abstraction as students cannot move the objects into groups. It focuses attention on the numbers in preparation for the part–total work in module 4.

Key Questions

- What are ways to break a set into groups?
- How can we make a number sentence to match a group?

Achievement Descriptor

K.Mod1.AD10 **Sort** objects into categories. (K.MD.B.3)

Agenda

Fluency 10 min

Launch 5 min

Learn 30 min

- Dog Picture
- Kia's Crayons
- Problem Set

Land 5 min

Materials

Teacher

- None

Students

- Red crayon
- Blue crayon
- Student book

Lesson Preparation

None

Fluency

10

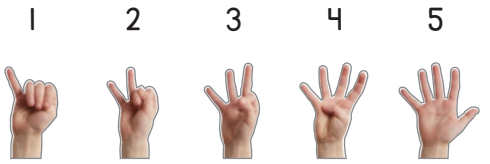
Counting the Math Way to 5

Students construct a number line with their fingers while counting aloud to develop a sense of quantity and order.

Let's count the math way.

Face the students and direct them to mirror you.

This is how to count the math way: 1, 2, 3, 4, 5. ***(Demonstrate.)***



Teacher Hands

Raise your right pinkie.

Show me your left pinkie. That is 1. Let's keep counting to 5.

Show the math way on your own fingers while students count, but do not count aloud.

Student Hands

Have students count the math way from 1 to 5.

Stay here at 5. Now, count back down to 0. Ready?

Have students count the math way from 5 to 0, putting down all fingers to show 0.

Offer more practice counting the math way to 5.

Show Me Another Way: 3, 4, and 5

Students represent a number on their fingers in different ways to prepare for work with decomposing numbers.

Show me 3 the math way.

(Shows 3 on their fingers the math way)

Now, show me another way to make 3, any way you want!

(Shows 3 on their fingers another way)

Close it up. Show me 3 another way.

Continue having students show 3 on their fingers in various ways a few more times. Repeat the process with 4 and 5.

Counting with Movement to 10

Students count with a body movement to build fluency with number names and one-to-one correspondence.

Let's clap 5 times and count our claps. Ready?

Count and clap from 1 to 5 slowly at first, emphasizing that one number is said for each clap. Repeat until most students are clapping, counting, or ideally, clapping and counting.

Repeat the process, this time stomping and counting to 5.

Now let's clap 10 times and count our claps. Ready?

Count and clap from 1 to 10 along with the students.

Repeat the process, this time stomping and counting to 10.

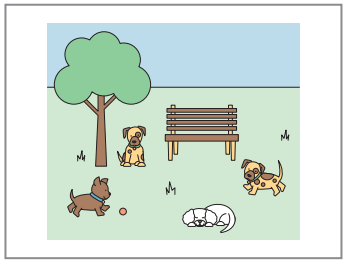
The chant-like cadence of rote counting can lull students into a relaxed cognitive state. Try varying the pace to nudge students back to alertness and invite play.

Launch

5

Students discuss what they notice about a picture.

Display the picture of the dogs so all students can see.



What do you notice about the dogs in this picture?

There are 4 dogs.

2 dogs are running, 1 dog is sitting, and 1 dog is lying down.

1 dog is playing with a ball, and 3 dogs are not playing with a ball.

How many dogs are on the bench?

None

What number is none?

0

As students share, encourage them to see various ways to decompose 4.

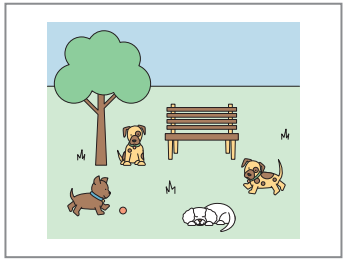
Transition to the next segment by framing the work.

Today, let's find different ways to sort what we see in the picture.

Learn 30

Dog Picture

Students analyze a picture of 4 and discuss more than one way to sort.



Continue to display the dog picture from Launch.

How many dogs are in this picture? Show me with your fingers.

(Shows 4 fingers)

Let's sort the 4 dogs into two groups. How many dogs are wearing collars? Show me with your fingers.

(Shows 3 fingers)

Keep those fingers up. *(Wave open hand.)* Show me on your other hand: How many dogs are not wearing a collar?

(Shows 1 finger)

Raise 3 fingers on one hand and 1 finger on the other.

Show me how many dogs are wearing a collar.

(Waves a hand showing 3 fingers)

Show me how many dogs are not wearing a collar.

(Waves a hand showing 1 finger)

Put them together.

(Moves the hands together)

How many dogs are your fingers showing now?

All 4 dogs

Observational Assessment

- ☑ Can students use the picture to classify and make two reasonable groups?
- ☑ Can students draw to represent two groups in the Kia's Crayons segment of Learn?

Promoting the Standards for Mathematical Practice

Students gain familiarity with using appropriate tools strategically **(MP5)** when they use their fingers to sort and count the dogs in the picture and again when they use drawings to model the crayons story problem.

Finish my number sentence: 4 is ... *(Move the hands showing 3 and 1 apart.)*

3 and 1 *(Moves the hands apart)*

What is another way we could sort the dogs in this picture?

We can sort by color.

I see some dogs with spots and some without spots.

Use a student idea to sort the dogs a different way and show both groups on fingers as shown above. Support students to say a number sentence to match their sort (e.g., 4 is ____ and ____) while separating the two hands to model the decomposition.

If a student does not suggest a sort that includes zero as a part, ask students to sort by dogs on the bench and dogs off the bench.

Kia's Crayons

Materials—S: Crayons

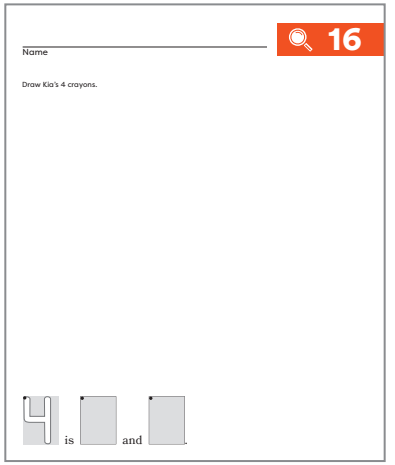
Students draw a picture where both addends are unknown to reinforce that 4 can be decomposed in multiple ways.

Distribute student books and crayons. If possible, make only red and blue crayons available.

Listen as I tell you a story.

Kia has red and blue crayons in a cup. She takes out 4 crayons.

Ask students to draw a picture of Kia's 4 crayons. Encourage simple math drawings. If students are ready, invite them to complete the number sentence at the bottom of the page.



Teacher Note

Expect some students to draw more than 4 crayons. If this happens, give the student a chance to recognize the mistake and consider a solution. *How could you change your picture to show 4 crayons?*

If they need support, suggest circling a group of 4 crayons. *Can you circle Kia's 4 crayons?* They may want to cross off the extra crayons. *You have more than enough crayons! Let's cross off the extras.*

When students finish, have them think–pair–share about the following questions.

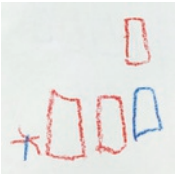
Look at your partner's picture. How are your pictures the same? How are they different?

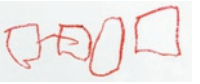
The colors are different.

We both have 4 crayons. That's the same.

We are the same because we have 4 crayons, but we are different because she has 3 red and I have 1 red.

Give students time to discuss, and then invite them to share. As they share, use the number sentence 4 is ____ and ____ to reinforce the understanding that there are multiple ways to decompose 4.

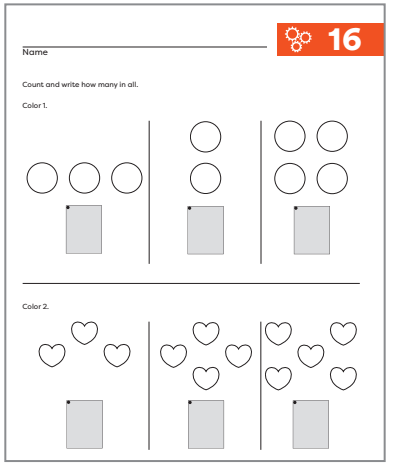




Problem Set

Use systematic modeling to get students started on the Problem Set. Demonstrate how to count and then write the total number of objects in the gray box. Then show students the crayon above the word *color* and the number next to it. Tell students to color that many objects. Ask students to say a number sentence to match the picture. For example, *3 is 1 and 2*.

Circulate as students work. Challenge them to say a number sentence for each problem.



Differentiation: Challenge

Challenge students to think about all the possible combinations of red and blue crayons. Kickstart the thinking by recording some of the combinations shared in class. *Have we found all the possible ways that Kia's crayons could look? How do you know?*

	Red	Blue	All
Keyli	2	2	4
Dennis	3	1	4
Shiri	2	2	4
Lidia	1	3	4
Jason	4	0	4

Land 5

Debrief 5 min

Materials—S: Problem Set

Objective: Decompose a set shown in a picture.

Gather students with their Problem Sets and display a copy.

Look at the first problem on your Problem Set. *(Point.)* How many circles?

3

Invite students to think–pair–share about the following questions by using the Problem Set they colored as inspiration.

How could you sort or break the 3 circles into groups?

You could have a gray group and a white group.

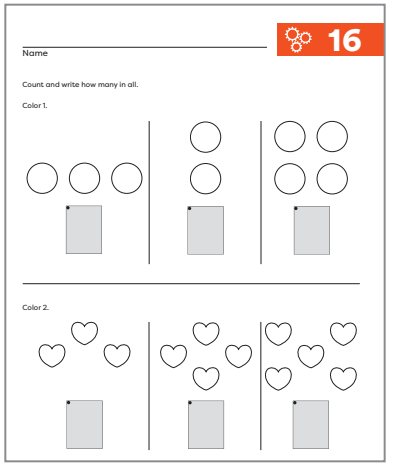
There could be 2 circles that are not colored and 1 circle that is colored.

I would make three groups. 1 circle in each group!

What number sentence matches your groups?

Support students in using number sentences such as 3 is _____ and _____, to describe their groups.

Highlight that we can look for smaller numbers inside larger numbers. Continue to emphasize this as students analyze one or two more problems from the Problem Set by using the same questions.


16

Name

Count and write how many in all.

Color 1.

Color 2.

17

LESSON 17

Model story problems.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Children intuitively model story problems as part of their everyday lives. This lesson taps into their natural way of thinking about addition and subtraction problems. They learn that when more things come, the group gets bigger, and when things leave, the group gets smaller. Module 5 explores formal addition and subtraction conventions. This lesson introduces the terms *explain* and *solve*.

Key Questions

- What happens to a group when some join?
- What happens to a group when some leave?

Achievement Descriptor

This lesson is foundational to the work of K.OA.A.1. Its content is intended to serve as a formative assessment and is therefore not included on summative assessments in this module.

Agenda

Fluency 10 min

Launch 10 min

Learn 25 min

- Bigger or Smaller?
- Model an *Add to* Story
- Model a *Take from* Story
- Solving Story Problems

Land 5 min

Materials

Teacher

- Hide Zero® cards, demonstration set (1–5)
- Chairs (5)
- Unifix® Cubes (5)
- 5-Frame (in the teacher edition)

Students

- Unifix® Cubes (5)

Lesson Preparation

- Prepare cards 1–5 from the Hide Zero cards demonstration set.
- Set up chairs in the front of the room, mimicking the seats on a bus.
- The 5-Frame is included in the teacher edition. Prepare one copy of the 5-Frame for each student to be placed in a personal whiteboard.
- Create 5-sticks with the Unifix Cubes, one for each student and one for yourself.

Fluency

10

Counting the Math Way Within 5

Students construct a number line with their fingers while counting aloud to develop a sense of quantity and order.

Show the math way on your own fingers while students count, but do not count aloud.

Let's count the math way.

Face the students and direct them to mirror you.

Have students count the math way from 1 to 5 and then back down from 5 to 0.

Watch closely and count out loud. Ready? *(Raise your right pinkie.)*

1 *(Raises left pinkie)*

Raise your right ring finger.

2 *(Raises left ring finger)*

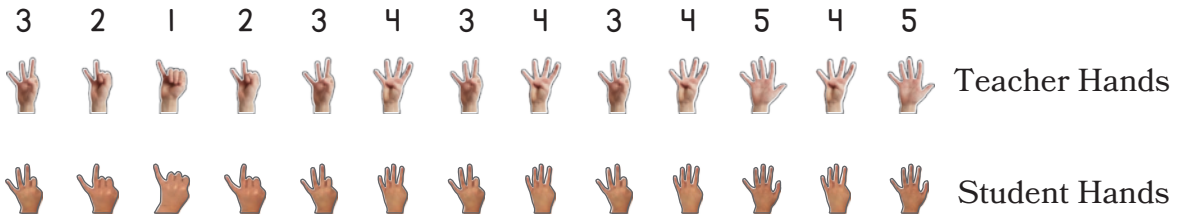
Raise your right middle finger.

3 *(Raises left middle finger)*

Lower your right middle finger.

2 *(Lowers left middle finger)*

Continue with the following sequence:



Teacher Note

In this lesson, counting the math way becomes more complex by reversing direction of the count frequently. This complexity helps students internalize the number line.

Teacher Note

Keep the pace slow but steady. As you listen to student responses, be mindful of errors, hesitation, and lack of full-class participation. If needed, adjust the tempo or sequence of numbers.

Feel the Number to 5

Materials—T: Hide Zero cards

Students finger trace and guess a numeral to build kinesthetic memory for numeral formation.

Let's play Feel the Number.

Have students form pairs and stand one behind the other, both facing forward. The partner in the back is the writer. The partner in the front is the guesser.

Stand behind the class, facing students' backs, and show the 3 card.

Writers, turn and look at my number, but don't say it. Keep it a secret! Write this number on your partner's back with your finger. Use your partner's whole back, so you write nice and big.

Guessers, can you tell what number your partner wrote?

3

Both partners, turn and look at my number. If you got it right, give me 3 claps!

Continue with 4, 5, 0, and then numerals within 5 in random order, celebrating with the corresponding number of claps. After some time, have partners switch roles.

Differentiation: Support

If the writer needs support, they can say the numeral formation rhyme as they trace.

If the guesser needs support, the writer can write in their hand so that they can both feel and see the numeral. Adjust the seating arrangement as necessary.

For any student uncomfortable with touch, this game can be played by having the writer write in the air or on the rug.

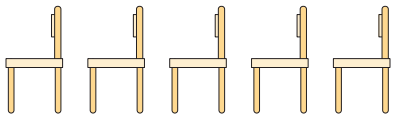
Launch

10

Materials—T: Chairs

Students model joining and separating with actions.

Make a bus by placing 5 chairs in a row.



Look at the bus! How many people can ride on our bus?

5

Everyone will get to ride the bus today. Count with me as I tap 3 people to get on the bus.

Tap 3 students to get on the bus. Reassure students that everyone will ride the bus.

1, 2, 3

How many people got on the bus?

3

Tap 2 more students to get on the bus.

How many people are on the bus now?

5

Tap 1 student to get off the bus.

How many people got off the bus?

1

How many people are on the bus now?

4

Continue as long as it takes to give every student the opportunity to ride the bus and answer the *how many* questions. Vary the number of students that get on and get off the bus. Use the questions below to engage the class in thinking about adding to or taking away.

How many people got on the bus?

How many people got off the bus?

How many people are on the bus now?

Transition to the next segment by framing the work.

Today, let's think about some more story problems!

Learn 25

Bigger or Smaller?

Materials—T: Unifix Cubes, 5-Frame, personal whiteboard

Students notice what happens when quantities are joined and when they are separated.

Invite students to listen to a bus story.

Some people are on the bus. Someone else gets on the bus.

Prompt students to remember the story. Have them turn to a partner and tell the story. Then ask the following question.

Did the group of people on the bus get bigger or smaller?

Bigger

There are more people now.

Invite students to listen to a second bus story. After the story, have them turn and tell it to their partner.

Some people are on the bus. Someone gets off the bus.

Did the group of people on the bus get bigger or smaller?

Smaller

Display a 5-Stick of Unifix Cubes, a 5-Frame, and a personal whiteboard.

These are math tools. You also have math tools on your hands. *(Wiggle your fingers.)*

What are some different ways you can use these math tools to show our bus stories? Turn and talk to your partner.

Listen as partners talk and select useful ideas to share with the class. Highlight ideas that show how cubes, fingers, or drawings can represent the people getting on or off the bus.

Language Support

Precise comparison language like *more*, *less*, and *fewer* is taught in module 3. For now, informal use of *bigger* and *smaller* allows students to consider how adding to or taking from a group changes its size.

Avoid the mistake of teaching students to use key words like *more* and *less* when solving word problems. As students learn more mathematics in years to come, these words become unreliable ways to choose an operation.

Model an *Add to* Story

Materials—S: Unifix Cubes, 5-Frame, personal whiteboard

Students choose tools to model and solve an *add to* story problem.

Invite students to listen to a new story problem.

> **4 people are on the bus. 1 person gets on the bus. How many people are on the bus now?**

Allow time for students to select math tools and model the story. Use the following questions to support students as they work.

> **How many people are on the bus at the beginning?**
>
> **How many people are on the bus now?**
>
> **When someone gets on the bus, does the number get bigger or smaller?**

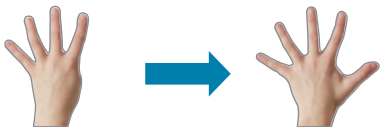
After sufficient work time, ask the class to agree on the total.

> **How many people are on the bus?**
>
> 5

Choose two or three students who can explain their thinking with words, numbers, or materials. Share the work so the class can compare similarities and differences and make connections. The following dialogue shows a sample discussion.

Modeling with Fingers (Jacob's Way)

> **Jacob used his fingers to show the bus. Let's listen to him explain, or tell about, his thinking.**
>
> I put up 4 fingers because that's how many people are on the bus. Then another person gets on the bus, so I put up another finger. And then there are 5 fingers because there are 5 people on the bus.



Teacher Note

This lesson intentionally invites student choice. It is a formative assessment opportunity to see how students model and solve basic *add to* and *take from* problems.

Some students may know that 5 is 1 more than 4. Encourage them to show how they know by using manipulatives or drawings.

Promoting the Standards for Mathematical Practice

Students use appropriate tools strategically **(MP5)** when they decide which math tools they will use to show the bus story. Students then model with mathematics **(MP4)** when they use the tools to show the bus story, explain their thinking to the class, and revoice other students' strategies.

Language Support

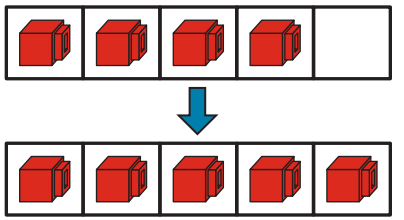
This is the first use of the term *explain*. Support understanding by using the term *explain* to revoice ways to tell about student thinking:

"You can use words, numbers, drawings, or objects to explain, or tell about, your thinking."

Invite one or more students to use their own words to explain how Jacob solved the problem.

Modeling with Cubes (Noah's Way)

Noah used cubes to show the story. Let's listen to Noah.



The cubes are the people. The boxes are the bus. I moved 4 people on the bus. Then I put 1 more cube for the person that gets on the bus. I counted all the people and there were 5.

What is the same about Jacob's way and Noah's way?

They both have 5 people on the bus.

They started with 4 people and put 1 more person on the bus.

What is different about Jacob's way and Noah's way?

Jacob used his fingers. Noah used the cubes.

Noah had a bus with 5 seats.

When someone gets on the bus, does the number get bigger or smaller?

Bigger

Model a *Take from* Story

Materials—S: Unifix Cubes, 5-Frame, personal whiteboard

Students choose tools to model and solve a *take from* story problem.

Invite students to listen to a new story problem.

4 people are on the bus. 1 person gets off the bus. How many people are on the bus now?

Allow time for students to select the math tools they want to use and then solve. Use the following questions to support students as they work.

Differentiation: Challenge

Number sentences, or equations, that include symbols like +, −, and = are introduced in module 4. If students use a number sentence like 4 + 1 = 5 in this lesson, acknowledge their work, and probe to assess their understanding of the numbers and symbols.

- You wrote a number sentence! Will you read it to me?
- What does the 4 tell us about? 1? 5?
- *(Point to the plus sign.)* What does this mean?
- *(Point to the equal sign.)* What does this mean?

If many students use symbols, consider selecting an example to share after a concrete model is shared. If only one or two students attempt this type of number sentence or their understanding of the symbols is developing, stick to showing concrete and pictorial representations of the problem.

How many people are on the bus at the beginning?

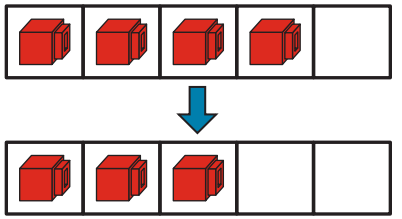
How many people are on the bus now?

After sufficient work time, choose two or three students who can explain their thinking with words, numbers, or materials. A sample discussion follows.

Modeling with Cubes (Vivi's Way)

Vivi used cubes to solve, or to find the answer. Let's listen to Vivi.

These are the 4 people on the bus. Then 1 person gets off. *(Moves a cube away.)* Now there are 3 people.



How do you know 3 people are on the bus now?

I counted 1, 2, 3.

Who can tell us why Vivi took away a cube?

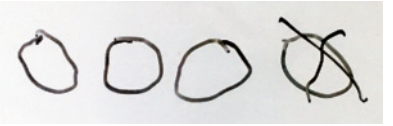
A person got off the bus. They went away.

Modeling with a Drawing (Tilly's Way)

Tilly drew the story. Let's listen to Tilly.

I made a math drawing. *(Points to the circles.)* These are the 4 people. *(Points to the crossed-out circle.)* This is the person who left.

Look at Tilly's drawing. How did she show that 1 person left?



She crossed off a circle.

Which circles show the people on the bus now?

(Points to the 3 circles.) These 3

What happens when someone leaves the bus? Does the number get bigger or smaller?

Smaller

Language Support

This is the first use of the term *solve*. Support understanding by using the term *solve* to revoice ideas about finding the answer:

"You can find the answer, or solve, by using cubes or drawing."

UDL: Action & Expression

Consider posting an example like Tilly's drawing as a reminder to use a math drawing instead of a more detailed art drawing when modeling story problems.

"Tilly remembered to make a math drawing! She used circles to show the 4 people. Her drawing didn't take long to make, but I can see all the parts of the story."

Encourage students to monitor their own work by referring to the example when they are drawing stories throughout the year.

Solving Story Problems

If time permits, use the following story problems as a guide, and repeat the Learn activity by using a similar back and forth exchange with the class. Make up more math stories as needed, making sure to keep within totals of 5.

Story Problems	Complexities
3 children are playing on the swings. 2 children come to swing. How many children are swinging now?	The playground stories involve 2 children coming or going. Most students are unlikely to know patterns of 2 more or 2 less.
5 children are playing on the swings. 2 children leave to play handball. How many children are swinging now?	
2 children are swimming in the pool. 2 more children jump in the pool. How many children are in the pool now?	Both parts, or addends, are the same. This can make it more difficult for students to keep track of the referents in the story.
4 children are swimming in the pool. They all get out of the pool. How many children are swimming now?	This story requires students to recognize that all the children getting out of the pool leaves 0 children in the pool.

Land 5

Debrief 5 min

Objective: Model story problems.

Think about the two bus stories I told you today.

After you give students a chance to recall the bus stories, repeat them.

4 people are on the bus. 1 person gets on the bus. *(Write the numbers 4 and 1 as you say the story.)*

4 1

4 people are on the bus. 1 person gets off the bus. *(Point to the numbers 4 and 1 when you say them.)*

We used 4 and 1 in both bus stories. Did the bus have the same number of people at the end of both stories?

No. There were 5 people on the bus at the end of the first story and 3 people on the bus at the end of the second story.

If we used the same numbers, why did we have a different number of people at the end of each story?

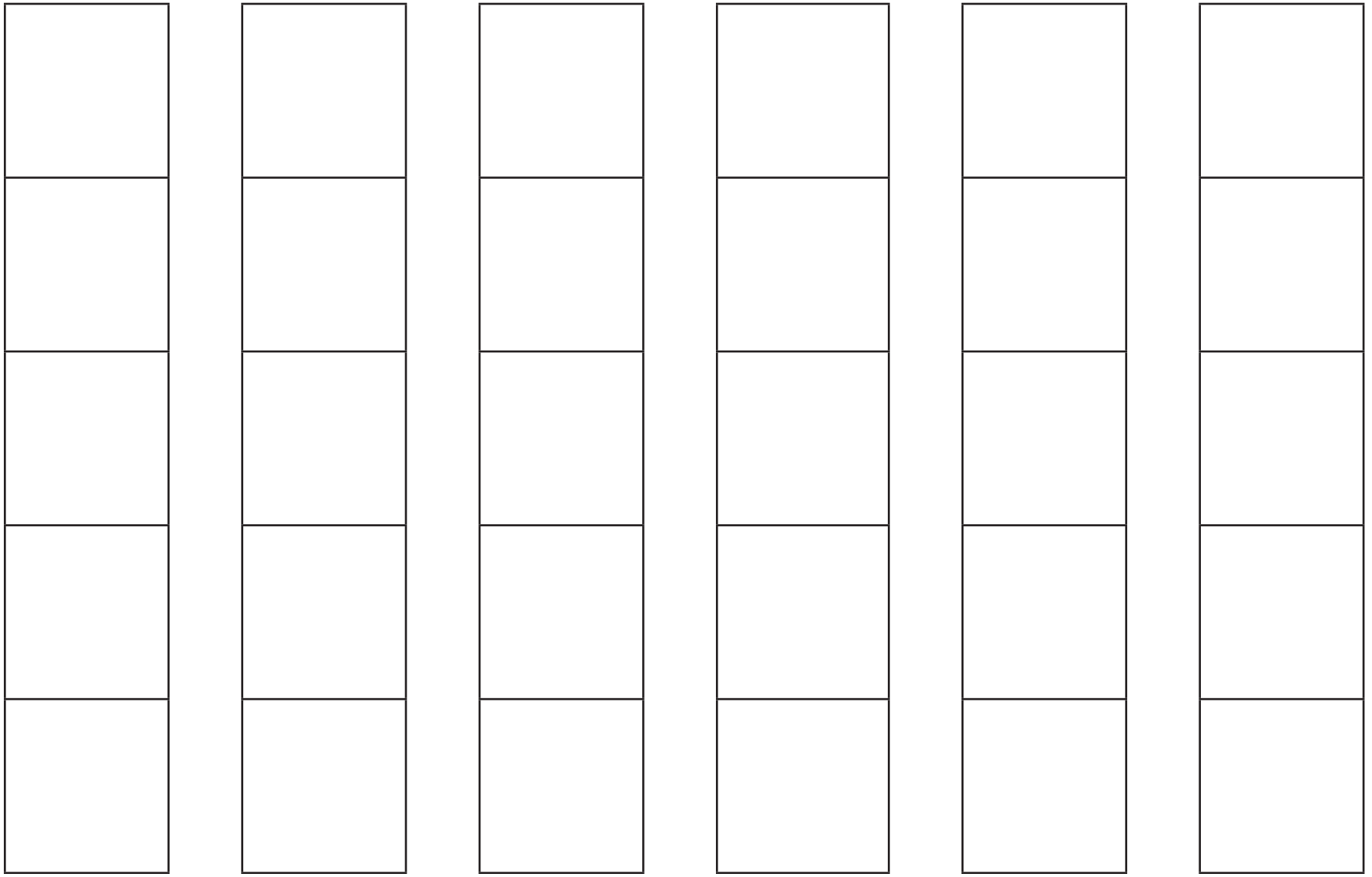
In the first story someone got on the bus and in the second story someone left the bus.

What happens to a group when some people join?

It gets bigger. There are more people.

What happens to a group when some people leave?

It gets smaller. There are not as many people.



18

LESSON 18

Model story problems and identify the numeral referents.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1
Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

This lesson extends the intuitive modeling of story problems by helping students attach numbers to the context of the story. Understanding what numbers refer to in math stories is key to solving story problems successfully. Introducing problem-solving skills slowly throughout the year is intentional. Story problems are revisited in modules 4 and 5.

Key Questions

- What is a story problem?
- What do number sentences tell us about a story problem?

Achievement Descriptor

This lesson is foundational to the work of K.OA.A.1. Its content is intended to serve as a formative assessment and is therefore not included on summative assessments in this module.

Agenda

Fluency 10 min

Launch 10 min

Learn 25 min

- Story Problem Referents
- Model Story Problems

Land 5 min

Materials

Teacher

- 5-group™ cards, demonstration set (1–5)
- Hide Zero® cards, demonstration set
- Chart paper

Students

- Unifix® Cubes (5)
- Work mat
- 5-Frame

Lesson Preparation

Prepare cards 1–5 from the 5-group cards demonstration set.

Fluency

10

Counting the Math Way to 7

Students construct a number line with their fingers while counting aloud to develop a sense of quantity and order.

Show the math way on your own fingers while students count, but do not count aloud.

Let's count the math way.

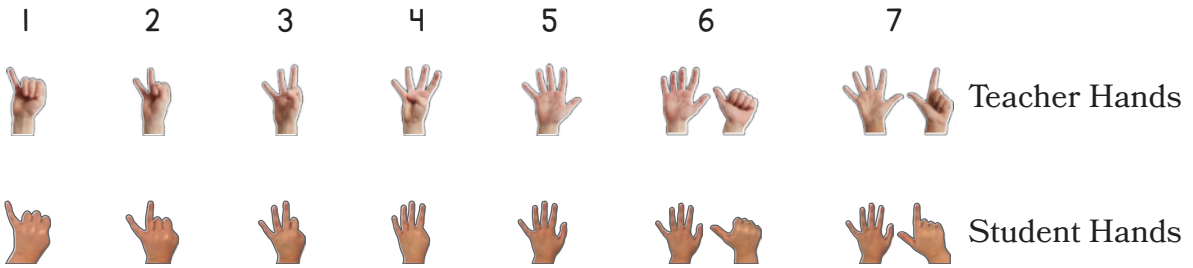
Face the students and direct them to mirror you.

This is how to count the math way: 1, 2, 3, 4, 5, 6, 7. *(Demonstrate.)*

Raise your right pinkie.

Show me your left pinkie. That is 1. Let's keep counting to 7.

Have students count the math way from 1 to 7.



Repeat the count one more time.

Stay here at 7. Now, count back down to 0. Ready?

Have students count the math way from 7 to 0.

Offer more practice counting the math way to 7.

5-Groups to 5

Materials—T: 5-group cards

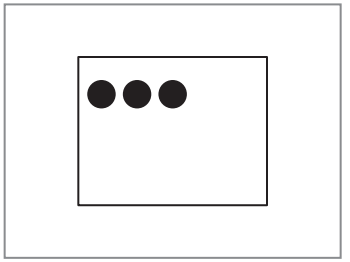
Students recognize a group of dots to develop the ability to subitize quantities shown in 5-groups.

The 5-group configuration will become familiar over time, and the familiarity will allow students to subitize. However, wait time is built into the routine to allow for counting if needed. Students who respond quickly benefit from holding a number in their mind and practicing self-regulation as they wait for others.

Remember to listen, think, raise your hand, and wait for the signal. *(Emphasize with gestures for each step.)*

Raise your hand when you know the answer to the question. Wait for my signal to say the answer.

Display the 5-group card that shows 3.

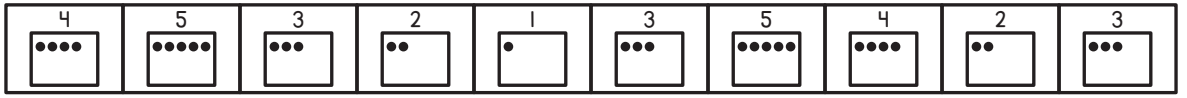


How many dots?

Wait until most students raise their hands, and then signal for students to respond.

3

Repeat the process with the following sequence:



As students are ready, challenge them to recognize the groups of dots more quickly by showing each card for a shorter time.

Counting with Movement to 10

Students count with a body movement to build fluency with number names and one-to-one correspondence.

Let's clap 5 times and count our claps. Ready?

Count and clap from 1 to 5 slowly at first, emphasizing that one number is said for each clap. Repeat until most students are clapping, counting, or ideally, clapping and counting.

Repeat the process, this time stomping and counting to 5.

Now let's clap 10 times and count our claps. Ready?

Count and clap from 1 to 10 along with the students.

Repeat the process, this time stomping and counting to 10.

The chant-like cadence of rote counting can lull students into a relaxed cognitive state. Try varying the pace to nudge students back to alertness and invite play.

Launch 10

Materials—T: Chart paper; S: Unifix Cubes and work mat

Students use math tools to model character, setting, and action abstractly.

Distribute materials, and facilitate a brainstorm to generate ideas about objects and contexts for story problems. Hold up five fingers. Put down a finger for each idea shared. A closed fist signals that sharing has concluded.

Show 3 cubes on your work mat. Use your imagination. What could these be? I'll take five ideas.

Chart ideas by using words or simple rebus drawings for use throughout the lesson. Build upon the five ideas to develop related settings and actions.

Teacher Note

Using fingers to guide the brainstorm mathematizes the sharing of ideas and reinforces the concept of zero.

This brainstorm provides appealing and culturally relevant contexts. Throughout Learn, adjust the story problem contexts to resonate with your students.

	Who?	Where?	What?
	puppies	park	playing
	fish	ocean	swimming
	kids	school	playing
	cars	racetrack	racing
	firefighters	fire	spraying

Look at the mat. Use your imagination. What place could this be?

What could these things be doing?

After the brainstorm, have students use Unifix Cubes and work mats to model the who, where, and what they imagined.

Bring the class back together and model a few scenarios together.

Pretend your cubes are fish. Make them jump! Now make them swim!

Transition to the next segment by framing the work.

Today, let's use our cubes to act out story problems.

UDL: Engagement

This brainstorm is intended to let students share contexts that are appealing and relevant. Throughout Learn, adjust the story problem contexts to resonate with your students. Use the suggested numbers, and make the characters and actions fit student interests.

Learn 25

Story Problem Referents

Materials—T: Hide Zero cards; S: Unifix Cubes and work mat

Students relate numerals to story problems.

Use an idea generated during the Launch brainstorm for the following exchange.

Show 3 cubes on your work mat.

Wave your hand over your cubes, say a silly word ... poof! The mat is now a park! Your cubes are puppies! Make them play at the park.

Ask students to listen carefully and move their cubes to show what is happening as you tell them a story.

Let's tell a story. 3 puppies are at the park.

2 more puppies come along. Show that with your cubes.

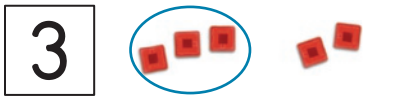
Observe as students add 2 cubes to their work mat.

How many puppies are at the park now?

5

Help me retell the story. We will tell the same story by using our own words.

Hold up the 3 card, and ask students to repeat after you as you say the following statement.



3 puppies are at the park. *(Point to the 3 puppies.)*

Hold up the 2 card, and ask students to repeat.

2 more puppies come along. *(Move 2 more puppies to join the others.)*

Teacher Note

The omission of number sentences with symbols like 4 + 1 = 5 is deliberate. The goal of this lesson is for students to move flexibly between their model and the story context.

Students learn to momentarily separate the math from the story when saying number sentences like "4 and 1 make 5." They recontextualize the numbers when asked questions such as, "What does 4 tell us about?"

Module 5 contains comprehensive lessons on addition and subtraction and using symbols to represent story problems.

Hold up the 5 card, and ask students to repeat.

5 puppies are playing at the park altogether. *(Point to all the puppies.)*

Write 3 and 2 make 5.

These are the numbers from our story. We can say them in a number sentence like this: 3 and 2 make 5. You try!

3 and 2 make 5.

What part of the story does 3 tell us about? *(Point to the 3 in the number sentence.)*

The puppies that are there at first.

What part of the story does 2 tell us about? *(Point.)*

The puppies that come along.

What part of the story does 5 tell us about? *(Point.)*

All the puppies at the end of the story.

Reverse the action of the story.

5 puppies are playing at the park. 2 puppies go home. How many puppies are playing at the park now?

Have students model and retell the story. Introduce and write the number sentence *5 take away 2 is 3*. Use the sequence of questions above to have students share the referent of each number in the story.

Model Story Problems

Materials—S: Unifix Cubes, work mat, 5-Frame, personal whiteboard

Students model story problems and identify the referents.

The following problems address different complexities in *add to with result unknown* and *take from with result unknown* story problems. Choose problems based on the needs of your class. Adjust contexts to incorporate the ideas students generated during Launch.

Promoting the Standards for Mathematical Practice

As students move fluidly between stories and abstract representations like cubes and numerals, modeling stories with cubes, retelling stories with number sentences, and contextualizing by identifying what each numeral represents in the story, they reason abstractly and quantitatively **(MP2)**.

Offer students access to the materials used for modeling in lesson 17. As students model problems, encourage them to use number sentences and tell what each number refers to in the story.

Problems	Complexities
You have 2 crayons. Your friend gives you 2 more. How many crayons do you have now?	The crayon stories introduce students to the idea that referents can be the same number but refer to different parts of the story.
You have 4 crayons. You give 2 to your friend. How many crayons do you have now?	
The farmer picks 1 apple. Then she picks 1 cherry. Then she picks 1 peach. How many pieces of fruit does she have now?	The fruit stories show there can be more than two parts. The subtraction story includes 0 in an accessible countdown structure.
The farmer has 3 pieces of fruit. The farmer gets hungry and eats 1 apple. She is still hungry and eats 1 cherry. She eats 1 peach, too. How many pieces of fruit does she have now?	
2 seagulls are on the beach. 0 more come along. How many seagulls are there altogether?	The seagull story engages students with 0 as an addend. Students must determine how to represent the action, or lack thereof, with their materials.

Land 5

Debrief 5 min

Objective: Model story problems and identify the numeral referents.

What are some of the story problems we have worked with?

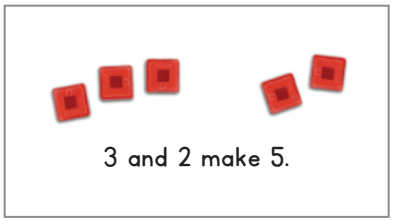
The puppy story

We worked on the bus stories.

What is a story problem?

Story problems usually have numbers.

They tell about something happening.



Display the picture of cubes.

We used number sentences with our stories. A number sentence tells how we put together or break apart numbers. When we told about 3 puppies in the park and 2 puppies coming to the park, our number sentence was *3 and 2 make 5*.

What do number sentences tell us about story problems?

They tell us about how many puppies there are at the beginning and how many more puppies come to the park.

They tell about how many.

Topic E
Answer *How Many* Questions with Up to 10 Objects

Topic E builds on the work of topic B as students extend number core concepts and counting strategies to sets of 6–10 objects. As the size of the group gets larger, tracking the count becomes more challenging. Students consider two key questions when choosing a counting strategy:

- Can I move the objects I want to count?
- What is the arrangement, or configuration, of the objects?

The first factor, mobility, depends on whether the student is counting concrete objects or objects in pictures. Move and count works well for concrete objects in any configuration. Movement allows students to keep track of what has and has not been counted. When the objects are images on paper, students need an alternative strategy, such as touch and count or mark and count.

The complexity of the configuration influences the choice of strategy and how the strategy is used. What makes a configuration more or less complex? Less complex configurations have a straightforward counting path as well as clear starting and stopping points. Linear configurations are easiest to count because they have all these features. Array configurations, in which objects are lined up in equal rows and columns, are slightly more complex. Students must count every row or column of the array without repeating any. Circular configurations are even more challenging because they lack clear starting and stopping points, and students risk repetition by continuing to count around the circle. Scattered configurations are the most challenging. With no clear counting path, students must use a strategy like mark and count to be sure that each object is counted exactly once.

Linear

Array

Circular

Scattered

The structure of 5-groups plays an important role in helping young students visualize quantities 6–10. Students first experience the 5-group formation in topic E. They begin to unitize five, seeing 6 as 5 and 1, 7 as 5 and 2, and so on. With time and experience, students can subitize 6–10 objects in a 5-group formation. They also come to see each number in relation to ten. The structure of the 5-group formation makes it easy to see how many are needed to complete the array and make ten. Students use 5-group formations through grade 5.

5-Group

Progression of Lessons

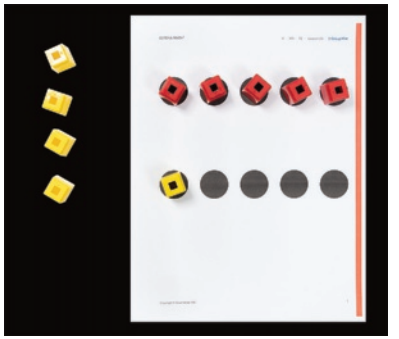
Lesson 19

Organize, count, and represent a collection of objects.

We used move and count to keep track of our candy canes.

Lesson 20

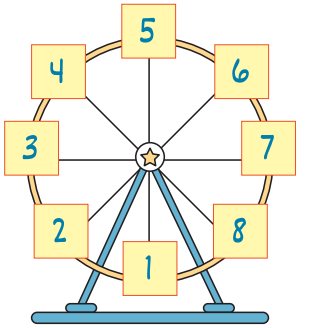
Count objects in 5-group and array configurations and match to a numeral.



5-groups all have 5 on the top.

Lesson 21

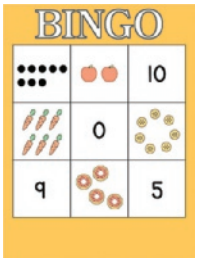
Count sets in circular configurations and match to a numeral.



We used mark and count to find out that 8 people can ride the Ferris wheel.

Lesson 22

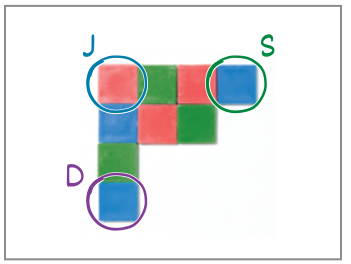
Count sets in scattered configurations and match to a numeral.



We counted to play bingo.

Lesson 23

Conserve number regardless of the order in which objects are counted.



We started counting in different places, but we all counted 9 tiles.

19

LESSON 19

Organize, count, and represent a collection of objects.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

This lesson invites students to count and record a collection of objects by using the tools and strategies of their choice. During this second experience with counting collections, students have an opportunity to demonstrate and celebrate growth with counting concepts while teachers gather formative assessment data.

There is no fluency component in this lesson.

Key Question

- What are some strategies, or things we can do, to help us count?

Achievement Descriptors

K.Mod1.AD1 **Count** to 10. (K.CC.A.1)

K.Mod1.AD4 **Say** one number name with each object when counting up to 10 objects. (K.CC.B.4.a)

K.Mod1.AD5 **Use** the last number of a count to tell *how many* regardless of arrangement or order counted. (K.CC.B.4.b)

K.Mod1.AD8 **Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration. (K.CC.B.5)

Agenda

Launch 10 min

Learn 35 min

- Prepare
- Organize, Count, and Record
- Share, Compare, and Connect

Land 5 min

Materials

Teacher

- "I Can Count" song lyrics (in the teacher edition)
- I Can Count cutouts (in the teacher edition)
- Hide Zero® cards, demonstration set (6–10)

Students

- Counting collection (1 per student pair)
- Work mat
- Organizing tools
- Student book

Lesson Preparation

- Prepare cards 6–10 from the Hide Zero cards, demonstration set.
- Set the "I Can Count" song lyrics aside for reference.
- Use student work from lesson 6 to determine whether the counting collections assembled for that lesson have enough objects for today's lesson. Adjust them as needed.
- Decide whether students will work in pairs or individually. The lesson is written for pairs but can be adjusted for students to work alone.
- Select organizing tools that students can use to organize their count, such as 10-frame cartons, number paths, or 10-frames.
- Place the Observational Assessment Checklist on a clipboard for observational notes.

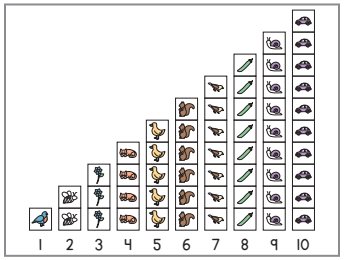
Launch 10

Materials—T: "I Can Count" song lyrics, Hide Zero cards

Students associate the counting word sequence with numerals on the number path.

Display the I Can Count visual and have the lyrics to "I Can Count" ready.

Sing "I Can Count" (through 10), advancing the image as you sing. At the end of the first verse, touch the flowers as you sing, "1, 2, 3." Repeat at the end of each verse, touching and counting the last column of pictures.



Show the 6 card.

> **This is the number 6. Point to the group that has 6 things in it.**

Invite a student to point to the group with 6 things (the squirrels) and to count to prove that there are 6 squirrels. Place the numeral below the squirrel column. Repeat with the other numerals in order.

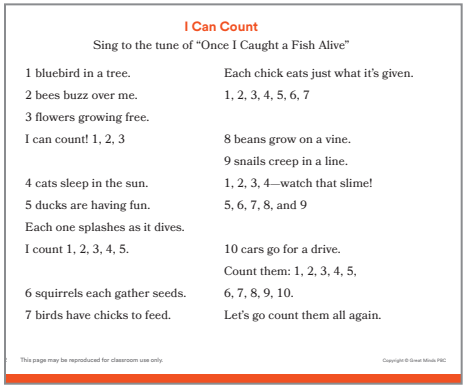
Once all the numerals are in place, touch and count the numerals as a class. If time permits, sing the song again, and gesture to the corresponding parts of the visual.

Transition to the next segment by framing the work.

> **Today, we will count collections again. You may want to use some of these numbers in your recording.**

UDL: Representation

If you introduced the I Can Count visual as an interactive anchor chart in lesson 5, invite students to interact with it. Strategically remove some numerals or images from the 1–5 slide, and as students locate the right spots for the "fallen" pieces, ask how they know where to put the pieces.



I Can Count

Sing to the tune of "Once I Caught a Fish Alive"

1 bluebird in a tree.
2 bees buzz over me.
3 flowers growing free.
I can count! 1, 2, 3

4 cats sleep in the sun.
5 ducks are having fun.
Each one splashes as it dives.
I count 1, 2, 3, 4, 5.

6 squirrels each gather seeds.
7 birds have chicks to feed.
Each chick eats just what it's given.
1, 2, 3, 4, 5, 6, 7

8 beans grow on a vine.
9 snails creep in a line.
1, 2, 3, 4—watch that slime!
5, 6, 7, 8, and 9

10 cars go for a drive.
Count them: 1, 2, 3, 4, 5,
6, 7, 8, 9, 10.
Let's go count them all again.

Learn 35

Prepare

Materials—S: Counting collection, work mat, organizing tools

Students review procedures and prepare to count collections.

Briefly reorient students to the counting collection materials and procedure:

- Partners collaborate to count a collection.
- Each partner makes an individual recording to show how the pair counted.

Present organizational tools students may choose to use. Tools such as a number path, 10-frame carton, or 10-frame will support one-to-one correspondence and may be beneficial, especially for larger collections.

Pair students. Invite them to choose a collection and find a workspace.

While collections are still bagged, invite partners to plan how to work together to count the whole collection. Circulate and ask students to briefly explain their plans. Ask a few pairs with reasonable plans to share their thinking with the class by asking the following questions.

How are you going to count your collection with your partner?

We will count by ...

What is your job? What is your partner's job?

My job is ...

My partner's job is ...

If necessary, model partner work that helps students understand mathematics as a collaborative activity. As you model, take care to stay neutral about how to count so that students' decisions remain valid. Throughout the lesson, look for and praise examples of strong partner work.

Transition to the next segment by framing the work.

You and your partner may begin counting. Remember to count all the things in your collection and show your work on paper.

Promoting the Standards for Mathematical Practice

Students use appropriate tools strategically (MP5) when they plan how to count their collection, select the necessary tools, and use their plan and the tools to count.

Teacher Note

Plan for what students should do when they finish counting and recording their collection:

- Try another way to organize and count.
- Switch collections with another student pair, and count to confirm the total.
- Explain their recording to another student pair.
- Clean up and get another collection.

Organize, Count, and Record

Materials—S: Counting collection, work mat, organizing tools

Students use their own strategies to organize and count objects and record their process.

Circulate and notice how students organize, count, and record.

- Organizing strategies may include touch and count or move and count for different configurations (linear, array, or scattered).
- Recordings may include drawings, stamps, or numbers.

Use the following questions and prompts to assess and advance student thinking.

Show (or tell) me what you did.

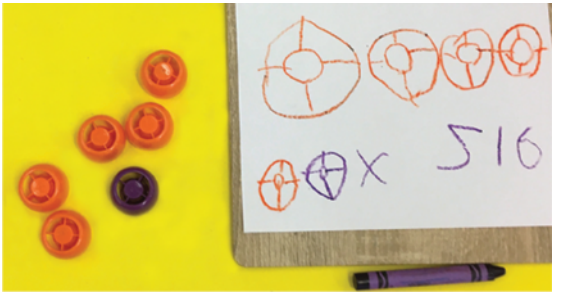
How are you keeping track of what you already counted and what you still need to count?

Can you write or draw something on your paper to show how you counted?

Select a few pairs to share their counting work in the next segment. Look for samples that accurately demonstrate ways to track the count, such as move and count and touch and count. Take photographs to project, if possible. If not, set aside selected work for sharing.

Have students who are not sharing their work clean up. Collect written representations to review as formative assessment after the lesson.

Move and count



Touch and count

Teacher Note

Early in the year, student representations vary significantly. Some drawings clearly show individual objects in a collection, whereas others are hard to distinguish. With time and experience, students develop their understanding of numbers and what it means to represent a set, as well as their fine motor skills.

Taking photographs as students work makes it easier to track that development. For example, in the sample below, the student traced around the entire collection. The photo taken during class shows how this representation relates to his collection.

Observational Assessment

☑ Watch students as they count. Check to see if they are

- moving objects to keep track of the things they have counted (one-to-one),
- saying the correct number sequence, and
- saying the last number in their count to tell the total (cardinality).

Share, Compare, and Connect

Materials—T: Student work samples; S: Counting collection

Students discuss strategies for counting and recording a collection.

Gather the class to view and discuss the selected work samples. Invite each selected pair to share their counting process. Name the counting strategies each pair used.

Move and Count (Colin and Tsega's Way)

Invite a pair that used the bag as part of a move and count strategy to demonstrate their process. When the pair is finished counting, help the class discuss their strategy.

Move and count

How did Colin and Tsega keep track of what they already counted and what they still needed to count?

They used the bag.

They took the candy canes out of the bag when they counted.

The candy canes on their mat were counted. The ones in the bag were not counted yet.

How did the move and count strategy help Colin and Tsega count all the candy canes?

They didn't count any twice.

When the bag was empty, they knew they were done.

Touch and Count (Dashay and Oscar's Way)

Invite a pair that used a touch and count strategy to demonstrate their process. When the pair finishes counting, help the class discuss their strategy.

Touch and count

How many caps are in the collection? How do you know?

6

The last number was 6.

Teacher Note

If a student pair has a larger collection (15 or more items), invite them to count a portion of their collection to keep other students engaged.

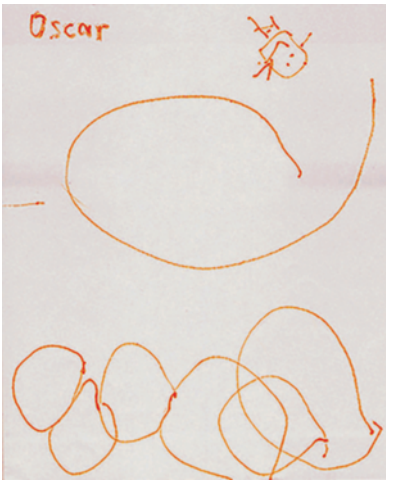
What did Dashay and Oscar do to be sure they counted all the caps?

They counted all the caps and didn't miss any.

They did touch and count.

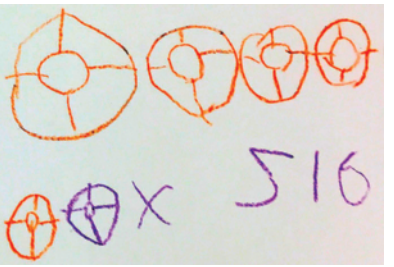
The touch and count strategy helped them count all the caps.

If the pair has recordings that clearly match their collection, briefly share them.



Oscar, I see that you wrote 6 above your drawing of 6 caps. What did you use to help you write 6?

The number path. I counted 1, 2, 3, 4, 5, 6. *(Points to the number path)* Then I saw how to make a 6.



Dashay, I see that you wrote 6 to tell about all the caps. *(Point.)* You also wrote 5 and 1. *(Point.)* Why did you write 5?

There are 5 orange caps.

Why did you write 1?

There is 1 purple cap.

I see. You wrote numbers to show that 5 caps and 1 cap make 6 caps.

Land 5

Debrief 5 min

Objective: Organize, count, and represent a collection of objects.

Assign new partners for the debrief. Consider using a strategy for partnering students that involves movement so students are reenergized for the conversation.

Continue to display student work from Share, Compare, and Connect. Invite students to reference the work as they think–pair–share about the following question.

What are some strategies, or things we can do, to help us count?

You can move things when you count them.

I put my erasers in a line across my mat so I didn't skip any.

You can use the bag to hold the ones you haven't counted yet.

I Can Count

Sing to the tune of "Once I Caught a Fish Alive"

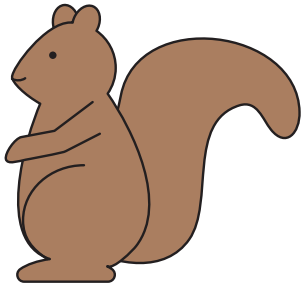
1 bluebird in a tree.
2 bees buzz over me.
3 flowers growing free.
I can count! 1, 2, 3

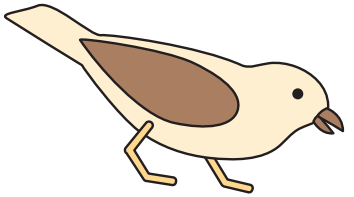
4 cats sleep in the sun.
5 ducks are having fun.
Each one splashes as it dives.
I count 1, 2, 3, 4, 5.

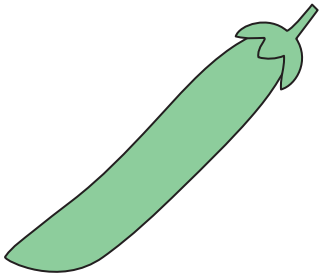
6 squirrels each gather seeds.
7 birds have chicks to feed.
Each chick eats just what it's given.
1, 2, 3, 4, 5, 6, 7

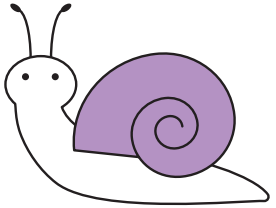
8 beans grow on a vine.
9 snails creep in a line.
1, 2, 3, 4—watch that slime!
5, 6, 7, 8, and 9

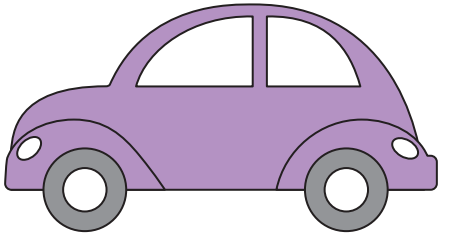
10 cars go for a drive.
Count them: 1, 2, 3, 4, 5,
6, 7, 8, 9, 10.
Let's go count them all again.











20

LESSON 20

Count objects in 5-group and array configurations and match to a numeral.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Students relate counting the math way on their fingers to pictorial 5-group formations. These models allow students to see numbers 6–10 in relation to 5, which supports visualization and subitizing. Students will also create and count array configurations. The term *5-group* is introduced in this lesson.

Key Question

- What makes 5 an important number?

Achievement Descriptors

K.Mod1.AD5 **Use** the last number of a count to tell *how many* regardless of arrangement or order counted. (K.CC.B.4.b)

K.Mod1.AD8 **Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration. (K.CC.B.5)

Agenda

Fluency 10 min

Launch 5 min

Learn 30 min

- 5 Fingers
- Relate Counting the Math Way to 5-Groups
- Build and Count Arrays
- Problem Set

Land 5 min

Materials

Teacher

- Right-hand and left-hand number gloves
- 5-group™ cards, demonstration set (1–5)
- Hide Zero® cards, demonstration set (6–10)
- Unifix® Cubes (10)
- 5-Group Mat (digital download)

Students

- Unifix® Cubes (10)
- 5-Group Mat (in the student book)
- Student book

Lesson Preparation

- Prepare cards 1–5 from the 5-group cards demonstration set.
- Consider tearing out the 5-Group Mat and placing it in a personal whiteboard. The 5-Group Mat will be used many times throughout the module.
- Prepare cards 6–10 from the Hide Zero cards demonstration set.
- Copy or print the 5-Group Mat to use for demonstration.

Fluency 10

Counting on the Number Glove Within 7

Materials—T: Right-hand and left-hand number gloves

Students count on the number glove to prepare to unitize five and to build familiarity with counting the math way.

Watch my number glove and count out loud. Ready?

Use the number glove to show the following sequence while students count aloud.

3	4	5	6	5	6	5	6	7	6	7

Offer more practice counting on the number glove within 7, emphasizing crossing over 5. Emphasize the unit of five by bringing the left hand in and out of view (behind your back).

If students have difficulty with a sequence within 7, return to a sequence within 5, and then gradually build up to 7.

Counting the Math Way Within 7

Students construct a number line with their fingers while counting aloud to build a sense of quantity and order.

For each count, show the math way on your own fingers while students count, but do not count aloud.

Let's count the math way.

Face the students and direct them to mirror you.

Have students count the math way from 1 to 7 and then from 7 to 0.

Teacher Note

Today is the first time students will start counting on the number glove with a number other than 1. If students hesitate, consider telling them the starting number before you hold up 3 fingers.

"Watch my number glove and count out loud. The first number you say is 3. Ready?"

Watch closely and count out loud. Ready? *(Raise your right pinkie.)*

1 *(Raises left pinkie)*

Raise your right ring finger.

2 *(Raises left ring finger)*

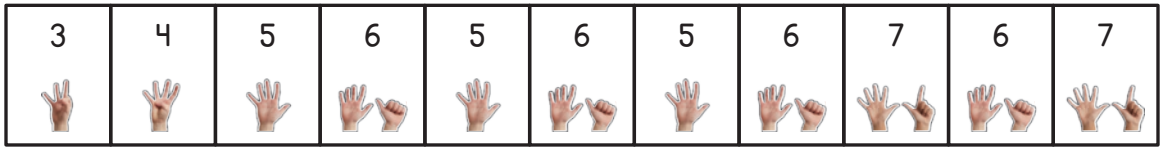
Raise your right middle finger.

3 *(Raises left middle finger)*

Lower your right middle finger.

2 *(Lowers left middle finger)*

Continue with the following sequence:



Offer more practice counting the math way within 7, emphasizing crossing over 5. Students can build kinesthetic memory for the unit of five by bringing their right hand behind their back when not needed for the count.

5-Groups to 5

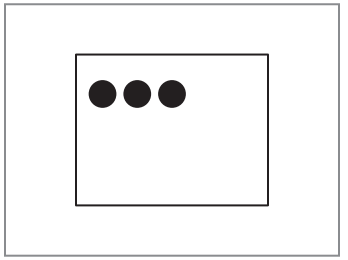
Materials—T: 5-group cards

Students recognize a group of dots to develop the ability to subitize quantities shown in 5-groups.

Raise your hand when you know the answer to the question. Wait for my signal to say the answer.

Display the 5-group card that shows 3.

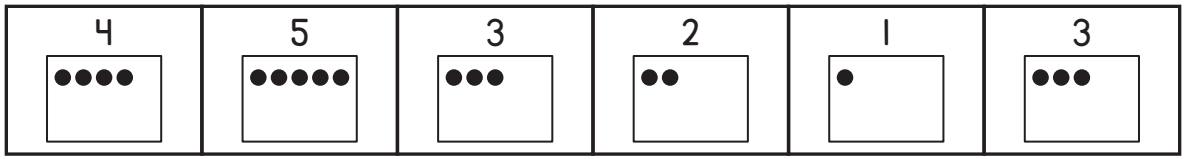
How many dots?

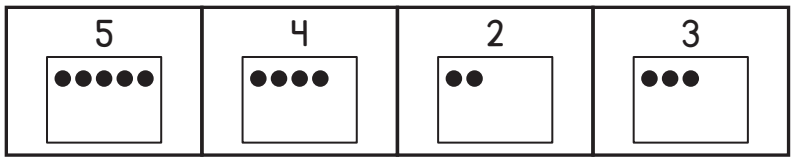


Wait until most students raise their hands, and then signal for students to respond.

3

Repeat the process with the following sequence:





As students are ready, challenge them to recognize the groups of dots more quickly by showing each card for a shorter time.

Launch

5

Materials—S: 5-Group Mat, Unifix Cubes

Find a unit of five in pictures of everyday objects and in mathematical models.

Display the collection of pictures. Invite students to think–pair–share about where they see five in each picture.

Where do you see five in each of these pictures?

The starfish has 5 legs.

I found 5 rings.

Daddy and baby have 5 toes on each foot.

There are 5 fingers on each glove.

Let's find five on your body, too!

Ask students to hold out one hand and count the fingers. Then ask them to hold out the other hand and count the fingers.

5 fingers on this hand *(shake hand)* and 5 fingers on that hand *(shake other hand)*. Is that the same number?

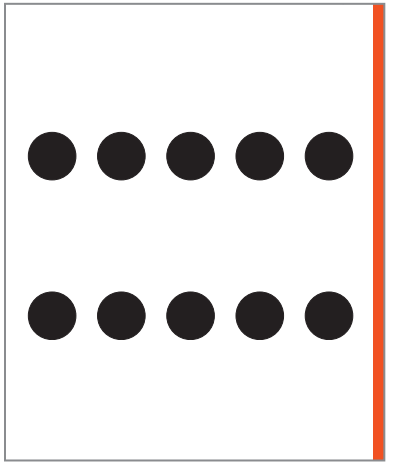
Yes.

Let's find five on some of our math tools.

Distribute 5-group mats. First have students count the dots on the top line and then count the dots on the bottom line. Emphasize that both the top and bottom lines have the same number of dots (5).

Transition to the next segment by framing the work.

Today, let's look for ways to find five in math tools.



5-Group Mat

Learn 30

5 Fingers

Materials—S: 5-Group Mat, Unifix Cubes

Students find a unit of five in a familiar linear configuration: their hands.

Distribute Unifix Cubes and a mat to each student. Then introduce an imaginary context: Students' fingers are people, and the cubes are hats. Give students a moment to play, letting their people dance, talk, and move.

Language Support

To facilitate the use of 5-group mats, consider introducing position words *top*, *middle*, and *bottom*, which may be familiar from literacy or handwriting programs.

Start with a simple "show me" activity. Use gestures to indicate positions in space and on the mat to support all learners in using the terms. Start with a predictable pattern: show me top, bottom, top, bottom. Then deviate and incorporate playful repetition: top, top, top, bottom!

Use gestures throughout the lesson to reinforce language acquisition.

Count out 5 hats. Set them on your mat.

Prompt students to put the hats on their fingers. Have them start with their left pinkie, counting the math way. Then they can put a hat on the ring finger, followed by the middle finger, and so on. Continue until all 5 fingers have hats, ending with the thumb.

How many hats did you put on?

5

How many people are wearing hats?

5

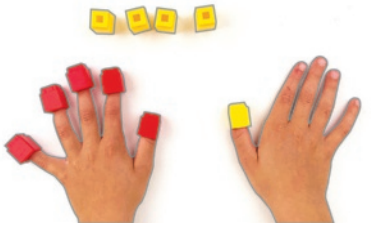
Let's remember for a moment that they're not really people, they're your fingers. How many fingers are on that one hand?

5

Pretend your fingers are people again. What if 1 more person wants to wear a hat? What would you do?

You'd have to use the other hand.

You could put it on your other thumb.



Good thinking! Let's see it.

After students put the sixth cube on a finger, repeat the series of questions about the number of hats, people, and fingers.

Relate Counting the Math Way to 5-Groups

Materials—T: Hide Zero cards, Unifix Cubes, 5-Group Mat; S: 5-Group Mat, Unifix Cubes

Students model numbers 6–10 on their hands and with 5-groups.

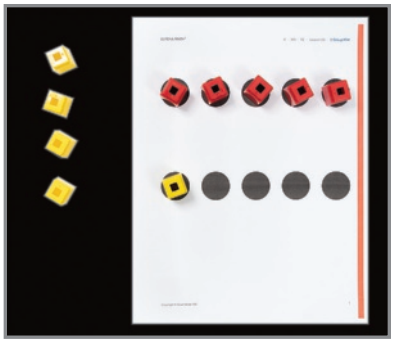
Display 6 cubes on a mat, with 5 on top and 1 on bottom.

Take your cubes off your fingers and make them look like this.

Show Hide Zero 6 card.

With just fingers, show me 6 the math way.

Look at your fingers. Look at your cubes. Fingers, cubes, fingers, cubes!



Repeat playfully a few times, and then take the Hide Zero 6 card out of view.

Where's the five on your hand? Hold it up high.

(Raises left hands, showing all 5 fingers)

Where's the five on your mat? Circle it with your finger.

(Circles the top row)

***(Show Hide Zero 6 card.)* Show me 6 the math way.**

Where do you see 1 on your hands? Hold it up high.

(Raises right hands, showing the thumb)

Where do you see 1 on your mat? Circle it with your finger.

(Circles the single cube on the bottom row)

Look at your cubes. Put your hand up when you know how many are on your mat.

Allow time to count, and then signal for a choral answer.

***(Point to the top row.)* We showed 6 as 5 and 1 more. *(Point to the bottom row.)* We call that a *5-group*. A what?**

5-group

Continue with 7–10 as time permits, pausing to connect the models and incorporate the new terminology.

Promoting the Standards for Mathematical Practice

As students look for five to help them count, they look for and make use of structure **(MP7)**. For example, they see five on their hands, in 5-groups, and in other arrangements around the classroom.

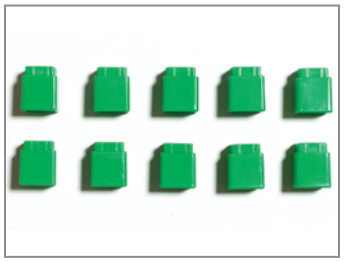
While it may be easier to let students count however they like, encourage them to look for and make use of five. Planting this seed now will help ensure that students have a proper foundation in place when they are expected to count on in grade 1.

Build and Count Arrays

Materials— T: 5-Group Mat, Unifix Cubes; S: 5-Group Mat, Unifix Cubes

Students build array configurations to match a picture and count.

Instruct students to flip over the 5-Group Mat to its blank side. Display the picture showing 10 as a 2-by-5 array.



Make your cubes look like mine. Stand up when you are finished.

The simple act of standing provides a clear indicator of completion and creates a sense of urgency, as well as a welcome opportunity for movement. Once most students are standing, refocus the class by asking students to tell a classmate how many cubes are on the mat.

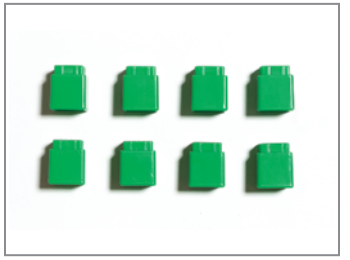
Class, how many cubes are on your mat?

10

This way of showing 10 is called a 5 ...

5-group!

Display the picture showing 8 as a 2-by-4 array. Repeat the sequence above, this time having students sit down when they have arranged their cubes.



Class, how many cubes are on your mat?

8

Is this a 5-group?

No.

Are there 5 on top?

No.

Differentiation: Challenge

Arrays can be easily decomposed into parts. Challenge students to make number statements to match each array. The parts that make 10 may inspire any of the following number statements:

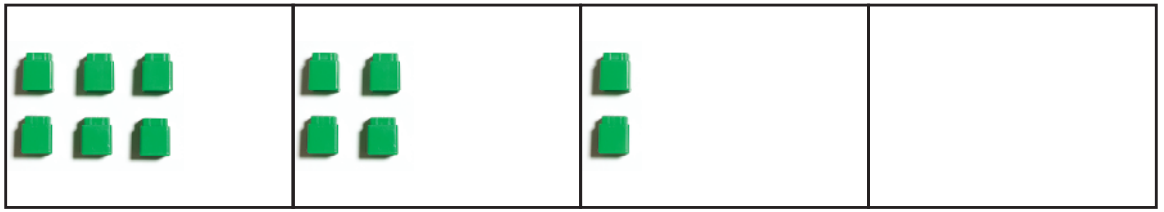
- 10 is 5 and 5.
- 5 and 5 make 10.
- 10 is 2 and 2 and 2 and 2 and 2.
- 4 and 6 make 10.

Observational Assessment

☑ Watch students move and count cubes.

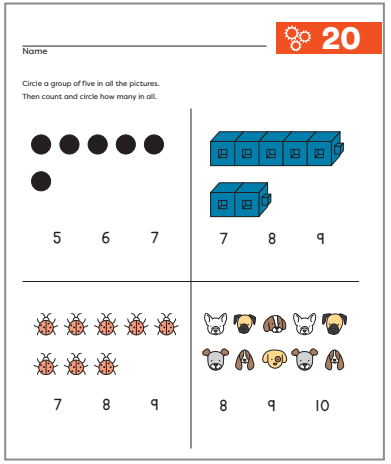
- Do students count in an organized way (e.g., left to right, top to bottom)?
- When asked "how many," can they confidently say the last number said? (cardinality)

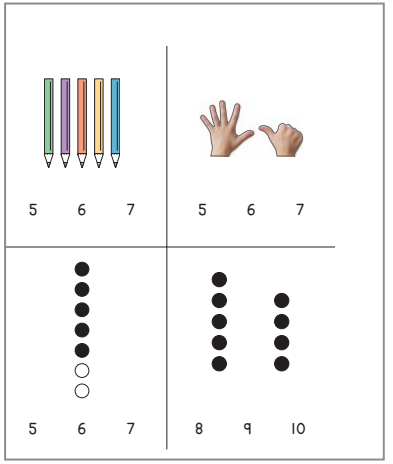
Repeat the process with the following sequence. Whenever possible, allow students to construct the array without guidance. Help students recall that zero means none.



Problem Set

Give the directions in two parts. First, have students circle a group of five in each picture. Consider having students circle a group of five by using a finger before using a writing utensil. After they have circled five in all the pictures, have them count and circle the number that tells how many in all.





Teacher Note

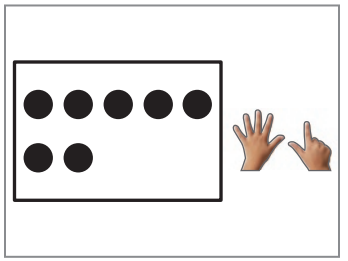
This Problem Set is designed for systematic modeling (see lesson 8 for more detail). Continue to use systematic modeling for Problem Sets until students are comfortable working with pencil and paper.

Land 5

Debrief 5 min

Objective: Count objects in 5-group and array configurations and match to a numeral.

Display the pictures showing 7. Record responses as students share what is the same and different about the pictures.



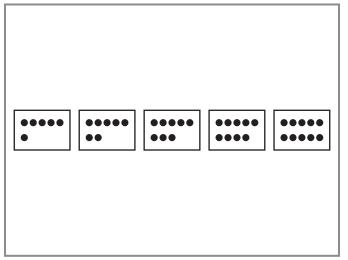
How are the math tools in this picture the same? How are they different?

They are the same because they both show 7.

They are the same because they both have 5 and 2.

They are different because one is dots, and the other is fingers.

Display the picture of Hide Zero cards 6–10.



Each picture shows a 5-group. Why do you think we call these 5-groups?

They all have 5 on the top.

10 has 5 on the top row and 5 on the bottom row.

There is 5 and some more.

What makes 5 an important number?

We have 5 fingers on each hand.

There are 5 dots on the top of the 5-group.

21

LESSON 21

Count sets in circular configurations and match to a numeral.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Young students need plenty of practice to integrate number core components to count accurately. This is the first lesson where students consider how to accurately count objects in a circular configuration. They discuss strategies to track, start, and end their count.

Key Question

- What are some strategies, or things we can do, to help us count things that are in a circle?

Achievement Descriptors

K.Mod1.AD3 **Represent** a group of objects with a written numeral 0–10. (K.CC.A.3)

K.Mod1.AD8 **Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration. (K.CC.B.5)

Agenda

Fluency 10 min

Launch 5 min

Learn 30 min

- Mark and Count
- Mark the Start
- Problem Set

Land 5 min

Materials

Teacher

- Number gloves
- 5-group™ cards, demonstration set (5–7)
- Sticky notes (8)
- Puppet or stuffed animal

Students

- Student book

Lesson Preparation

Prepare cards 5–7 from the 5-group cards demonstration set.

Fluency

10

Counting the Math Way to 10

Students construct a number line with their fingers while counting aloud to build a sense of quantity and order.

Let's count the math way.

Face the students and direct them to mirror you.

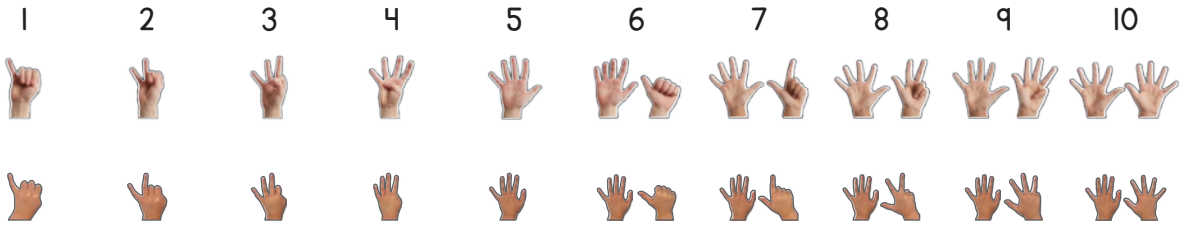
Counting the math way looks like this: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10. *(Demonstrate.)*

Raise your right pinkie.

Show me your left pinkie. That is 1. Let's keep counting to 10.

Show the math way on your own fingers while students count, but do not count aloud.

Have students count the math way from 1 to 10.



Repeat the count two more times.

Stay here at 10. Now, count back down to 0. Ready?

Have students count the math way from 10 to 0.

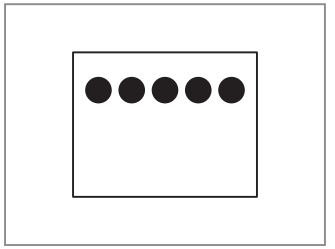
5-Groups to 7

Materials—T: 5-group cards

Students recognize a group of dots to develop an understanding of numbers 6–10 as 5 and some more.

Raise your hand when you know the answer to the question. Wait for my signal to say the answer.

Display the 5-group card that shows 5.

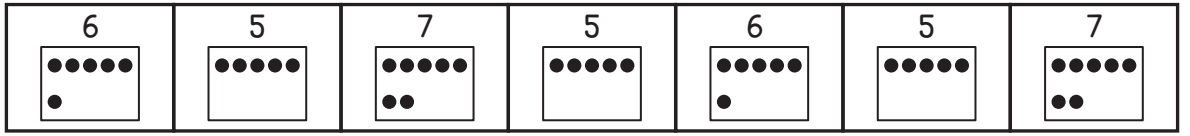


How many dots?

Wait until most students raise their hands, and then signal for students to respond.

5

Repeat the process with the following sequence:



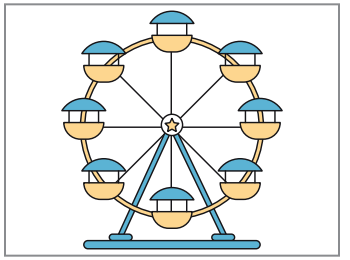
Note the sequence deliberately returns to 5 often so that students can see five as a unit. As students are ready, challenge them to recognize the groups of dots more quickly by showing each card for a shorter time.

Launch 5

Materials—T: Puppet or stuffed animal

Students recognize the need for tracking the count when objects are arranged in a circular configuration.

Display the Ferris wheel.



How many people can ride the Ferris wheel at the same time?

Have students think–pair–share.

Think about how we could figure this out. Share your thoughts with a partner.

We have to count all the cabins.

We could pretend to put 1 person in each car and then count the people.

I heard a lot of you say that you would count the cabins. Puppet loves to count, so let's get Puppet out to help us.

Use Puppet to count the cabins without stopping. Keep going around the wheel until the students stop Puppet.

What's wrong? Why did you stop Puppet from counting?

Puppet counted too many cabins and didn't stop at the bottom.

Puppet doesn't know where to stop counting.

Puppet isn't keeping track of the cabins counted.

Let's help Puppet count things that are in a circle.

Differentiation: Challenge

Suggest that there are 2 people aboard each cabin and invite students to strategize. Some possibilities may include:

- tracking on fingers
- counting around the circle twice
- counting by twos

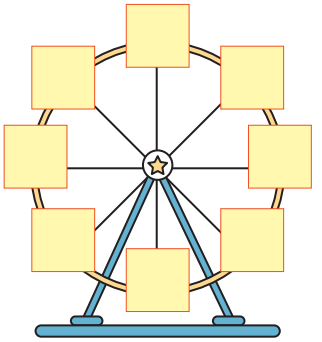
As time permits, have them explore other options with numbers they know how to count by, such as fives or tens.

Learn 30

Mark and Count

Materials—T: Sticky notes

Students mark and count to find how many in a circular configuration.

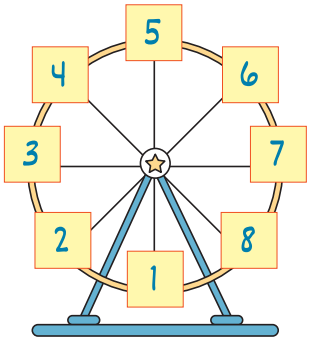


I think if we use the mark and count strategy, it will help Puppet know how many people can ride the Ferris wheel.

Let's mark each cabin as we count to keep track. Count with me.

Place a sticky note on each cabin as the class counts.

Let's count one more time. This time I will write the number on each sticky note so we can remember how many people can ride at the same time.



As students count, write each number, and move the sticky note from the Ferris wheel into a linear formation.

How many people can ride on the Ferris wheel at the same time?

8 people

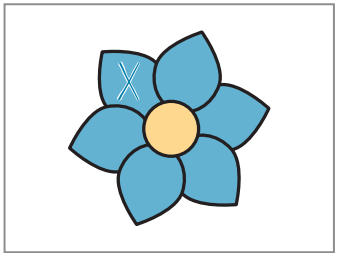
Hold up or point to the 8 sticky note to reinforce cardinality: The last number named tells the amount.

Mark the Start

Students mark the starting place and count how many in a circular configuration.

Marking the starting place on a circular configuration is a simpler form of mark and count that is efficient for some students. Others will prefer to make a mark for every object as they count.

Display the flower.



Look at this flower. I want to know how many petals there are, but I don't have any more sticky notes.

How can we mark the picture to make sure we count correctly?

We can cross out each petal after we count it.

We can put a mark where we start counting so we know where to stop counting.

Those are great ideas! Let's try marking the first petal we count so we can remember where we started.

Cross off the first petal and touch the other petals as students count.

How many petals are on this flower?

6 petals

Write 6 to reinforce that the last number said tells how many.

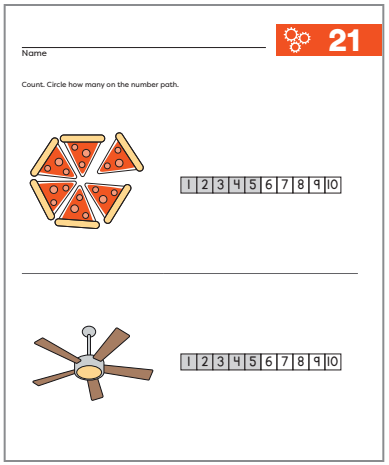
It's your turn to count some more things that are in a circle.

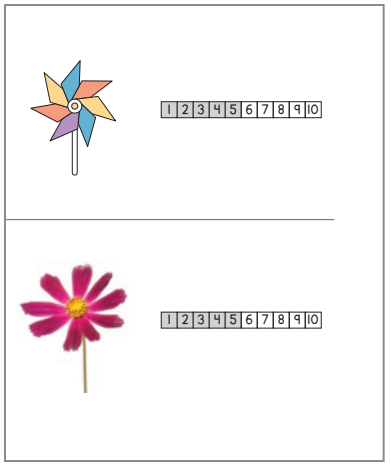
Promoting the Standards for Mathematical Practice

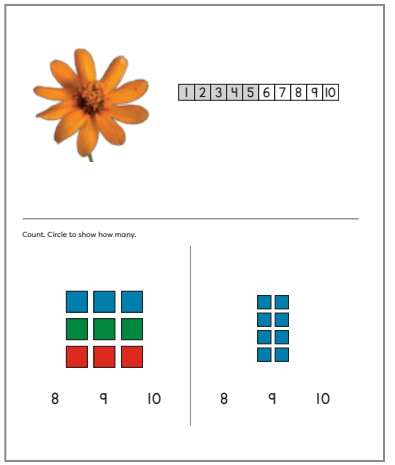
Students attend to precision **(MP6)** when they mark the first petal and are careful to count all the petals without counting the crossed out petal twice.

Problem Set

Students count in circular configurations and circle the numeral to match. Use systematic modeling to get the class started, and then circulate or work with a small group of students who need extra support.







Observational Assessment

☑ Watch students as they work on the Problem Set.

- Can you hear students saying the number sequence as they use a strategy to count (e.g., marking the start or crossing out)?
- Are students recognizing and circling the correct number from the number path without counting from 1 to find the number?

Land 5

Debrief 5 min

Materials—T: Puppet or stuffed animal

Objective: Count sets in circular configurations and match to a numeral.

Let's teach Puppet how to count objects that are in a circle.

Think about the strategies you used in class today. What strategies can we use to teach Puppet?

You can use sticky notes to mark the things you're counting.

You could move the objects into a line so it's easier to count.

If you mark where you started counting, then you'll know where to stop.

When you count pictures, you can cross off each thing as you count.

22

LESSON 22

Count sets in scattered configurations and match to a numeral.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1
Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Students count objects in scattered configurations by using move and count for concrete objects and mark and count for pictures. They match number cards to groups in scattered, circular, linear, and array configurations. Then they play bingo, which provides practice with recognizing numbers in isolation.

Key Question

- Which strategy would you use to count a scattered group?

Achievement Descriptors

K.Mod1.AD3 **Represent** a group of objects with a written numeral 0–10. (K.CC.A.3)

K.Mod1.AD8 **Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration. (K.CC.B.5)

Agenda

Fluency 10 min

Launch 10 min

Learn 25 min

- Number Match
- Bingo

Land 5 min

Materials

Teacher

- Teddy bear counters (7)
- Hide Zero® cards, demonstration set
- 5-group™ cards, demonstration set (5–10)

Students

- Hide Zero® cards
- Bingo Board (in teacher edition)
- Personal whiteboard
- Unifix® Cubes or two-color beans (9)

Lesson Preparation

- Prepare cards 5–10 from the 5-group cards demonstration set.
- Consider placing bingo boards in personal whiteboards so students can use the mark and count strategy.
- Organize groups of Unifix Cubes or beans for students to use as markers on bingo board spaces.

Fluency

10

Counting the Math Way Within 10

Students construct a number line with their fingers while counting aloud to build a sense of quantity and order.

Show the math way on your own fingers while students count, but do not count aloud.

Let's count the math way.

Face the students and direct them to mirror you.

Have students count the math way from 1 to 10 and then from 10 to 0.

Watch closely and count out loud. Ready? *(Raise your right pinkie.)*

1 *(Raises left pinkie)*

Raise your right ring finger.

2 *(Raises left ring finger)*

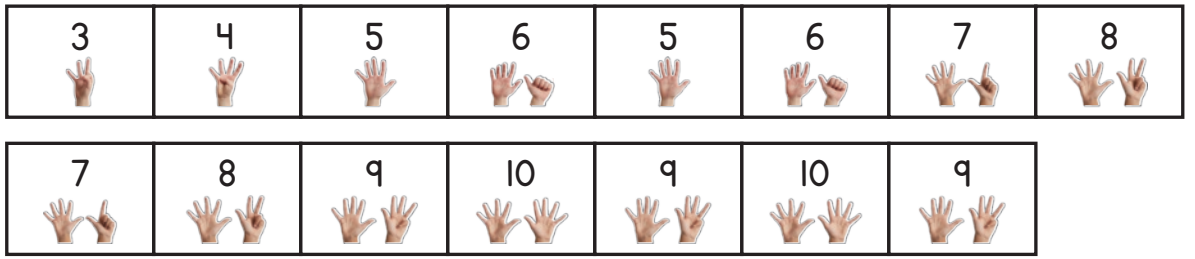
Raise your right middle finger.

3 *(Raises left middle finger)*

Lower your right middle finger.

2 *(Lowers left middle finger)*

Continue with the following sequence:



Offer more practice counting the math way within 10, emphasizing crossing over 5.

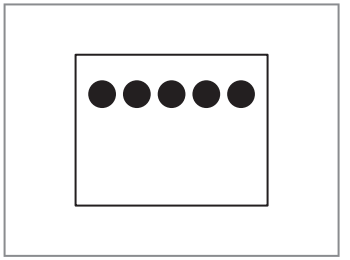
5-Groups to 10

Materials—T: 5-group cards

Students recognize a group of dots to develop an understanding of numbers 6–10 as 5 and some more.

Raise your hand when you know the answer to the question. Wait for my signal to say the answer.

Display the 5-group card that shows 5.

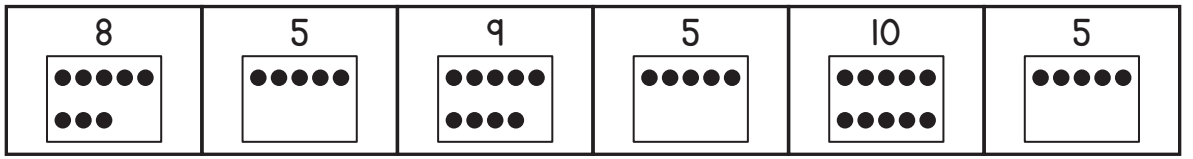


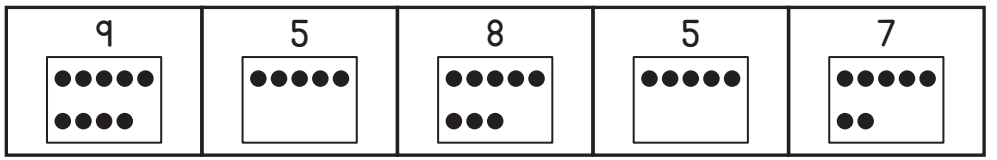
How many dots?

Wait until most students raise their hands, and then signal for students to respond.

5

Repeat the process with the following sequence:





Note the sequence deliberately returns to 5 often so that students can see five as a unit. As students are ready, challenge them to recognize the groups of dots more quickly by showing each card for a shorter time.

Launch 10

Materials—T: Teddy bear counters

Students use different counting strategies to count a group of concrete objects and a group in a picture.

Display 7 bear counters in a scattered configuration. Consider using two colors to highlight a 5-group.

I wonder how many bears there are. What can we do to find out?

We can count them.

How should we count the bears so we don't make a mistake?

We can touch and count.

We can move them as we count.

We can move them into a line.

Good ideas. I will move them into a line as we count them together.

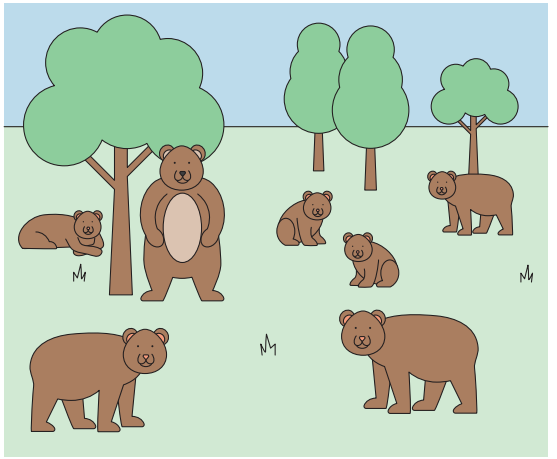
Move the bears into a line as the class counts chorally to 7.

How many bears?

7 bears

That's right. Moving and counting the bears makes it easy to count without missing any bears or counting a bear twice.

Set aside the bear counters for Land. Display the picture of bears in the forest.



Look at the picture of bears. I wonder how many bears are in this picture.

Can we move and count them as we did before?

No. They are stuck in the picture.

How should we count the bears in the picture so we don't make a mistake?

We can mark the first bear we count, keep going, and stop when we get back to the first one we marked.

We can cross each bear off as we count it.

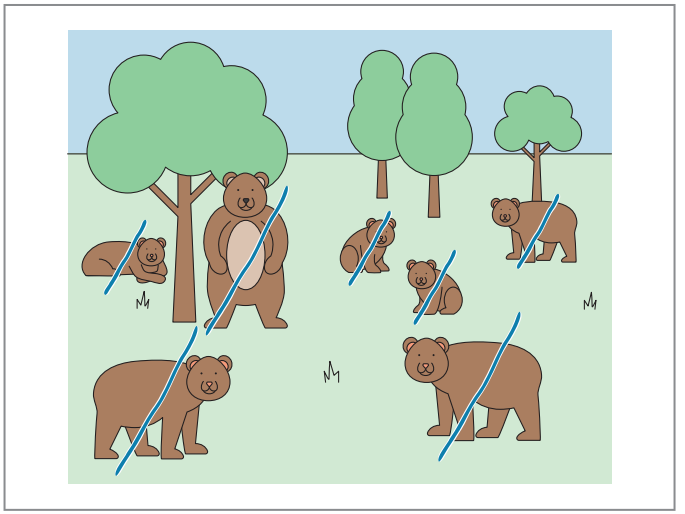
Good ideas. Let's cross off the bears. Count as I cross off each bear.

How many bears are there?

7 bears

Transition to the next segment by framing the work.

Today, let's look at pictures and use our counting strategies to find how many.



Learn 25

Number Match

Students count sets of objects and match to a number card.

Materials—T: Hide Zero cards; S: Hide Zero cards, bingo board

Distribute bingo boards and Hide Zero cards. Direct students to put the Hide Zero cards in order from 0–10 below the bingo board.

Look at your bingo board. Count the things in the first box.

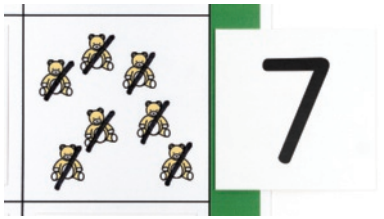
Differentiation

The bingo boards are grouped by complexity. The boards in the first level have 4 or 5 spaces with numerals and may be helpful for students who need more time to count. The boards in the fifth level have no numerals and a few challenging configurations.

All the boards contain groups of 0–10 objects in different configurations. Every board has at least one chance for students to count objects in a scattered configuration.

Find the matching number card and put it in the box.

Demonstrate if needed. Circulate as students count and match their cards to the groups on the board.



Have students leave the Hide Zero cards on their board so they are ready to play bingo in the next segment.

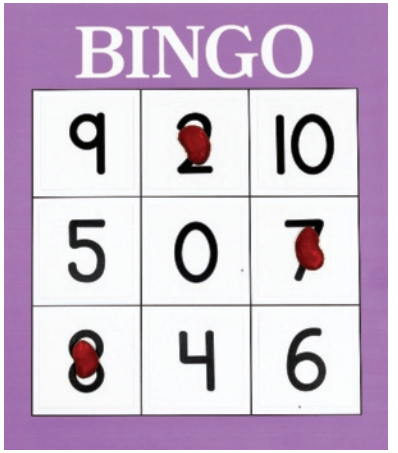
Bingo

Materials—T: Bingo board, Unifix Cubes or two-color beans; S: Bingo board, Hide Zero cards, Unifix Cubes or two-color beans

Students recognize numbers in isolation and out of sequence.

Display a bingo board with Hide Zero cards. Model and explain how to play the game:

- The teacher calls a number from 0–10.
- Students find that number on their board.
- Students use a Unifix Cube or bean to mark the number called.
- The first student to have three in a row across, down, or diagonal wins.



While playing the game, circulate to ensure that students identify and mark the correct number.

Promoting the Standards for Mathematical Practice

Students reason abstractly and quantitatively (MP2) when matching number cards to the boxes by recognizing arrangements of objects and numerals as different representations of the same number.

Observational Assessment

☑ Watch students work with their bingo board.

- Are students using a counting strategy to count the images? Are some configurations harder to count?
- Can students recognize numbers in isolation? (number symbol)

Teacher Note

Keeping the Hide Zero cards on top of the board gives students practice recognizing numerals in isolation. It also keeps the game moving at a pace that sustains interest. When you pause the game for a few students to recount groups, others get restless.

Consider having a student call out the numbers. Once students have learned to play the game independently, it can be added to centers or stations.

Land 5

Debrief 5 min

Materials—T: Teddy bear counters

Objective: Count sets in scattered configurations and match to a numeral.

Display the 7 bear counters from Launch and the picture of bears in the forest.

How did we count each group of bears?

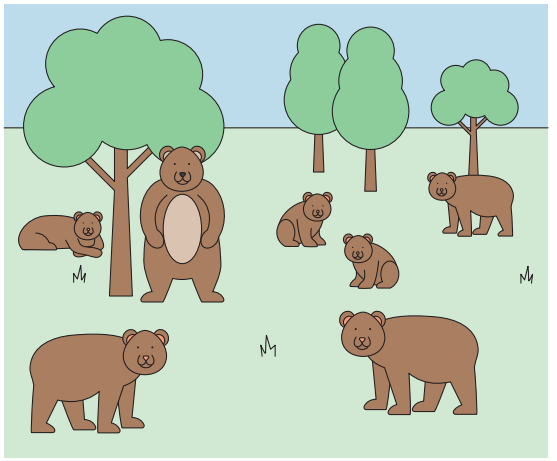
We moved the blue and red bears.

We crossed out the bears in the forest.

What is different about counting these groups of bears?

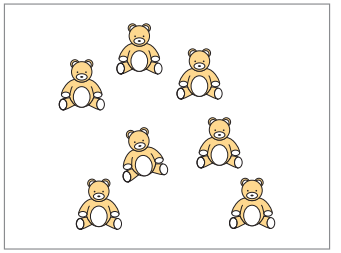
You can move these bears into a line.

The picture bears cannot move because they are on the paper.



We used different strategies to count the bears we could move and the bears in the picture. We can use move and count and mark and count to help us know how many there are.

Display the picture of teddy bears.

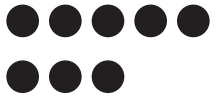
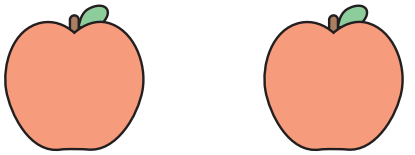
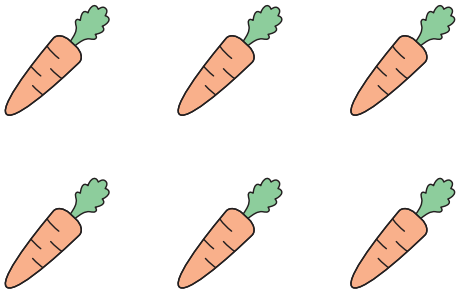
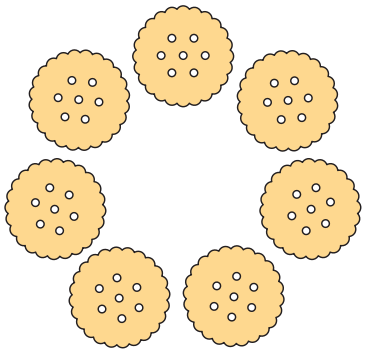
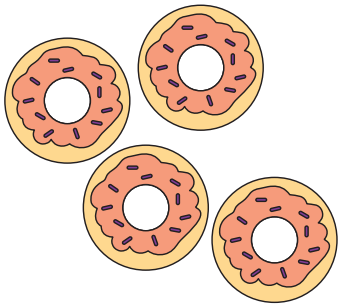


Imagine that this group of bears is on your bingo card. Which strategy would you use to count this group?

I would use mark and count.

I would cover the bears that I already counted with my hand.

BINGO

		10
	0	
9		5

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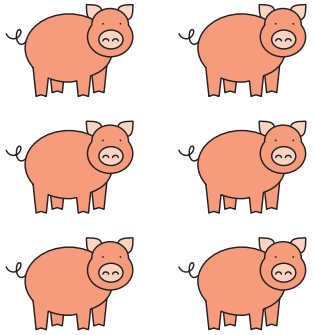
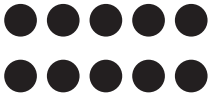
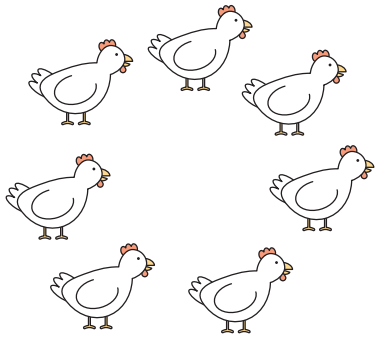
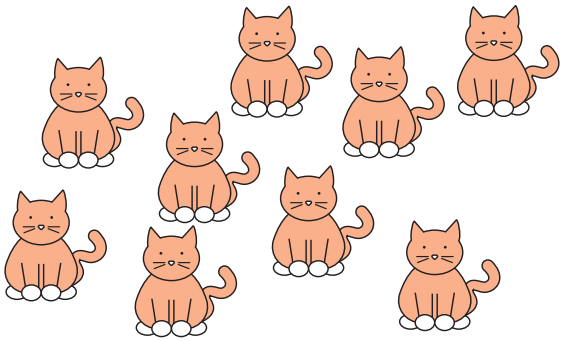
	3	
	5	0
8		1

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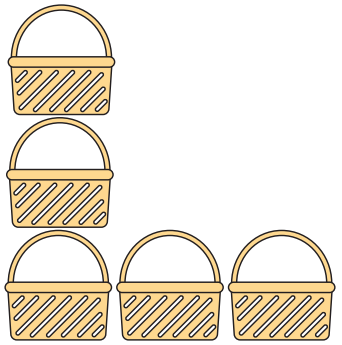
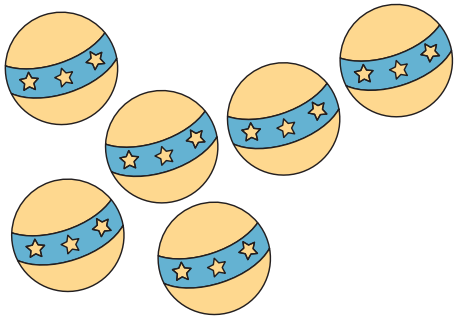
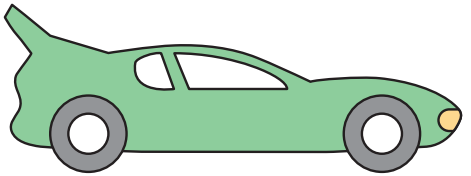
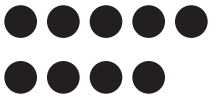
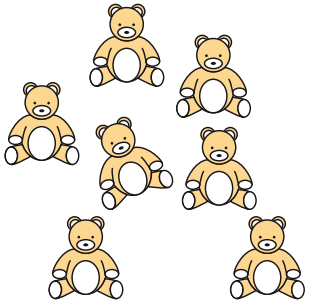
	4	
10		0
	2	

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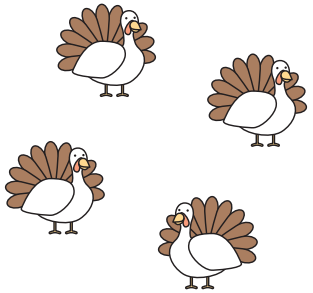
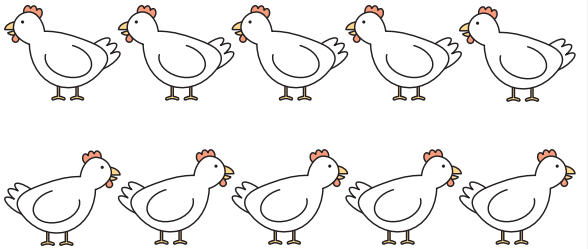
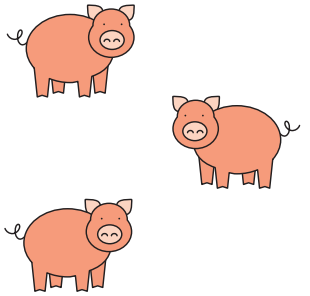
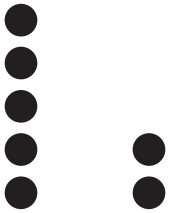
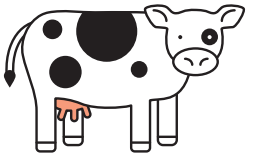
	0	
9		5
	8	

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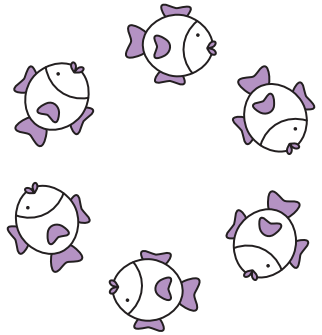
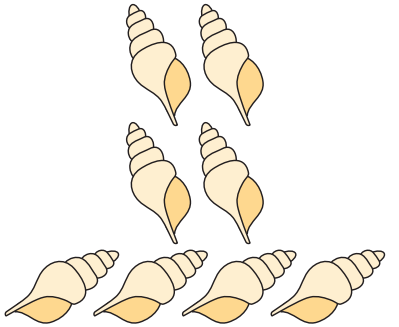
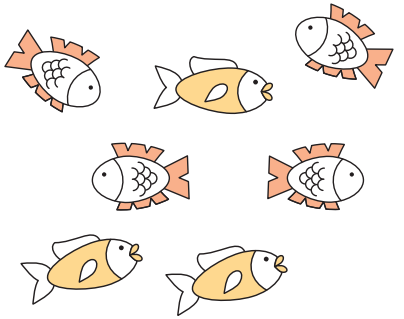
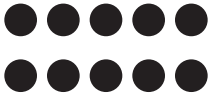
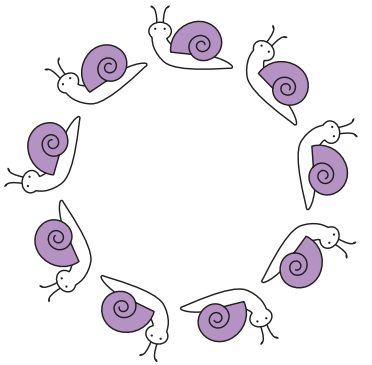
	1	
3		2
	0	

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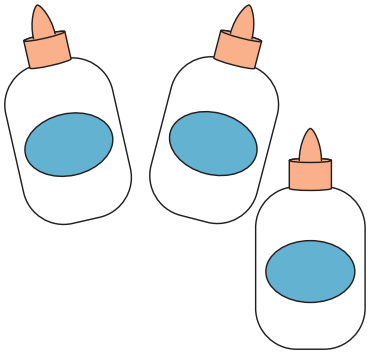
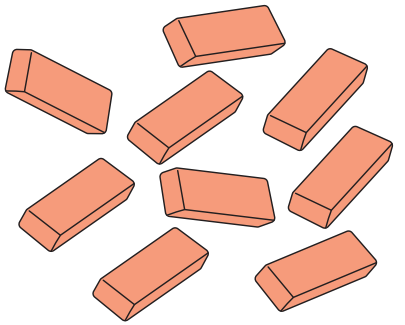
7		
10	2	

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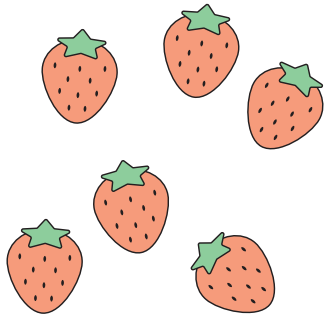
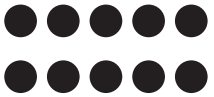
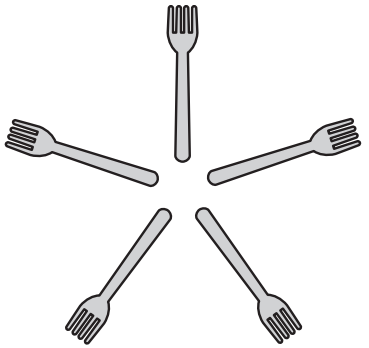
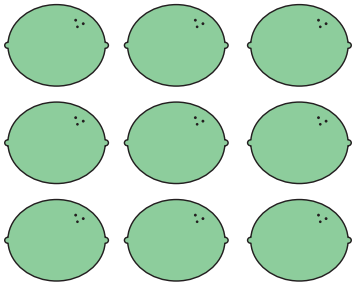
		4
7		
		8

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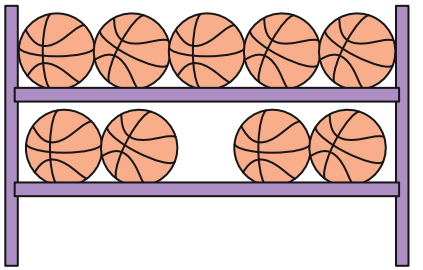
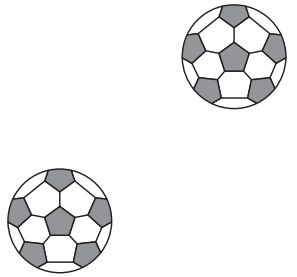
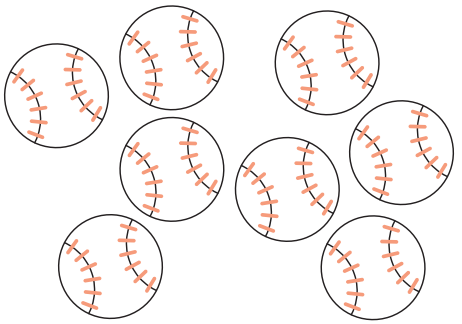
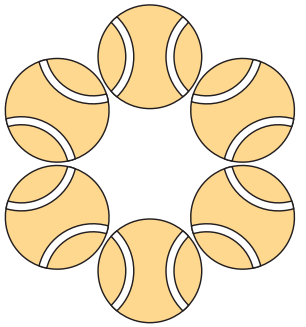
	3	
		7
	1	

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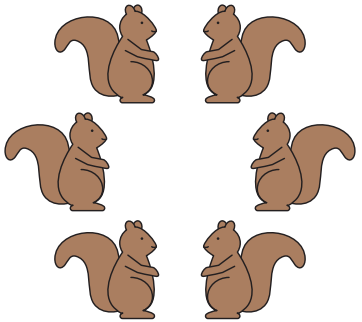
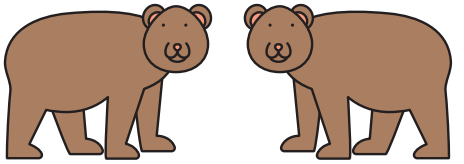
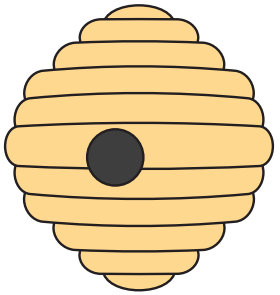
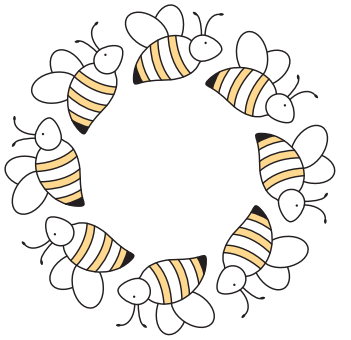
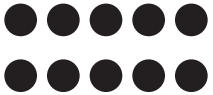
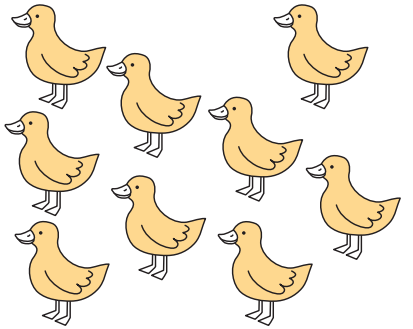
		3
	5	
		7

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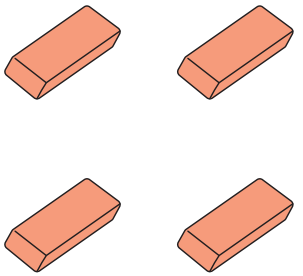
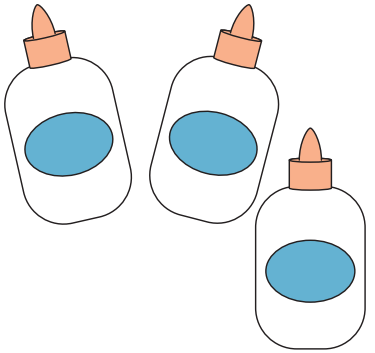
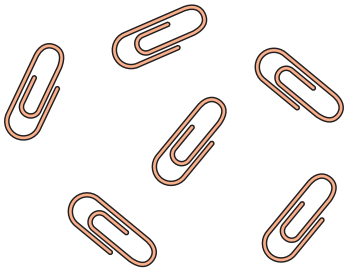
●●●●● ●●●	1	
10		9
		

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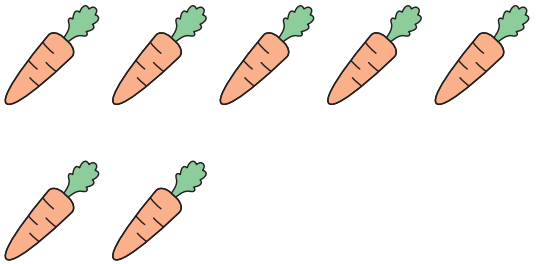
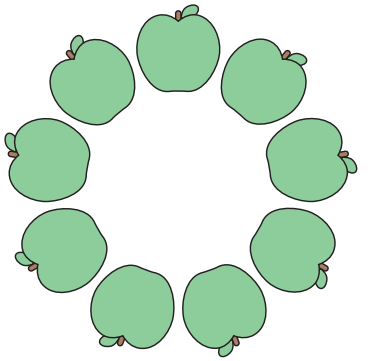
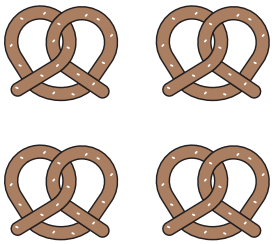
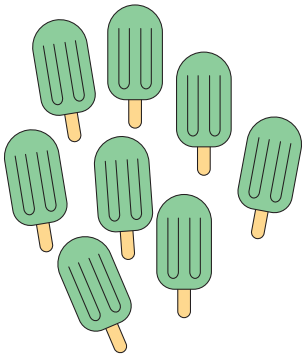
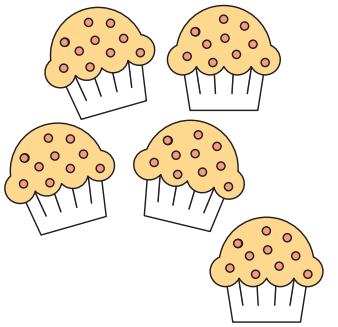
	1	
6		10
	●●●	

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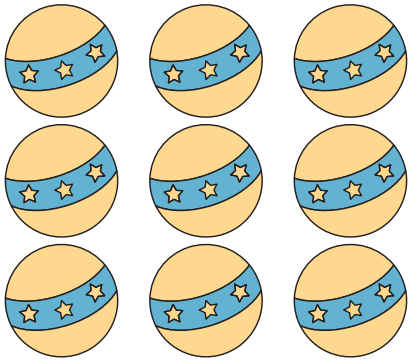
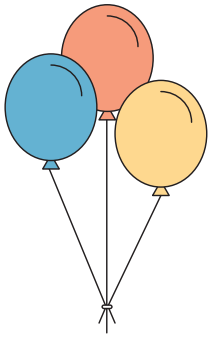
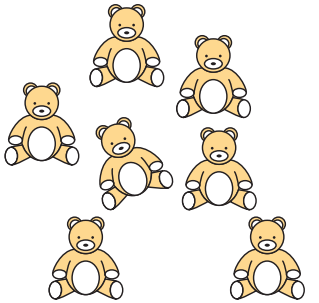
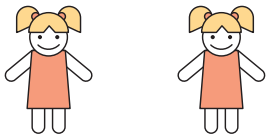
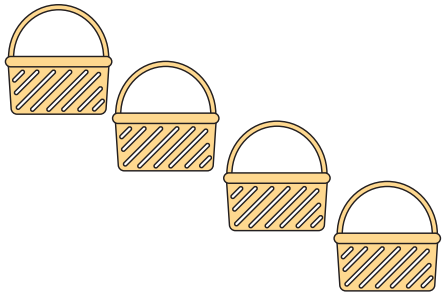
	5	
6		
		8

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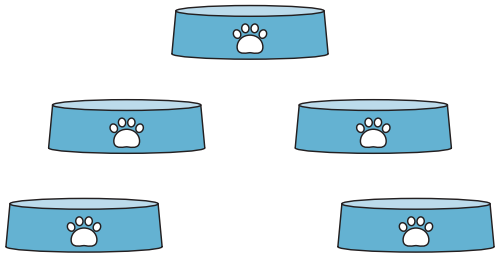
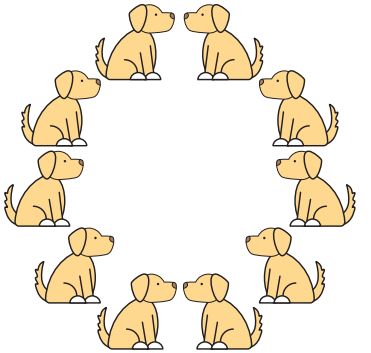
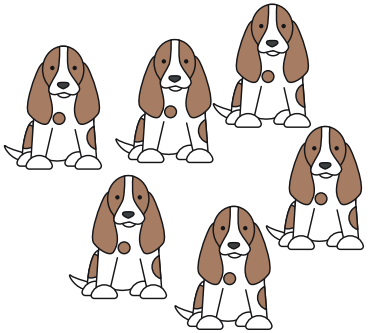
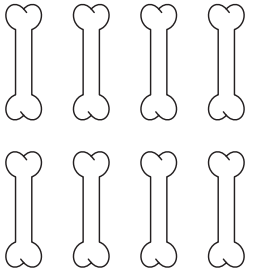
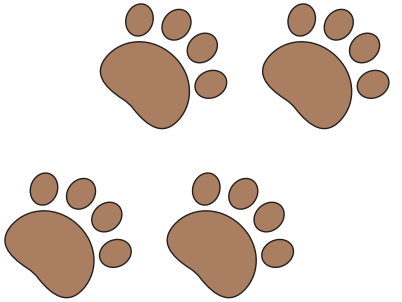
		
1	3	
		

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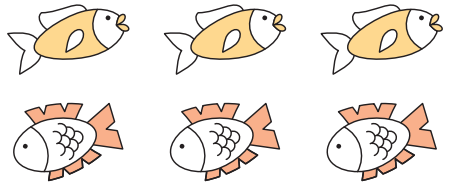
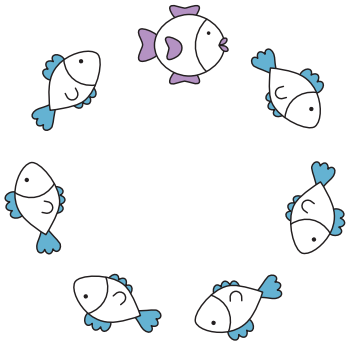
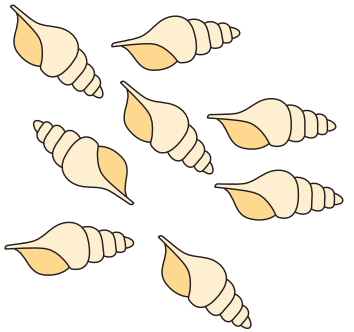
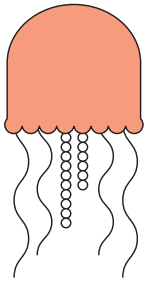
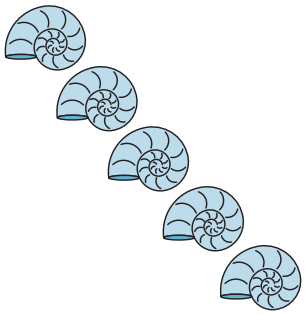
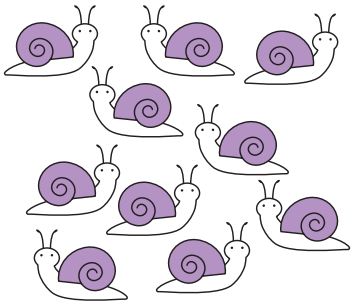
	4	
		
	2	

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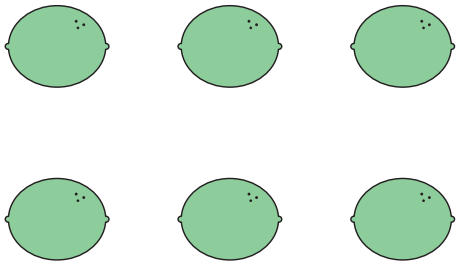
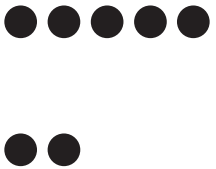
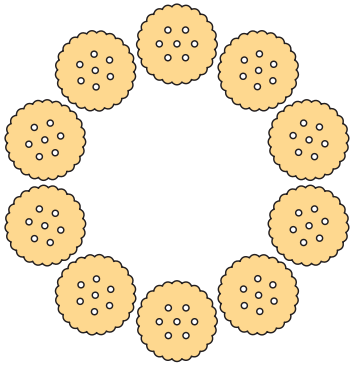
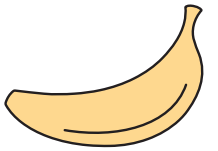
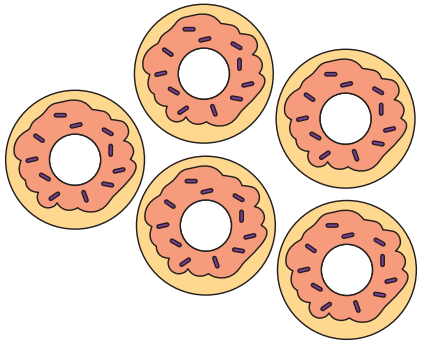
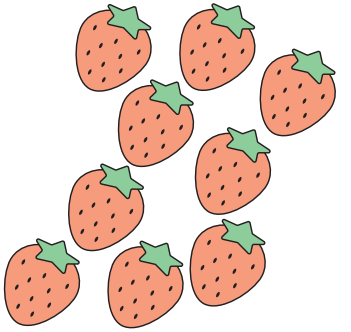
	0	
		
	2	

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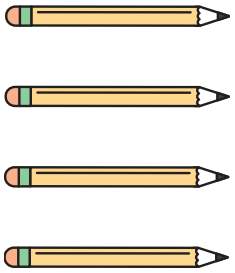
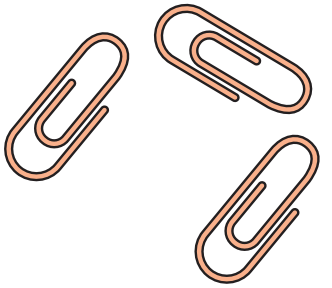
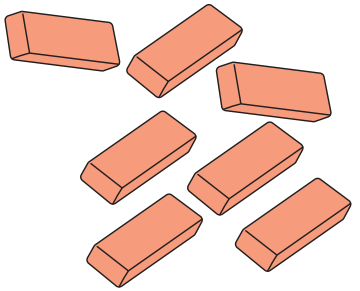
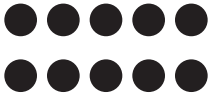
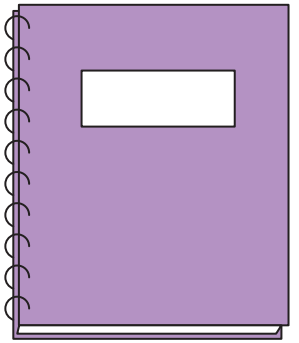
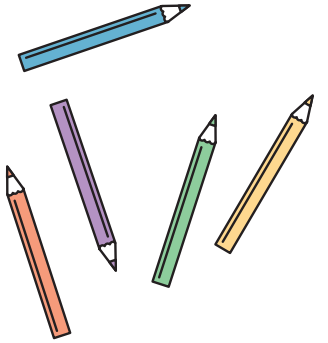
	9	
		6
		

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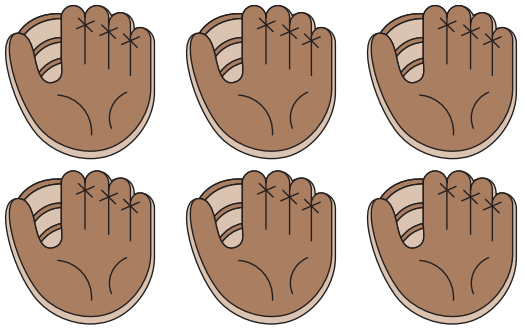
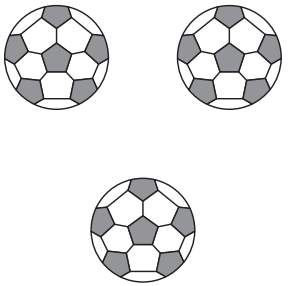
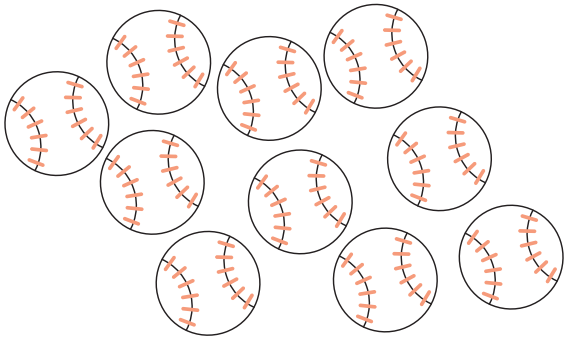
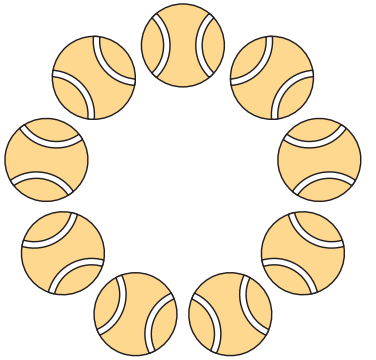
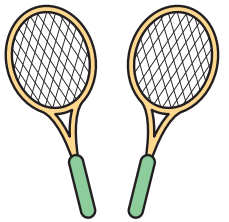
		7
		
5		

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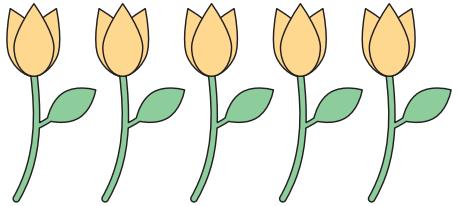		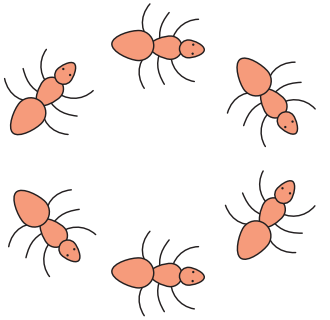
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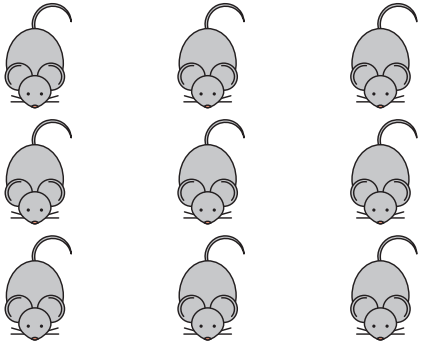	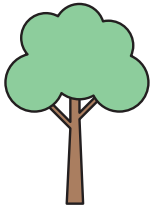	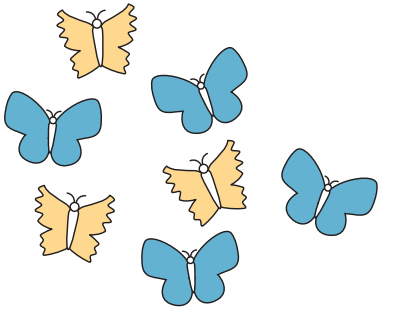

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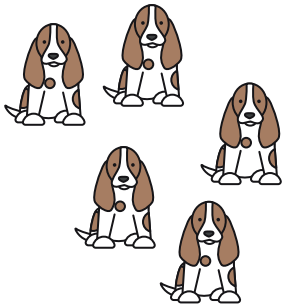
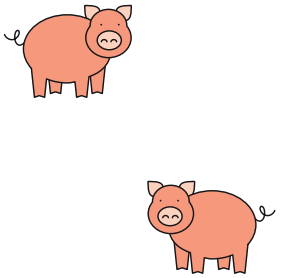
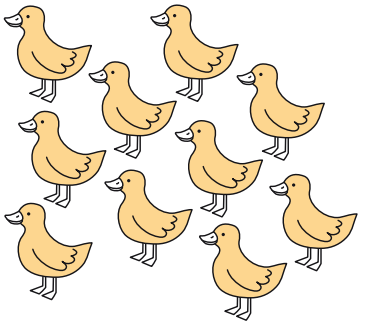
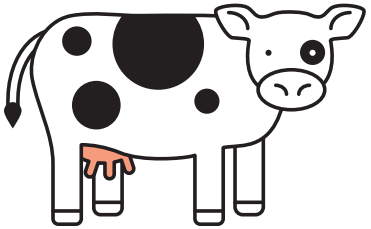
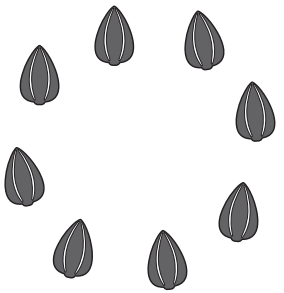
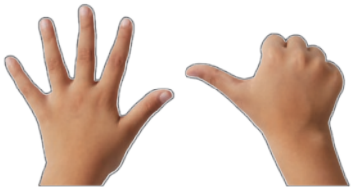
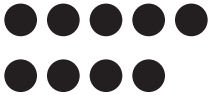
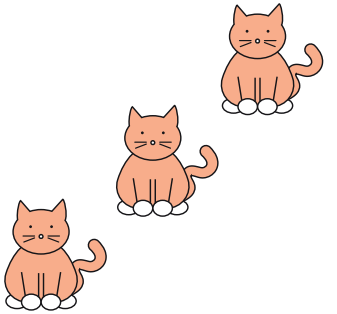
		
		
	4	

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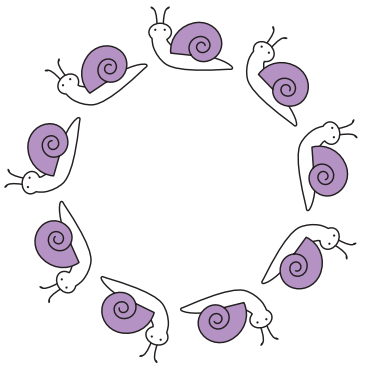
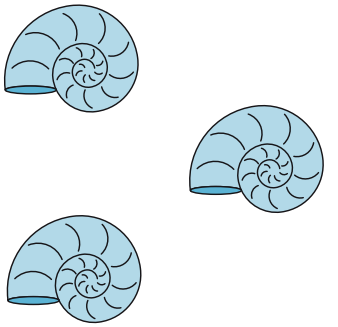
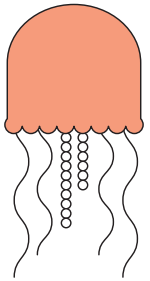
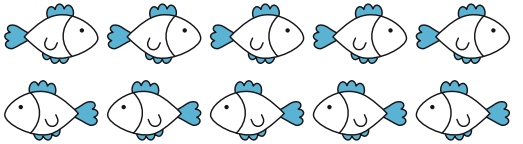
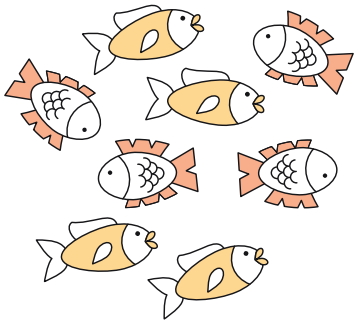
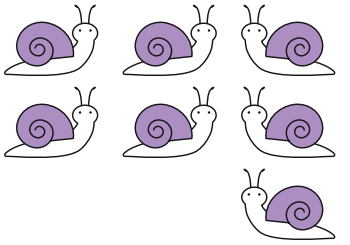
		
	6	
		

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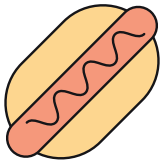
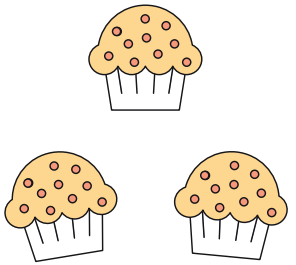
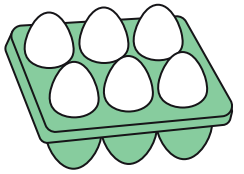
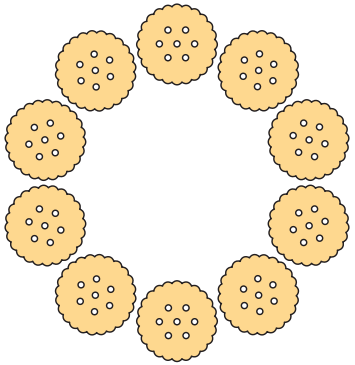
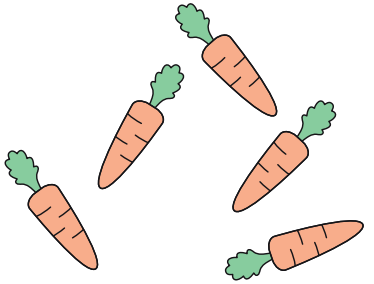
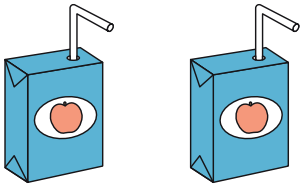
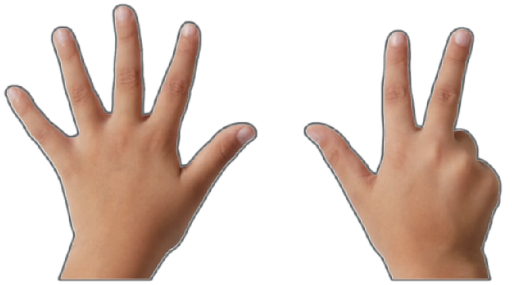
		
		9
		

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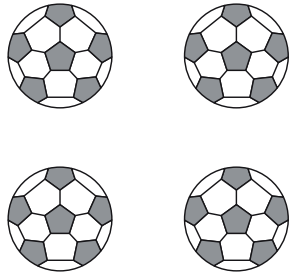
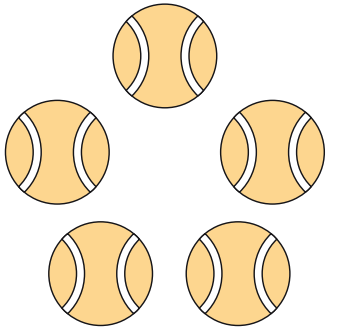
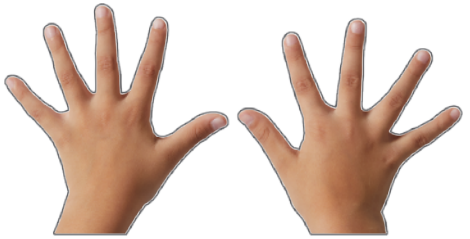
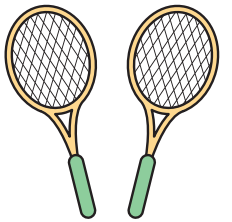
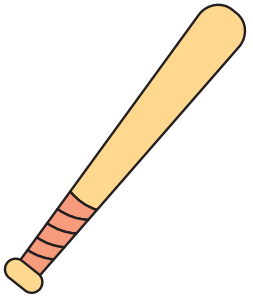
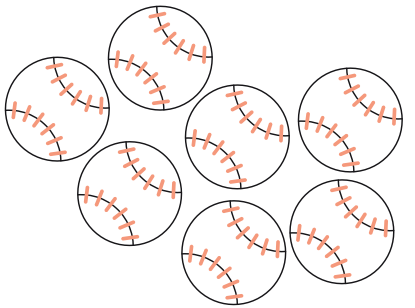
		
	8	
		

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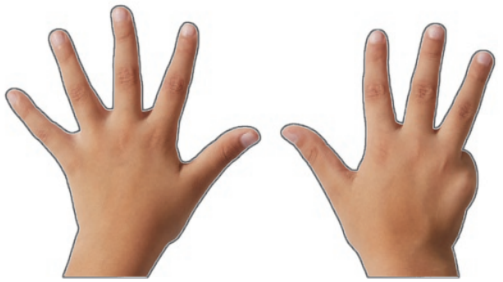
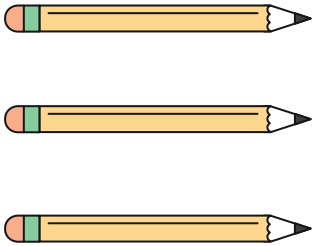
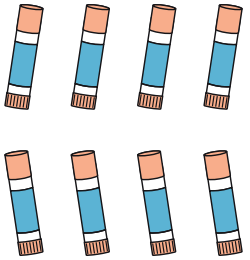
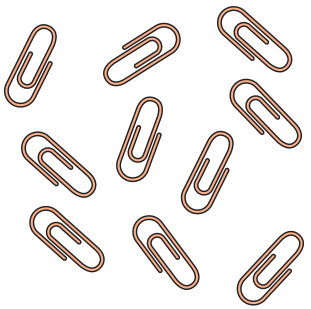
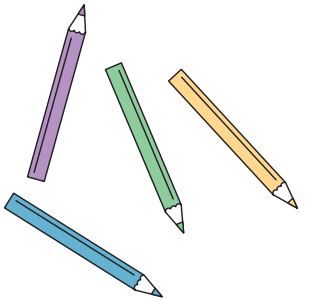
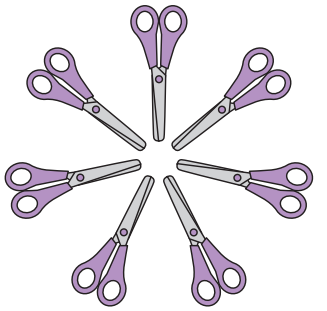
		
	2	
		

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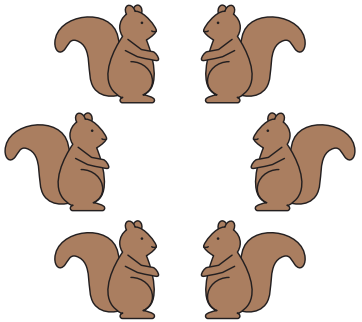
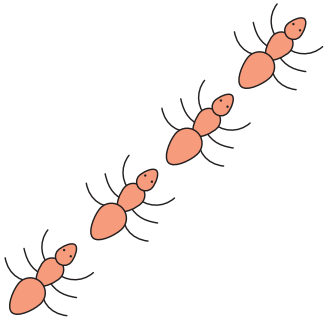
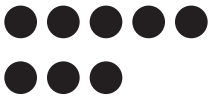
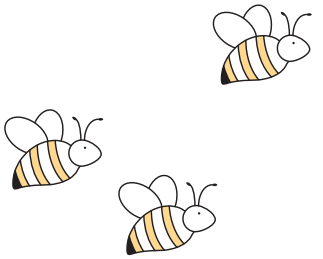
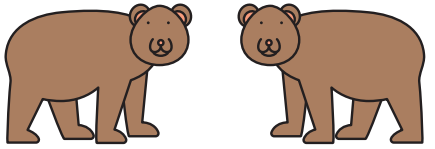
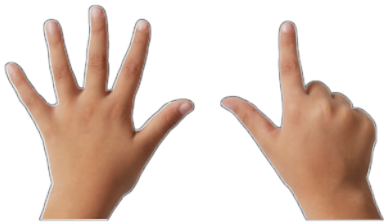
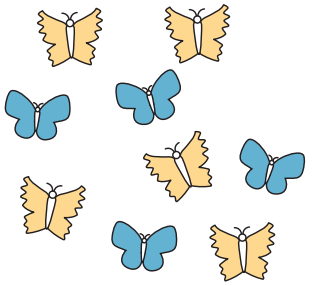
	5	
		
		

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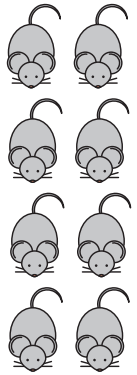	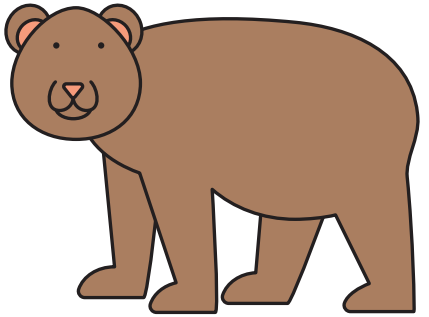	
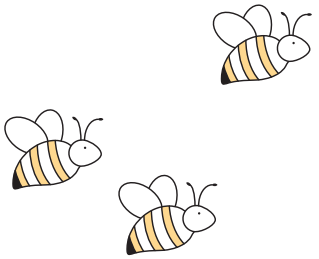		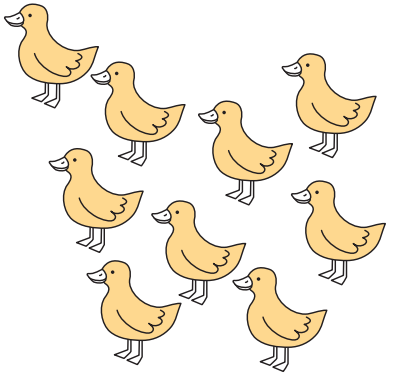
	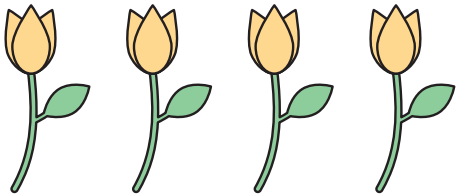	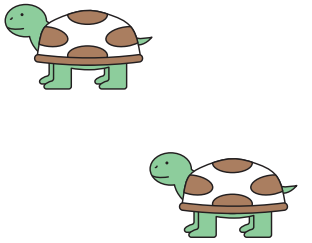

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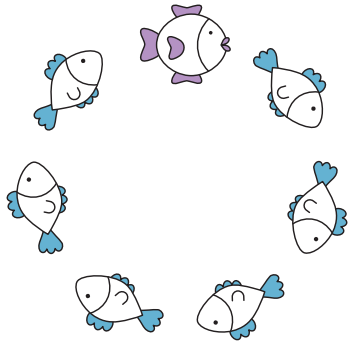	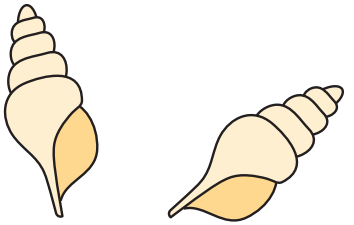	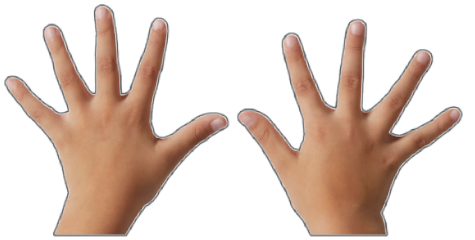
		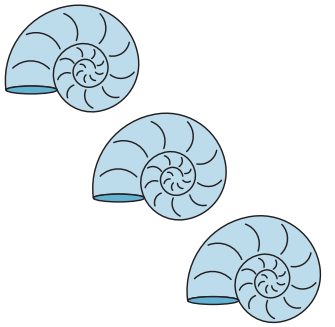
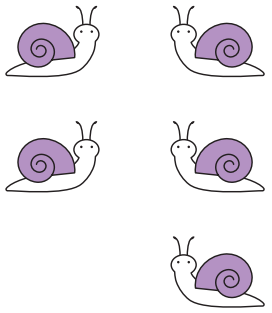	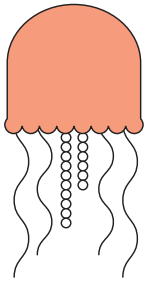	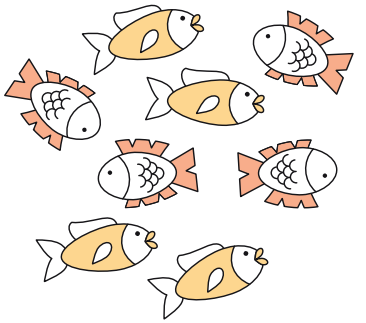

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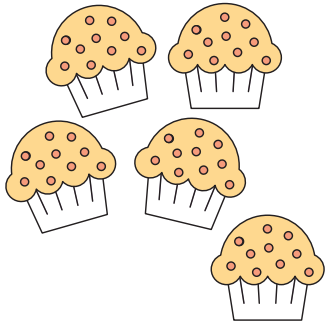		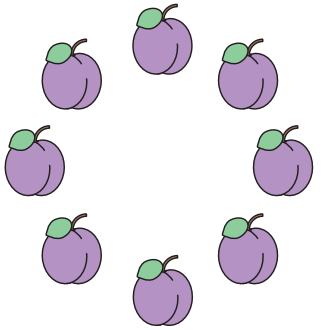
	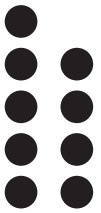	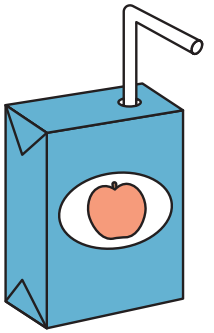
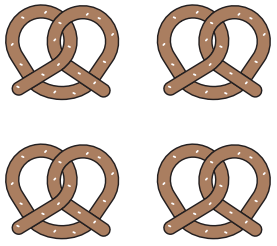	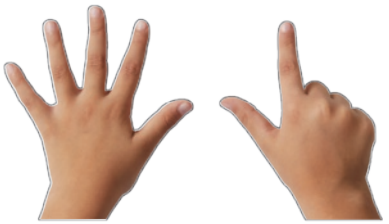	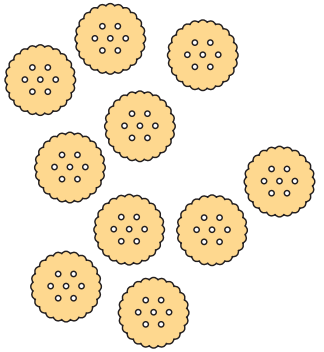

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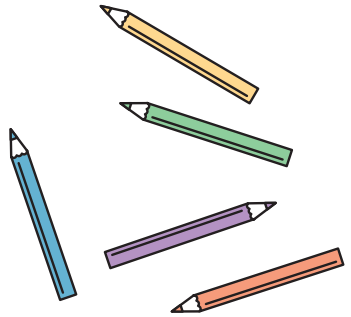	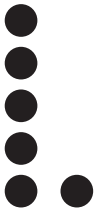	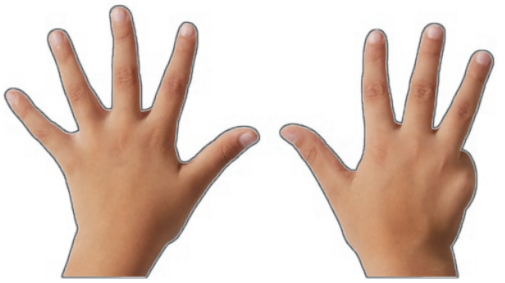
	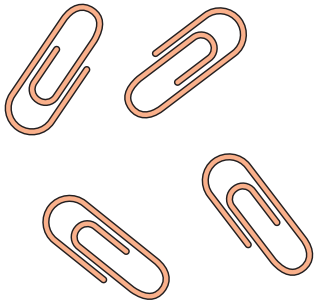	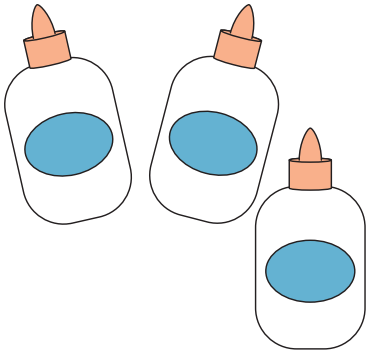
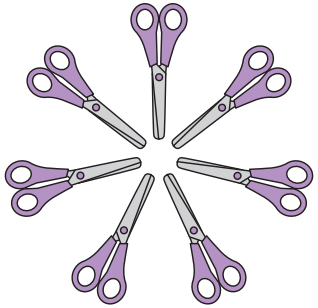		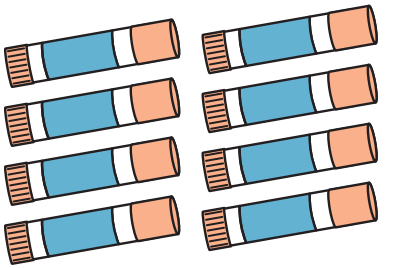

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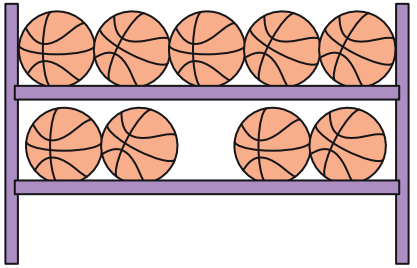	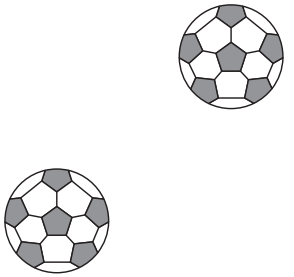	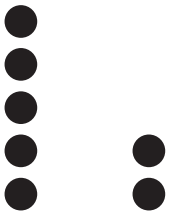
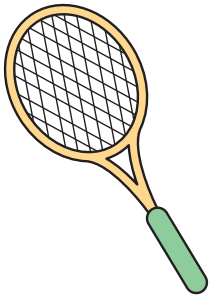		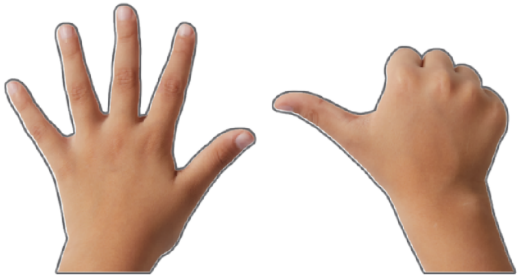
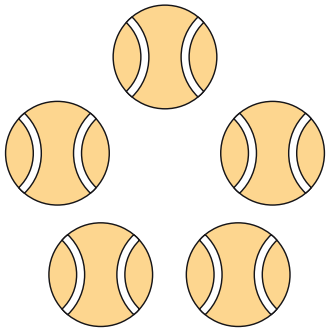		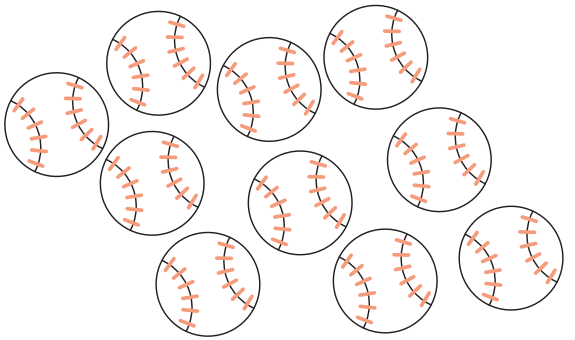

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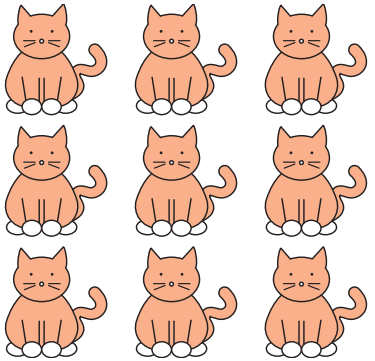	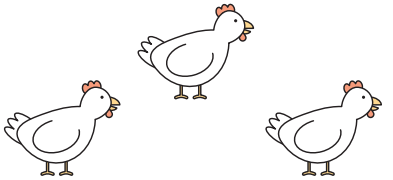	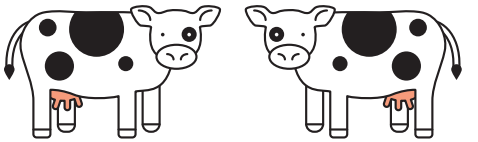
	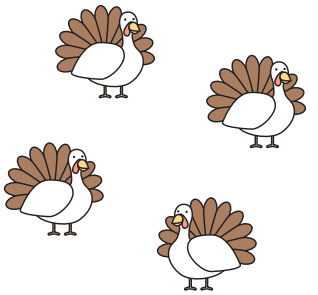	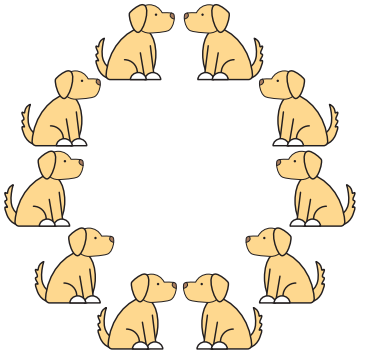
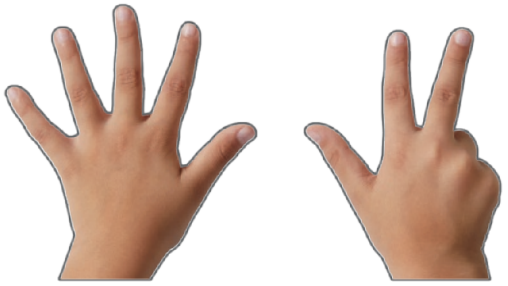	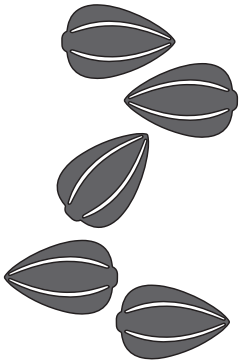	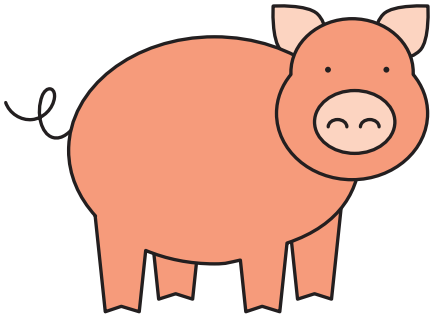

23

LESSON 23

Conserve number regardless of the order in which objects are counted.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1
Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Students count groups of scattered objects in different ways. They notice that the number of objects stays the same. Students use repeated experiences to test the idea and confirm that the number of objects stays the same no matter the order in which they are counted.

Key Question

- Does it matter where you start counting?

Achievement Descriptor

K.Mod1.AD6 **Say** *how many* without recounting when objects are rearranged. (K.CC.B.4.b)

Agenda

Fluency 5 min

Launch 10 min

Learn 25 min

- Starting Point
- Spill and Count
- Problem Set

Land 10 min

Materials

Teacher

- Right-hand and left-hand number gloves
- Demonstration page (in the teacher edition)
- Crayon

Students

- Cup (per student pair)
- Two-color beans (6–10 per student pair)
- Work mat
- Student book
- Crayon

Lesson Preparation

- Student pairs need 1 cup of 6–10 beans each. Vary the number of beans in cups so that pairs can trade and practice counting different amounts.
- Prepare the Demonstration page for use on the Problem Set task.

Fluency

5

Counting on the Number Glove Within 10

Materials—T: Right-hand and left-hand number gloves

Students count on the number glove to develop fluency with unitizing five and to build familiarity with counting the math way.

Watch my number glove and count out loud. Ready?

Use the number glove to show the following sequence while students count aloud:

3	4	5	6	5	6	7	8	7	8

9	10	9	10

Offer more practice counting on the number glove within 10, emphasizing crossing over 5. Emphasize the unit of five by bringing the left hand in and out of view (behind your back).

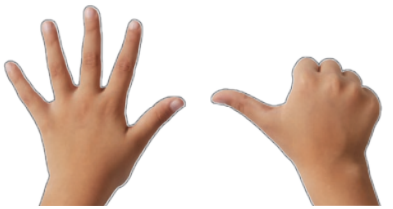
If students have difficulty with the sequence within 10, return to a sequence within 5, and then gradually build up to 10.

Show Me Another Way: 6 and 7

Students represent numbers on their fingers in different ways to prepare for work with conservation.

Show me 6 the math way.

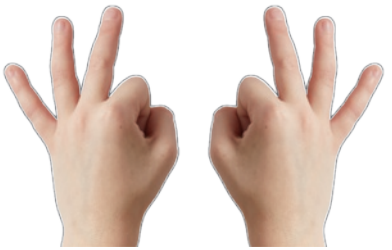
(Shows 6 on their fingers the math way)



Now show me another way to make 6, any way you want!

(Shows 6 on their fingers another way)

Close it up. Show me 6 another way.



Continue having students show 6 on their fingers in various ways a few more times.

Repeat the process with 7.

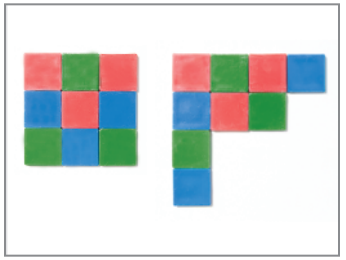
As the total increases beyond 6, fewer combinations are possible on hands. For example, students cannot show 7 with 6 on one hand and 1 on the other. Show Me Another Way does not continue beyond 8 because only one number combination is possible for totals of 9 and 10.

Launch

10

Students analyze two pictures to determine whether they contain the same number of objects.

Gather students and display the tile pictures.



Puppet made this shape with tiles. *(Point to the large square.)* Show thumbs up when you know how many tiles Puppet used.

Wait until most students show thumbs up, and then ask for a choral response.

How many tiles are in Puppet's shape?

9 tiles

Puppet walked away from the work mat for a while. When Puppet came back, this shape was there. *(Point to the image on the right.)*

UDL: Action & Expression

Consider providing Unifix Cubes so that students can explore the question by building the shapes. Cube color is key to answering the question. Provide students with 3 blue, 3 green, and 3 red cubes.

What do you think happened? Do you think someone took some tiles, or added some tiles? Or maybe the number of tiles didn't change at all?

Invite students to think–pair–share about the following questions.

***(Point to the image on the right.)* Could you make the second shape by using Puppet's tiles? How do you know?**

Listen and encourage all explanations without acknowledging the correct answer. Some students may see that both shapes are made of the same tiles, either by focusing on the number of tiles in each or by visualizing the tiles moving to create the second shape. Others may focus on side length or appearance and think that the second shape can't be created by using Puppet's tiles.

Transition to the next segment by framing the work.

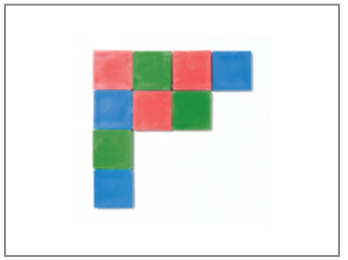
Your explanations help me understand your thinking. Today, let's think more about how many tiles are in the new shape.

Learn 25

Starting Point

Students use different counting paths and notice that the number of objects stays the same.

Display the picture of the new shape.



Show thumbs up when you know how many tiles are in this shape.

Wait until most students show thumbs up, and then ask for a choral response.

How many tiles are in this shape?

9 tiles

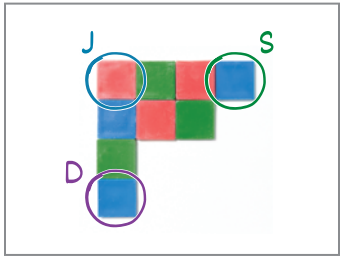
Teacher Note

This lesson focuses on different starting points because they are easy to mark. If students start counting in different places, they take different counting paths. Tracking and comparing counting paths can be tricky for young students.

A major part of conservation is understanding that the number of objects stays the same no matter how they are arranged or in what order they are counted. The idea that different paths can arrive at the same answer is key in elementary mathematics. This lesson gives students one of their first opportunities to experiment with that concept.

Invite a student to come up and show how they counted the tiles. Mark their starting point.

Ask who started counting from a different tile. Invite a couple of these students to show how they counted and mark their starting points.



Three different people started counting the tiles in three different places. How did they all come up with the same number of tiles?

There were the same number of tiles.

The tiles didn't change. They were the same for everybody.

So the number of tiles stays the same no matter where we start counting?

Yes.

Let's test our idea by playing a game.

Spill and Count

Materials—S: Two-color beans, cup, work mat

Students test the idea that they can use different counting paths and find that the number of objects stays the same.

Invite a student to help you model how to play the Spill and Count game.

- Partner A spills all the beans in the cup onto the work mat. Partner A counts the beans and says how many.
- Partner B counts the beans starting with a different bean and says how many.
- The beans go back in the cup. Partners trade cups with another group.
- Partners switch roles and repeat.

It is okay for both partners to move the beans as they count. This practice reinforces the idea that moving the beans does not change the number.

Observational Assessment

☑ Watch as students count beans from one starting point and then count again from a different starting point. When asked "How many?" can students simply say the last number they counted both times, or do they recount a third time?

Once students have counted their beans, ask them to place the beans back in the cup and trade cups with another group.

After students have traded cups a couple of times, help the class remember the idea they are testing.

We are testing the idea that the number stays the same no matter where we start counting. Is that true with your beans?

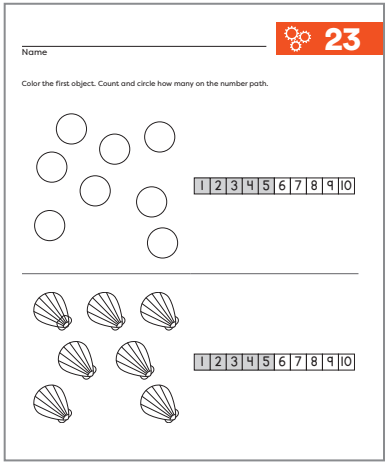
Yes. Marisol started with this bean and I started with that bean, but we both counted 10 beans!

Problem Set

Materials—T: Demonstration page, crayon

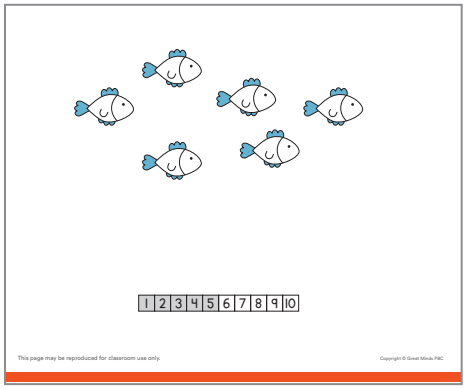
Transition to the Problem Set by practicing your routine for passing out the student book and finding the correct page.

Use the Demonstration page to show the Problem Set task. Model coloring the starting point, counting the fish, and circling the matching number on the number path.



Promoting the Standards for Mathematical Practice

When students test that the number of beans stays the same no matter where they start counting, they look for and express regularity in repeated reasoning **(MP8)**.



Land 10

Debrief 10 min

Materials—S: Problem Set

Objective: Conserve number regardless of the order in which objects are counted.

Gather students with their Problem Sets. Ask students to point to the first circle they counted. Have them think–pair–share about the following questions.

Did you start your count with the same circle as your partner?

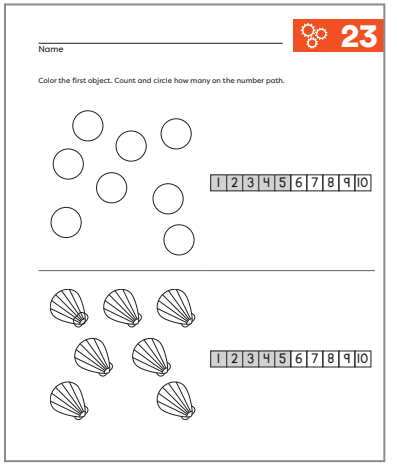
Did you and your partner count the same number of circles?

Does it matter where you start counting? Why?

No. It doesn't matter because the circles stay the same either way you count.

I don't think so. We both counted 8 circles.

Select one or two students to share with the class. As needed, use these questions with the other items on the Problem Set to solidify the idea that the number stays the same no matter where we start our count.

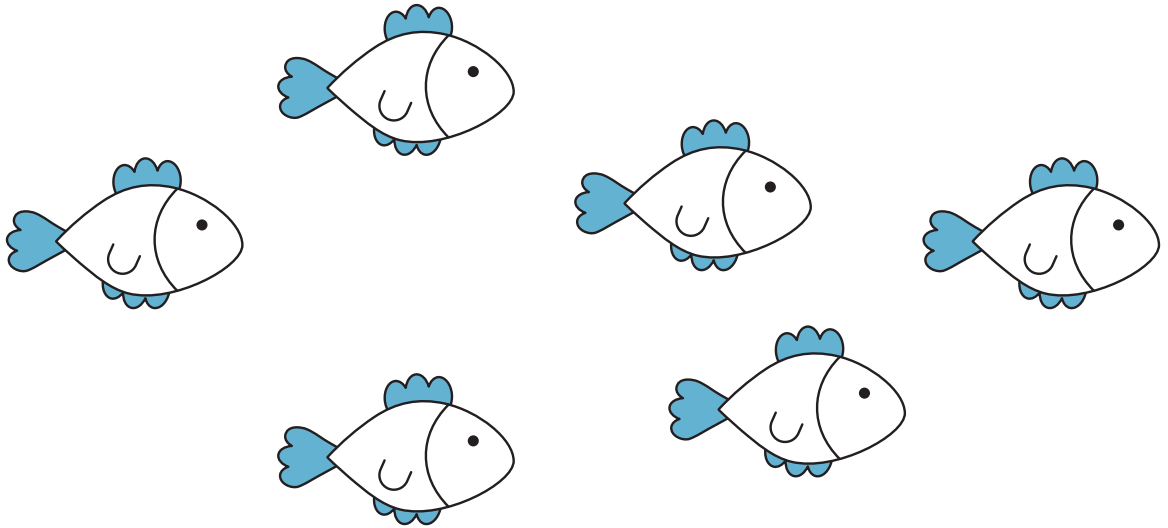

Name

23

Color the first object. Count and circle how many on the number path.

1 2 3 4 5 6 7 8 9 10

1 2 3 4 5 6 7 8 9 10



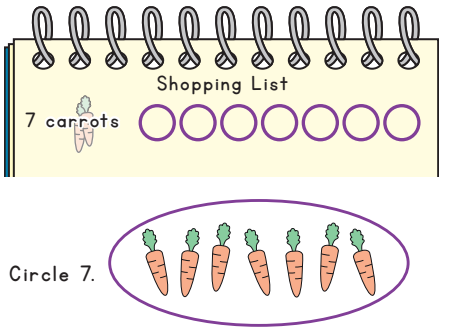
1	2	3	4	5	6	7	8	9	10

Topic F
Write Numerals and Create Sets of Up to 10 Objects

Topic F provides space to practice counting while students learn to write 6, 7, 8, 9, and 10. A mixture of familiar and new contexts encourages students to build independence while maintaining engagement.

The consistent structure of numeral writing lessons allows space for new types of counting practice. Students count things that happen over time, such as a person's jumps or the runs in a baseball game, and see that writing numbers is a good way to record and remember that information. After a few weeks of asking why we write numbers and building a comprehensive list of reasons, students share their thinking as a way of celebrating that they can write numerals 0–10.

Sequencing and ordering numbers is an underlying thread throughout the module. At the end of topic F, students are ready to use their knowledge of the number sequence to reason about numbers in relation to one another. This sets the stage for topic G, where students uncover patterns in the number word list, specifically understanding that each successive number name refers to a quantity that is one larger (**K.CC.B.4.c**).



Students count out a group by drawing and by circling objects in a picture.

Students answer the question, Why do we write numbers?

Progression of Lessons

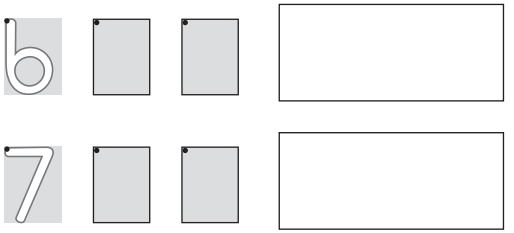
Lesson 24

Count out a group of objects to match a numeral.

I drew 7 carrots.

Lesson 25

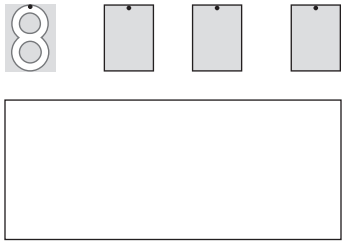
Write numerals 6 and 7.



I can write 6 and 7.

Lesson 26

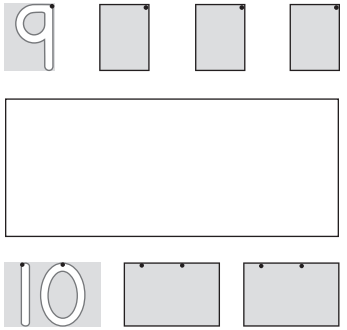
Write numeral 8.



I can write 8.

Lesson 27

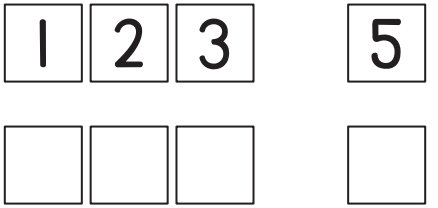
Write numerals 9 and 10.



I can write 9 and 10.

Lesson 28

Order numerals 1–10 and reason about an unknown number in the number sequence.



I know the missing number because the numbers are in order.

24

LESSON 24

Count out a group of objects to match a numeral.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

This lesson revisits the drive-thru role-play game from lesson 10, where students counted out a group of objects to match a number from 1–5. This lesson extends the work to 10. Now that students can accurately count a group of up to 10 objects and recognize numerals 6–10, they are ready to create larger groups.

Key Question

- How can we remember when to stop counting?

Achievement Descriptor

K.Mod1.AD9 **Count** out a given number of 1–10 objects from a larger group. (K.CC.B.5)

Agenda

Fluency 15 min

Launch 5 min

Learn 25 min

- Count Out a Set
- Problem Set

Land 5 min

Materials

Teacher

- Hide Zero® cards, demonstration set (6–10)

Students

- 5-Group Mat (in the student book)
- Unifix® Cubes (10)
- Match cards (1 set per student pair)
- Hide Zero® cards (1 set of 6–10 per student pair)
- Plate (1 per student pair)
- Student book

Lesson Preparation

- Prepare the 5-Group Mats.
- Prepare sets of Match cards. Make sets of 22 cards per student pair that include two cards for each quantity, 0–10.
- Prepare cards 6–10 from the Hide Zero cards demonstration set.
- Review the menu provided in the digital resources for this lesson. Consider adjusting it to incorporate culturally familiar foods.

Fluency 15

Show Me 5-Groups: 5 to 10

Materials—S: 5-Group Mat, Unifix Cubes

Students place cubes in 5-groups to develop an understanding of numbers 6–10 as 5 and some more.

Throughout the activity, encourage students to add Unifix Cubes from left to right so they see the 5-group formation.

Let's play Show Me 5-Groups. I say a number, and you show it with your cubes. Use your mat to help you make a 5-group.

Show me 5.

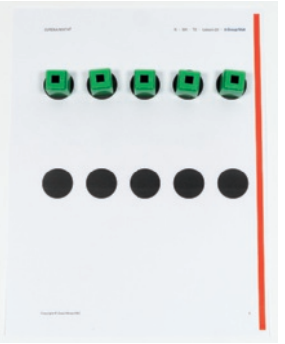
(Places 5 cubes on the mat, filling the top row)

Show me 6.

(Places a cube on the bottom-left dot)

Show me 7.

(Places another cube on the mat, without skipping any dots, for a total of 2 cubes on the bottom row)



Continue to 10, in order.

Teacher Note

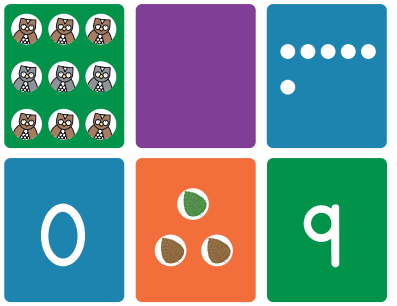
When students first take part in Show Me 5-Groups, many will count from 1 each time a new number is called. The suggested sequence in this lesson asks students to add 1 more cube each time. Take note of students who pick up on this pattern and ask them to explain why they did not need to count from 1.

Match: Sets and Numerals

Materials—S: Match cards

Students count sets and match a numeral to a set to maintain fluency with one-to-one correspondence and an understanding of cardinality.

Have students form pairs. Distribute a set of cards to each pair and have them play the game according to the following rules. Consider doing a practice round with students.



- Lay out six cards.
- Partner A selects cards that match. If no cards match, use an efficient procedure to address the situation (e.g., draw an additional card until a match is made).
- Partner B checks their work and gives a compliment (e.g., "Nice work!") or a suggestion (e.g., "Try using touch and count.").
- Place the matched cards to the side and replace them with two new cards from the pile.
- Continue until all cards are matched, alternating roles at each turn.

Circulate as students play the game and provide support as needed. For example, partners may need some coaching on appropriate suggestions. If this is the case, ask if the partner has a suggestion, such as using the touch and count strategy.

Launch

5

Materials—T: Hide Zero cards

Students remember a target number while multitasking.

Playfully flash the 7 card long enough for students to recognize it, and then remove it from view.

Say the number.

7

Hold that number in your mind and hop until I say stop. Ready? Go!

Differentiation: Challenge

Consider any of the following game adaptations to increase the challenge as students are ready:

- Lay out eight cards in two rows of four to build students' ability to sort through more visual information.
- Invite students to find two cards that make 5 or another target number.

Teacher Note

Counting out a group requires multitasking. Students must remember the target number while saying the number words in order and attending to one-to-one correspondence. This exercise provides practice remembering a number despite distractions.

Stop! What was that number?

7

Let's check.

Hold up the card to verify and celebrate.

Give yourselves 7 claps for remembering the number was 7.

Repeat the process. This time show the 8 card, and have students hop 8 times.

Continue with 6, 9, and 10 by using various exercises (e.g., stomping, squats, hopping on one foot) to maintain engagement.

Transition to the next segment by framing the work.

Let's practice counting cubes to match the numbers on the cards.

Learn 25

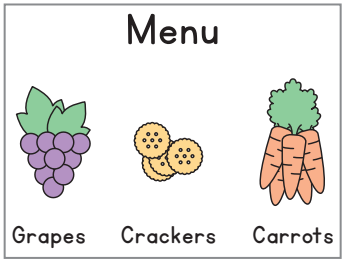
Count Out a Set

Materials—S: Unifix Cubes, Hide Zero cards, plate

Students recognize numerals and count out a matching set.

Display the menu. Remind the class of the drive-thru restaurant scenario from lesson 10 by role-playing customer and worker. Use the following exchange as guidance.

The customer approaches the drive-thru window. The worker greets the customer and asks for the order.



Language Development

Support role-play with sentence frames that are appropriate for the student. Connect the mathematics to the context by modeling and encouraging natural dialogue that students would use in the real world. The length of the sentence stem can be modified to meet the student's language goals.

- How many _____ would you like?
- How many _____?
- I'd like 8 _____ please.
- 8 _____ please.

How many grapes would you like?

The customer gives a Hide Zero card to the worker and says their order.

I'd like 8 grapes please.

The worker counts out a set of 8 cubes and places them on the plate. The customer counts to check. Prepare workers and customers to give gentle corrections.

You asked for 8. This card says 6. Please try again.

That's not what I ordered. Please try again.

After modeling, invite the class to role-play. Pair students and distribute materials. Switch roles from time to time so that every student has an opportunity to count out a set.

Circulate and observe. As needed, give concise corrections:

- Remember the number on the card. Stop counting when you get to that number.
- You have too many grapes; count again.
- You need 2 more to make 8 grapes.

Problem Set

Materials—S: Unifix Cubes

The first items on the Problem Set ask students to represent a number of food items. They may draw or stamp. Allow students to start with counters if needed, which they can trace. Support students who draw the wrong amount at first by beginning with questions that let them consider ways to solve the problem:

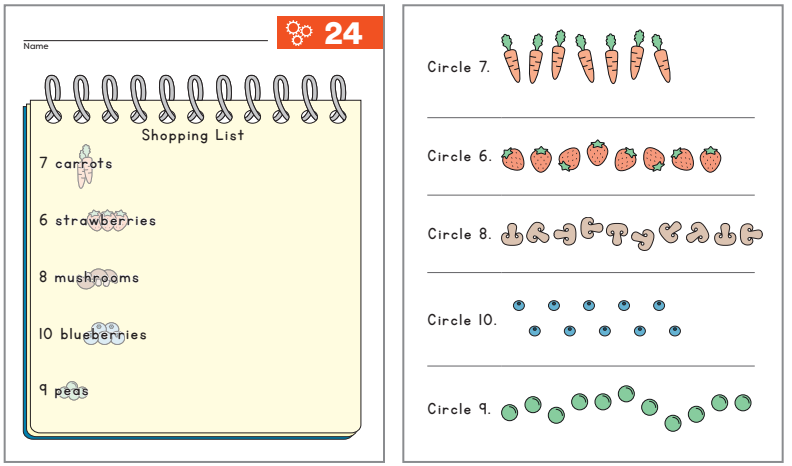
- You have 8 carrots. Should you cross some off or draw more?
- You drew too many carrots. What can you do so your drawing shows 7 carrots?
- There aren't enough carrots. How can you show 7 carrots?

Observational Assessment

☑ Watch as workers count out the requested amount.

- Does the target number match the food given to the customer?
- Does the worker need to recount once or twice?

Items on the second page of the Problem Set ask students to count out and circle a group to match the number shown. For example, they should draw one circle around a group of 7 carrots. If they need support to circle the correct amount, suggest using mark and count so the objects that are part of the group are easy to see.



Land 5

Debrief 5 min

Objective: Count out a group of objects to match a numeral.

Gather students with their Problem Sets. Display the first page of the Problem Set and ask students to put a finger on their carrots.

What did you draw to show the carrots?

Circles

Lines

Teacher Note

This Problem Set is designed for systematic modeling (see lesson 8 for more detail).

Consider offering students stamps or stickers as an alternative to drawing on the first page.

Promoting the Standards for Mathematical Practice

Students model with mathematics **(MP4)** when they make drawings to show 7 carrots, 6 strawberries, etc. Prompting students to alter their drawing if it shows the incorrect number helps students develop the important practice of revising a model.

Let's count our carrots. As we count, let's say what we are counting. Since we are counting carrots, we will say: 1 carrot, 2 carrots, and so on until we have counted them all.

1 carrot, 2 carrots, 3 carrots, 4 carrots, 5 carrots, 6 carrots, 7 carrots.

How did you know when to stop drawing carrots?

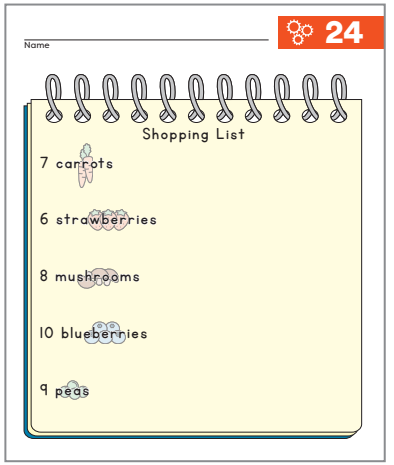
I counted them as I drew each carrot.

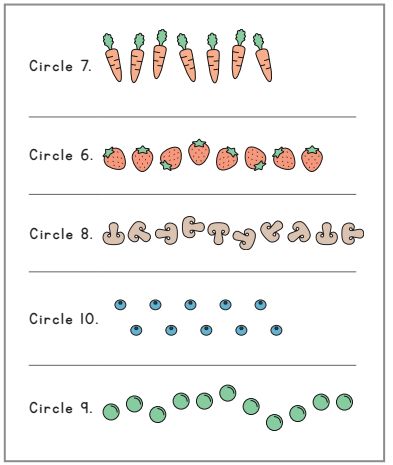
I looked at the number 7, and I counted my carrots to make sure there were 7.

If students completed both pages, invite them to turn and talk about the following questions.

Which was easier: drawing 7 carrots or circling 7 carrots? Why?

How did you make sure to circle the correct number of carrots? Show your partner.





25

LESSON 25

Write numerals 6 and 7.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

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K.Mod1.AD2	**Write** numbers from 0 to 10.	
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K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Students consider why people write numerals as they learn to write 6 and 7. They focus on writing numerals as a way to remember how many times something happens.

Key Question

- Why do we write numbers?

Achievement Descriptor

K.Mod1.AD2 **Write** numbers from 0 to 10. (K.CC.A.3)

Agenda

Fluency 5 min

Launch 10 min

Learn 25 min

- Air and Carpet Writing
- Numeral Writing
- Beep Number

Land 10 min

Materials

Teacher

- Hide Zero® cards, demonstration set (0–7)
- Chart paper
- Puppet or ball
- Why Do We Write Numbers? chart from lesson 11

Students

- 5-Group Mat
- Unifix® Cubes (10)
- Student book

Lesson Preparation

- Prepare the 5-Group Mats.
- Prepare cards 0–7 from the Hide Zero cards demonstration set.
- Consider tearing out the numeral writing page and placing it in a personal whiteboard.

Fluency

5

Show Me 5-Groups: 10 to 5

Materials—S: 5-Group Mat, Unifix Cubes

Students place cubes in 5-groups to develop an understanding of numbers 6–10 as 5 and some more.

Throughout the activity, encourage students to add Unifix Cubes from left to right so they see the 5-group formation.

Let's play Show Me 5-Groups. I say a number, and you show it with your cubes. Use your mat to help you make a 5-group.

Show me 10.

(Places 10 cubes on the mat, filling the top and bottom rows)

Show me 9.

(Removes a cube from the bottom-right dot)

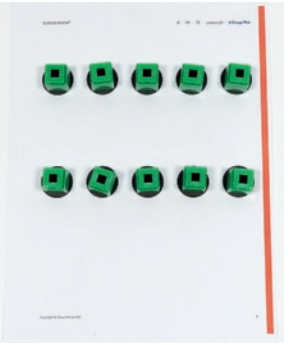
Show me 8.

(Removes the next cube from the bottom row, without skipping any)

Continue to 5 in order. Observe to see which students must count from 1 each time.

Teacher Note

Many students will count from 1 each time a new number is called. The suggested sequence in this lesson asks students to show 1 fewer cube each time. Take note of students who pick up on this pattern and ask them to explain why they did not need to count from 1.



Finger Flash: The Math Way with 5, 6, and 7

Students say how many fingers they see to develop the ability to recognize quantities 6–10 as 5 and some more.

I am going to show you some fingers the math way, but only for a second. You say the number you see. Watch closely!

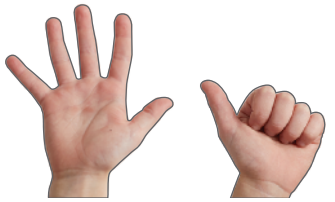
Lean in, establish eye contact, pause dramatically, and then briefly show 5 fingers the math way. Hide them.

How many fingers did you see?

5

Get ready. Here comes the next one.

Briefly show 6 fingers the math way. Hide them.



How many fingers did you see?

6

Continue with the following sequence:

5	7	5	6	5	7	5	6	5	7

Launch 10

Materials—T: Hide Zero cards, chart paper

Students build a need to write numerals.

Share the procedure for the Secret Number Hop game:

- The teacher shows a student a secret number.
- The student hops that many times while the rest of the class counts.
- At the teacher's signal, the class says the secret number.

Invite three to four students to play. Pause to see whether the class remembers how many jumps each student took.

How many times did Jahari hop? What about Neelia?

Um, I think maybe 3. Or maybe 4?

We can't remember.

It is getting hard to remember. Let's write down how many times each person hops. When we have lots of numbers to remember, we can write them down to help us.

Promoting the Standards for Mathematical Practice

Students reason abstractly and quantitatively **(MP2)** when they decontextualize by using numerals to represent how many times their classmates hop. Later, they contextualize the numerals by remembering that they are referring to how many times each student hopped.

Write the names of previous hoppers on chart paper. Use students' memories and the discarded Hide Zero cards to write the number of times each person hopped.

Invite more students to hop until all the cards have been used. This time, record their names and number of hops on the chart paper.

Jahari - 3
Amyra - 0
Neelia - 5
Tyler - 2
Sadie - 7
Vipul - 6
Maxwell - 1
Molly - 4

Look at the chart. How many times did Amyra hop? ***(Point to the student name on the chart.)***

Why is it important for us to write down the number after each person hops?

So we can remember the numbers easier.

Transition to the next segment by framing the work.

You are experts at writing most of the numbers on our chart: 0, 1, 2, 3, 4, and 5. Today, we will learn how to write numbers 6 and 7.

Cover the chart or set it aside, but plan to display it again in Land.

Learn 25

Air and Carpet Writing

Materials—T: Puppet or ball

Students learn the basic strokes for writing numerals 6 and 7.

Hold the ball high in the air and write numeral 6 starting from the top while saying the rhyme. Encourage students to follow your movements with a straight arm.

Down the side, and then a curl. The 6 makes a little swirl.

Have students move their counting fingers to the carpet or another surface that provides tactile feedback. Repeat the rhyme while students write 6 on the new surface.

UDL Representation

Having students simulate writing numerals by using a straight arm in the air and by using fingers on the carpet, or another tactile surface, presents the information in multiple modes. This provides additional ways for students to process and retain information.

Repeat the same process for the numeral 7.

Across the sky, then drop a line. I make a 7 every time.

Numeral Writing

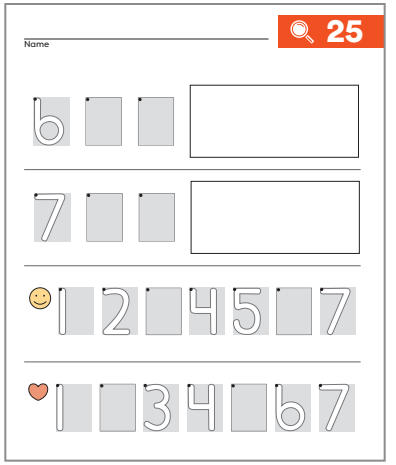
Materials—S: Numeral writing page

Students trace and write numerals 6 and 7.

Distribute classwork and writing utensils. Invite students to find the numeral 6 on the page. Once they have their fingers on the numeral 6, have students collectively say the rhyme while tracing the numeral with their fingers.

Demonstrate how to write 6. Then invite students to use a pencil or crayon to write 6 until the row is complete. If time permits, have students draw 6 circles inside the box.

Repeat with the numeral 7.



Beep Number

Students sequence numbers to 7.

Have students stand to play Beep Number.

Let's play Beep Number! I'll count, but instead of saying one of the numbers, I'm going to say *beep*. Raise your hand when you know the beep number. Ready?

3, 4, 5, beep *(Signal.)*

6

4, 5, 6, beep *(Signal.)*

7

3, 4, beep, 6 *(Signal.)*

5

4, 5, beep, 7 *(Signal.)*

6

Teacher Note

Consider tearing out the numeral writing page and placing it inside a personal whiteboard to reuse for practice.

Observational Assessment

☑ Observe students as they write.

- Do they start at the dot and stay inside the writing rectangle?

Differentiation: Support

If students have trouble with the verbal sequencing in Beep Number, consider having them follow along on the number path with their fingers.

If time permits, invite students to complete the number sequences at the bottom of the numeral writing page. Work through the first sequence together, as if playing Beep Number on paper. Track with a finger, saying the numbers that are shown. Say *beep* for the blanks.

Land 10

Debrief 10 min

Materials—T: Why Do We Write Numbers? chart

Objective: Write numerals 6 and 7.

Gather students and remind them about the secret number game they played in Launch. Without showing the chart, pose the following question.

How many times did Tyler hop?

We can't remember.

I think maybe 4 or 5.

What did we do to help us remember?

We wrote it down.

Display the chart from Launch. Ask how many times different students hopped, allowing students to reference the chart while answering.

Display or point to the Why Do We Write Numbers? chart started in lesson 11.

Why do we write numbers?

To help us remember things.

It's easier than drawing 6 or 7 things.

Add any new ideas to the chart.

Jahari - 3
Neelia - 5
Sadie - 7
Maxwell - 1
Amyra - 0
Tyler - 2
Vipul - 6
Molly - 4

Why Do We Write Numbers?
- play restaurant
- remember the count
- make grocery list
- share your phone number
- faster than drawing
- make a calendar
- room numbers
- keep score
- play a game
- make a birthday card

26

LESSON 26

Write numeral 8.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Students know that written numerals tell how many, are more efficient than drawing, and help us remember quantities. They continue to explore reasons people write numerals as they learn to write 8. They realize, when counting the arms and legs of animals, it's helpful to write down the number of limbs rather than count them over again.

Key Question

- Why do we write numbers?

Achievement Descriptors

K.Mod1.AD1 **Count** to 10. (K.CC.A.1)

K.Mod1.AD2 **Write** numbers from 0 to 10. (K.CC.A.3)

Agenda

Fluency 10 min

Launch 10 min

Learn 25 min

- Air and Carpet Writing
- Numeral Writing
- Beep Number
- Problem Set

Land 5 min

Materials

Teacher

- Hide Zero® cards, demonstration set (0–7)
- Chart paper
- Puppet or ball
- Why Do We Write Numbers? chart

Students

- 5-Group Mat
- Unifix® Cubes (10)
- Student book

Lesson Preparation

- Prepare the 5-group mats.
- Prepare cards 0–7 from the Hide Zero cards demonstration set.
- Create a baggie of 10 Unifix Cubes of the same color for each student.
- Consider tearing out the numeral writing page and placing it in a personal whiteboard.

Fluency

10

Show Me 5-Groups: 5 and 10

Materials—S: 5-Group Mat, Unifix Cubes

Students place cubes in 5-groups to develop an understanding of numbers 6–10 as 5 and some more.

Throughout the activity, encourage students to add Unifix Cubes from left to right so they see the 5-group formation.

Let's play Show Me 5-Groups. I say a number, and then you show it with your cubes. Use your mat to help you make a 5-group.

Show me 5.

(Places 5 cubes on the mat, filling the top row)

Show me 10.

(Places 5 more cubes on the mat, filling the bottom row)

Show me 5.

(Removes 5 cubes from the bottom row)

Show me 10.

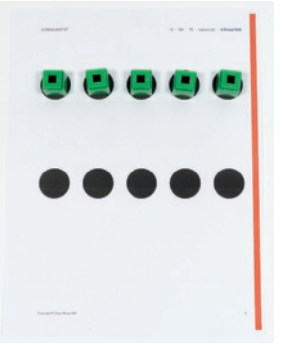
(Places 5 cubes back on the bottom row)

Alternate playfully between 5 and 10 with the goal of removing or filling a row of 5 all at once.

Teacher Note

Show Me 5-Groups: 5 and 10 emphasizes the structure of 5-groups. This structure helps young students visualize quantities 6–10.

This simple activity helps students unitize 5, or work with a group of 5 cubes as a unit rather than individual cubes. 10 can be seen as two rows, or units, of 5. This thinking fosters understanding of part-total relationships and sets the stage for Level 2 counting on strategies.



Feel the Number to 7

Materials—T: Hide Zero cards

Students finger trace and guess a numeral to build kinesthetic memory for numeral formation.

Let's play Feel the Number.

Have students form pairs and stand one behind the other, both facing forward. The partner in the back is the writer. The partner in the front is the guesser.

Stand behind the class, facing students' backs, and show the 6 card.

Writers, turn and look at my number, but don't say it. Keep it a secret! Write this number on your partner's back with your finger. Use your partner's whole back, so you write nice and big.

Guessers, can you tell what number your partner wrote?

6

Both partners, turn and look at my number. If you got it right, give me 6 claps!

Continue with recently learned numerals 6 and 7, as well as any that pose a challenge for the class. Celebrate with the corresponding number of claps. Now that the numbers have increased, invite students to count while clapping. After some time, have partners switch roles.

Differentiation: Support

If writers need support, they can say the numeral formation rhyme as they trace.

If the guessers need support, writers can write in the guessers' hands so that they can both feel and see the numeral. Adjust the seating arrangement as necessary.

For any student uncomfortable with touch, this game can be played by having the writer write in the air or on the rug.

Launch 10

Materials—T: Chart paper

Students count animal legs and arms and tell how many.

Gather students and tell them they will take an imaginary trip to the zoo. If time permits, have students sit like they are on a train.

While we ride the train around the zoo, your job is to count the number of arms and legs on each animal.

Show the picture of the ostrich.

Raise your hand if you know the name of this animal.

Ostrich

How many arms and legs does the ostrich have?

2

Record the name of the animal and the total number of arms and legs on chart paper. Ask students to say the number-writing rhyme as you write each numeral.

Continue counting and recording the number of legs for the pictures of the giraffe, black heron, monkey, snake, sea star, and octopus.

When you reach the octopus, transition to the next segment by naming the need to write the numeral 8.

We need to learn how to write the number 8 so that we can write that the octopus has 8 arms.

Teacher Note

This is an opportunity to celebrate diverse language skills by asking students to name the animals in their native languages. Consider looking up the animal names in advance to be able to write them on the chart correctly.

Differentiation: Challenge

Challenge students to sort animals by the number of arms and legs. Once they have sorted a dozen or more animals, encourage them to look for patterns. Symmetry is common in anatomy, and many animals have an even number of arms and legs. Encourage students to research and learn more about animal anatomy to better understand the patterns they find.

Learn 25

Air and Carpet Writing

Materials—T: Puppet or ball

Students learn the basic stroke for writing the numeral 8.

Hold the ball high in the air and write the numeral 8 starting from the top while saying the rhyme. Encourage students to follow your movements with a straight arm.

Make an S and do not stop. I see an 8 when I close the top.

Have students move their counting fingers to the carpet or another surface that provides tactile feedback. Repeat the rhyme while students write 8 on the new surface.

If students need additional practice with numerals 1–7, use any extra time to practice or review the rhymes for writing those numerals.

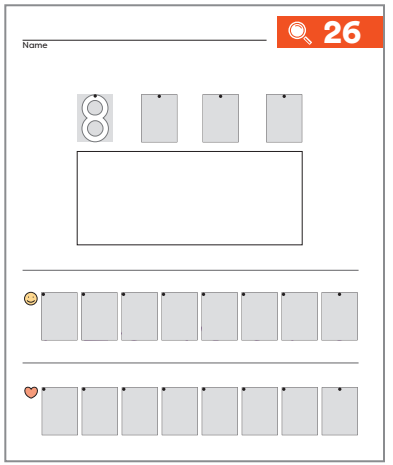
Numeral Writing

Materials—S: Numeral writing page

Students trace and write the numeral 8.

Distribute classwork and writing utensils. Invite students to find the numeral 8 on the page. Once they have their fingers on the numeral 8, have students collectively say the rhyme while tracing the numeral with their fingers.

Demonstrate how to write 8. Then invite students to use a pencil or crayon to write 8 until the row is complete. If time permits, have students draw an animal with 8 arms or legs inside the box.



Teacher Note

Starting numerals and letters from the top is an important habit for students to learn in kindergarten. It will help them keep up when the writing demands increase in later grades.

Teacher Note

Consider tearing out the numeral writing page and placing it inside a personal whiteboard to reuse for practice.

Observational Assessment

☑ Observe students as they write.

- Can students form numerals accurately?
- Can students accurately fill in the missing numbers? (number sequence)

Beep Number

Students sequence numbers to 8.

Have students stand to play Beep Number.

Let's play Beep Number! I'll count, but instead of saying one of the numbers, I'm going to say *beep*. Raise your hand when you know the beep number. Ready?

5, 6, 7, beep *(Signal.)*

8

5, 6, beep, 8 *(Signal.)*

7

5, beep, 7, 8 *(Signal.)*

6

Beep, 6, 7, 8 *(Signal.)*

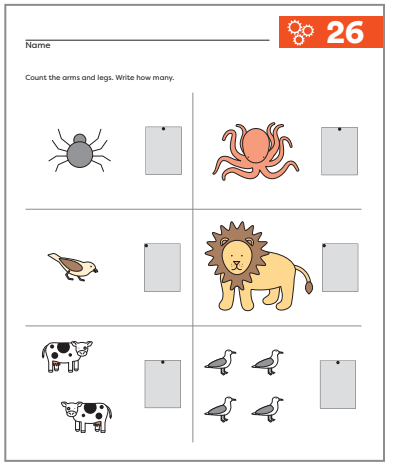
5

If time permits, invite students to complete the number sequences at the bottom of the numeral writing page. Work through the first sequence together, as if playing Beep Number on paper. Track with a finger, saying the numbers that are shown. Say *beep* for the blanks.

Problem Set

Transition to the Problem Set by practicing your routine for passing out the student book and finding the correct page.

Invite students to count the number of arms and legs in each box and write the numeral in the writing rectangle. Anticipate questions about the cow and seagull problems. Encourage students to count the legs on all the animals in each box.



Promoting the Standards for Mathematical Practice

Students look for and make use of structure (MP7) when they use the given numerals in the counting sequence to help them figure out which numerals need to be written in the empty boxes on the numeral writing page.

Differentiation: Challenge

The pictures on the Problem Set can be used for decomposition or composition. Challenge students to make number statements about the pictures.

- Spider: 8 legs is 4 legs and 4 legs.
- Cows: 4 legs and 4 legs make 8 legs.
- Seagulls: 2 legs and 2 legs and 2 legs and 2 legs make 8 legs.

Land 5

Debrief 5 min

Materials—T: Why Do We Write Numbers? chart

Objective: Write numeral 8.

Gather students with their Problem Sets. Display the Problem Set. Ask students to point to the spider.

Show your partner how you counted the spider's legs.

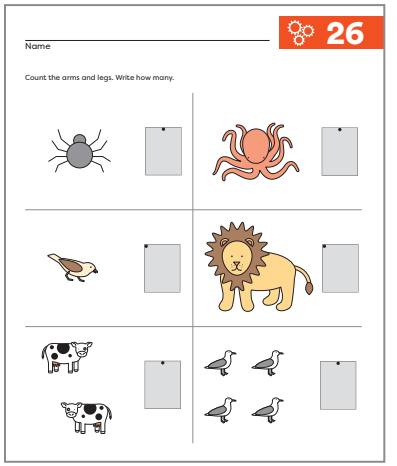
Pause for partners to share how they counted the spider's legs. Listen for organized counting strategies. Choose two counting strategies to share with the class.

I heard some students say they marked each leg as they counted to keep track.

Other students touched and counted each leg. They counted all the legs on one side of the spider and then all the legs on the other side of the spider. Someone said, "4 legs and 4 legs make 8 legs."

Even though we used different strategies to count the legs, we all wrote the number 8.

Display or point to the Why Do We Write Numbers? chart. Add any new ideas to the chart.


Name

26

Count the arms and legs. Write how many.

27

LESSON 27

Write numerals 9 and 10.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Students round out their module 1 numeral writing experience by learning how to form 9 and 10. They celebrate their new abilities by writing numerals 1–10 in order and sharing their thoughts about why people write numerals.

Key Question

- Why do we write numbers?

Achievement Descriptor

K.Mod1.AD2 **Write** numbers from 0 to 10. (K.CC.A.3)

Agenda

Fluency 10 min

Launch 10 min

Learn 20 min

- Air and Carpet Writing
- Numeral Writing
- Problem Set

Land 10 min

Materials

Teacher

- Hide Zero® cards, demonstration set (0–8)
- Puppet or ball
- "I Can Count" song lyrics (in the teacher edition)
- Why Do We Write Numbers? chart

Students

- 5-Group Mat
- Unifix® Cubes (10)
- Scoreboard (in the student book)
- Personal whiteboard
- Dry-erase marker
- Student book

Lesson Preparation

- Prepare the 5-group mats.
- Prepare cards 0–8 from the Hide Zero cards demonstration set.
- The Scoreboard must be placed in personal whiteboards. Consider tearing Scoreboards out of the student book and placing them in whiteboards in advance.
- Consider tearing out the numeral writing page and placing it in a personal whiteboard.

Fluency

10

Show Me 5-Groups: Build from 5

Materials—S: 5-Group Mat, Unifix Cubes

Students place cubes in 5-groups to develop an understanding of numbers 6–10 as 5 and some more.

Throughout the activity, encourage students to add Unifix Cubes from left to right so they see the 5-group formation.

Let's play Show Me 5-Groups. I say a number, and you show it with your cubes. Use your mat to help you make a 5-group.

Show me 5.

(Places 5 cubes on the mat, filling the top row)

Show me 6.

(Places a cube on the bottom-left dot)

Show me 5.

(Removes a cube from the bottom row)

Show me 7.

(Places 2 cubes on the bottom row, starting from the left)

Continue with the following sequence:

5	8

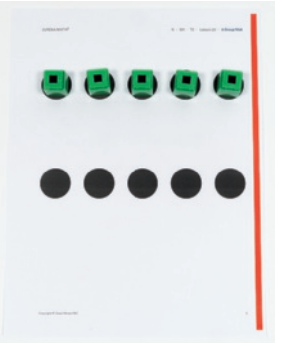
5	9

5	10

Observe to see which students are using the structure of the 5-group instead of counting from 1 each time.

Teacher Note

Show Me 5-Groups: Build from 5 emphasizes the structure of 5-groups. This simple activity helps students unitize 5 by seeing 6 as 5 and 1, 7 as 5 and 2, and so on. Unitizing 5 in this way sets the stage for Level 2 counting on strategies.



Finger Flash: The Math Way to 10

Students say how many fingers they see to develop the ability to recognize quantities 6–10 as 5 and some more.

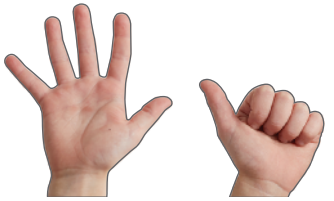
I am going to show you some fingers the math way, but only for a second. You say the number you see. Watch closely!

Lean in, establish eye contact, pause dramatically, and then briefly show 5 fingers the math way. Hide them.

How many fingers did you see?

5

Get ready. Here comes the next one.



Briefly show 6 fingers the math way. Hide them.

How many fingers did you see?

6

Continue with the following sequence:

5	7	5	8	5	9	5	10

Feel the Number to 8

Materials—T: Hide Zero cards

Students finger trace and guess a numeral to build kinesthetic memory for numeral formation.

Let's play Feel the Number.

Have students form pairs and stand one behind the other, both facing forward. The partner in the back is the writer. The partner in the front is the guesser.

Stand behind the class, facing students' backs, and show the 8 card.

Writers, turn and look at my number, but don't say it. Keep it a secret! Write this number on your partner's back with your finger. Use your partner's whole back, so you write nice and big.

Guessers, can you tell what number your partner wrote?

8

Both partners, turn and look at my number. If you got it right, give me 8 claps!

Continue with recently learned numerals 6, 7, and 8, as well as any that pose a challenge for the class. Celebrate with the corresponding number of claps. Now that the numbers have increased, invite students to count while clapping. After some time, have partners switch roles.

Launch 10

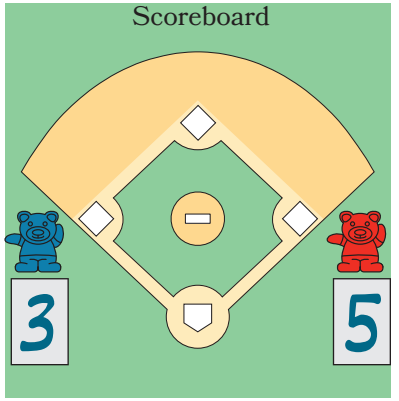
Materials—S: Scoreboard, personal whiteboard, dry-erase marker

Students practice writing numerals 0 through 8 and establish a purpose for writing numerals.

Display the Baseball Bears digital interactive.

The blue and red teddy bears are having a home run competition. They get 1 point for every home run they hit.

Our job is to keep score. What can we do to show how many points each bear scores?



Listen to student ideas. If students do not suggest writing the numerals, show a copy of the Scoreboard, and describe how it is used to keep track of runs in baseball. Distribute a Scoreboard to each student.

Promoting the Standards for Mathematical Practice

When students choose to write numerals to keep track of the score, they use appropriate tools strategically (MP5). Students could also keep score by using drawings or marks but see that if they use numerals they don't have to repeatedly count.

Ask the following question to promote MP5:

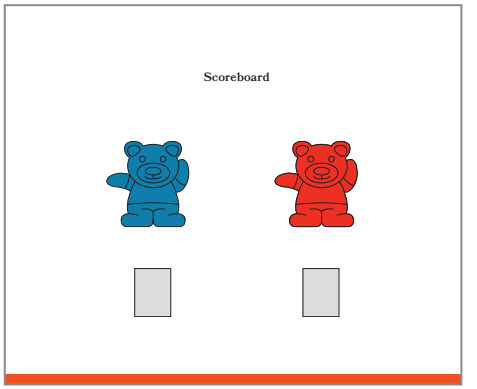
- Can we draw circles each time a team scores a point?

The bears don't have any points yet. What's the math word for none?

Zero

Prompt students to write 0 for each bear on the Scoreboard. Demonstrate the numeral formation while saying the number rhyme if needed.

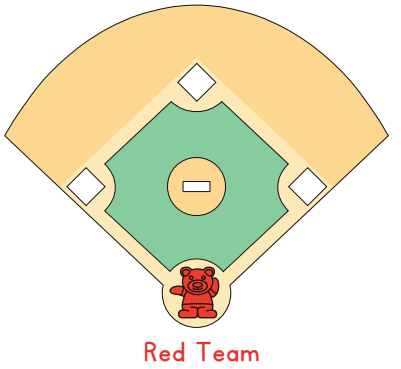
The blue team will go first. In the digital interactive, swing to let a bear take its turn at bat. If the bear hits a home run, prompt students to change their Scoreboards. If the bear does not hit a home run, it gets an out.



The blue bear scored a point! How should we change our Scoreboards?

We should change the blue bears' 0 to a 1.

Consider having students hold up their personal whiteboards so that you can quickly validate the accuracy of their work.



Swing for the blue bear until it has 3 outs. A red bear will automatically come to bat.

Repeat the process, demonstrating numeral formation as needed, until students have to write 9.

Transition to the next segment by framing the work.

We need to change the score to 9, but we haven't practiced writing 9 or 10. Let's learn those numbers now.

Learn 20

Air and Carpet Writing

Materials—T: Puppet or ball

Students learn the basic strokes for writing numerals 9 and 10.

Hold the ball high in the air, and write the numeral 9 starting from the top while saying the rhyme. Encourage students to follow your movements with a straight arm.

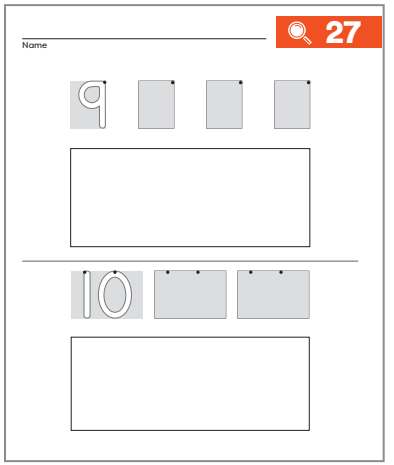
> **Draw a loop and drop a line. That is the way I make a 9.**

Have students move their counting fingers to the carpet or another surface that provides tactile feedback. Repeat the rhyme while students write 9 on the new surface.

The numeral 10 does not have its own rhyme.

> **We use 1 and 0 to write 10. We already know how to write 1 and 0.**

Practice writing 10 first in the air and then on the carpet.



Teacher Note

Ten is the first two-digit numeral students learn to write. Avoid saying things like "Ten is a 1 and a 0," which could be misunderstood as a number statement. Ten is a single number made of two digits. This precision becomes especially important when students build the foundation for place value understanding in module 6.

Numeral Writing

Materials—S: Numeral writing page

Students trace and write numerals 9 and 10.

Distribute classwork and writing utensils. Invite students to find the numeral 9 on the page. Once they have their fingers on the numeral 9, have students collectively say the rhyme while tracing the numeral with their fingers.

Teacher Note

Consider tearing out the numeral writing page and placing it inside a personal whiteboard to reuse for practice.

Demonstrate how to write 9. Then invite students to use a pencil or crayon to write 9 until the row is complete. If time permits, have students draw 9 circles inside the box.

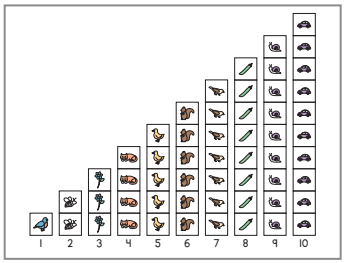
Repeat with the numeral 10.

Problem Set

Materials—T: "I Can Count" song lyrics

Display the I Can Count visual and have the lyrics to "I Can Count" ready.

Sing the song, and show each column of images as they are introduced. At the end of the song, have students turn to the Problem Set. Invite students to write numerals 1 through 10 to go along with the images and the song.



Observational Assessment

☑ Observe students as they write.

- Do students start at the dot and stay inside the writing rectangle?

Land 10

Debrief 10 min

Materials—T: Why Do We Write Numbers? chart

Objective: Write numerals 9 and 10.

Today is an exciting day for our class! With hard work and practice, we have learned to write numbers 1 through 10.

How did writing numbers help us keep score during the baseball game?

It helped us remember how many points the teams had.

We've talked a lot about why we write numbers over the past few weeks. What ideas haven't we written on the chart?

Why Do We Write Numbers?
- play restaurant
- remember the count
- make grocery list
- share your phone number
- faster than drawing
- make a calendar
- room numbers
- keep score
- play a game
- make a birthday card

Teacher Note

Consider ways to make this discussion feel like the celebration of a milestone.

- Take a photo of the class holding up their Problem Sets.
- Invite a special member of the school community to ask the class about why people write numbers.
- Send home a note encouraging families to celebrate the accomplishment and to ask students why people write numbers.
- Write the reasons people write numbers as a letter to the principal.

I Can Count

Sing to the tune of "Once I Caught a Fish Alive"

1 bluebird in a tree.
2 bees buzz over me.
3 flowers growing free.
I can count! 1, 2, 3

4 cats sleep in the sun.
5 ducks are having fun.
Each one splashes as it dives.
I count 1, 2, 3, 4, 5.

6 squirrels each gather seeds.
7 birds have chicks to feed.
Each chick eats just what it's given.
1, 2, 3, 4, 5, 6, 7

8 beans grow on a vine.
9 snails creep in a line.
1, 2, 3, 4—watch that slime!
5, 6, 7, 8, and 9

10 cars go for a drive.
Count them: 1, 2, 3, 4, 5
6, 7, 8, 9, 10.
Let's go count them all again.

28

LESSON 28

Order numerals 1–10 and reason about an unknown number in the number sequence.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1
Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Sequencing numbers helps students begin to understand the relationship between them. Students explore this relationship by ordering Numeral Cards 1–10. They become number detectives by identifying numbers within the sequence that they can not see.

Key Question

- How does number order help you figure out which number is missing?

Achievement Descriptor

K.Mod1.AD1 **Count** to 10. (K.CC.A.1)

Agenda

Fluency 10 min

Launch 10 min

Learn 25 min

- Order Numbers 1–10
- Number Detective
- Problem Set

Land 5 min

Materials

Teacher

- Hide Zero® cards, demonstration set (1–10)
- Sticky notes (12)
- *Eureka Math²* Numeral Cards (1–10)

Students

- 5-Group Mat
- Unifix® Cubes (10)

Lesson Preparation

- Prepare the 5-group mats.
- Prepare cards 0–10 from the Hide Zero cards demonstration set.
- Write numbers 1–12 on the sticky notes.
- Prepare cards 1–10 from the Numeral Cards set. If you do not have Numeral Cards, consider using index cards. Number the cards 1–10.

Fluency

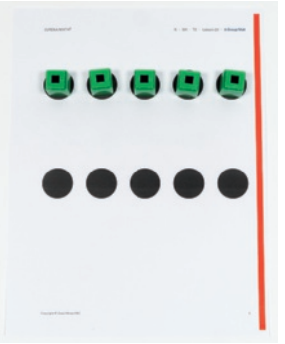
10

Show Me 5-Groups: 6–10

Materials—S: 5-Group Mat, Unifix Cubes

Students place cubes in 5-groups to develop an understanding of numbers 6–10 as 5 and some more.

Throughout the activity, encourage students to add Unifix Cubes from left to right so they see the 5-group formation.



Let's play Show Me 5-Groups. I say a number, and you show it with your cubes. Use your mat to help you make a 5-group.

Show me 5.

(Places 5 cubes on the mat, filling the top row)

Continue with numbers 6–10 in any order.

If students are ready, consider removing the 5-group mat.

Feel the Number to 10

Materials—T: Hide Zero cards

Students finger trace and guess a numeral to build kinesthetic memory for numeral formation.

Let's play Feel the Number.

Have students form pairs and stand one behind the other, both facing forward. The partner in the back is the writer. The partner in the front is the guesser.

Stand behind the class, facing students' backs, and show the 9 card.

Writers, turn and look at my number, but don't say it. Keep it a secret! Write this number on your partner's back with your finger. Use your partner's whole back, so you write nice and big.

Differentiation: Support

If students need support, refer to previous lessons for a more supported sequence. Observe to see which students are using the structure of the 5-group instead of counting from 1 each time.

Guessers, can you tell what number your partner wrote?

9

Both partners, turn and look at my number. If you got it right, give me 9 claps!

Continue with recently learned numerals 9 and 10, as well as any that pose a challenge for the class. Celebrate with the corresponding number of claps. Now that the numbers have increased, invite students to count while clapping. After some time, have partners switch roles.

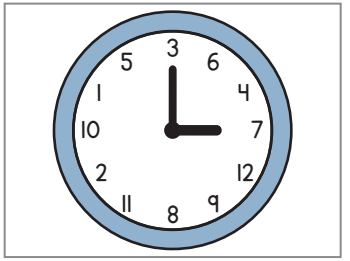
Launch

10

Materials—T: Sticky notes

Students correct a sequence of numbers that is out of order.

Have students look at a clock and notice the numbers. Then display the mixed-up clock.



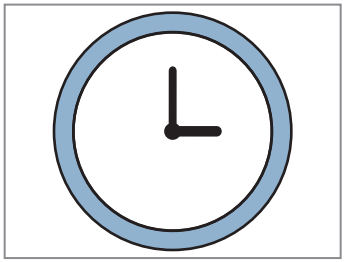
Look at this clock. Is there something wrong with it?

Yes, the numbers are all mixed up.

Yes, it doesn't tell you the time.

Let's fix it together by putting the numbers in order.

Display the numberless clock, and place the numbered sticky notes out of order where students can easily see them.



Let's use these sticky notes to put the numbers in order.

3	6	4	7	12	9	8	11	2	10	1	5

Let's put 1 on the clock first! Where does it go?

Teacher Note

This is not a lesson on telling time. Rather, the intent is to show a familiar, real-world example of sequenced numbers to create curiosity about the reason for number order.

Find the sticky note with the number 1, and follow students' instructions to put it in the appropriate place on the clock.

What number goes next?

2

Ask a student to find 2 and point out the appropriate place to put it on the clock. Continue until all numbers are added to the clock in order.

Transition to the next segment by framing the work.

Today, we will explore other ways that ordering numbers can help us figure things out.

Learn 25

Order Numbers 1–10

Materials—T: Numeral Cards

Order numerals 1–10 and reason about an unknown number in the number sequence.

I have a set of number cards. They are out of order. Let's put them in order together.

Place 10 large number cards in a linear formation, out of order, so the class can see them.

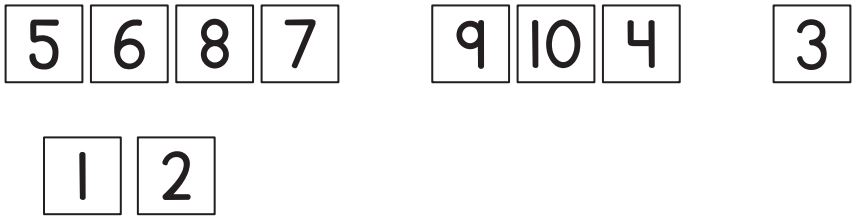
How should we put these numbers in order?

We can move and count them.

We can find number 1 and move it to the front.

Good ideas. Let's take the 1 card and move it down and to the front.

Move the 1 card to start another row, and continue sequencing the numbers with the class.



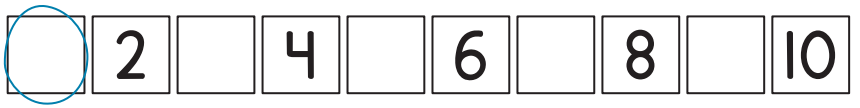
All of our numbers are in order now. Let's count them to make sure. *(Point to the Numeral Cards as the class counts chorally.)*

Number Detective

Materials—T: Numeral Cards

Students reason about numbers based on their placement in a sequence.

Using the sequenced number cards, turn over every other card starting with 1.



Point to one of the cards that is turned over. For example, number 1.

Let's be number detectives and use clues to figure out this number. When you think you know what the number is, stand up.

Give students think time, and wait for most of the class to stand up. Call on a student to say the number.

If you agree, show thumbs up. Let's turn over the card and see if we were good detectives.

Turn over the card and reveal the number 1.

Observational Assessment

- ☑ Can students order the cards accurately and efficiently?
- ☑ Can students name the missing number? Do they count the cards from the beginning of the set or just say the number?

Number Detective Variations

There are many ways to vary this game. Use the suggestions below to support or challenge your class.

Support

- Use fewer cards (1–5).
- Use Hide Zero cards with dots on the back.
- Chorally say the number sequence before asking students to identify a hidden number.

Challenge

- Use the 0 card.
- Place the cards in a decreasing sequence beginning with 10.
- Arrange the cards in a 5-group rather than in a linear formation.

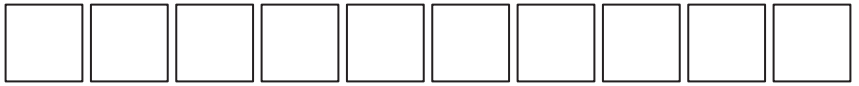
Wow! You were right! What clues did you use to figure out that this is number 1?

1 is at the beginning.

1 comes before 2.

Play a few more times with other cards that are turned over. Be sure to ask what clues students used to figure out the hidden number.

Let's do some more detective work. This time all the cards are turned over.



Invite a student to choose a card without showing it to the class. Give the class time to think–pair–share about the following question.

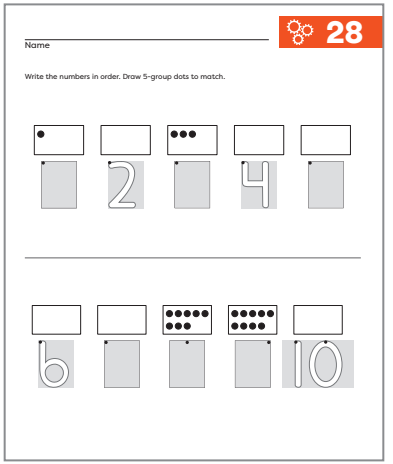
Which number is on the missing card? How do you know?

It's 4. I know because I counted 1, 2, 3, 4. *(Touches the cards and empty space)*

Continue the game, inviting other students to choose a card. Use suggestions from the Number Detective Variations to customize this activity to meet the needs of your class.

Problem Set

Use systematic modeling to get students started on the Problem Set. Circulate or work with a small group of students who need extra support.



Promoting the Standards for Mathematical Practice

Students look for and make use of structure (MP7) when they use the numerals in the counting sequence that they can see to help them figure out the hidden numbers. Having students explain what clues they notice helps reveal what parts of the structure students notice and use.

Land 5

Debrief 5 min

Materials—T: Numeral Cards

Objective: Order numerals 1–10 and reason about an unknown number in the number sequence.

Hold up the 4 card so students cannot see the number.

We were really good number detectives today! Do you know what this number is?

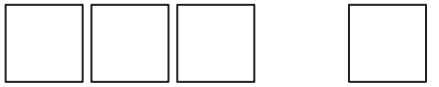
5? 1? 3?

We don't know because it's all by itself.

You have to put it in a row so we can figure out what number it is.

Display the 1, 2, 3, and 5 cards in a row, leaving space between the 3 and 5. Then turn over the cards to hide the numbers.

Let's see if you can use detective clues to figure out the missing number. The missing number goes in this space. *(Point to the space.)* What is the number?



4

Place the card so that everyone can see the number 4.

How can we use the order of numbers to know which number is on the missing card?

You can count from the beginning.

If the missing card is at the beginning, you know it is 1 because that's the first number.

Topic G
Analyze the Count Sequence

Topic G celebrates kindergarten students' growth with counting concepts while opening a door to more sophisticated ways of using the number system. Their work to uncover the pattern of 1 more and the pattern of 1 less in the count sequence is the first conceptual step on a path leading to counting on strategies in grade 1.

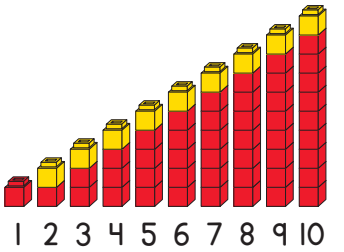
Number order is a thread that weaves throughout module 1 and is the highlight of lesson 29. There, students combined their understanding of the number word list and written numerals to order numbers 1–10. Now they are ready to analyze the count sequence and discover two complementary patterns.

- The pattern of 1 more in the forward count sequence
- The pattern of 1 less in the backward count sequence

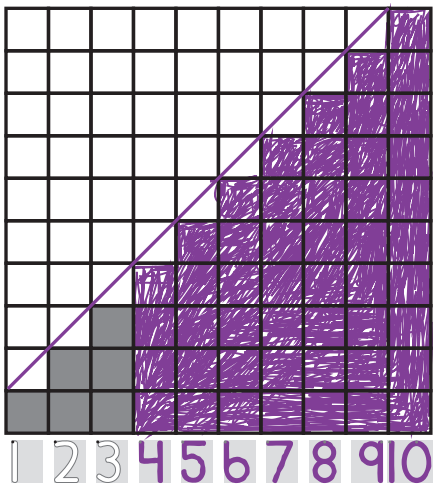
While students show the patterns of 1 more and 1 less in a variety of ways, the number stairs model provides the clearest visual representation of the patterns. Kindergarten students use the number stairs to show both patterns as they develop language to describe them. Practice with 1 more and 1 less counting (*1; 1 more is 2. 2; 1 more is 3.)* builds both language and conceptual understanding. With support, students use their own words to share that each successive number name refers to a quantity that is 1 larger (K.CC.4.C): *The numbers get bigger by 1 more when you count forward.*

Why is understanding these patterns in the count sequence so important? Without this basic understanding, students might recount an entire collection when 1 object is added or taken away. The language of *more* and *less* is foundational for comparison in module 3, where number stairs are an important model. These patterns also play a role in efficient strategies for addition and subtraction, including patterns of plus or minus 1, plus or minus 10, and counting on in grade 1.

The final lesson in each module is a culminating activity. For module 1, the culminating activity is a counting collection. It is an opportunity for students to reflect on and celebrate their counting progress. It is also an opportunity for teachers to assess counting concepts through an authentic task.



Students practice 1 more counting: 1; 1 more is 2. 2; 1 more is 3. 3 ...

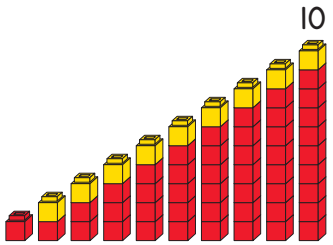


This student showed the pattern of 1 more in the number sequence by drawing a diagonal line up the number stairs.

Progression of Lessons

Lesson 29

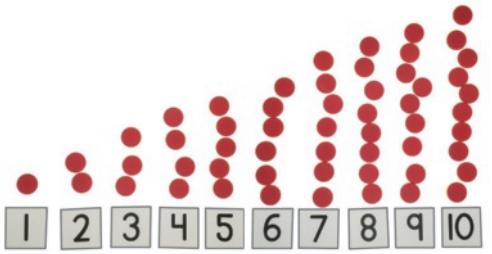
Model the pattern of 1 more in the forward count sequence.



The stairs start small and get bigger.

Lesson 30

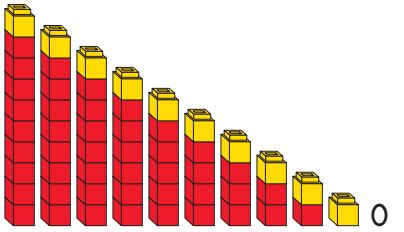
Build number stairs to show the pattern of 1 more in the forward count sequence.



I built number stairs. The next number is 1 more.

Lesson 31

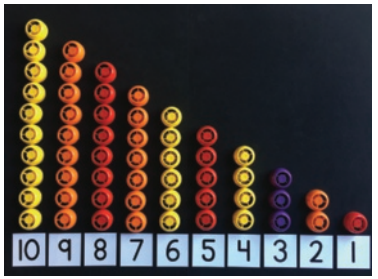
Model the pattern of 1 less in the backward count sequence.



The stairs start big and get smaller.

Lesson 32

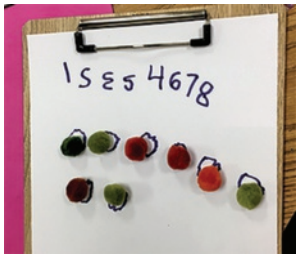
Build number stairs to show the pattern of 1 less in the backward count sequence.



When you count back, the next number is 1 less.

Lesson 33

Organize, count, and represent a collection of objects.



I know my collection and drawing match because I put the pom-poms on my drawing.

29

LESSON 29

Model the pattern of 1 more in the forward count sequence.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1
Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Students visualize the pattern of 1 more in the forward count sequence through a series of models. The number stairs are a high-impact visual to help students see that when counting forward, each number said is 1 more than the previous number.

Key Question

- What do you notice, or see and hear, as we count from 1 to 10?

Achievement Descriptor

K.Mod1.AD7 **Recognize** that each successive number is one more when counting within 10. (K.CC.B.4.c)

Agenda

Fluency 10 min

Launch 10 min

Learn 25 min

- Model "Dancing Cats Chant"
- Count 1 More
- Number Stairs

Land 5 min

Materials

Teacher

- Hide Zero® cards, demonstration set (1–7)
- Unifix® Cubes (10)
- "Dancing Cats Chant" song lyrics

Students

- Two-Hands Mat, (in the student book)
- Two-color beans (7)
- *Eureka Math²* Numeral Cards (1 set of 1–10 per student pair)
- Unifix® Cubes (10)

Lesson Preparation

- Prepare cards 1–7 from the Hide Zero cards demonstration set.
- During Launch, students act out the "Dancing Cats Chant." Find or create space in the classroom to represent the mat in the chant.
- Prepare cards 1–10 from the Numeral Cards set. If you do not have Numeral Cards, consider using index cards. Number the cards 1–10.

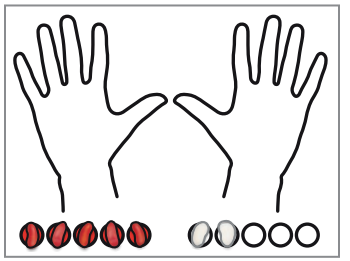
Fluency

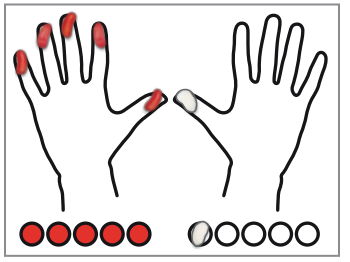
10

Show Me Beans to 7

Materials—T: Hide Zero cards; S: Two-Hands Mat, two-color beans

Students hear a number or see a numeral and count out a set to build fluency with associating a numeral with a set.





Let's set up. Put 5 red beans on the red dots at the bottom.

Put 2 white beans on the white dots at the bottom.

I say a number. You move that many beans to the fingernails. Remember to start with the pinkie just like we practiced. *(Wiggle pinkie for emphasis.)* Ready?

Show me 5.

Pause while students move red beans to fill the left hand, from pinkie to thumb.

Quick! Show me 6.

Pause while students move a white bean to the thumb of the right hand.

All right! Show me 5.

Pause while students remove a white bean from the thumb of the right hand.

Continue with the following sequence.

5	6	5	6	7	6	7	6	5

Have students reset their mats by moving all 7 beans back to the dots at the bottom.

Repeat the activity, this time by using a card to show how many beans should be moved. Start with the 5-card, and then the 6-card. Continue showing the cards in a similar sequence as before.

Number Detective

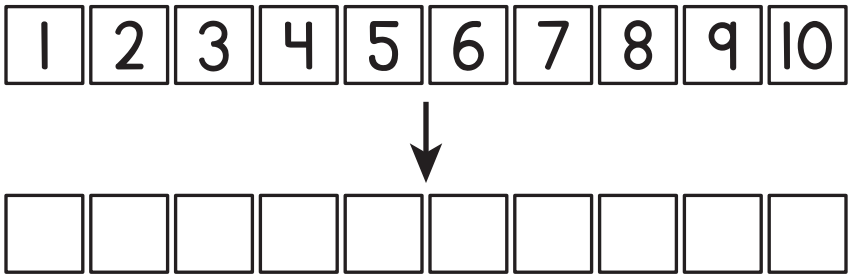
Materials—S: Numeral Cards

Students sequence numbers to 10 to prepare for work with the pattern of 1 more.

Have students form pairs. Distribute a set of cards to each pair and have them play according to the following rules of the game:

- Partners work together to put cards in order with the numbers showing.
- Partners turn the cards facedown. As they turn them, they carefully place each card back in position within the sequence.
- Partner A takes a card. Partner B uses clues to determine the number.
- Partner A reveals the number. Partner A determines whether Partner B is correct and responds with either a compliment or a suggestion (e.g., "Try using touch and count.").
- Partners switch roles and play again, starting with all cards facedown.

Circulate as students play the game, and provide support as needed. For example, remind students to chorally count while touching the cards if necessary.



Differentiation: Support

- Use fewer cards (1–5).
- Use Hide Zero cards with dots on the back.
- Chorally say the number sequence before asking students to identify a hidden number.

Differentiation: Challenge

- Use the 0 card.
- Place the cards in decreasing sequence beginning with 10.
- Arrange the cards in a 5-group rather than in a linear formation.

Launch 10

Materials—T: "Dancing Cats Chant" song lyrics

Students model the pattern of 1 more through movement and song.

Prior to starting, select a space in the classroom to represent the mat in the chant. Make it wide enough for 10 students to dance in a line.

Select a student to be the first cat. Prepare the student to act out the first line of the chant.

Repeat after me: 1 cat dancing on the mat. Your turn.

1 cat dancing on the mat

Select another student to act out the second and third lines.

1 more came. Now there are ... *(Pause and gesture toward the actors.)*

2

Continue to 10. Invite volunteers to join the cats according to the lyrics of the chant. Anticipate that more students will join in saying the chant as they catch onto the pattern.

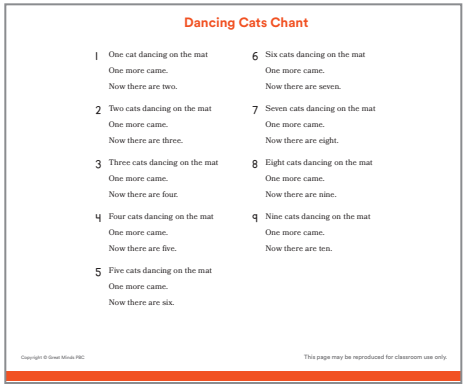
What happened to the group of cats as we said the chant?

It got bigger.

They filled up the mat.

Transition to the next segment.

Today, we will find other ways to show what happens when 1 more joins a group.



Dancing Cats Chant

1 One cat dancing on the mat
One more came.
Now there are two.

2 Two cats dancing on the mat
One more came.
Now there are three.

3 Three cats dancing on the mat
One more came.
Now there are four.

4 Four cats dancing on the mat
One more came.
Now there are five.

5 Five cats dancing on the mat
One more came.
Now there are six.

6 Six cats dancing on the mat
One more came.
Now there are seven.

7 Seven cats dancing on the mat
One more came.
Now there are eight.

8 Eight cats dancing on the mat
One more came.
Now there are nine.

9 Nine cats dancing on the mat
One more came.
Now there are ten.

UDL: Action & Expression

Support students to express learning in flexible ways. Invite them to keep track of the count on their fingers during the chant. If they count the math way, they will see the quantity growing steadily from left to right.

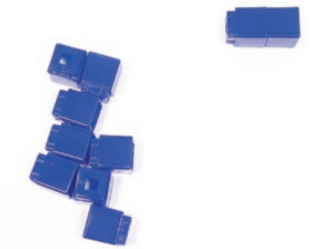
Learn 25

Model "Dancing Cats Chant"

Materials—S: Unifix Cubes

Students use cubes to model the pattern of 1 more in the chant.

For this segment, students may link Unifix Cubes horizontally to mimic the actions of the chant or stack cubes vertically to form a tower. Encourage them to model in whichever way makes sense to them. Have students begin with a pile of cubes rather than connected sticks.



Let's pretend these cubes are the cats. How does the chant begin?

1 cat dancing on a mat

Let's see it—make it look like it's dancing!

Pause to let students dance a cube around the table.

Then what happened?

1 more came. *(Attaches another cube.)* Now there are 2.

Continue to 10 at a steady pace. Circulate to support students who need help making their cubes match the chant.

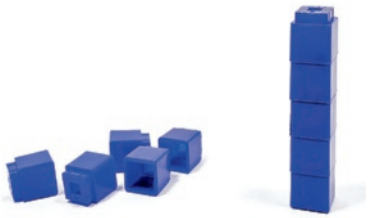
When the chant is over, ask students to pull their cubes apart again. Have them stand when finished. The simple act of standing provides a welcome movement break and is an indicator of readiness for the next task.

Count 1 More

Materials—T/S: Unifix Cubes

Students build a tower to model the pattern of 1 more in the forward count sequence.

For this segment, make a vertical tower so students observe the correspondence between 1 more and the growth of the tower. Working vertically relates to the image of number stairs in the next segment.



There are math words in the "Dancing Cats Chant" that keep repeating: 1 more, 1 more, 1 more. Nod if you heard that.

We can count forward by using the words *1 more*.

To increase student engagement while counting, use echo singing to teach 1-more counting. The singsong cadence encourages students to move their bodies and internalize the language of *1 more*.

I have 1. *(Hold up 1 cube.)*

I have 1.

1 more is 2. *(Attach a cube.)*

1 more is 2.

Continue to 10 by using choral response. Then repeat the process. This time have students use their cubes to build towers as everyone counts by using the language of *1 more*.

Teacher Note

Stating the pattern of 1 more can be linguistically challenging. Students have a tendency to rush, omitting the initial quantity: 1 more is 2, 1 more is 3, 1 more is 4, and so on.

Steady the pace and establish the starting number by inserting phrases such as "we are at 5" or "I have 6" before saying the next *1 more is* statement.

Likewise, crisp and distinct movement on the teacher's part reinforces conceptual understanding of the pattern. Most students will naturally mimic the teacher's actions.

Observational Assessment

☑ Listen and watch as students build towers. Are they using the language of *1 more* as they add a cube to their tower, not speaking too slowly or too quickly, and matching the phrase *1 more* to 1 cube?

Number Stairs

Students analyze the pattern of 1 more by using the number stairs model.

Display the picture of 1 cube (the first number stair).

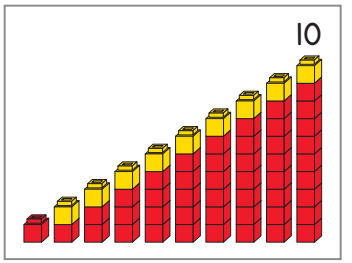
I made a picture of your towers for each number. Count with me. 1; 1 more is 2. 2; 1 more is 3 ...

Advance through the other number stair pictures while counting to 10 by using the language of *1 more*. Leave the picture of all 10 number stairs displayed for the discussion.

These are called number stairs. Why do you think they are called number stairs?

Because they go up, up, up

They look like stairs.



What do the number stairs show us about the number 1?

1 is little. It is so small.

You only need 1 cube. It's not even a tower.

What do the number stairs show us about the number 10?

10 has the biggest tower, so it's the biggest number in the picture.

Biggest number *in the picture*, yes, I'm so glad you said that. Do numbers stop at 10?

No.

What happens to the numbers as we count from 1 to 10?

They start small and get bigger.

Teacher Note

Young children often use general terms such as *big*, *little*, and *small* to describe measurable attributes. If students use generic terms to describe the number stairs, you can gently revoice their thought with a more specific term such as *tall*, *long*, or *short*, but avoid focusing on that terminology now.

Comparison of measurable attributes and precise terminology will be covered extensively in module 3. For this lesson, the focus is on magnitude and the pattern of 1 more in the counting sequence.

Land 5

Debrief 5 min

Objective: Model the pattern of 1 more in the forward count sequence.

What happened to the group of cats as we chanted?

It got bigger.

Who can talk about what happened by using the words *1 more*?

1 more person came up every time.

1 more cat got on the mat until there were 10 cats.

What happened to the towers as we counted from 1 to 10?

The towers got bigger and bigger.

Who can talk about the towers by using the words *1 more*?

We put on 1 more cube every time.

1 more is the next number.

What happens to the numbers as we count from 1 to 10?

They get bigger.

Who can talk about the numbers by using the words *1 more*?

Each number is 1 more.

Promoting the Standards for Mathematical Practice

Students look for and express regularity in repeated reasoning (MP8) when they notice that when 1 more is added to a group, they always get the next counting number. Expressing this verbally will help students think of this as a rule they can trust and use going forward.

Dancing Cats Chant

1 One cat dancing on the mat
One more came.
Now there are two.

2 Two cats dancing on the mat
One more came.
Now there are three.

3 Three cats dancing on the mat
One more came.
Now there are four.

4 Four cats dancing on the mat
One more came.
Now there are five.

5 Five cats dancing on the mat
One more came.
Now there are six.

6 Six cats dancing on the mat
One more came.
Now there are seven.

7 Seven cats dancing on the mat
One more came.
Now there are eight.

8 Eight cats dancing on the mat
One more came.
Now there are nine.

9 Nine cats dancing on the mat
One more came.
Now there are ten.

30

LESSON 30

Build number stairs to show the pattern of 1 more in the forward count sequence.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1
Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Students build and draw number stairs to show the pattern of 1 more in the forward count sequence. They use their work to show how each successive number is 1 more and develop language to describe the pattern.

Key Question

- What do you notice as we count from 1 to 10?

Achievement Descriptor

K.Mod1.AD7 **Recognize** that each successive number is one more when counting within 10. (K.CC.B.4.c)

Agenda

Fluency 10 min

Launch 5 min

Learn 30 min

- Count with Number Stairs
- Build Number Stairs
- Gallery Walk
- Problem Set

Land 5 min

Materials

Teacher

- Hide Zero® cards, demonstration set (1-10)

Students

- Two-Hands Mat
- Two-color beans (10)
- Counters (55)
- Hide Zero® cards, (1-10)

Lesson Preparation

- Prepare cards 1–10 from the Hide Zero cards demonstration set.
- Decide whether students will build number stairs individually or in groups.
- Students use counters to build the number stairs. Counters can be any classroom material, such as cubes, color tiles, stickers, bear counters, squares of paper, or pennies. Ensure that each student or group has 55 of the same material. The material can vary between students or groups.
- Make sure that all the counters in a group's number stair model are the same size. If there are size variations with the units, the pattern of 1 more will not be visible. For example, the size difference between the following rocks make this an ineffective number stairs model.

Fluency

10

Show Me Beans to 10

Materials—T: Hide Zero cards; S: Two-Hands Mat, two-color beans

Students hear a number or see a numeral and count out a set to build fluency with associating a numeral with a set.

Let's set up. Put 5 red beans on the red dots at the bottom.

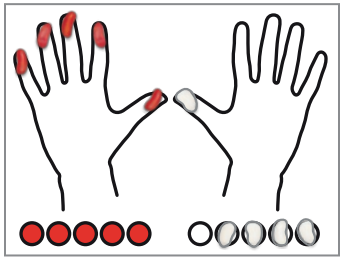
Put 5 white beans on the white dots at the bottom.

I say a number. You move that many beans to the fingernails. Remember to start with the pinkie just like we practiced. *(Wiggle pinkie for emphasis.)* Ready?

Show me 5.

Pause while students move red beans to fill the left hand, from pinkie to thumb.

Quick! Show me 6.



Pause while students move a white bean to the thumb of the right hand.

All right! Show me 7.

Pause while students add a white bean to the pointer finger of the right hand.

Continue with the following sequence.

8	7	8	9	10	9	10	9

Have students reset their mats by moving all 10 beans back to the dots at the bottom.

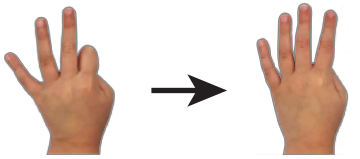
Repeat the activity, this time by using a card to show how many beans should be moved. Start with the 5-card, and then the 6-card. Continue showing the cards in a similar sequence as before.

Show Me the Math Way: 1 More

Students show a number and 1 more the math way to develop fluency with the pattern of 1 more.

Show me 3 the math way.

(Shows the pinkie, ring, and middle finger of the left hand)



Show me 1 more. To do that, you can put up 1 more finger.

(Puts up the index finger of the left hand)

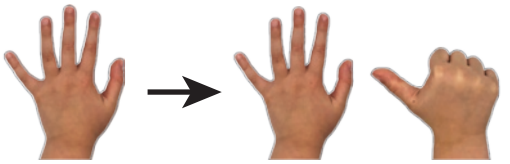
How many fingers are you showing now?

4

Close it up! Get ready for the next one.

Show me 5 the math way.

(Shows the full left hand)



Show me 1 more.

(Puts up the thumb of the right hand)

How many fingers are you showing now?

6

Close it up! Get ready for the next one.

Repeat the process with 9 and then with any other number and 1 more.

Launch

5

Students model the growing pattern of 1 more with their bodies.

Model the action of a sprouting seed turning into a tree so students can imitate. Begin by showing students how to safely crouch on the floor to imitate a seed.

Pretend you are a little seed down in the ground. Slowly grow into a tree, first becoming a little plant, and then getting taller and taller until your branches reach up to the sky.

Have students practice the motions before beginning to count. Increase engagement by narrating a garden scene. Consider reinforcing science objectives by using classroom lights and pretend rain to give the seeds what they need to grow.

This time, you will be a counting seed. To make the counting seed grow into a tree, we will do our 1-more counting.

We are at 1. 1 more is ...

2

Invite students to join in the counting as they slowly grow into counting trees.

We are at 2. 1 more is 3.

We are at 3. 1 more is 4.

Continue to 10.

Teacher Note

Stating the pattern of 1 more can be linguistically challenging. There is also a tendency to rush, omitting the initial quantity: 1 more is 2, 1 more is 3, 1 more is 4, and so on.

Steady the pace and establish the starting number by inserting phrases such as "we are at 5" or "I have 6" before saying the next *1 more is* statement.

UDL: Representation

Consider presenting the information in another format. If a real staircase is available, invite students to take turns climbing while counting by using the language of *1 more*. This can be done in place of Launch or at another time of day.

Learn 30

Count with Number Stairs

Students use number stairs to count forward using the language of *1 more*.

Display the picture of 1 cube (the first number stair). Advance through the number stair pictures by using the echo singing learned in the previous lesson.

Let's try our 1-more counting with the number stairs.

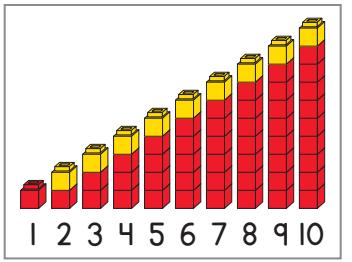
I have 1.

I have 1.

1 more is 2. *(Advance the slide.)*

1 more is 2.

Continue to 10. Leave the picture of all 10 number stairs displayed while students build them in the next segment. Because the model is relatively new, the picture is an important visual reference as students engage in the tasks of counting out groups and aligning them to form stairs.



Build Number Stairs

Materials—S: Hide Zero cards, counters

Students put numbers in order and build number stairs to match.

Organize students if they will work in pairs or small groups. Assign workspace with ample room for materials, and if possible, that includes a natural guide for alignment (e.g., a rug, tile, or table edge). Distribute Hide Zero cards.

Differentiation: Support

Consider the amount of scaffolding needed when selecting materials for building number stairs. Cubes provide the most structure and are easy to align at the bottom to clearly show the pattern of 1 more. Other linking materials may provide similar structure, although some, like chain links, may be harder to align on a horizontal surface.

A preprinted number path can provide support for students working to master the counting sequence. It may also help students organize and align their number stairs.

Today we get to make number stairs with different kinds of counters. Everyone will have the same numbers. Start by putting your cards in order.

Circulate to check for accuracy. When a group has their numbers ordered correctly, give them a bag of counters to begin building number stairs.

As the class works, use the following questions and prompts to assess and advance student thinking. Invite them to use gestures or movements to accompany their explanations.

How did you make the stair for the number 6?

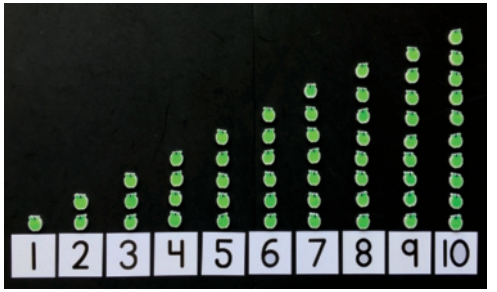
How can you use the stair for the number 7 to help you make the stair for 8?

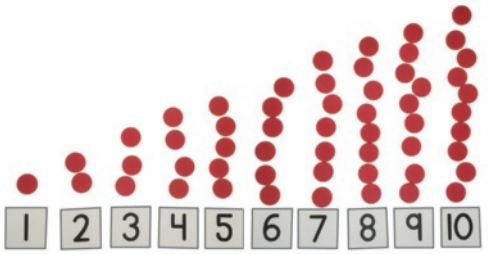
What happens to your number stairs when you go from 1 to 2? 2 to 3? 3 to 4?

How do your number stairs show the 1-more pattern?

What would a stair for the number 11 look like? Where would it go?

Where would the number 0 be on the number stairs?





When students finish building their stairs, invite them to use their work to count by using the language of *1 more*. Make sure students leave their number stairs in place for a gallery walk.

Gallery Walk

Students examine one another's work and learn protocols for a gallery walk.

Gather students away from their number stairs to introduce the gallery walk routine. This is the first of three gallery walks in this topic. Each of the three gallery walks introduces a new part of the routine.

Promoting the Standards for Mathematical Practice

Students look for and make use of structure (MP7) when they notice and use the pattern of 1 more to build the next stair. Rather than counting all the items for every stair, they use the pattern to understand that this stair is 1 taller than the stair before. The questions in this lesson promote this mathematical practice by helping students talk about the structure of the number sequence.

Observational Assessment

☑ Listen and watch as students build stairs. Are they saying the number sequence as they build each stair, or are they using the pattern of 1 more to build stairs and saying the sequence after all the stairs are built?

Let's pretend that we are in a math museum and take a gallery walk. A gallery walk is a chance to appreciate our classmates' work and learn from each other.

Establish norms for walking around the room to view the work.

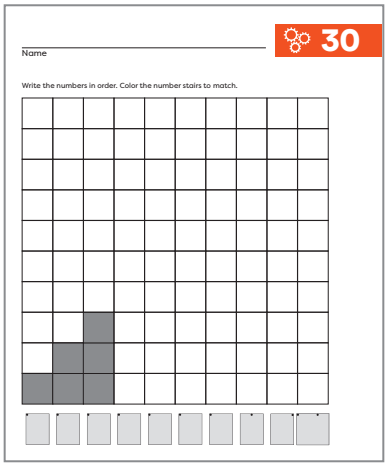
Look but do not touch, just like in a museum or gallery. Hold your hands behind your back as a reminder. *(Clasp your hands behind your back.)*

Be very quiet as you look around so everyone can think about what they see.

For this gallery walk, focus on the procedure of walking quietly with clasped hands to observe work. In lessons 32 and 33, students will practice giving positive feedback about a classmate's work.

Problem Set

Use systematic modeling to get students started on the Problem Set. Circulate as students work. Make note of which students color and count each square (without using the pattern of 1 more), and those who use the structure of the number stairs to color 1 more square each time (by using the pattern of 1 more).


Name

30

Write the numbers in order. Color the number stairs to match.

UDL: Engagement

Consider providing feedback that recognizes students' efforts to manage behaviors during the gallery walk. Studying other people's work without talking or touching can be challenging for kindergarten students, so it is important to provide praise for students who are working hard to follow the routine. For example, "I can tell that David is really appreciating his classmates' work because he is looking at it quietly without touching."

This praise encourages the types of behaviors that will be needed for gallery walks to become a useful exchange of ideas in the future.

Land 5

Debrief 5 min

Objective: Build number stairs to show the pattern of 1 more in the forward count sequence.

Gather students with their Problem Sets.

How is your number stairs picture the same as the number stairs you made with objects? How is it different?

They both go 1, 2, 3, ... , 10. They both go 1 more, 1 more, 1 more.

One is made of things and the other is coloring.

How did you decide what to color?

First, I wrote all the numbers. Then I looked at the number and colored that many spaces.

I colored a bunch of ones on the bottom first, and then 1 more and 1 more until I got the right number.

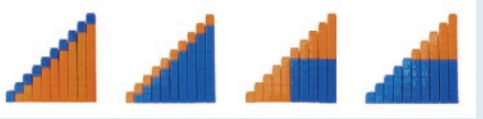
What do you notice as we count from 1 to 10?

The numbers keep getting bigger by 1.

The next number is 1 more.

Differentiation: Challenge

If students have a clear understanding of the pattern of 1 more, advance their thinking by displaying variations of number stairs for analysis.



Guide them to notice features such as the color change at 5, or how the model indicates 1 more.

A simple and engaging way to call attention to those characteristics is through choral counting: Let's count the blue cubes in each stair.

Make blank copies of the Problem Set available for students to experiment with different representations at another time.

31

LESSON 31

Model the pattern of 1 less in the backward count sequence.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Students see the pattern of 1 less while counting backward through a series of models. The final model is the number stairs flipped to start at 10. Using a familiar model helps students see that the pattern of 1 less is complementary to the pattern of 1 more and that when counting backward, each number said is 1 less than the previous number.

Key Question

- What do you notice as we count back from 10 to 0?

Achievement Descriptor

K.Mod1.AD7 **Recognize** that each successive number is one more when counting within 10. (K.CC.B.4.c)

Agenda

Fluency 10 min

Launch 10 min

Learn 25 min

- Farmer Brown's Apples
- Count 1 Less
- Number Stairs

Land 5 min

Materials

Teacher

- Right-hand and left-hand number gloves
- Puppet or stuffed animal
- "Farmer Brown Had Ten Red Apples" song lyrics
- *Growing Up with Ella Jenkins* album
- Unifix® Cubes (10)

Students

- *Eureka Math²* Numeral Cards (1 set of 1–10 per student pair)
- Unifix® Cubes (10)
- Work mat

Lesson Preparation

- If possible, find the *Growing Up with Ella Jenkins* album by Ella Jenkins to use in Launch.
- Consider having students draw a tree outside of the math block. They may use their drawings when modeling Farmer Brown's Apples in Learn.
- Prepare cards 1–10 from the Numeral Cards set.

Fluency 10

Counting on the Number Glove

Materials—T: Right-hand and left-hand number gloves

Students count down on the number glove to prepare for work with the pattern of 1 less.

Watch my number glove and count out loud. Ready?

Use the number glove to show the following sequence while students count aloud:

- Count down from 3 to 0.
- Count down from 5 to 0.
- Count down from 10 to 0.

Offer more practice counting down on the number glove within 10, always ending at 0.

Number Detective

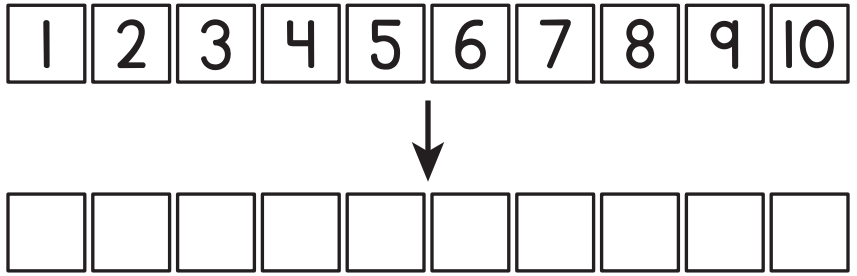
Materials—S: Numeral Cards

Students sequence numbers to 10 to prepare for work with the pattern of 1 less.

Have students form pairs. Distribute a set of cards to each pair and have them play according to the following rules of the game:

- Partners work together to put cards in order with the numbers showing.
- Partners turn the cards facedown. As they turn them, they carefully place each card back in position within the sequence.
- Partner A takes a card. Partner B uses clues to determine the number.
- Partner A reveals the number. Partner A determines whether Partner B is correct and responds with either a compliment or a suggestion (e.g., “Try using touch and count.”).
- Partners switch roles and play again, starting with all cards facedown.

Circulate as students play the game, and provide support as needed.

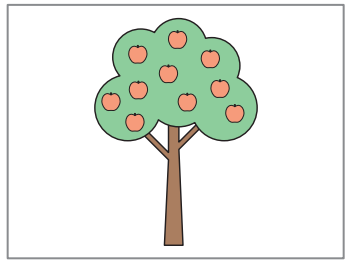


Launch

10

Materials—T: "Farmer Brown Had Ten Red Apples" song lyrics, puppet, *Growing Up with Ella Jenkins* by Ella Jenkins

Students count backward by singing a song and notice the pattern of 1 less.



Display the picture of the apple tree with 10 apples. Hold up Puppet and explain that Puppet is Farmer Brown. He wants to pluck, or pick an apple off the tree to eat. Sing the first verse alone.

Farmer Brown had 10 red apples hanging on a tree.

Farmer Brown had 10 red apples hanging on a tree.

Then he plucked 1 apple and he ate it greedily,

leaving 9 red apples a-hanging on a tree.

Language Support

Use actions to help students understand new vocabulary. For example, any time students hear the word *plucked*, encourage them to pretend to pick an apple off a tree.

UDL: Representation

Place a number path on the board for students to refer to while singing the song. Providing a number path gives students an opportunity to see what number comes next in the countdown sequence. Students may need to pause after Farmer Brown plucks each apple to assess how many apples are on the tree now.

Encourage students to sing along. Start again from 10 to help students get the rhythm of the song. Invite students to show Farmer Brown's apples with their fingers while they sing.

Continue the song until there are 0 apples on the tree.

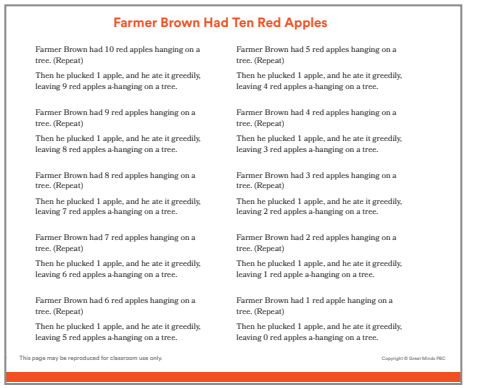
What happened to the group of apples as we were singing?

It got smaller.

Farmer Brown kept eating them until there were none left.

Close by transitioning to the next segment.

Today, we are going to find ways to show what happens when we take 1 from a group.



Farmer Brown Had Ten Red Apples

Farmer Brown had 10 red apples hanging on a tree. (Repeat)
Then he plucked 1 apple, and he ate it greedily, leaving 9 red apples a-hanging on a tree.

Farmer Brown had 9 red apples hanging on a tree. (Repeat)
Then he plucked 1 apple, and he ate it greedily, leaving 8 red apples a-hanging on a tree.

Farmer Brown had 8 red apples hanging on a tree. (Repeat)
Then he plucked 1 apple, and he ate it greedily, leaving 7 red apples a-hanging on a tree.

Farmer Brown had 7 red apples hanging on a tree. (Repeat)
Then he plucked 1 apple, and he ate it greedily, leaving 6 red apples a-hanging on a tree.

Farmer Brown had 6 red apples hanging on a tree. (Repeat)
Then he plucked 1 apple, and he ate it greedily, leaving 5 red apples a-hanging on a tree.

Farmer Brown had 5 red apples hanging on a tree. (Repeat)
Then he plucked 1 apple, and he ate it greedily, leaving 4 red apples a-hanging on a tree.

Farmer Brown had 4 red apples hanging on a tree. (Repeat)
Then he plucked 1 apple, and he ate it greedily, leaving 3 red apples a-hanging on a tree.

Farmer Brown had 3 red apples hanging on a tree. (Repeat)
Then he plucked 1 apple, and he ate it greedily, leaving 2 red apples a-hanging on a tree.

Farmer Brown had 2 red apples hanging on a tree. (Repeat)
Then he plucked 1 apple, and he ate it greedily, leaving 1 red apple a-hanging on a tree.

Farmer Brown had 1 red apple hanging on a tree. (Repeat)
Then he plucked 1 apple, and he ate it greedily, leaving 0 red apples a-hanging on a tree.

"Farmer Brown Had Ten Red Apples" song lyrics

Learn 25

Farmer Brown's Apples

Materials—S: Unifix Cubes, work mat

Students use cubes to model the pattern of 1 less in a song.

Distribute Unifix Cubes and work mats. Students may begin with cubes linked or apart. Encourage them to model in whichever way makes sense to them.

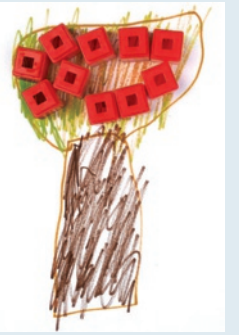
Let's pretend these cubes are the apples. How does the song begin?

Farmer Brown had 10 red apples hanging on a tree.

Invite students to take 10 cubes and place them on their work mats to form their apple trees.

Teacher Note

This lesson does not provide time to create tree drawings, but students may enjoy using drawings created before the lesson.



What did Farmer Brown do next?

He plucked 1 apple.

That's right! Let's pluck 1 apple off our apple tree. *(Take away 1 cube.)*

How many apples are on the tree now?

9

Sing the song, taking away 1 cube at a time until there are 0 apples on the tree. Circulate to support students who need help making their cubes match the song.

When the song is over, ask students to build a tower with their cubes. Have them stand when finished. The simple act of standing provides a welcome movement break and is an indicator of readiness for the next task.

Count 1 Less

Materials—T/S: Unifix Cubes

Students use cubes to model the pattern of 1 less in the backward count sequence.

When we say the "Dancing Cats Chant," we repeat 1 more. When we sing the Farmer Brown song and pick 1 apple, there is 1 less.

We can count backward by using the words *1 less*.

Use echo singing to teach counting 1 less. Demonstrate holding a tower of cubes vertically so students observe the correspondence between 1 less and the tower getting shorter. Working vertically relates to the number stairs model in the next segment.

I have 10. *(Hold up a 10 stick.)*

I have 10.

Teacher Note

Fewer is used when discussing sets of objects (e.g., apples, fingers, cubes). *Less* is the correct term when discussing numbers (e.g., I have 4. 1 less is 3.). Later, when comparison is taught in module 3, it will be important for the teacher to model correct language, with the understanding that students are likely to use *less* because of its colloquial usage. Through repeated exposure, they may adopt *fewer* and use it interchangeably with *less* but should not be expected to make the distinction between the two. The focus in this topic, however, is observing the quantity increase or decrease while noting the corresponding shifts in the number word list.

1 less is 9. *(Take off a cube.)*

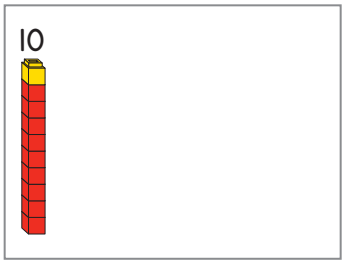
1 less is 9.

Continue to 0 by using choral response. Then repeat the process. This time have students remove cubes from their own towers one at a time as everyone counts backward by using the language of *1 less*.

Number Stairs

Students analyze the pattern of 1 less by using the number stairs model.

Display the picture of 10 cubes (the last number stair). Advance through the other number stair pictures while counting backward to 0.



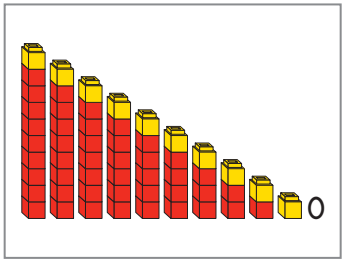
I made a picture of your tower for each number. Count backward with me. 10; 1 less is 9. 9; 1 less is 8 ...

Continue counting backward to 0 by using the language of 1 less. Leave the picture of all 10 number stairs displayed for the discussion.

How are these number stairs different?

They still look like stairs but now they go down instead of up.

They are getting shorter.



What do you notice when we count backward from 10 to 0?

The numbers get smaller.

Each tower has 1 less.

When we count down, what number comes after 1?

0

Observational Assessment

☑ Listen and watch as students remove cubes from their towers. Do students use the language of *1 less* as they take each cube off their towers, not speaking too slowly or too quickly, and matching the phrase *1 less* to 1 cube?

Teacher Note

Young students often use general terms like *big*, *little*, and *small* to describe measurable attributes. If students use generic terms to describe the number stairs, you can gently revoice with a more specific term like *short*, *long*, or *tall*, but avoid focusing on that terminology now.

Comparison of measurable attributes and precise terminology will be covered extensively in module 3. For this lesson, the focus is on magnitude and the pattern of 1 less in the counting sequence.

Land 5

Debrief 5 min

Objective: Model the pattern of 1 less in the backward count sequence.

What happened to the group of apples as Farmer Brown plucked them from the tree?

The group got smaller.

Who can talk about it using the words *1 less*?

When Farmer Brown plucked an apple, there was 1 less apple on the tree.

We took off 1 cube each time, so that was 1 less.

What happened to the number stairs as we counted backward from 10 to 0?

The stairs got smaller and smaller.

Who can talk about it using the words *1 less*?

We took 1 cube off each time, so there was 1 less cube.

1 less is the next number when counting back.

What happens to the numbers as we count back from 10 to 0?

They get smaller.

Who can talk about it using the words *1 less*?

Each number is 1 less.

Promoting the Standards for Mathematical Practice

Students look for and express regularity in repeated reasoning **(MP8)** when they notice that when a group has 1 less item, they always get the counting number that comes just before. Expressing this verbally helps students think about the pattern as a rule they can trust and use going forward.

Farmer Brown Had Ten Red Apples

Farmer Brown had 10 red apples hanging on a tree. (Repeat)

Then he plucked 1 apple, and he ate it greedily, leaving 9 red apples a-hanging on a tree.

Farmer Brown had 9 red apples hanging on a tree. (Repeat)

Then he plucked 1 apple, and he ate it greedily, leaving 8 red apples a-hanging on a tree.

Farmer Brown had 8 red apples hanging on a tree. (Repeat)

Then he plucked 1 apple, and he ate it greedily, leaving 7 red apples a-hanging on a tree.

Farmer Brown had 7 red apples hanging on a tree. (Repeat)

Then he plucked 1 apple, and he ate it greedily, leaving 6 red apples a-hanging on a tree.

Farmer Brown had 6 red apples hanging on a tree. (Repeat)

Then he plucked 1 apple, and he ate it greedily, leaving 5 red apples a-hanging on a tree.

Farmer Brown had 5 red apples hanging on a tree. (Repeat)

Then he plucked 1 apple, and he ate it greedily, leaving 4 red apples a-hanging on a tree.

Farmer Brown had 4 red apples hanging on a tree. (Repeat)

Then he plucked 1 apple, and he ate it greedily, leaving 3 red apples a-hanging on a tree.

Farmer Brown had 3 red apples hanging on a tree. (Repeat)

Then he plucked 1 apple, and he ate it greedily, leaving 2 red apples a-hanging on a tree.

Farmer Brown had 2 red apples hanging on a tree. (Repeat)

Then he plucked 1 apple, and he ate it greedily, leaving 1 red apple a-hanging on a tree.

Farmer Brown had 1 red apple hanging on a tree. (Repeat)

Then he plucked 1 apple, and he ate it greedily, leaving 0 red apples a-hanging on a tree.

32

LESSON 32

Build number stairs to show the pattern of 1 less in the backward count sequence.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

Students build and draw number stairs from 10 to 1 to show the pattern of 1 less in the backward count sequence. They use their work to show that the next number is 1 less and develop language to describe the pattern.

Key Question

- What do you notice as we count back from 10 to 0?

Achievement Descriptor

K.Mod1.AD7 **Recognize** that each successive number is one more when counting within 10. (K.CC.B.4.c)

Agenda

Fluency 5 min

Launch 5 min

Learn 35 min

- Count with Number Stairs
- Build Number Stairs
- Gallery Walk
- Problem Set

Land 5 min

Materials

Teacher

- None

Students

- Hide Zero® cards, demonstration set (1-10)
- Counters (55)

Lesson Preparation

- Decide whether students will build number stairs individually or in groups.
- Students use counters to build the number stairs. Counters can be replaced with classroom materials, such as Unifix Cubes, color tiles, stickers, bear counters, squares of paper, or pennies. Ensure that each student or group has 55 of the same material. The material can vary between students or groups.

Fluency

5

Counting the Math Way Within 10

Students construct a number line with their fingers while counting aloud to develop fluency with the pattern of 1 less.

Show the math way on your own fingers while students count, but do not count aloud.

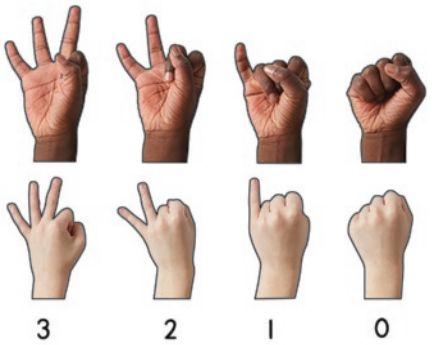
Let's count the math way.

Face the students and direct them to mirror you.

Have students count the math way from 3 to 0.

Continue with the following sequence:

- Count down from 5 to 0.
- Count down from 10 to 0.



Show Me the Math Way: 1 Less

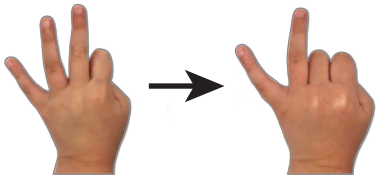
Students show a number and 1 less the math way to develop fluency with the pattern of 1 less.

Show me 3 the math way.

(Shows the pinkie, ring, and middle finger of the left hand)

Show me 1 less. To do that, you can put down 1 finger.

(Puts down the middle finger of the left hand)



How many fingers are you showing now?

2

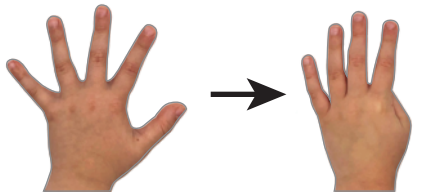
Close it up! Get ready for the next one.

Show me 5 the math way.

(Shows the full left hand)

Show me 1 less.

(Puts down the thumb of the left hand)



How many fingers are you showing now?

4

Close it up! Get ready for the next one.

Repeat the process with 10 and then with any other number and 1 less.

Launch

5

Students model the pattern of 1 more and the pattern of 1 less by counting forward and backward with movement.

Model the action of a sun rising and setting so students can imitate. Begin by showing students how to safely crouch on the floor like a sun that will soon begin to rise.

Pretend it is morning, and the sun is rising. Rise a little higher and higher until your arms are high in the sky.

Have students practice the motions before beginning to count. Once students have stretched tall, have them show the sun set by slowly bending down until they are back to a crouching position on the floor.

This time, you will be a counting sun. To make the sun rise, we will do our 1-more counting.

We are at 1. 1 more is ...

2

Invite students to join in the counting as they slowly rise. Stop when you reach 10.

Teacher Note

Stating the pattern of 1 less can be linguistically challenging. There is also a tendency to rush, omitting the previous number: 1 less is 9, 1 less is 8, 1 less is 7, and so on.

Steady the pace and establish the starting number by inserting phrases such as "we are at 9" or "I have 8" before saying the next *1 less is* statement.

Now that we are at 10, we will do 1-less counting so the sun can set.

We are at 10. 1 less is ...

9

Continue to 0. Practice counting forward and backward until students can recite the sequence with ease.

Learn 35

Count with Number Stairs

Students use the number stairs to count back by using 1-less language.

Display the picture of 10 cubes (the last number stair). Advance through the number stair pictures by using the echo singing learned in the previous lesson.

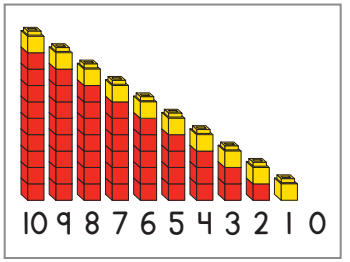
Let's try our 1-less counting with the number stairs.

I have 10.

I have 10.

1 less is 9. *(Advance the slide.)*

1 less is 9.



Continue counting backward to 0 by using the language of *1 less*. Leave the picture of all 10 number stairs displayed while students build number stairs in the next section.

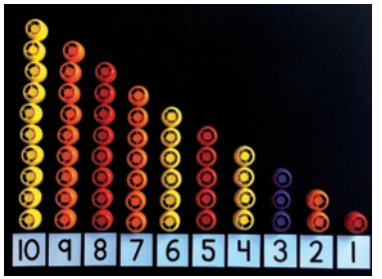
UDL: Action & Expression

Because the model is relatively new, the picture is an important visual reference as students engage in the tasks of counting out groups and aligning them to form stairs.

Build Number Stairs

Materials—S: Hide Zero cards, counters

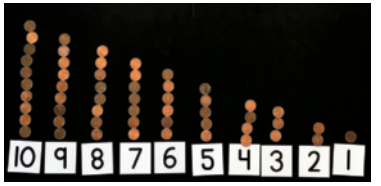
Students order numbers from 10 to 1 and build number stairs to match.



Organize students if they will work in pairs or small groups. Assign workspace with ample room for materials and, if possible, with a natural guide for alignment (e.g., a rug, tile, or table edge).

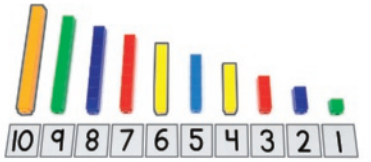
Distribute Hide Zero cards.

> **Today we get to make number stairs again with different kinds of counters. But this time, instead of counting from 1 to 10, you will count back from 10 to 1. Let's start by putting cards in order from 10 to 1.**



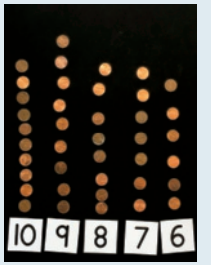
Circulate to check for accuracy. When a pair or group have their numbers ordered correctly, give them a bag of counters to begin building number stairs.

As the class works, use the following questions and prompts to assess and advance student thinking. Invite students to use gestures or movements to accompany their explanations.



- What happens to your number stairs when you go from 10 to 9? 9 to 8? 8 to 7?
- How can you use the stair for the number 7 to help you make the stair for 6?

Teacher Note



Inconsistent spacing between objects makes it hard to see the pattern of 1 less or the pattern of 1 more in number stairs.

If spacing is a challenge, consider the following:

- Ask students to make the objects touch. Encourage them to make the bottom object touch the Hide Zero card.
- Give them cubes to connect instead of loose materials.

Promoting the Standards for Mathematical Practice

Students look for and make use of structure (MP7) when they notice and use the pattern of 1 less to build the next stair. They use the pattern to build the stair 1 shorter than the previous stair, rather than counting all the items every time. The questions in this lesson promote this mathematical practice by helping students talk about the structure of the number sequence.

- How do your number stairs show the 1-less pattern?
- How would you make a stair for the number 0? Where would it go?
- Where would the number 11 be on the number stairs?

When students finish building their stairs, invite them to use their work to count by using the language of *1 less*. Make sure students leave their number stairs in place for a gallery walk.

Gallery Walk

Students examine one another's work and learn protocols for a gallery walk.

Gather students away from their number stairs work to introduce a new part of the gallery walk routine.

Tell students they will go on another gallery walk. Remind them of the following norms:

- Remind students to look but not to touch, as they would in a museum or gallery. They can hold their hands behind their backs as a reminder.
- Prompt students to be very quiet as they look. Encourage them to think about what they notice about the number stairs.

Observe students as they walk around. Once students have completed the gallery walk around the room, gather the class together. Use the following prompts to have them think–pair–share.

Turn and tell a partner what you noticed about the number stairs. You can start your sentence by saying "I noticed ..."

What did you notice about the number stairs while you walked around?

I noticed the towers got smaller.

I noticed the stairs looked different because the materials were different.

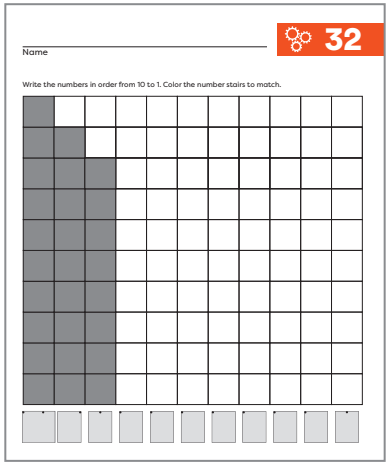
Observational Assessment

☑ Listen and watch as students build stairs.

- Do students start building their stairs from 10 or 1?
- Are students saying the sequence of 1 less or building silently?
- Are students counting clearly and with confidence?

Problem Set

Use systematic modeling to get students started on the Problem Set. As students work, observe to see whether they are able to use the pattern to color 1 less in each stair.



Name

32

Write the numbers in order from 10 to 1. Color the number stairs to match.

Land 5

Debrief 5 min

Objective: Build number stairs to show the pattern of 1 less in the backward count sequence.

Gather students with their Problem Sets.

How is your number stairs picture the same as the number stairs you made with objects? How is it different?

The picture and objects both start with 10 and go down like stairs.

I used move and count for the objects, but I colored the picture.

How did you decide what to color?

I wrote the numbers first. Then I looked at the number and colored that many squares to match.

I didn't have to count, I just colored 1 less each time.

Let's start with 10 and say the 1-less pattern. You can use your Problem Set to help.

10; 1 less is 9. 9; 1 less is 8 ...

Now start the count at a number other than 10. Give students time to find the start number in their Problem Sets before beginning the count.

What happens to the numbers as we count back from 10 to 0?

They keep getting smaller by 1.

The next number is 1 less.

33

LESSON 33

Organize, count, and represent a collection of objects.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	
Notes		**PP** Partially Proficient **P** Proficient **HP** Highly Proficient

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Lesson at a Glance

This counting collection lesson serves as a culminating task for the module. Students demonstrate and celebrate growth with counting concepts and written recordings while teachers gather formative assessment data. Class discussion focuses on student recordings.

There is no Fluency component in this lesson. This lesson introduces the term *record*.

Key Question

- How did you get better at counting and recording?

Achievement Descriptors

K.Mod1.AD1 **Count** to 10. (K.CC.A.1)

K.Mod1.AD4 **Say** one number name with each object when counting up to 10 objects. (K.CC.B.4.a)

K.Mod1.AD5 **Use** the last number of a count to tell *how many* regardless of arrangement or order counted. (K.CC.B.4.b)

K.Mod1.AD8 **Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration. (K.CC.B.5)

Agenda

Launch 10 min

Learn 35 min

- Organize, Count, and Record
- Share, Compare, and Connect
- Gallery Walk

Land 5 min

Materials

Teacher

- None

Students

- Counting collection (1 per student pair, in the student book)
- Work mat
- Organizing tools
- Student book

Lesson Preparation

- Use student work from lesson 19 to determine whether the counting collections assembled for that lesson have enough objects for today's lesson. Adjust them as needed.
- Decide whether students will work in pairs or individually. The lesson is written for pairs but can be adjusted for students to work alone.
- Select organizing tools that students can choose to organize their count, such as 10-frame cartons, number paths, or 10-frames.
- Place the Observational Assessment Checklist on a clipboard for observational notes.

Launch 10

Materials—S: Counting collection, work mat, organizing tools

Students review procedures and prepare to count collections.

Briefly reorient students to the counting collection materials and procedure.

- Partners collaborate to count a collection.
- Each partner makes their own recording to show how the pair counted.

Point out organizing tools students may choose to use. Tools such as number paths or 10-frame cartons support one-to-one correspondence and may be beneficial. Encourage students to choose a different tool than they used in previous counting collection lessons.

Pair students. Invite them to choose a collection and find a workspace.

While collections are still bagged, invite partners to plan how they will work together to count the whole collection. Circulate and ask students to briefly explain their plans. Ask a few pairs with reasonable plans to share their thinking with the class.

Throughout the lesson, look for and praise examples of strong partner work.

Transition to the next segment by framing the work.

Today, you will get to count your collection and show your work on paper.

Teacher Note

Number paths of different lengths are excellent tools to offer. Number paths support one-to-one correspondence and may allow students to stretch into larger collections than they could count alone. Students also use number paths as a way to independently find and copy numerals.

Learn 35

Organize, Count, and Record

Materials—S: Counting collection, counting collection classwork, work mat, organizing tools

Students use their own strategies to count objects and record their process.

Encourage students to begin counting.

Circulate and notice how students organize, count, and record.

- Remind students to count all the items in the collection. Organizing strategies may include touch and count or move and count for different configurations (linear, array, or scattered).
- Recordings may include drawings, stamps, or numbers.

Use the following questions and prompts to assess and advance student thinking.

What counting strategy did you use? Is it working? Is there something else you could try?

How will you show the things you counted on paper? What will you draw or write?

Does your drawing match your collection? How do you know?

Select a few pairs to share their counting work in the next segment. Look for samples that demonstrate different ways to record, including drawings and numerals. Take photographs to project if possible. If not, set aside selected work for sharing.

Teacher Note

As students count their collections, they may want to write two-digit numbers. Avoid saying things like, "Fourteen is a 1 and a 4." This gives the incorrect impression that fourteen is made of two numbers, 1 and 4, when in fact it is a single number made of two digits.

When students ask how to write a two-digit number, show them an example that they can copy. Students will build the place value knowledge they need to understand the composition of two-digit numbers in module 6.

Observational Assessment

☑ Watch students as they count. Are they

- moving objects to keep track of the things they have counted (one-to-one),
- saying the correct number sequence and
- saying the last number in their count to tell the total (cardinality)?

Have students who are not sharing their work leave it in place for the gallery walk. Encourage them to make it easy for others to see their collections and their drawings.

Share, Compare, and Connect

Materials—T: Student work samples

Students discuss strategies for counting and recording a collection.

Gather the class to view and discuss the selected work samples. Invite each selected pair to share their recordings alongside their collection.

Incomplete Recording (Ellie and Theo's Way)

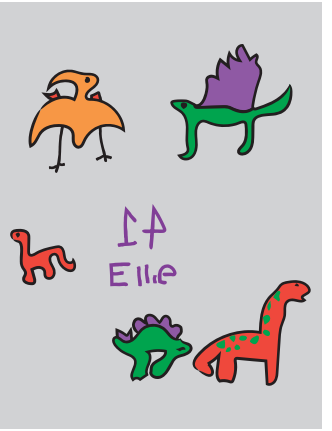
Invite a pair who used move and count to share.

***(Point to horizontal rows.)* I see that your dinosaurs are in rows. How did you decide to put them in rows?**

We were lining them up, but they didn't fit on the paper, so we had to put the others on top.

Did you put them in rows first or did you move and count them?

Move and count



Promoting the Standards for Mathematical Practice

Students model with mathematics **(MP4)** when they use drawings, numbers, or other written information to represent their collection. Revision is an important step in modeling with mathematics. Be sure to encourage students who make mistakes while recording to consider how to fix their work.

Direct attention to the pair's recordings.

Ellie, how did you record, or show, your collection on paper?

I started to draw the dinosaurs, but it was taking a long time. So I wrote 14 instead.

Theo, I saw you tracing dinosaurs on your recording. What did you find out about tracing dinosaurs?

It's hard. There are a lot of pointy parts. They made me frustrated.

It's no fun to feel frustrated. We want to be able to show the whole collection. Let's ask our friends for ideas. Class, what would make it easier to draw all 14 dinosaurs?

Maybe drawing circles?

Yeah, you could make a circle and then put a dinosaur on the circle until all the dinosaurs have a circle.

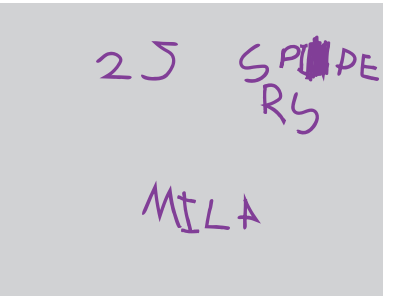
If students do not suggest math drawings, like circles, find an opportunity to model or speak about math drawings. Encourage a supportive math community by inviting students to listen and try one another's ideas.

Drawings and Numerals (Mila and Campbell's Way)

Display a second pair's recordings. If possible, select recordings that include drawings and numerals.

Put your finger on your nose if you can tell me how many spiders are in Mila and Campbell's collection.

Select one or two volunteers to tell how many spiders and to explain how they know. Highlight elements of the recordings that make it easy to see the number of spiders. This may include use of numbers, clear drawings of individual objects, or the organization of objects on the paper.



Language Support

This segment introduces *record* as a new term. Support this term in future instances by revoicing and describing it as a way to show something on paper with a drawing, letters, or numbers. "You can record, or draw, to show how you counted and how many are in your collection."

Mila, I see you wrote *25 spiders* on your recording. Writing the label, spiders, was very helpful because now we all know what you counted. How did you know how to write the number 25?

I used the number path and counted to 25.

Campbell, I see that you wrote 25. There's an arrow pointing from the number 25 to this spider. *(Point to the arrow.)* What does that arrow tell us?

I drew too many spiders, so I took all the spiders and put them on my drawing. That is the last spider. That's where there are 25 spiders.

Putting the spiders on top of your drawing was a good way to check that your drawing matches your collection. You found a way to make your drawing match even though you drew too many at first.

Did anyone else draw too many at first? How did you change your drawing?

Invite one or two volunteers to share their solution for drawing too many objects.

Gallery Walk

Students do a gallery walk to examine one another's work.

Tell students they will go on another gallery walk. Remind them of the following norms:

- Remind students to look but not to touch, as they would in a museum or gallery. They can hold their hands behind their backs as a reminder.
- Prompt students to be very quiet as they look. Encourage them to think about what they notice about the collections and recordings.

While we gallery walk, think about something you notice or like about a classmate's work.

Observe students as they walk around. Once students have completed their walk around the room, gather the class together.

Let's talk about what you notice or like about a classmate's work. You can say "I notice ..." or "I like ..." to start your sentence.

Land 5

Debrief 5 min

Materials—T: Student work

Objective: Organize, count, and represent a collection of objects.

Continue to display student work from the gallery walk. Focus the discussion on what students have learned since the beginning of school.

How has your counting changed since the first counting collection?

I like to move my collection into rows and then count. At first, I dumped them on the table and counted.

I didn't know how to count past 10. Now I can count to 20.

How has the way you record, or draw, your collection on paper changed?

I tried to trace when I recorded the first time. Now, I draw circles to show how many. It's a lot faster.

I didn't know how to draw my collection at first. Now I do.

You have learned a lot about math since the beginning of the school year. What are some math things you have learned to do?

I've learned to count and write numbers!

I know how to sort now.

I can count a big collection!

I can tell about my math thinking.

Celebrate all the things students know how to do. If time allows, make a list of all things that students say, and display it in the classroom.

Observational Assessment Recording Sheet

Student Name

Grade K Module 1

Counting and Cardinality

Achievement Descriptors		Dates and Details of Observations
K.Mod1.AD1	**Count** to 10.	
K.Mod1.AD2	**Write** numbers from 0 to 10.	
K.Mod1.AD3	**Represent** a group of objects with a written numeral 0–10.	
K.Mod1.AD4	**Say** one number name with each object when counting up to 10 objects.	
K.Mod1.AD5	**Use** the last number of a count to tell *how many* regardless of arrangement or order counted.	
K.Mod1.AD6	**Say** *how many* without recounting when objects are rearranged.	
K.Mod1.AD7	**Recognize** that each successive number is one more when counting within 10.	
K.Mod1.AD8	**Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.	
K.Mod1.AD9	**Count** out a given number of 1–10 objects from a larger group.	
K.Mod1.AD10	**Sort** objects into categories.	

Notes

PP Partially Proficient **P** Proficient **HP** Highly Proficient

Module Achievement Descriptors and Content Standards by Lesson

● Focus content ○ Supplemental content

Achievement Descriptor	Aligned CCSSM	Lesson																															
		Topic A					Topic B				Topic C				Topic D					Topic E					Topic F					Topic G				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33
K.Mod1.AD1	K.CC.A.1				●		●					○	●							●						○	●	○	●					●
K.Mod1.AD2	K.CC.A.3											●	●	○	●	○	○									●	●	●			○		○	
K.Mod1.AD3	K.CC.A.3					●		●		○			○	○	●	○	○				○	●	●	○			○	○			○		○	
K.Mod1.AD4	K.CC.B.4.a						●	●						●						●													●
K.Mod1.AD5	K.CC.B.4.b						●	●						●						●	●													●
K.Mod1.AD6	K.CC.B.4.b									●														●										
K.Mod1.AD7	K.CC.B.4.c																													●	●	●	●	
K.Mod1.AD8	K.CC.B.5			●			●	●	●						○					●	●	●	●	○			○							●
K.Mod1.AD9	K.CC.B.5										●			○				○	○						●						○		○	
K.Mod1.AD10	K.MD.B.3	●	●	●	●	●										●	●																	

Module Assessment

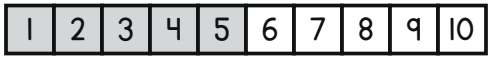
Grade K Module 1

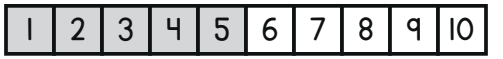
Counting and Cardinality

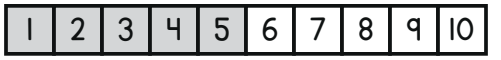
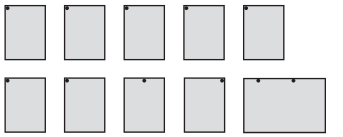
Administer this assessment only to students who show inconsistent proficiency throughout the module, per observational assessment recordings. End the assessment if the student is unable to answer the first few questions.

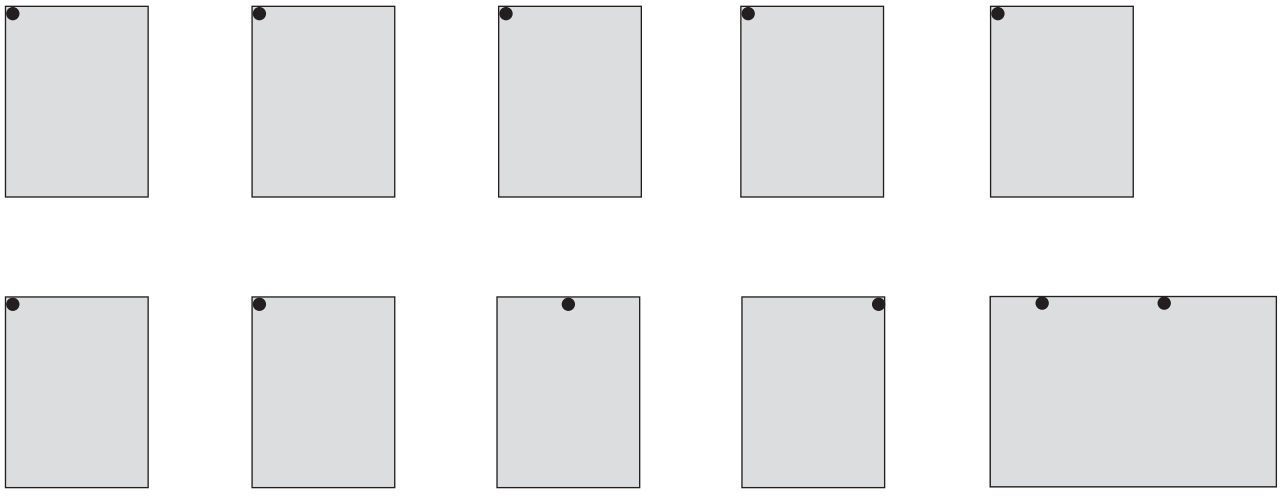
Materials

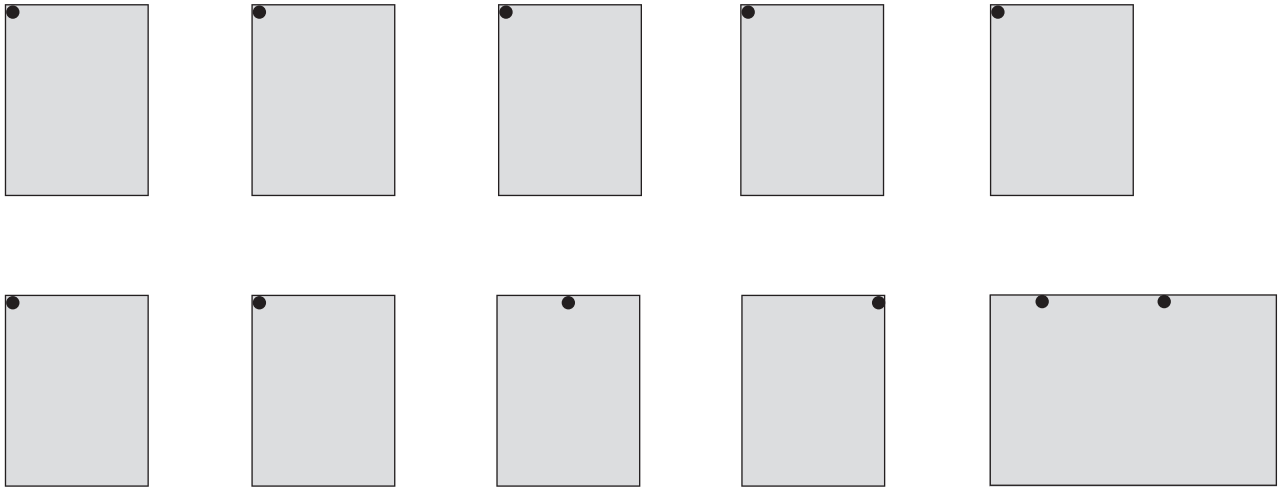
- Bag of 10 loose Unifix® Cubes
- Collection of writing utensils to sort—colored pencils, crayons, markers
- Hide Zero® 7 card
- Number Path (provided removable)
- Flower image (provided removable)
- Numeral writing page (provided removable)

Achievement Descriptors and Standards	Assessment Question
K.Mod1.AD1 Count to 10. (K.CC.A.1) **K.Mod1.AD3 Represent a group of objects with a written numeral 0–10.** (K.CC.A.3) **K.Mod1.AD4 Say one number name with each object when counting up to 10 objects.** (K.CC.B.4.a) **K.Mod1.AD5 Use the last number of a count to tell *how many* regardless of arrangement or order counted.** (K.CC.B.4.b) **K.Mod1.AD8 Count to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.** (K.CC.B.5) **K.Mod1.AD10 Sort objects into categories.** (K.MD.B.3)	1. Give the student the bag of writing utensils. Place the number path in front of the student. **You can sort these any way you want.** If needed, prompt student to sort by size. Point to the smallest group from the sort. **How many are in this group?** **Point to the number that tells how many.** **How many cubes are in the group?** **If the student says *none*, ask for the number that shows *none* (0).**  

Achievement Descriptors and Standards	Assessment Question
K.Mod1.AD1 Count to 10. (K.CC.A.1) **K.Mod1.AD3 Represent a group of objects with a written numeral 0–10.** (K.CC.A.3) **K.Mod1.AD4 Say one number name with each object when counting up to 10 objects.** (K.CC.B.4.a) **K.Mod1.AD5 Use the last number of a count to tell *how many* regardless of arrangement or order counted.** (K.CC.B.4.b) **K.Mod1.AD6 Say *how many* without recounting when objects are rearranged.** (K.CC.B.4.b) **K.Mod1.AD8 Count to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.** (K.CC.B.5)	2. Show the picture of the flower. **Count the petals.** **Put 1 cube on each petal as you count.** **How many cubes are there?** **Point to the number that tells how many cubes.** Scatter the cubes. **How many cubes are there?**  

Achievement Descriptors and Standards	Assessment Question
K.Mod1.AD1 Count to 10. (K.CC.A.1) **K.Mod1.AD3 Represent** a group of objects with a written numeral 0–10. (K.CC.A.3) **K.Mod1.AD4 Say** one number name with each object when counting up to 10 objects. (K.CC.B.4.a) **K.Mod1.AD5 Use** the last number of a count to tell *how many* regardless of arrangement or order counted. (K.CC.B.4.b) **K.Mod1.AD7 Recognize** that each successive number is one more when counting within 10. (K.CC.B.4.c) **K.Mod1.AD9 Count** out a given number of 1–10 objects from a larger group. (K.CC.B.5)	3. Give the student the bag of 10 objects. Hold up the Hide Zero 7 card. ***(Hold up the 7 card.)* Count out this many.** **If you get 1 more, how many will there be?** **Point to the number that shows 1 more than 7.**   
K.Mod1.AD2 Write numbers from 0 to 10. (K.CC.A.3)	4. Remove the number path. Place the numeral writing page in front of the student. **Write the numbers 1 through 10 in order.** 





Standards

Module Content Standards

Know number names and the count sequence.

K.CC.A.1 Count to 100 by ones and by tens.

K.CC.A.3 Write numbers from 0 to 20. Represent a number of objects with a written numeral 0–20 (with 0 representing a count of no objects).

Count to tell the number of objects.

K.CC.B.4 Understand the relationship between numbers and quantities; connect counting to cardinality.

a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.

b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.

c. Understand that each successive number name refers to a quantity that is one larger.

K.CC.B.5 Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.

Classify objects and count the number of objects in each category.

K.MD.B.3 Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.[3]

Standards for Mathematical Practice

MP1 Make sense of problems and persevere in solving them.

MP2 Reason abstractly and quantitatively.

MP3 Construct viable arguments and critique the reasoning of others.

MP4 Model with mathematics.

MP5 Use appropriate tools strategically.

MP6 Attend to precision.

MP7 Look for and make use of structure.

MP8 Look for and express regularity in repeated reasoning.

3 Limit category counts to be less than or equal to 10.

Achievement Descriptors: Proficiency Indicators

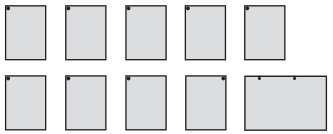
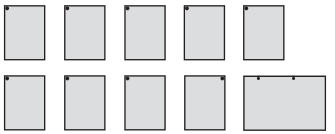
K.Mod1.AD1 **Count** to 10.

RELATED CCSSM
K.CC.A.1 Count to 100 by ones and by tens.

Partially Proficient	Proficient	Highly Proficient
Count to **5**. *Count as high as you can.* 1, 2, 3, 4, 5, 8, 7, 10	**Count** to **10**. *Count as high as you can.* 1, 2, 3, 4, 5, 6, 7, 8, 9, 10	**Count** to **numbers greater than 10.** *Count as high as you can.* 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20

K.Mod1.AD2 **Write** numbers from 0 to 10.

RELATED CCSSM
K.CC.A.3 Write numbers from 0 to 20. Represent a number of objects with a written numeral 0–20 (with 0 representing a count of no objects).

Partially Proficient	Proficient	Highly Proficient
Write some numbers from 0 to 10.[1] *Write the numbers 1–10.* 	**Write all numbers** from 0 to 10.[2] *Write the numbers 1–10.* 	

1 Occasional reversals at the beginning of the year are common and do not represent a lack of proficiency.
2 Occasional reversals at the beginning of the year are common and do not represent a lack of proficiency.

K.Mod1.AD3 **Represent** a group of objects with a written numeral 0–10.

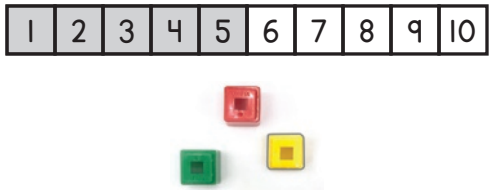
RELATED CCSSM

K.CC.A.3 Write numbers from 0 to 20. **Represent a number of objects with a written numeral 0–20 (with 0 representing a count of no objects).**

Partially Proficient

Represent a group of objects with a written numeral **0–5**.

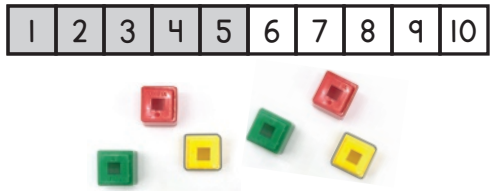
Count the cubes. Point to the number that shows how many.



Proficient

Represent a group of objects with a written numeral **6–10.**

Count the cubes. Point to the number that shows how many.



Highly Proficient

K.Mod1.AD4 **Say** one number name with each object when counting up to 10 objects.

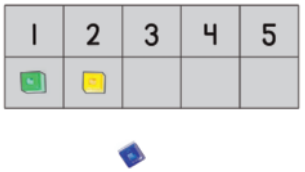
RELATED CCSSM

K.CC.B.4.a When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.

Partially Proficient

Say one number name with each object when counting up to 10 objects **with the help of a tool, like the number path.**

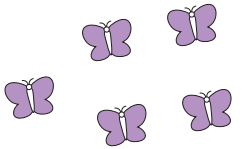
Count the cubes. How many cubes are there?



Proficient

Say one number name with each object when counting up to 10 objects **by using strategies such as touch and count, move and count, or mark and count.**

Count the butterflies. How many butterflies are there?



Highly Proficient

Say one number name with each object when counting **more than 10 objects.**

Count the dots. How many dots are there?

K.Mod1.AD5 **Use** the last number of a count to tell *how many* regardless of arrangement or order counted.

RELATED CCSSM
K.CC.B.4.b **Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.**

Partially Proficient	Proficient	Highly Proficient
	Use the last number of a count to tell *how many* regardless of arrangement or order counted.   *Count the dots.* 1, 2, 3, 4, 5, 6, 7 *How many dots?* 7	

K.Mod1.AD6 **Say** *how many* without recounting when objects are rearranged.

RELATED CCSSM

K.CC.B.4.b Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.

Partially Proficient

Say *how many* without recounting when **1–5 objects** are rearranged.

Count the cubes.

1, 2, 3

How many cubes are there?

3

Teacher spreads out the cubes.

How many cubes are there now?

3

Proficient

Say *how many* without recounting when **6–10 objects** are rearranged.

Count the cubes.

1, 2, 3, 4, 5, 6, 7

How many cubes are there?

7

Teacher spreads out the cubes.

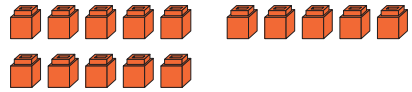
How many cubes are there now?

7

Highly Proficient

Say *how many* without recounting when **more than 10 objects** are rearranged.

Count the cubes.



1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

How many cubes are there?

15

Teacher rearranges the cubes.

How many cubes are there now?

15

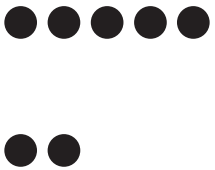
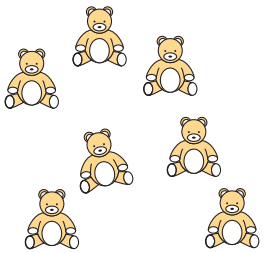
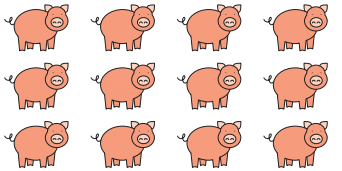
K.Mod1.AD7 **Recognize** that each successive number is one more when counting within 10.

RELATED CCSSM
K.CC.B.4.c Understand that each successive number name refers to a quantity that is one larger.

Partially Proficient	Proficient	Highly Proficient
Count starting from 1 to say the number that is one more, within 10. *I have 3 cubes. One more is ...* 1, 2, 3, 4. 4.	**Say** the number that is one more, within 10. *I have 3 cubes. One more is ...* 4.	

K.Mod1.AD8 **Count** to answer *how many* questions about as many as 10 things arranged in a line, a rectangular array, a circle, or a scattered configuration.

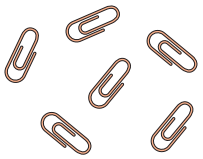
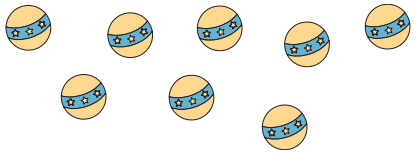
RELATED CCSSM
K.CC.B.5 Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.

Partially Proficient	Proficient	Highly Proficient
Count to answer *how many* questions about as many as 10 things arranged **in a line or a rectangular array.** *Count the dots. How many dots are there?* 	**Count** to answer *how many* questions about as many as 10 things arranged **in a circle or a scattered configuration.** *Count the bears. How many bears are there?* 	**Count** to answer *how many* questions about **as many as 20 things** arranged **in a line, a rectangular array, or a circle.** *Count the pigs. How many pigs are there?* 

K.Mod1.AD9 **Count** out a given number of 1–10 objects from a larger group.

RELATED CCSSM

K.CC.B.5 Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; **given a number from 1–20, count out that many objects.**

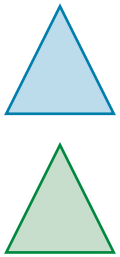
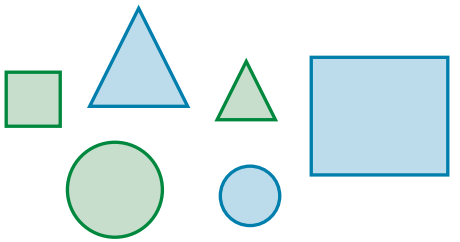
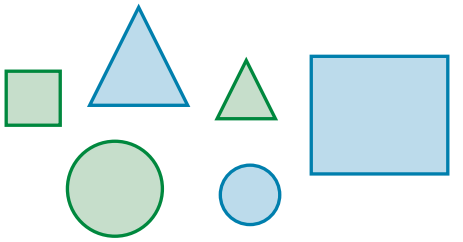
Partially Proficient	Proficient	Highly Proficient
Count out a given number of **1–5 objects** from a larger group. *Circle 3 paper clips.* 	**Count** out a given number of **6–10 objects** from a larger group. *Circle 6 balls.* 	

K.Mod1.AD10 **Sort** objects into categories.

RELATED CCSSM

K.MD.B.3 **Classify objects into given categories**; count the numbers of objects in each category and sort the categories by count.[3]

[3]**Limit category counts to be less than or equal to 10.**

Partially Proficient	Proficient	Highly Proficient
Identify whether objects are the same or different. *Are these shapes exactly the same?* 	**Sort** objects into categories **when an attribute is given.** *Sort the objects by color.* 	**Sort** objects into categories **when an attribute is not given.** *Sort the objects.* 

Terminology

The following terms are critical to the work of grade K module 1. This resource groups terms into categories called New and Academic Verbs. The lessons in this module incorporate terminology with the expectation that students work toward applying it during discussions and in writing.

Items in the New category are discipline-specific words that are introduced to students in this module. These items include the definition, description, or illustration as it is presented to students. At times, this resource also includes italicized language for teachers that expands on the wording used with students.

Items in the Academic Verbs category are high-utility terms that are used across disciplines. These terms come from a list of academic verbs that the curriculum strategically introduces at this grade level.

New

count
When we want to find out how many of something there are, we count. (Lesson 3)

enough
When there is enough of something, we don't need any more. For example, each dog gets 1 treat, each person gets 1 pair of shoes, or there is 1 fork for each plate. (Lesson 7)

line
Objects organized straight across (or up and down) are in a line. (Lesson 8)

In kindergarten, students only work with lines as an organizational concept. In later grades, they will be asked to consider lines geometrically, as a straight path with no thickness that extends in both directions without end.

number
How many things there are. We write numbers to show how many things there are. (Lesson 5)

In kindergarten, number *is commonly used to refer to a number (the concept of 5), its numeral (5), and the English word for that number (five). Kindergarten students are not asked to distinguish between these concepts.*

number sentence
A number sentence tells how we put together or take apart a number, like *5 is 3 and 2* and *3 take away 1 is 2*. (Lesson 15 and Lesson 18)

In module 4, we will also use the term number sentence *to describe an equation that uses symbols like +, –, and =. For example, 5 = 2 + 3 and 3 – 1 = 2 are number sentences.*

sort
Put a set of objects into different groups. We might organize by color, size, or something else. (Lesson 2)

strategy
This is a plan to solve a problem. We can use a strategy to make sure we count correctly. (Lesson 6)

In module 1, students learn several counting strategies, such as touch and count and move and count. Later, students will learn strategies for activities other than counting, such as adding and subtracting.

Academic Verbs

explain

notice

record

solve

Math Past

Zero

If *zero* means "nothing," then why do we need it?
Did someone invent the number zero?
Was zero always drawn as *0*?

Invite your students to imagine a world without the number zero. Here are some scenarios that might amuse them. Try to think of more!

Without zero ...

... you could count down: 3, 2, 1. But you couldn't launch a rocket! Rockets need a countdown that goes all the way to zero: 3—2—1—blastoff! The blastoff happens when the countdown time reaches zero.

- In a world without zero, the rocket just sits there!

... you could walk because one foot is always on the ground. But you couldn't hop, skip, or jump. If you did, you would have zero feet touching the ground.

- In a world without zero, you couldn't hop, skip, or jump!

... you could have a cookie in your hand, but you couldn't eat it! If you ate the cookie, you would have zero cookies in your hand.

- In a world without zero, you couldn't eat the cookie!

It's a good thing that our world does have the number zero. We need zero!

People have been counting 1, 2, 3, and so on for a very long time. Quantities such as 1 rock, 2 twigs, and 3 flowers represent things that people can see and touch. But you can't see or touch zero rocks.

Eventually people realized that a symbol to represent zero was needed in our number system. As one historian of number symbols wrote,

> *The zero is something that must be there in order to say that nothing is there.*[1]

1 Karl Menninger, *Number Words and Number Symbols*, 400.

The Maya were one of the earliest civilizations to write a symbol for zero. They lived in Mexico and Central America more than 3,000 years ago. Their symbol for zero looked like a fancy shell:

The Hindu in ancient India also developed a symbol for zero. Their symbol for zero was much closer to our modern-day zero and looked like this:

The idea of a placeholder for zero traveled to the countries of Iran and Iraq. Their symbol for zero originally looked like this:

Finally, the symbol for zero evolved into the one we use today:

0

Our zero symbol looks a little like both the Hindu and Arabic zeros!

Materials

The following list of materials are needed to implement this module. The suggested quantities are based on a class of 24 students and one teacher.

3	Carrots
1	Chart paper, tablet
25	Counting collections
25	Crayon sets
25	Cups
25	Dry-erase markers
1	*Eureka Math*$^{2™}$ 5-Group™ cards, demonstration set
25	*Eureka Math*$^{2™}$ Bingo boards
24	*Eureka Math*$^{2™}$ Hide Zero® cards, basic student set 12
1	*Eureka Math*$^{2™}$ Hide Zero® cards, demonstration set
12	*Eureka Math*$^{2™}$ Match cards, set of 12
12	*Eureka Math*$^{2™}$ Numeral Cards
24	*Learn* books
1	Pad of sticky notes
96	Paper plates
25	Pencils
25	Personal whiteboards
25	Personal whiteboard erasers
1	Projection device
1	Puppet or stuffed animal
1	Set of number gloves, left and right
48	Small resealable plastic bags
25	Sorting bags
1	*Teach* book
1	Teacher computer or device
3	Teddy bear counters, set of 96
275	Two-color beans, red and white
1	Unifix® Cubes, set of 1,000
1	White paper, ream

Visit http://eurmath.link/materials to learn more.

Please see lesson 6 for a list of organizational tools (cups, rubber bands, graph paper, etc.) suggested for counting collections.

Daily Tool Kits

In module 1, students and teachers work with hands-on materials to explore the math concepts introduced in each lesson. The list of materials below includes the most frequently used items in module 1. Consider creating a tool kit for each student to minimize materials preparation for each lesson. Having student and teacher tool kits on hand each day allows for smooth transitions and drastically decreases lesson prep time.

For best results, begin module 1 with 5 Unifix® Cubes, 5 two-colored beans, Hide Zero® cards 0–5, a pencil, and a crayon. Increase the number of cubes, beans, and Hide Zero® cards to 10 before beginning topic E.

Student Daily Tool Kit

- Unifix® Cubes (10)
- Two-color beans in resealable bag (10)
- *Eureka Math²™* Hide Zero® cards, student set (0–10)
- Pencil
- Crayon

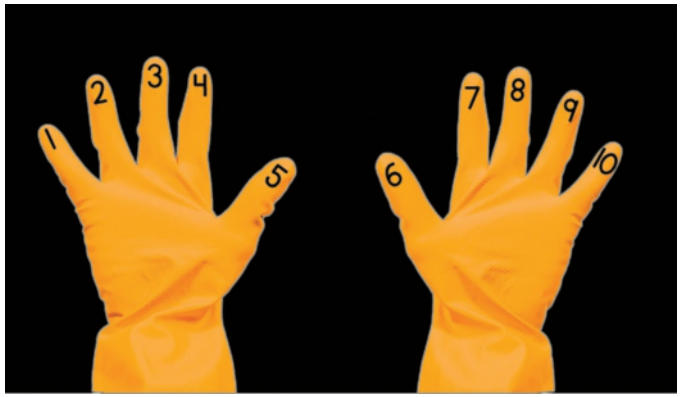
Teacher Daily Tool Kit

- Set of number gloves, left and right
- Two-color beans in resealable bag (10)
- Unifix® Cubes (10)
- *Eureka Math²™* Hide Zero® cards, demonstration set (0–10)

Self-Created Materials

Number Gloves

To create number gloves, you will need a new pair of cleaning gloves and a permanent marker. Lay out the gloves with the palms facing up. Start with the right-hand glove, writing numbers on the fingertips beginning with 1 on the pinkie finger. Continue across the fingers, ending with 5 on the thumb. Continue with the left-hand glove, beginning with 6 on the thumb and ending with 10 on the pinkie finger. Keep the gloves in your teacher tool kit for multiple uses in module 1.



Two-Color Beans

To create two-color beans, you will need lima beans and a can of red spray paint. Lay the beans on newspaper or a protected surface. Spray one side of the beans and allow them to dry. The other side will remain the original color of the bean. Keep the beans in a cool, dry place in your teacher tool kit for multiple uses in module 1.

Sorting Bags

In topic A, students sort objects in a variety of ways and explore attributes such as number, size, shape, and color. They use sorting bags, or bags of strategically selected objects, that can be classified by attribute. Use sorting bags to provide extra practice in stations, small group instruction, or at other times throughout module 1.

Use the chart to create sorting bags that vary by attribute and complexity. Create one or more sorting bags for each attribute.

You do not need to create a class set for every bag type because students choose from the assortment of bags each day.

Students are not limited to one way of sorting items in a bag, even if the bag is designed with a specific attribute in mind. For example, students may sort a bag of buttons by color, shape, or size. They may also sort into unique categories based on their personal experience. Giving students the autonomy to sort as they choose allows them to explore categories and attributes independently.

	Attributes					
Difficulty	**Color**	**Size**	**Name or Type**	**Shape**	**Location**	**Use or Activity**
Complex	Different objects with the same pattern	Different objects with contrasting dimensions (e.g., long, thin items; short, wide items; long, wide items; short, thin items)	Similar objects with different attributes (e.g., insects and spiders)	Different objects, 2-D and 3-D shapes	Similar objects, 3 types of transportation (e.g., students who ride the bus, walk, or bike)	Objects with multiple uses, 3 uses (e.g., use to play, use to write, use to build)
Moderate	Different objects, 3 colors	Different objects, 3 sizes (small, medium, and large)	Different objects, 3 types (e.g., fly, cat, and fish)	Different objects, 3 shapes	Different objects, 3 locations	Different objects, 3 uses
Easy	Same objects, 2 colors	Same objects, 2 sizes	Different objects, 2 obvious types (e.g., fly and cat)	Same objects, 2 shapes (e.g., round button and square button)	Different objects, 2 obvious locations (e.g., apple in lunch box, car in toy box)	Different objects, 2 obvious uses (e.g., use to eat, use to write)

Bags that can be sorted in more than one way are especially interesting for students. They can also be used for decomposition activities beginning in module 1 topic D and continuing through module 4. In the following examples, the number of objects in each group and the number of possible groups may vary depending on the attribute used to sort. This keeps students engaged in counting in topic A, and in considering different ways to decompose a number in topic D and beyond.

Easy	• Large yellow bears, small yellow bears, large blue bears, small blue bears (size, color) • Yellow banana, yellow school bus, yellow lemon, yellow marker, red apple, red fire truck, red marker, green lettuce, green car (color, type, use) • Green apple, peas, watermelon, banana, yellow squash, corn, red apple, raspberry, cherry (color, shape, type, size)
Moderate	• Small white rocks, small black rocks, medium black rocks, large gray rocks (size, color, shape) • Small round brown buttons, large round brown buttons, medium pink round buttons, small pink heart-shaped buttons, large square blue buttons, small green round buttons (color, size, shape) • Bird, insect, airplane, boat, duck, pool float (transportation, air or water; type, alive or not; use, fly or float)
Complex	• Polka-dot shirt, polka dot pants, polka dot plate, striped jacket, striped cup, plaid socks, plaid napkin (color, use) • Fish, fox, dolphin, dog, donkey, clam, cow, coyote, camel (name, first sound; location, water or land) • Scissors, pencil, crayon, marker, eraser, toothbrush, comb, flip-flops, umbrella, bathing suit (use, location)

Counting Collections

Throughout the kindergarten year, students will organize, count, and record collections of objects. Each class needs a variety of counting collections made of everyday materials. At the beginning of the year, collections of 4–25 objects are appropriate for most students. By the end of the year, kindergartners may be ready to count collections of 100 or more objects.

Does this sound like a lot of materials management? Establishing routines and an organization system for counting collections makes the process much more manageable, and the student learning will be worth it.

Counting Collection Bins
4–10 objects
11–25 objects
26–45 objects
46–100 objects
101–150 objects

Creating and Organizing Collections

Counting collections can be assembled by using materials easily found in classrooms or homes. Buttons, beans, bottle caps, pom-poms, erasers, craft sticks, crayons … almost anything can be part of a counting collection. Put each collection in a resealable bag or container.

We suggest sorting and storing collections in color-coded bins based on the number of objects in the collection. Place a corresponding colored sticker on each collection so students can easily return them to the proper bin. Begin the year with a written inventory of how many objects are in each bag to help gauge student counting accuracy, especially with larger collections. Consider having a designated container for items that were missed during cleanup.

Routine Materials

Develop a routine set of materials that each pair of students needs for counting collection lessons. One counting collection and two pieces of paper per student pair are necessary, but providing a work mat and two clipboards will help kindergarten students stay organized. A piece of 11" x 17" paper makes a good work mat. Counting collection lessons are a great opportunity for formative assessment, so we recommend that teachers have an observational checklist available.

Choice Materials and Organizing Tools

Students may choose to use organizing tools as they count and record. Cups, bowls, 10-frame cartons, number paths, 10-frames, and two-hand mats can support collection organization, counting, and recording. Teacher notes provide specific ideas for using organizing tools to support or challenge students. Display and make available these types of materials for students to use as they wish.

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Acknowledgments

Beth Barnes, Dawn Burns, Mary Christensen-Cooper, Cheri DeBusk, Stephanie DeGiulio, Jill Diniz, Brittany DuPont, Lacy Endo-Peery, Krysta Gibbs, Melanie Gutierrez, Eddie Hampton, Rachel Hylton, Travis Jones, Kelly Kagamas Tomkies, Liz Krisher, Ben McCarty, Kate McGill Austin, Cristina Metcalf, Ashley Meyer, Melissa Mink, Katie Moore, Bruce Myers, Marya Myers, Maximilian Peiler-Burrows, Shelley Petre, John Reynolds, Meri Robie-Craven, Robyn Sorenson, Julie Stoehr, James Tanton, Julia Tessler, Philippa Walker

Trevor Barnes, Brianna Bemel, Lisa Buckley, Adam Cardais, Christina Cooper, Natasha Curtis, Jessica Dahl, Brandon Dawley, Delsena Draper, Sandy Engelman, Tamara Estrada, Soudea Forbes, Jen Forbus, Reba Frederics, Liz Gabbard, Diana Ghazzawi, Lisa Giddens-White, Laurie Gonsoulin, Nathan Hall, Cassie Hart, Marcela Hernandez, Rachel Hirsh, Abbi Hoerst, Libby Howard, Amy Kanjuka, Ashley Kelley, Lisa King, Sarah Kopec, Drew Krepp, Crystal Love, Maya Márquez, Siena Mazero, Cindy Medici, Ivonne Mercado, Sandra Mercado, Brian Methe, Patricia Mickelberry, Mary-Lise Nazaire, Corinne Newbegin, Max Oosterbaan, Tamara Otto, Christine Palmtag, Andy Peterson, Lizette Porras, Karen Rollhauser, Neela Roy, Gina Schenck, Amy Schoon, Aaron Shields, Leigh Sterten, Mary Sudul, Lisa Sweeney, Samuel Weyand, Dave White, Charmaine Whitman, Nicole Williams, Glenda Wisenburn-Burke, Howard Yaffe