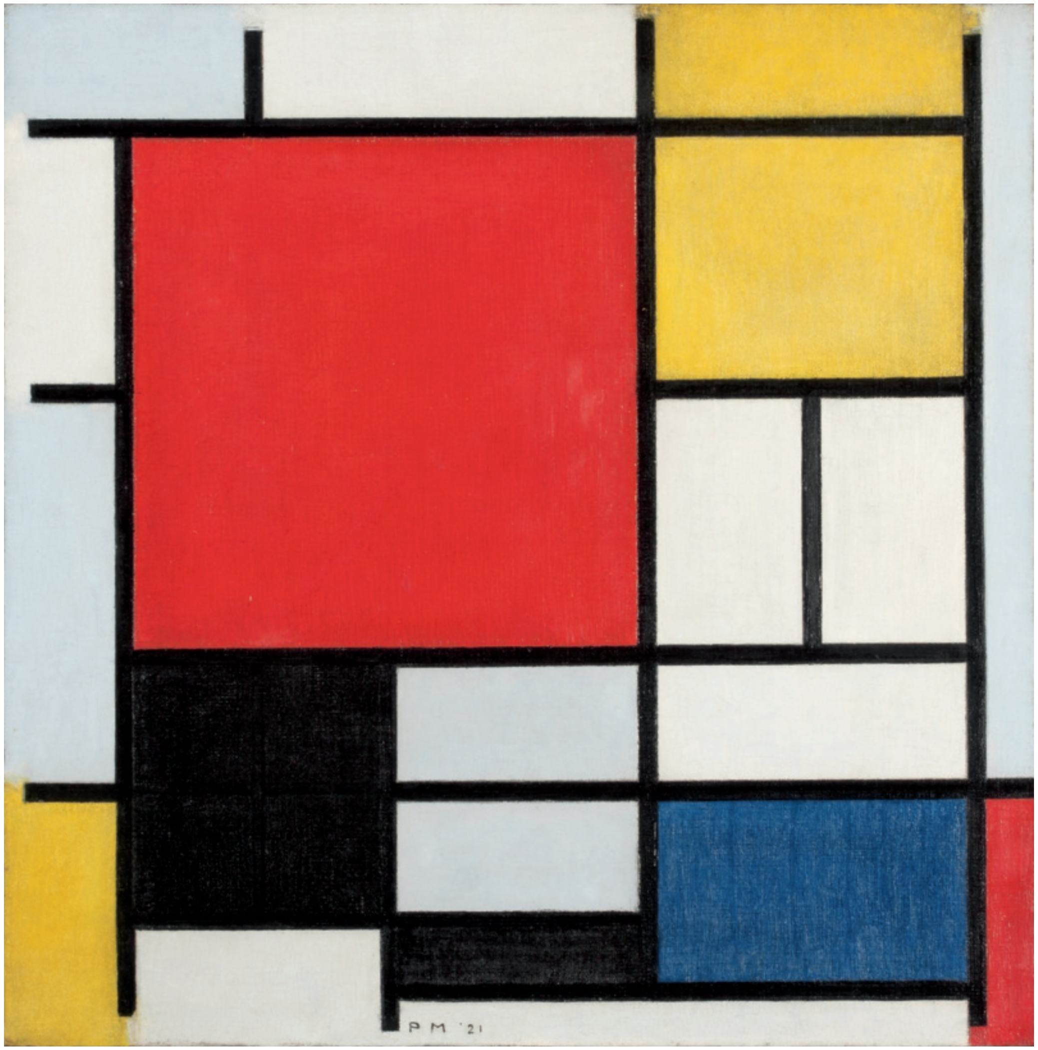

What does this painting have to do with math?

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™

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EUREKA MATH²

A Story of Units®

Part-Part-Total ▸ K

TEACH

Before This Module

Kindergarten Module 1

Students learn to integrate all four elements of the number core as they count and create sets. Their tools encourage them to think of numbers relative to 10.

Kindergarten Module 5

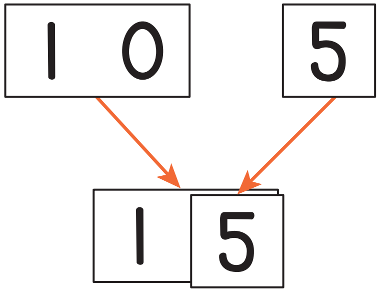
Students use addition and subtraction sentences to represent composition and decomposition of numbers to 10. They look for and make use of patterns. They continue to develop fluency with counting within 100. Through counting collections, students discover that grouping objects makes it easier to both track and count.

Overview

Place Value Foundations

Topic A

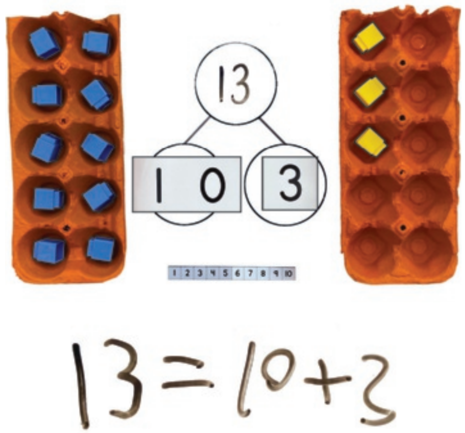
Count and Write Teen Numbers



Students dive into place value concepts as they count and write numbers 11 to 20. They learn that each teen number, 11 to 19, is composed of 10 ones and some more ones and that the digit 1 in a teen number represents 10 ones. Throughout the topic, students use and discuss tools that highlight the structure of ten in our number system such as Hide Zero® cards, fingers, 10-frames, and rekenreks. They use the tens and ones structure to organize objects. This helps them count a group of 11 to 20 objects efficiently and accurately.

Topic B

Compose and Decompose Teen Numbers

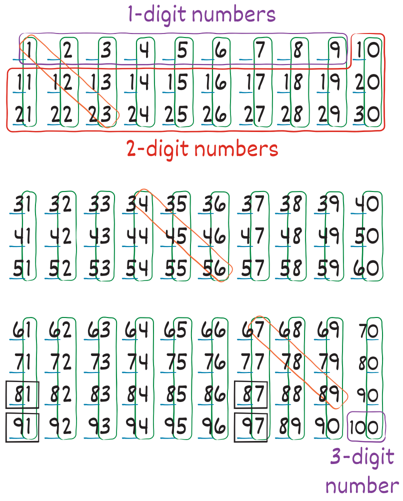


Students expand their experience with place value and part–total relationships by representing teen numbers with number bonds and number sentences. Story contexts offer an entry point for students to connect real-life situations to abstract mathematical representations. Each story uses 10 as a part to reinforce the understanding that teen numbers are composed of 10 ones and some more ones.

Topic C

Count to 100

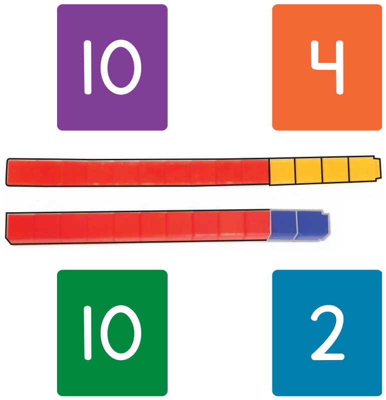
Students master the count to 100 by using pattern and structure. They discover that number words after 20 can be formed by pairing a decade word with a number word one through nine. Students consider efficiency as they organize materials into groups and as they decide when to count by tens or ones.



Topic D

Compare

Students conclude the year by applying comparison strategies to situations involving greater numbers and measurable attributes. Students use their understanding of part–total relationships to decompose teen numbers into 10 ones and some ones before comparing. Measurement scenarios extend student learning and set the stage for comparison in grade 1.



After This Module

Students use tools to organize and count efficiently when they count collections in grade 1.

Grade 1 Module 1

Students use bar graphs they make with number paths to record the data they collect through surveys, observations, and sorting. Because students work within 20, they use emerging place value understanding to compare numbers.

Grade 1 Module 3

Proficiency with $10 + n$ facts, decomposition within 10, and partners to 10 gives students access to the Level 3 strategy of making a simpler problem. For example, to solve 9 + 6 they decompose 6 into 1 and 5 and then add 1 and 9 to make 10. This converts the problem to the familiar 10 + 5.

Contents

Place Value Foundations

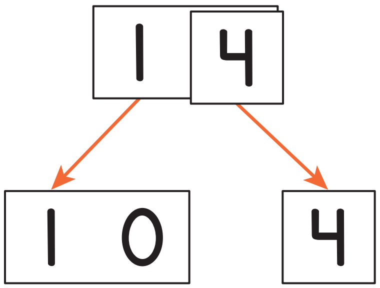
Why

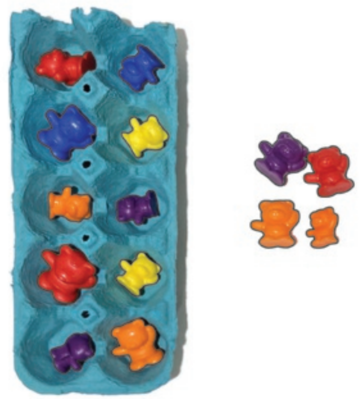
Place Value Foundations

How does the way we name teen numbers impact the way students understand them?

Kindergarten students need to master a critical idea about teen numbers, or numbers 11 to 19. Each teen number is composed of 10 ones and some more ones. The way we name teen numbers in English does not make this clear and can cause confusion for the following reasons.

- **Absence of ten in the number names:** Numbers 13 through 19 include *teen*, which indicates, but does not say, ten. *Eleven* and *twelve* do not include *teen*, as their origins are Old English words meaning “one left” (after ten) and “two left.”[1] Because the word *ten* is obscured or left out of teen number names, most students do not initially understand that the digit 1 in a teen number represents 10 ones. They see 14 as 1 and 4 instead of 10 and 4.
- **Inconsistent naming structure:** The words *eleven*, *twelve*, *thirteen*, and *fifteen* do not contain the name of the digit in the ones place (i.e., *one*, *two*, *three*, *five*). *Fourteen*, *sixteen*, *seventeen*, *eighteen*, and *nineteen* do contain the name of the digit in the ones place. Inconsistency makes it more difficult for students to discern how many ones there are beyond 10.
- **Order of pronunciation:** In numbers 13 through 19, we say the digit in the ones place first. This can lead students to reverse digits when writing numerals. *Fourteen* is often written as 41 instead of 14.

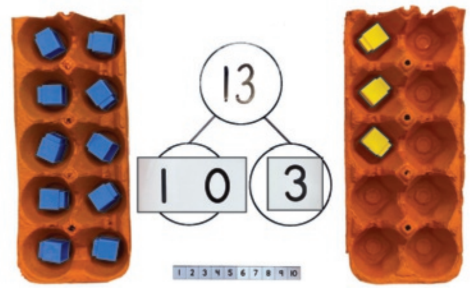




Clarifying the idea that each teen number is composed of 10 ones and some more ones began with Say Ten counting in module 5. This way of counting establishes 10 as a benchmark and highlights the base-ten structure within teen numbers. When students relate Say Ten counting to regular counting (e.g., *ten 1* is the same as *eleven*), students understand that 11 represents 10 ones and 1 one and 12 represents 10 ones and 2 ones, and so on.

1 Clements and Sarama, 102.

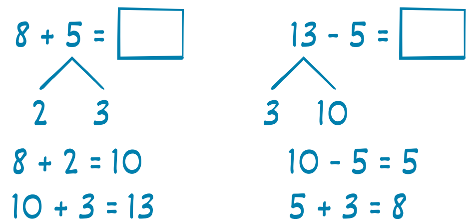
Module 6 provides repeated experience decomposing teen numbers by using tools that highlight the base-ten structure of our number system, including fingers, 10-frames, and rekenreks. Hide Zero cards are used alongside these concrete representations to help students see that the digit 1 in a teen number represents 10 ones.



Why do students need to represent teen numbers with number sentences?

Throughout module 6, students represent teen numbers in predictable ways such as by using objects, drawings, and written numerals. When students decompose teen numbers as 10 ones and some more ones, they may also record their work with an addition or subtraction sentence. Depending on the context, students might record the decomposition of 13 as 13 = 10 + 3, 13 = 3 + 10, 13 − 3 = 10, or 13 − 10 = 3.

Students who can fluently decompose teen numbers into 10 ones and some more ones and represent that thinking with a number sentence are said to know their *10 + n* facts. When students fluently know 13 = 10 + 3, they also know 3 + 10 = 13, 13 − 10 = 3, and all of the related facts. In kindergarten, the focus is on number sentences that have 10 as a part. Students may see, but are not expected to work comfortably with, number sentences such as 8 + 5 = 13 or 13 − 5 = 8.

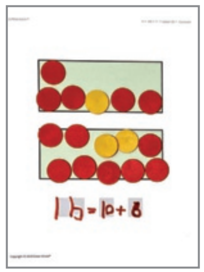


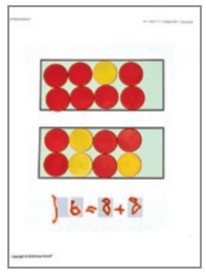
Decomposing a teen number into 10 ones and some more ones is foundational to Level 3 make ten and take from ten strategies, which students learn in grade 1 module 3. When students know their *10 + n* facts, they can simplify problems such as 8 + 5 or 13 − 5.

Why are measurement concepts included in a module about counting and place value?

Weaving measurement concepts into work with numbers provides authentic and engaging contexts for the major work of the grade. Topics B and D include investigations of area and length that allow students to test and apply their emerging place value understanding.

In an optional topic B lesson, students investigate ways to decompose teen numbers by using counters to fill shapes of different sizes. Possible decompositions are tied to the area of each shape: *2 purple boxes will fit 16 doughnuts, but I need 4 yellow boxes to fit 16 doughnuts.*

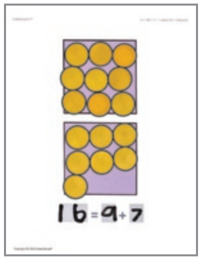


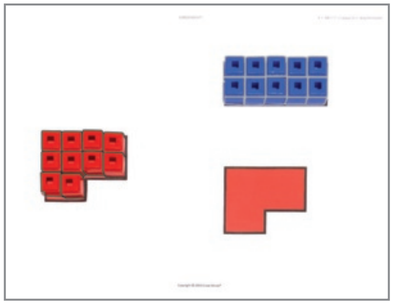


In topic D, area serves as a context for comparing numbers. Students explore early area comparison strategies, such as comparing the sides of shapes and covering one shape with the other, before landing on a more reliable strategy. They cover flat shapes with Unifix® Cubes and compare the number of cubes needed to cover each shape. With shapes that require 10 to 20 cubes, there is an authentic opportunity to consider place value when comparing the numbers.

A length comparison lesson also provides context for using place value concepts. Lesson 23 engages students with familiar length comparison situations, but now the length of the objects requires use of both 10-sticks and individual cubes. Students have an opportunity to count by tens and then ones to describe their cube sticks: *10, 20, 21, 22, 23. The backpack is as long as 23 cubes.*

Lessons that weave together number and measurement concepts prepare students for the work of subsequent grades. As students use direct comparison strategies to compare objects with greater lengths and areas, they develop a need for the place value understanding built in grade 1. Repeated experience with area concepts throughout the primary years prepares students for formal lessons on area in grade 3. Module 6 highlights the interconnectedness of all disciplines of mathematics.





Achievement Descriptors: Overview

Place Value Foundations

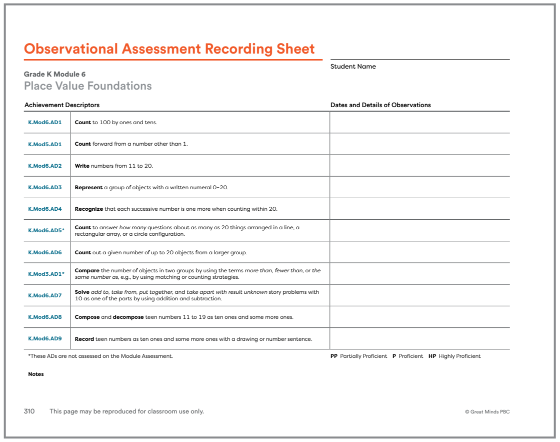
Achievement Descriptors (ADs) are standards-aligned descriptions that detail what students should know and be able to do based on the instruction. ADs are written by using portions of various standards to form a clear, concise description of the work covered in each module.

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 11 ADs listed.


Observational Assessment Recording Sheet

Student Name

Grade K Module 6
Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than*, *fewer than*, or *the same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to*, *take from*, *put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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K.Mod6.AD1

Count to 100 by ones and tens.

K.CC.A.1

K.Mod5.AD1

Count forward from a number other than 1.

K.CC.A.2

K.Mod6.AD2

Write numbers from 11 to 20.

K.CC.A.3

K.Mod6.AD3

Represent a group of objects with a written numeral 0–20.

K.CC.A.3

K.Mod6.AD4

Recognize that each successive number is one more when counting within 20.

K.CC.B.4.c

K.Mod6.AD5

Count to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.

K.CC.B.5

K.Mod6.AD6

Count out a given number of up to 20 objects from a larger group.

K.CC.B.5

K.Mod3.AD1

Compare the number of objects in two groups by using the terms *more than*, *fewer than*, or *the same number as*, e.g., by using matching or counting strategies.

K.CC.C.6

K.Mod6.AD7

Solve *add to*, *take from*, *put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.

K.OA.A.2

K.Mod6.AD8

Compose and **decompose** teen numbers 11 to 19 as ten ones and some more ones.

K.NBT.A.1

K.Mod6.AD9

Record teen numbers as ten ones and some more ones with a drawing or number sentence.

K.NBT.A.1

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 6 is coded as K.Mod6.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.

AD Code Grade.Module.AD#

AD Language

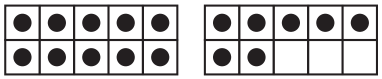
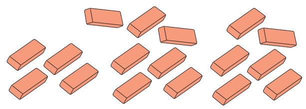
Related Standard

AD Indicators

K.Mod6.AD8 **Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.

RELATED CCSSM

K.NBT.A.1 **Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings,** and record each composition or decomposition by a drawing or equation (such as 18 = 10 + 8); **understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.**

Partially Proficient	Proficient	Highly Proficient
Count a collection of 11 to 19 objects shown as 10 ones and some more ones by counting on from 10. *Count on from 10 to find the number of dots.* 	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones. *Circle a group of 10. Fill in the blanks.*  ___ ones and ___ ones	

Topic A
Count and Write Teen Numbers

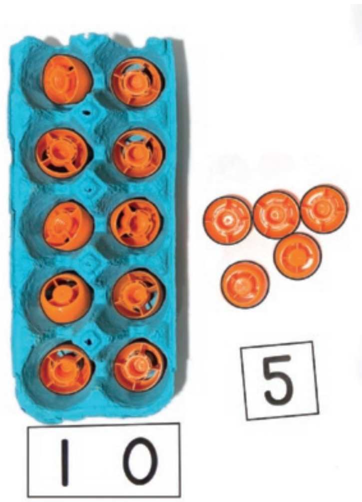
Since the first weeks of kindergarten, students have engaged with number core concepts and explored our number system. Students have counted well past 10 in Fluency and with their counting collections. In topic A, they dive into place value concepts as they count and write numbers 11–20.

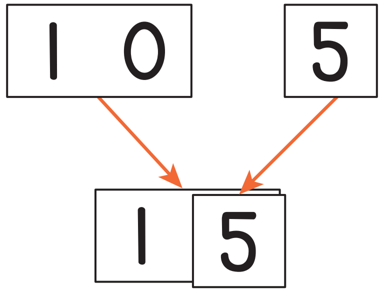
Kindergarten students need to master a critical idea about teen numbers, which include numbers 11–19: Each teen number is composed of 10 ones and some more ones (K.NBT.A.1). This work is foundational to naming ten as a place value unit, which will occur in grade 1 module 3. Students begin the topic by decomposing groups of 11–19 objects into 10 ones and ___ ones and then labeling them with Hide Zero® cards. They see that groups organized to show 10 make it easier to see the total by counting on (*tennnn, 11, 12, 13, 14, 15*) or by conceptual subitizing (*I can see 10 and 5; I know that makes 15*).

Throughout the topic, students use and discuss tools that highlight the structure of ten in our number system such as fingers, 10-frames, and rekenreks. They build on their experience with counting collections, now organizing materials to efficiently and accurately count out a group of 11–20 objects.

Writing numbers 11–20 is another way that kindergarten students explore place value concepts. The English words for teen numbers make it challenging to understand that there are 10 ones in a teen number and often lead to students reversing digits when writing numerals (e.g., writing fifteen as 51). Say Ten counting highlights the ten inside teen numbers: ten 1 is eleven, ten 2 is twelve, and so on. Hide Zero cards also support students in understanding that the digit 1 in a teen number represents 10 ones. Putting the Hide Zero cards together to make the number and then writing the number dispels the misconception that 15 is made of 1 and 5. Students understand that 15 is made of 10 and 5. The digit 1 represents 10 ones and the digit 5 represents 5 ones.

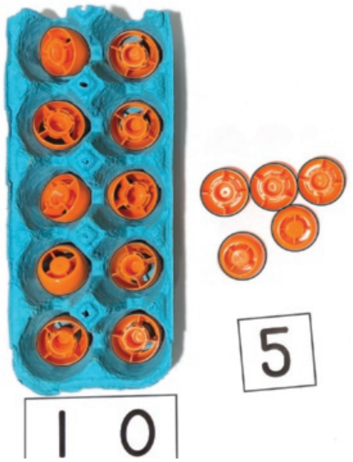
Place value concepts are also supported by choral counting experiences in which students count as the teacher writes the count sequence with strategic organization. Students identify and discuss patterns in the written number sequence that build early understanding of our base-ten system. The early exploration of patterns in the number system will continue in topic C as students study numbers to 100.





Lesson 1

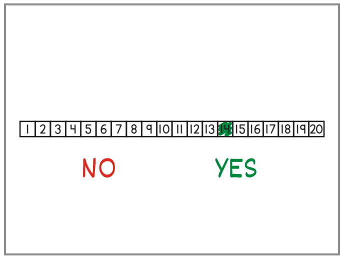
Describe teen numbers as 10 ones and __ ones.



10 ones and 5 ones is 15 ones.

Lesson 2

Find 10 ones in a teen number.



There's 10 hiding inside 14, but not in 8.

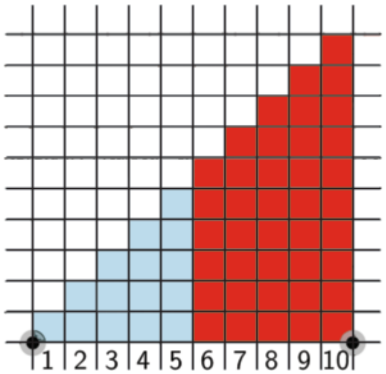
Lesson 3

Write numerals 11–20.

The 1 tells about the 10 cubes.
The 0 is covered with the 9-card.

Lesson 4

Order numerals 0–20.



I see a 1 more pattern: 10; 1 more is 11.

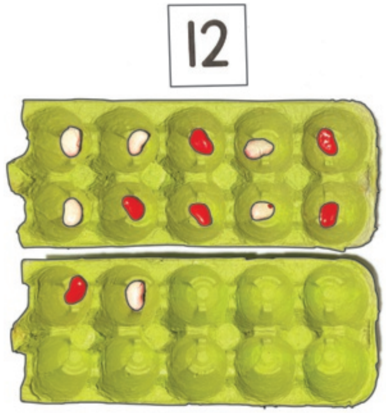
Lesson 5

Reason about a number's position in the number sequence.

I know the number before is 1 less.

Lesson 6

Count out a group of objects to match a numeral.



10 and 2 make 12.

1

LESSON 1

Describe teen numbers as 10 ones and __ ones.

Observational Assessment Recording Sheet

Student Name

Grade K Module 6

Place Value Foundations

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*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

Module 6 introduces students to basic place value concepts as they engage with teen numbers. Students count and describe groups of 10–19 objects as 10 ones and some more ones. Comparing the organization of different groups of objects helps students recognize the value of making a group of 10 to help them count. This lesson introduces the term *ones*.

Key Question

- How did making a group of 10 help you count?

Achievement Descriptors

K.Mod6.AD5 **Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration. (K.CC.B.5)

K.Mod6.AD8 **Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones. (K.NBT.A.1)

Agenda

Fluency 10 min

Launch 10 min

Learn 25 min

- Organized Count
- Teen Counting Bags
- Problem Set

Land 5 min

Materials

Teacher

- 20-bead rekenrek
- Empty can
- Pennies (5)
- Counting collection
- 10-Frame (in the teacher edition)
- Hide Zero® cards, demonstration set
- Computer or device*
- Projection device*
- *Teach* book*

Students

- Counting collection
- Work mat
- Hide Zero® cards
- Organizing tools
- *Learn* book
- Pencil*

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

Lesson Preparation

- Copy or print the 10-Frame to use for demonstration.
- Use counting collections assembled for previous lessons. Adjust collections to have between 10–19 objects for today's lesson.
- Select organizing tools that students can choose from to organize their count such as 10-frame cartons, number paths, and 10-frames.
- Place the Observational Assessment Checklist on a clipboard for observational notes.

Fluency 10

Counting on the Rekenrek the Say Ten Way

Materials—T: Rekenrek

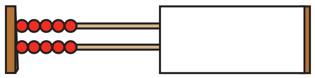
Students count the Say Ten way to prepare for describing teen numbers as 10 ones and some more ones.

Show students the rekenrek with the side panel attached. Start with all the beads behind the panel.

Say how many beads there are as I slide them over.

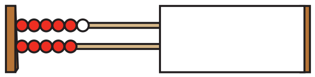
Slide the red beads in the top and bottom rows from behind the panel, one at a time, as students count to 10.

1, 2, 3, 4, 5, 6, 7, 8, 9, 10



Ten

Let's keep counting the Say Ten way. Counting the Say Ten way sounds like this: ten 1, ten 2, ten 3. (Slide white beads in the top row from behind the panel, one at a time, as you demonstrate the count.)



Ten 1

Slide the white beads back behind the panel, again showing 10 beads.

Now it's your turn! Say how many beads there are as I slide them over.

Slide the white beads in the top row from behind the panel, one at a time, as students count to ten 3.

Ten, ten 1, ten 2, ten 3

Slide the white beads back behind the panel, again showing 10 beads.

Repeat the process, having students count from ten to ten 5, and then from ten to ten 10.

How many beads are on the top row?

10

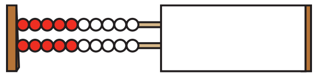
Teacher Note

In Say Ten Push-Ups, the word *and* serves as a placeholder so that each word matches a motion (e.g., ten and 1). When counting the Say Ten way on the rekenrek, the word *and* is omitted (e.g., ten 1).

How many beads are on the second row?

10

That's 2 tens! When we count the Say Ten way we can say ten 10 or 2 ten.



Ten 10 or 2 ten

Coin Drop: Add 1

Materials—T: Empty can, pennies

Students track the count mentally and add 1 more to build addition fluency within 5.

In your mind, count the pennies as I drop them into the can.

Drop 3 pennies into the can, one at a time, pausing between each penny.

On my signal, say how many pennies. Ready?

3

Watch closely!

Clearly drop another penny into the can.

Now how many pennies?

4

Empty the can, then repeat the process, adding 1 more to different amounts of pennies within 5.

Show Me the Math Way: Add or Subtract

Students use finger perception exercises to build addition and subtraction fluency within 5.

Invite students to place both hands under a table, on their lap, or behind their back so that they cannot be seen.

Display the numeral 3.

Teacher Note

Being able to feel but not see their fingers plays an important role in improving students' finger perception, which leads to fact fluency.

Show this many.

(Shows 3 fingers the math way underneath the table)

Display + 1.

$3 + 1 = 4$

Now do this. ***(Gesture to the + 1.)***

(Puts up 1 more finger)

On my signal, say the addition sentence with the answer. Use your fingers to help you. Ready?

3 + 1 = 4

Display the answer.

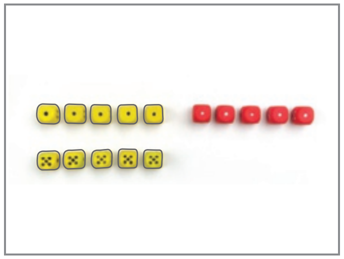
Repeat the process with the following sequence:

3 - 1	4 + 1	4 - 1	5 - 2	3 + 2

Launch 10

Students use different strategies to determine how many.

Display the dice picture on a surface where an erasable marker can be used, such as a classroom whiteboard. Have students give a silent signal to indicate when they know how many.



Invite students to turn to a partner and share how they found the total. Listen for students who use different ways of counting to find the total. Select a student who counts from 1 to share. If none of the students count from 1, have Puppet demonstrate it.

Sri, show us how you counted 15.

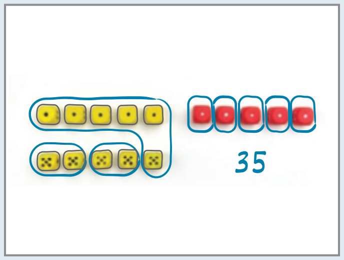
I started counting the yellow dice first and counted. *(Points.)* 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15

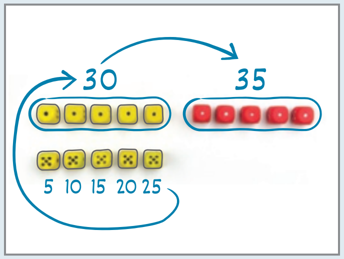
Teacher Note

The instruction to “now do this” is deliberately vague, prompting students to interpret the mathematical symbol. They decide whether they should put up more fingers or hide some fingers based on the meaning of the symbol.

Teacher Note

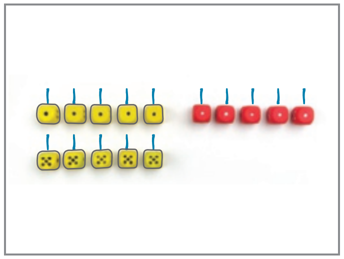
Students in need of a greater challenge may count the dots on the dice. Regardless of what students decide to count, the picture allows for grouping, counting on, or counting by units of ones, fives, and tens. Emphasize that organized groups make counting easier.





Mark or circle to record the student's strategy.

You counted the dice one by one. When we count things one at a time, we call that counting by ones.

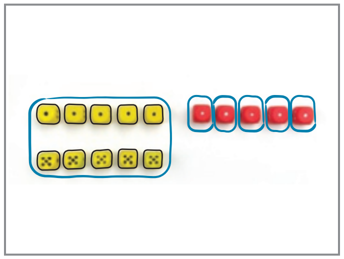


Select a student who counts on from 10 to share.

Kevin, show us how you counted 15.

I saw 5 on top and 5 on the bottom, and that's 10. *(Points to the yellow dice.)* I just started counting the red ones: 11, 12, 13, 14, 15.

Circle to record the student's strategy.



(Point to the circled yellow dice.) **Kevin could see that there were 10 yellow dice, or 10 ones. He was able to count on from 10. When the things we count are organized, we can sometimes tell how many without counting them all one by one.**

Transition to the next segment by framing the work.

Today, we will use groups of 10 ones to help us count.

Language Support

Consider using the following pairing suggestions to create strategic, flexible grouping throughout the module:

- 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 groupings by pairing students who speak the same native language.

Learn 25

Organized Count

Materials—T: Counting collection, Hide Zero cards, 10-Frame

Students contrast counting with and without organizing objects into a group of 10.

Hold up a counting collection of 13.

Look at the pom-poms in this bag. If you think there are more than 10 pom-poms, show me 10 fingers.

If you think there are fewer than 10 pom-poms, hide 10 fingers behind your back.

Pause to let students indicate their estimate.

Let's count the pom-poms to find out if there are more or fewer than 10. What tool or strategy can we use to help us count?

We can put them in a line and count them 1 at a time.

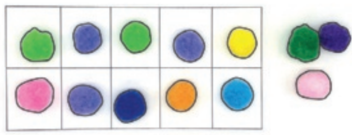
We could use a 10-frame to see if there are 10.

Choose one of the suggested tools or strategies that highlights an organized 10.

Let's use a 10-frame.

Place 10 of the 13 pom-poms in the 10-frame, leaving the extra 3 pom-poms next to the 10-frame without counting aloud.

Were there more than 10 pom-poms in the bag?



Yes.

How did you know? We didn't count them.

We didn't need to. You filled up the 10-frame.

So can we start counting from 10 to find out how many pom-poms? Let's do it.

Tennnn, 11, 12, 13

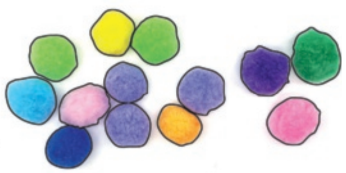
Let's count the pom-poms again by ones to check that there are 13.

Remove the pom-poms from the 10-frame and count them one by one aloud with the class.

How many pom-poms?

13

Was it easier to count the pom-poms with or without a tool that helped us see a 10?

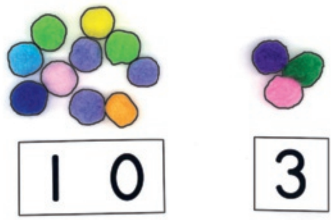


The tool helped us because we didn't make a mistake.

The tool made it faster because we started at 10.

I'm going to label the groups we counted with Hide Zero cards to show 13 as 10 ones and 3 ones. Let's say it the Say Ten way!

Ten 3



Teen Counting Bags

Materials—S: Counting collections, work mat, Hide Zero cards, organizing tools

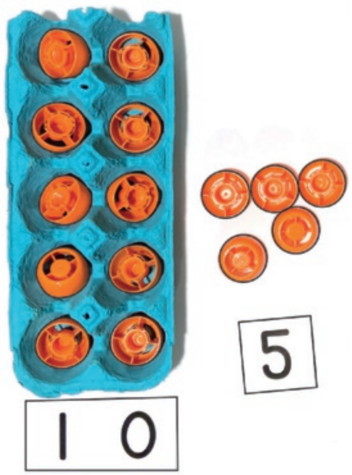
Students choose a tool to count a group of 10–19 things as 10 ones and some more ones.

Distribute a teen counting collection, a work mat, and Hide Zero cards to each student. Prepare a place for students to return and exchange their bags so they can work at their own pace.

It's your turn to count by using a group of 10.

Explain the following steps before releasing students to work independently:

- Count the things in your bag by using a group of 10.
- Choose a tool (optional).
- Label your count with Hide Zero cards.
- Describe the count out loud. For example, say, "10 ones and 5 ones is 15 ones."
- Return your bag to the table and choose a new bag to count.



Have a few extra bags on the table for early finishers. Circulate and support students as needed. Use the following questions and prompts to assess and advance student thinking:

- Show me your group of 10. Do you have to count those by ones?
- How many? Say it the Say Ten way. Say it the regular way.
- Why did you choose that tool to help you count?

Promoting the Standards for Mathematical Practice

Students use appropriate tools strategically (MP5) when they choose a tool to help them find the total for a collection with 10–19 items.

In many kindergarten situations, students can choose whichever tool they would like to use. Students who are thinking strategically will choose a tool that helps them make use of the structure of the total as 10 and some ones.

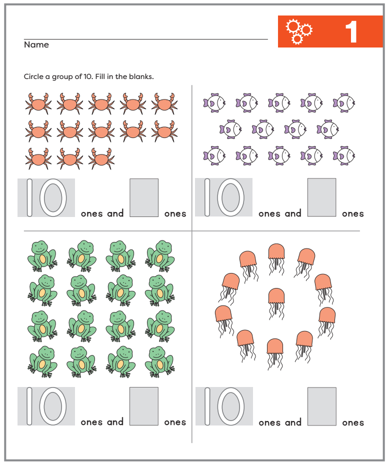
UDL: Engagement

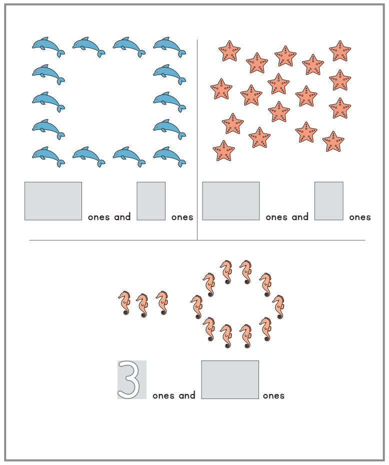
As you circulate, consider looking for opportunities to provide mastery-oriented feedback. Focus your feedback on students' efforts and strategy use, as in the following examples:

- I see you used a 10-frame carton to organize your objects. That really helped you count correctly and easily.
- I saw you lost track for a moment, but then you went back to recount. That shows that you want to do your best work.

Problem Set

Discuss strategies for finding and circling a group of 10 before letting students work independently on the Problem Set. In some configurations, students may be able to see a group of 10 as two sets of 5. In other configurations, students might mark and count to find a group of 10.





Observational Assessment

☑ Prompt students as they complete the Problem Set.

- Show me 10 ones. How many extra ones are there? How many altogether?
- Can you say it the Say Ten way and the regular way?

Land 5

Debrief 5 min

Objective: Describe teen numbers as 10 ones and ____ ones.

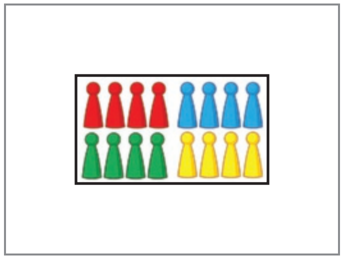
Display the picture of a board game.

Look at this board game. How many game pieces are on it?

It's hard to count. The pieces are all spread out.

20?

Display the picture of game pieces in a box.



Look at the game pieces when they are put away in the box. Do you know how many pieces there are now?

Maybe 20?

Wait. It looks like 20, but there are only 8 on top and 8 on the bottom.

If we make a group of 10, then there are 3 and 3, so it's ten 6. There are 16.

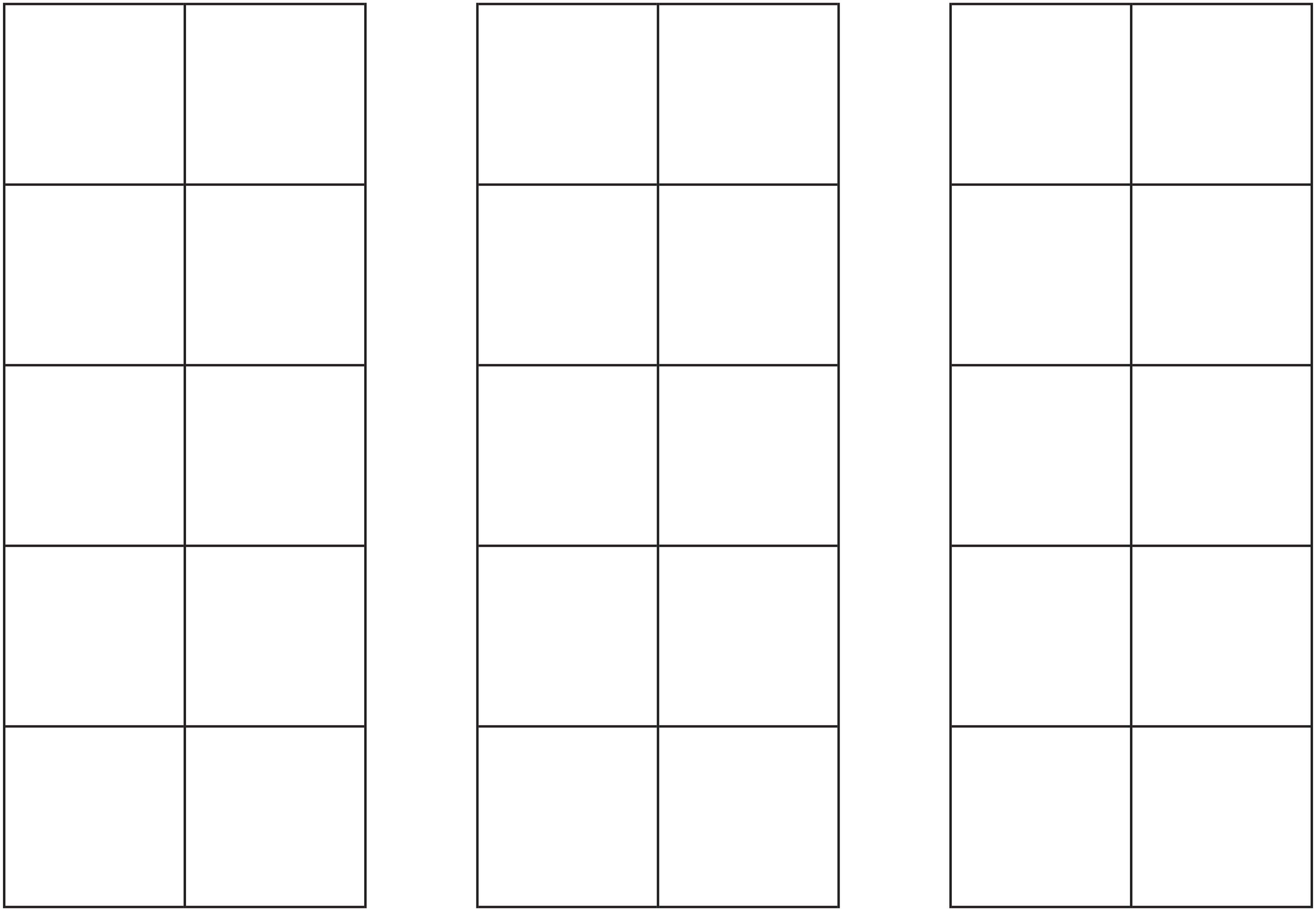
Yes. 16 is 10 ones and 6 ones.

Show the slide of a game board and game pieces. Have students think–pair–share about the organization of the two pictures.

How does making a group of 10 help you count?

After we make a group of 10, we just have to count the extra ones.

When you put 10 together, it looks just like the Say Ten way.



2

LESSON 2

Find 10 ones in a teen number.

Observational Assessment Recording Sheet

Student Name

Grade K Module 6

Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than, fewer than*, or the *same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to, take from, put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

Students continue to explore place value concepts by searching for groups of 10 inside collections of 1–20 objects. Students use a number path to track which numbers contain a group of 10 and which do not. The number path provides a visual record that allows students to reason about the results of their tracking.

Key Question

- When do numbers have 10 inside?

Achievement Descriptors

K.Mod6.AD1 **Count** to 100 by ones and tens. (K.CC.A.1)

K.Mod6.AD8 **Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones. (K.NBT.A.1)

Agenda

Fluency 10 min

Launch 10 min

Learn 25 min

- Number Path
- Color Number Path

Land 5 min

Materials

Teacher

- 20-bead rekenrek
- Empty can
- Pennies (5)

Students

- Counting collection
- 10-frame carton
- Number Path to 20 (in the student book)
- Red crayon
- Green crayon
- Student book

Lesson Preparation

- Consider tearing out the number path prior to the lesson.
- Prepare a counting collection for each student. Each bag should contain a different number of items ranging from 1 to 19. Do not include bags with 10 or 20 items.

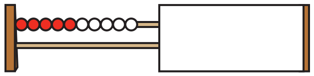
Fluency 10

Counting on the Rekenrek the Say Ten Way

Materials—T: Rekenrek

Students count the Say Ten way to prepare for identifying 10 ones in a teen number.

Show students the rekenrek with the side panel attached. Start with all the beads behind the panel.



Ten

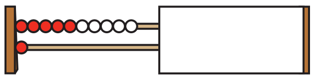
Say how many beads there are as I slide them over.

Slide the beads in the top row from behind the panel, one at a time, as students count to 10.

1, 2, 3, 4, 5, 6, 7, 8, 9, 10

Let's keep counting the Say Ten way.

Say how many beads there are as I slide them over.



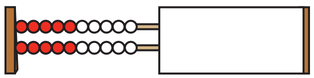
Ten 1

Slide the beads in the second row from behind the panel, one at a time, as students count to ten 3.

Ten, ten 1, ten 2, ten 3

Slide the second row of beads back behind the panel, again showing 10 beads.

Repeat the process, having students count from ten to ten 5, and then from ten to ten 10, or 2 ten.



Ten 10 or 2 ten

Coin Drop: Subtract 1

Materials—T: Empty can, pennies

Students track a count mentally and subtract 1 to build subtraction fluency within 5.

In your mind, count the pennies as I drop them into the can.

Drop 5 pennies into the can, one at a time, pausing between each penny.

On my signal, say how many pennies. Ready?

5

Watch closely!

Clearly remove 1 penny from the can.

Now how many pennies?

4

Empty the can, then repeat the process, subtracting 1 from different amounts of pennies within 5.

Show Me the Math Way: Subtract

Students use finger perception exercises to build subtraction fluency within 5.

Invite students to place both hands under a table, on their lap, or behind their back so that they cannot be seen.

Display the numeral 5.

$$5 - 1 = 4$$

Show this many.

(Shows 5 fingers the math way underneath the table)

Display – 1.

Now do this. *(Gesture to the – 1.)*

(Hides 1 finger)

On my signal, say the subtraction sentence with the answer. Use your fingers to help you. Ready?

5 – 1 = 4

Display the answer.

Repeat the process with the following sequence:

5 - 4	5 - 3	5 - 2	4 - 2	4 - 1	3 - 2

Launch

10

Students compare the efficiency of counting objects in different configurations.

Display the flower picture.

How many petals are on this flower? What strategy can help us count them?

We can touch and count each petal.

You can start at the top and count all the way around.

We should put an x on the petal we count first so we don't forget.

Let's count by ones and touch each petal as we count.

Mark the start and then touch and count the 14 petals. Then display the pigeon picture.

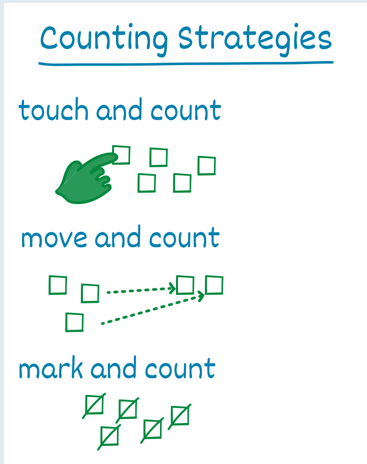
How many pigeons are there? What strategy could help us count them?

Let's find 10 and count the other birds.

Identify 10 and count on with the class.

UDL: Representation

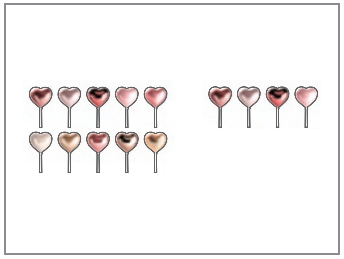
The counting strategies learned in module 1 will continue to be helpful as students count groups with more objects. Consider posting the counting strategies chart from module 1 as a reminder.



There are 14 pigeons. Say it the Say Ten way.

Ten 4

Display the balloon picture.



How many balloons are there?

14

Wow, how did you know that so fast?

I counted on. I saw a group of 10 and then counted the rest.

I saw 10 and 4. That makes 14.

Which picture was the easiest to count? Why?

The birds because they were all in a line and we counted 10.

The balloons because I could see 10 and 4 and I knew that was 14.

Transition to the next segment by framing the work.

Finding 10 ones inside a larger number can make it easier to count. Today, we will find out which numbers have a group of 10 inside.

Promoting the Standards for Mathematical Practice

As students count the total in each picture, they look for and make use of structure (MP7). Though all three pictures show 14, the structure of the number is obscured to varying degrees in the first two pictures.

To count the petals on the flower, there is no obvious structure to make use of, so students need to count from 1 and use a strategy such as mark and count to ensure accuracy. When counting the pigeons, students can impose structure on the picture by finding a group of 10 and using it to make counting easier. Finally, the balloons are already arranged to highlight 14 as 10 and 4, and students can notice and make use of this structure to find the total more easily.

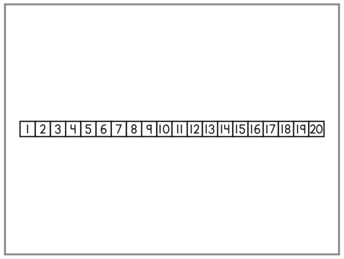
Learn 25

Number Path

Materials—S: Counting collections, 10-frame carton, Number Path to 20, crayons

Identify the numbers between 1 and 19 that have 10 ones inside.

Display the number path to 20.



Turn and talk to your partner: Which of these numbers has a group of 10 ones inside? Which numbers do not have 10 ones inside?

Listen to students as they reason aloud and note their predictions without comment. Students will test their predictions throughout the lesson.

Distribute the bags of counting collections to students as well as 10-frame cartons or regular 10-frames. Place the bags in the center of each table or group of students and prompt students to choose a bag but not to open it.

Look at your bag. Can you tell how many things are in your bag?

Mine has 4.

My bag has too many. I need to count them.

Invite all students to open their bags and to count the objects. Encourage use of the 10-frame carton or 5-group formations so students can easily see if there are at least 10 ones.

If you have fewer than 10 things in your bag, show me how many you have with your fingers.

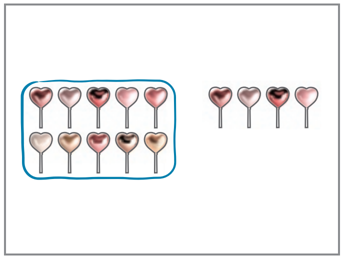
Wait for students who have fewer than 10 things to show their count with their fingers, and then ask them to put their fingers down.

If you found a group of more than 10 things in your bag, show me how many you have with your fingers.

We can't. We don't have enough fingers.

I have more than 10 in my bag, but I only have 10 fingers.

We are going to use our number path to keep track of which numbers have 10 ones inside and which numbers do not.

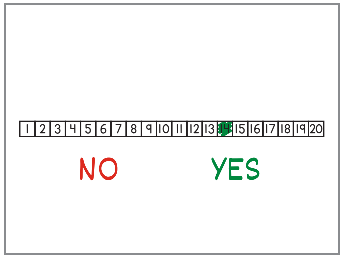


Show the balloon picture and circle the group of 10 balloons.

Earlier we found a group of 10 in our picture of 14 balloons.

Display the number path.

I'm going to color the number 14 green to show that there are 10 ones inside of 14.



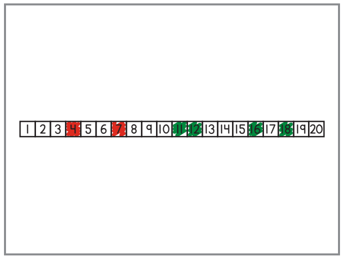
Observational Assessment

☑ Observe students as they count.

- Are students creating groups to help them count?
- Can students find a group of 10 ones and some more ones?
- Can students say the correct number sequence?

Distribute number paths and crayons to each student.

If your number does not have 10 ones inside, color the number red. If your number has 10 ones inside, color the number green.



When students are ready, instruct them to return their bags to the middle of the table and to choose another bag.

Count the things in your new bag. If the number of things does not have 10 ones inside, find and color that number red. If the number of things does have 10 ones inside, find and color that number green.

Students may work at their own pace, counting as many collections as time permits. Most students should be able to count and record between three and six collections.

Teacher Note

If possible, color the numbers by using a transparent coloring tool so students can still see the numbers underneath the coloring. If students use crayons, they will be able to see the numbers after coloring.

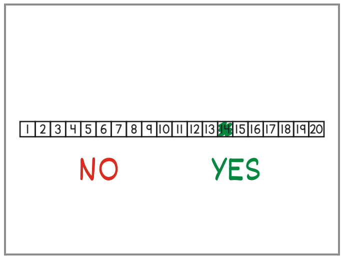
Color the Number Path

Materials—S: Partially completed number path, crayons

Students color the number path to determine which numbers have 10 ones inside.

Display the number path. Point to the number 8.

If you counted a bag with 8 things, stand up. Hold up the crayon you used to color the 8.



Wait for the standing students to show their red crayon.

Why did you color it red?

There's not a group of 10 inside 8.

Use red to color the 8 on the displayed number path as students color the 8 on their number path.

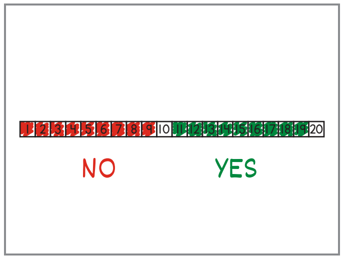
If you counted a bag with 19 things, stand up. Hold up the crayon you used to color the 19.

Wait for the standing students to show their green crayon.

Why did you color it green?

There's 10 hiding inside 19.

Let's all color the 19 green to show that it has 10 ones inside of it.



Use green to color the 19 on the displayed number path as students color the 19 on their number path.

Repeat for each number until the entire number path is colored red or green except for numbers 10 and 20. These numbers will be discussed in Land.

Land 5

Debrief 5 min

Objective: Find 10 ones in a teen number.

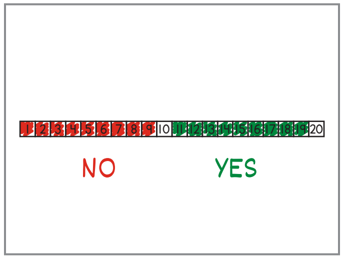
Display the colored number path from Learn. Invite a student to come to the front of the class and show 10 fingers.

Are there 10 ones inside of 10?

Ten is 10 ones. There aren't any left.

Would you color it green or red? Why? Turn and talk to your partner.

Green because all the other numbers that have 10 ones are colored green.



Invite another student to come to the front of the class to help show 20 fingers. Point to the number 20.

Are there 10 ones hiding inside of 20?

There are 10 ones twice.

It's like Say Ten counting: ten 10.

Should we color 20 green or red? Why?

Green because there are 10 ones inside of it.

Have students think–pair–share about what they notice and wonder about the number path.

I notice the green numbers come after 9 so they have 10 ones.

The green numbers have 2 numbers. The red numbers have only 1 number.

I wonder if the numbers after 20 have 10 inside.

When do numbers have 10 inside?

When numbers come after 9, they have 10 inside.

When the number has a 1 at first and then another number after it, there's a group of 10 in it.

Consider creating a center where students can explore their wonderings about the number path. If time permits, use the following prompt to engage student curiosity and reasoning.

Puppet is wondering if the numbers that come after 20 have a group of 10 inside them. Turn and talk to your partner: Do you think the numbers after 20 have a group of 10 inside them? Why?

Language Support

Provide sentence frames with symbols to support students in discerning the meaning of notice and wonder. Choose symbols that are familiar from other content areas or students' life experience like the following examples:

- Consider drawing a magnifying glass or eyes to convey observation for "I notice …"
- A question mark or thinking face emoji might communicate curiosity as it relates to "I wonder …"

Teacher Note

Young students often refer to two-digit numbers as having two numbers. If this happens, casually introduce the term *digit*. For example, "We can call the 1 and 4 you see in 14 *digits*. 14 is the number. 1 and 4 are the digits."

Students will not be responsible for using *digit* as terminology until grade 1.

3

LESSON 3

Write numerals 11–20.

Observational Assessment Recording Sheet

Grade K Module 6

Place Value Foundations

Student Name

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than, fewer than*, or the *same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to, take from, put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

Once students have organized collections of 10–20 objects as 10 ones and some more ones, they are better prepared to understand the meaning of the digit in the tens place. In this lesson, an authentic counting context provides reason for writing numerals to 20. Hide Zero cards and math tools highlight the underlying structure of ten in our counting as students learn to represent their count with a written numeral.

Key Question

- What does the 1 in a teen number represent?

Achievement Descriptors

K.Mod6.AD2 **Write** numbers from 11 to 20. (K.CC.A.3)

K.Mod6.AD3 **Represent** a group of objects with a written numeral 0–20. (K.CC.A.3)

K.Mod6.AD8 **Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones. (K.NBT.A.1)

Agenda

Fluency 10 min

Launch 10 min

Learn 25 min

- Inventory Demonstration
- Taking Inventory
- Writing 20
- Problem Set

Land 5 min

Materials

Teacher

- Chart paper
- Different-color markers
- Books (13)
- Hide Zero® cards, demonstration set

Students

- Add 1 or 0 Sprint (in the student book)
- Classroom Inventory page (in the student book)
- Hide Zero® cards
- Various classroom objects
- Organizing tools
- Group of objects, such as paper clips (20)
- Personal whiteboard
- Dry-erase marker
- Student book

Lesson Preparation

- Consider tearing out the Sprint pages in advance of the lesson.
- Keep the choral counting chart made in this lesson to use in upcoming lessons.
- Prepare classroom objects that may need to be counted for inventory at the end of the year. Possible objects are books, chairs, manipulatives, desks, etc.
- Select organizing tools that students can choose to organize their count such as 10-frame cartons, 10-frames, number paths, and personal whiteboards.

Fluency

10

Sprint: Add 1 or 0

Materials—S: Add 1 or 0 Sprint

Students add 1 or 0 to build addition fluency within 5.

Read the instructions to students and have them complete the sample problems.

Add.

2 + 1 =	3
8 + 0 =	8

Direct students to Sprint A. Frame the task.

I do not expect you to finish. Do as many problems as you can, your personal best.

Take your mark. Get set. Think!

Time students for 1 minute on Sprint A.

Stop! Underline the last problem you did.

I'm going to read the answers. As I read the answers, call out "Yes!" and mark your answer if you got it correct.

Read the answers to Sprint A quickly and energetically.

Count the number you got correct and write the number at the top of the page. This is your personal goal for Sprint B.

Celebrate students' effort and success.

Lead students in one fast-paced and one slow-paced counting activity, each with a stretch or physical movement.

Point to the number you got correct on Sprint A. Remember this is your personal goal for Sprint B.

Direct students to Sprint B.

Take your mark. Get set. Improve!

Time students for 1 minute on Sprint B.

Stop! Underline the last problem you did.

I'm going to read the answers. As I read the answers, call out "Yes!" and mark your answer if you got it correct.

Read the answers to Sprint B quickly and energetically.

Count the number you got correct and write the number at the top of the page.

Stand if you got more correct on Sprint B.

Celebrate students' improvement.

Teacher Note

Count forward by ones from 70 to 80 for the fast-paced counting activity.

Count backward by ones from 80 to 70 for the slow-paced counting activity.

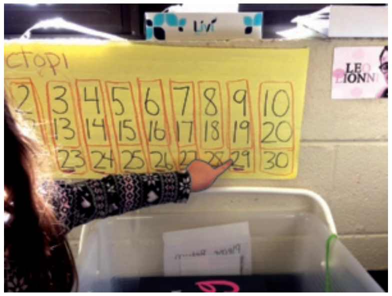
Launch 10

Materials—T: Chart paper, markers

Students chorally count by ones from 1 to 30 and notice patterns.

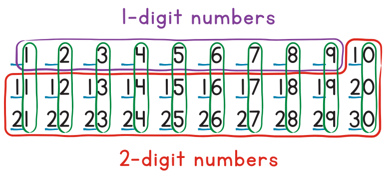
Post a sheet of chart paper in landscape orientation.

Invite students to chorally count by ones starting at 1. Guide the class to count as one unified voice. Encourage students to watch the marker carefully, without counting too quickly or slowly, as you record the count.



Record up to 10 in the first row, leaving ample space around each number to record patterns and connections that students notice.

On the left side of the paper, begin a second row with 11. Continue to record the count up to 30.



Invite students to share what they notice. Use any combination of the following questions to facilitate discussion and to elicit student observations:

- What do you notice?
- What is changing in the count? What is staying the same?
- Is this happening anywhere else?
- If we keep going, what do you think will happen?

As needed, give students the opportunity to come up to the chart and point to help explain what they see. Use different-color markers to record patterns and connections students notice. Each class chart will be unique based on student responses.

Transition to the next segment by framing the work.

Today, we will think about these patterns as you write numbers 11–20.

Teacher Note

Recording choral counts on chart paper allows students to revisit previous counts. Students may look for additional patterns, confirm how to write certain numbers, or simply enjoy recounting a particular count.

This choral counting chart will be revisited in an upcoming lesson.

Teacher Note

Students may notice some of the following patterns:

- The numbers 1–9 have one digit, and the rest of the numbers have two digits.
- As you move down each column, the digit in the ones place stays the same.
- As you move across each row, the digit in the tens place is the same until the last number.
- As you move down the last column, the numbers in the tens place follow the counting sequence 1, 2, 3.

Learn 25

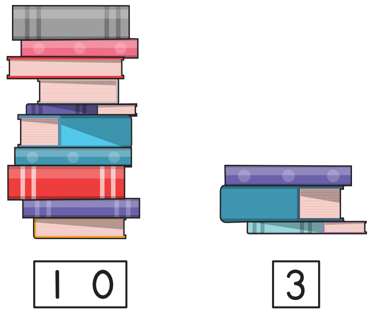
Inventory Demonstration

Materials—T: Books, Hide Zero cards; S: Classroom Inventory page

Students help count a set as 10 ones and some more ones and then combine Hide Zero cards to show how many.

Introduce the concept of taking inventory or making a complete list of items in a particular place. Invite the class to consider why an inventory of classroom materials might be helpful.

Hold up a set of books or other materials to count. Invite students to count with you as you place them into a group of 10 ones and 3 ones.



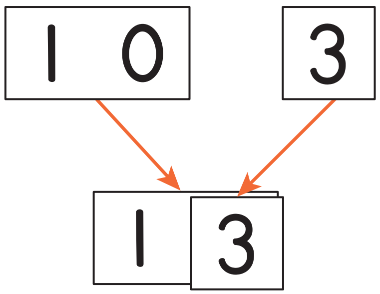
How many books?

13

How many are in this group? *(Point to the stack of 10 books.)*

10

Place the 10 Hide Zero card next to the stack of 10 books. Repeat for the stack of 3 books.



How do we say the total number of books the Say Ten way?

Ten 3

Move the 10 and 3 cards together to show 13.

10 and 3 make ten 3, or 13.

Language Support

As students share, revoice their responses by using precise terminology (e.g., *digit, number, tens*).

For example, if a student says, “4 has only 1 number, but 14 and 24 have 2 numbers,” revoice the idea and point to the relevant part of the chart: “Yes, the number 4 only has 1 digit. 14 and 24 are numbers that have 2 digits.”

Promoting the Standards for Mathematical Practice

As students use Hide Zero cards to help them write the numbers 11–19, they look for and express regularity in repeated reasoning (MP8). After counting and representing several collections of objects, they come to understand that the 1 in the numbers 11–19 represents a group of 10.

This lays the foundation for place value understanding that students will come to rely on in grade 1 and beyond. Here the group of 10 is always thought of as being made up of 10 distinct objects. In grade 1, students will learn to unitize this as a ten.

What happened to the 0 of the 10?

The 0 is hiding under the 3.

It is covered by the 3.

Turn and ask your partner: Does the 1 in 13 tell us about 1 book or 10 books? How do you know?

1 tells about 10 books. You can see the 10 books.

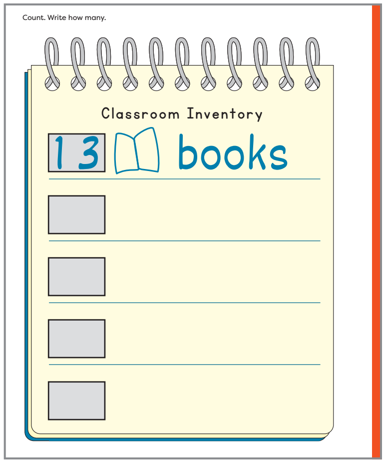
The 1 comes from the 10. We just covered the 0 with the 3 card.

Why do you think these cards are called Hide Zero cards? *(Hold up the Hide Zero cards.)*

I think they are called Hide Zero cards because you put the 3 over the 0 in 10.

We've been making big numbers by putting the smaller number on top of the 0. It hides the 0.

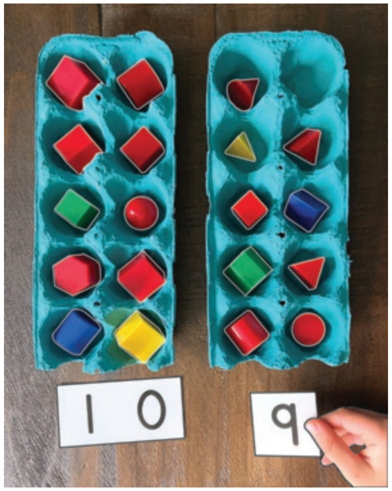
Demonstrate how to write 13 by using the Classroom Inventory page. Use pictures or words to show what was counted.



Taking Inventory

Materials—S: Various classroom objects, Hide Zero cards, Classroom Inventory page, organizing tools

Students count a set as 10 ones and some more ones and then combine Hide Zero cards to show how many.



Set up stations containing classroom materials of various quantities 10–20. Review the following procedure for counting and recording materials:

Differentiation: Challenge

All students can benefit from using Hide Zero cards to write teen numbers. The cards help overcome common reversal errors when writing numbers such as 14, 16, 17, 18, and 19 where students hear the ones first. When students think about covering the 0, they are more likely to put the correct digit in the ones place.

If students need the challenge of counting larger sets, give them a set with 21–29 objects along with the 20 Hide Zero card. Point out that the 2 tells about the 2 groups of 10 inside the number.

- Count materials, separating them into 10 ones and some more ones. Tools such as 10-frame cartons, 10-frames, or 5-group formations can be used to organize the count.
- Place Hide Zero cards to match the groups.
- Make the teen number by using Hide Zero cards and then write the number on your inventory sheet. Write or draw a label to show what you are counting.
- After you have counted and recorded your sets, rotate stations.

Circulate to ensure students are correctly counting and writing the numerals. Use the following questions to assess and advance student thinking.

Where is your group of 10? How many are in the other group?

Show the number with your Hide Zero cards. What does the 1 represent in your number?

How did breaking the materials into a group of 10 and another group help you know how many?

When most students have completed the first side of their inventory sheet, have the class clean up the materials.

Writing 20

Materials—T: Group of 20 objects, 10-frame cartons, Hide Zero cards; S: Classroom Inventory page

Students write the numeral 20.

Gather students in a central location with their inventory sheets. Show the collection of 20 objects. Have the class count aloud as you place the objects into 10-frame cartons.

UDL: Engagement

Taking inventory adds relevance and value to the task of counting objects and writing teen numbers. To further promote this idea, consider providing a rationale, such as ensuring there are enough materials for next year as the current school year comes to a close.

Observational Assessment

☑ Observe and prompt students as they count.

- Ask students to show the objects a 1 is talking about. *(Point to the 1 in the tens place.)*
- Can students write teen numerals?

How many paper clips do we have?

20

How many groups of 10 do we have?

2 groups

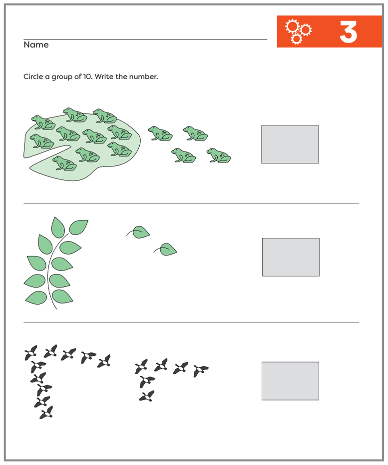
Show the number with Hide Zero cards and demonstrate writing 20 on the Classroom Inventory page.

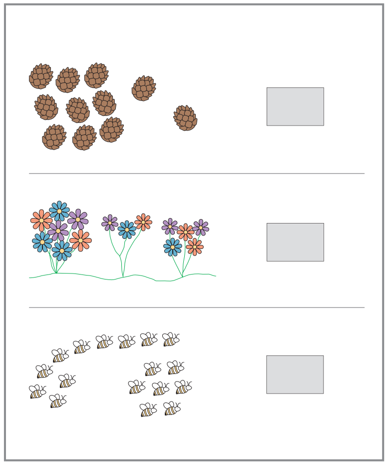
We write twenty, or 2 tens, like this. The 2 tells us that we have 2 groups of ten.

Invite students to add this group to their inventory sheet by writing 20 and a label.

Problem Set

Students circle a group of 10 and write the total. Use systematic modeling as needed to get the class started, and then circulate or work with a small group of students who need extra support.





Teacher Note

The Icky Bug Counting Book by Jerry Pallotta and *How Many Snails?* by Paul Giganti Jr. invite students to count groups of creepy, crawly objects. *The Icky Bug Counting Book* includes numerals and number words. Consider adding these books to the classroom library for early finishers to browse.

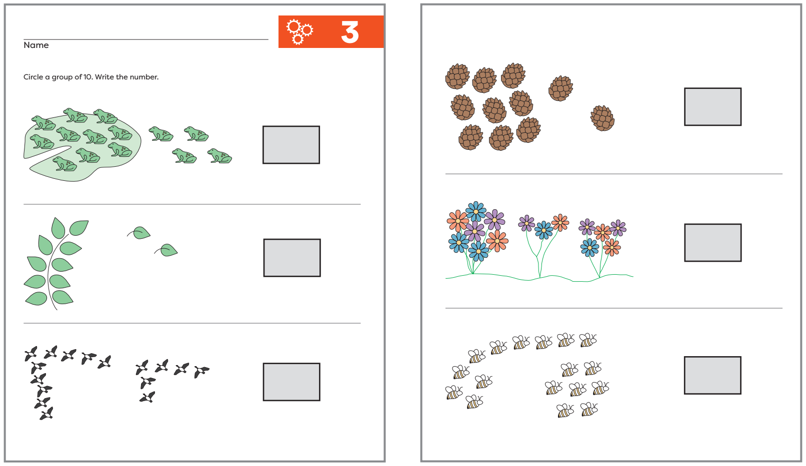
Land 5

Debrief 5 min

Materials—S: Personal whiteboard, dry-erase marker

Objective: Write numerals 11–20.

Review Problem Set answers as a class, asking students to say each number the regular way and the Say Ten way. Pause at the leaf problem.



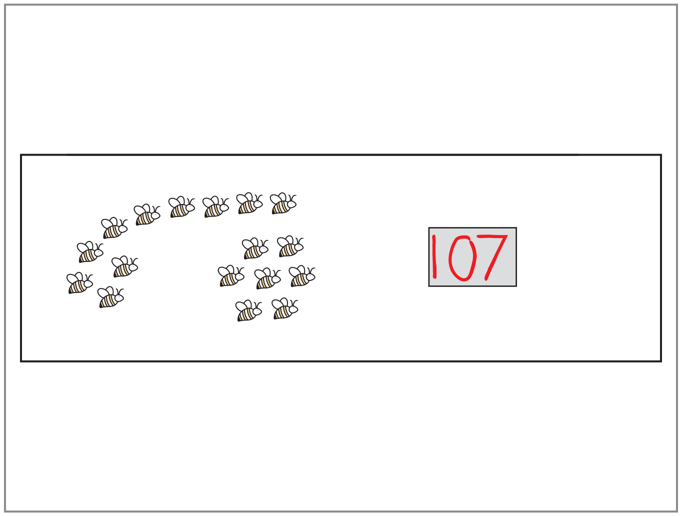
What does the 1 in 12 represent, or tell us about?

It tells us about the 10 leaves on the stem.

Teacher Note

If time does not permit the class to complete the Problem Set, use the Classroom Inventory to say teen numbers the regular way and the Say Ten way. Use a number from the inventory to ask the key question, *What does the 1 in ___ represent?*

Continue reviewing the answers to the other problems. Display Puppet's work on the bee problem.



This is how Puppet wrote 17. Did Puppet write it correctly?

No, Puppet wrote one hundred seven.

Puppet didn't hide the 0 with the 7.

Turn and ask your partner: What would you tell Puppet so Puppet can write 17 correctly?

I would tell Puppet to use the Hide Zero cards.

Puppet needs to hide the 0 with the 7.

Teacher Note

As students begin to make sense of the meaning of the digit in the tens place, some add a 0 to teen numbers. Puppet's work, which shows 107 instead of 17, represents this potential misconception.

Sample Solutions

Expect to see varied solution paths. Accept accurate responses, reasonable explanations, and equivalent answers for all student work.

A

Number Correct: ________

Add.

3 + 1 = 4	3 + 0 = 3
1 + 3 = 4	0 + 4 = 4
5 + 1 = 6	5 + 0 = 5
1 + 5 = 6	0 + 6 = 6
9 + 1 = 10	3 + 1 + 0 = 4
1 + 9 = 10	3 + 2 + 1 = 6
7 + 1 = 8	5 + 2 + 1 = 8
1 + 7 = 8	6 + 1 = 7
4 + 1 = 5	16 + 1 = 17

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B

Number Correct: ________

Add.

3 + 1 = 4	3 + 0 = 3
1 + 3 = 4	0 + 4 = 4
5 + 1 = 6	5 + 0 = 5
1 + 5 = 6	0 + 6 = 6
9 + 1 = 10	3 + 1 + 0 = 4
1 + 9 = 10	3 + 2 + 1 = 6
7 + 1 = 8	5 + 2 + 1 = 8
1 + 7 = 8	6 + 1 = 7
4 + 1 = 5	16 + 1 = 17

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4

LESSON 4

Order numerals 0–20.

Observational Assessment Recording Sheet

Student Name

Grade K Module 6

Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than, fewer than,* or the *same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to, take from, put together,* and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

Students continue to think about patterns in the counting sequence as they write and order numbers. They return to the 1 more and 1 less patterns embedded in the forward and backward count sequences. Students expand the number stairs into the teen numbers to see if the pattern continues.

Key Questions

- How do you know which number comes next in the count sequence?
- How do you know which number comes before?

Achievement Descriptors

K.Mod6.AD4 **Recognize** that each successive number is one more when counting within 20. (K.CC.B.4.c)

K.Mod6.AD8 **Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones. (K.NBT.A.1)

K.Mod6.AD9 **Record** teen numbers as ten ones and some more ones with a drawing or number sentence. (K.NBT.A.1)

Agenda

Fluency 5 min

Launch 10 min

Learn 30 min

- Number Stairs
- Number Path Game
- Problem Set

Land 5 min

Materials

Teacher

- 100-bead rekenrek
- Choral counting chart created in lesson 3
- Chart paper
- Different-color markers

Students

- Number Path to 20 (in the student book, 1 per student pair)
- Unifix® Cubes (2 per student pair)
- 6-sided die (1 per student pair)
- Personal whiteboard
- Dry-erase marker
- Student book

Lesson Preparation

Consider preparing the number paths in advance of the lesson or set aside time for partners to make them during the lesson. Save the number paths for use throughout the module.

Fluency 5

Beep Counting

Students determine the missing number in a sequence to build fluency counting within 10.

Invite students to participate in Beep Counting.

Listen carefully as I count. I will replace one of the numbers with the word *beep*. Raise your hand when you know the beep number. Ready?

Display the sequence 7, 8, ______.

7	8	<u>9</u>

7, 8, beep

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

9

Display the answer.

Repeat the process with the following sequence:

7 <u>8</u> 9	<u>7</u> 8 9	7 8 <u>9</u> 10	6 <u>7</u> 8 9

Counting on the Rekenrek

Materials—T: Rekenrek

Students count the regular way or the Say Ten way to develop fluency with describing teen numbers as 10 ones and some more ones.

Show students the rekenrek. Start with all the beads to the right side.

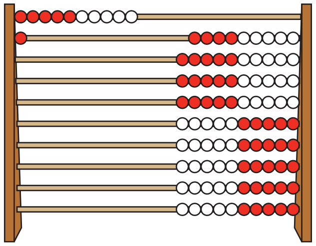
Say how many beads there are as I slide them over.

Slide the beads in the top row from behind the panel, all at once.

Ten

Let's keep counting the Say Ten way.

Say how many beads there are as I slide them over.



Ten 1

Slide over each bead in the second row, one at a time, as students count.

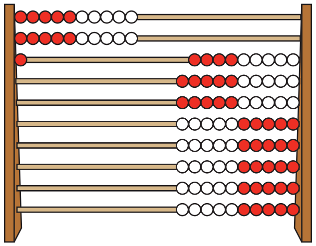
Ten 1, ten 2, ten 3, ten 4, ten 5

Wait! Now keep counting the regular way.

Continue to slide over each bead in the second row, one at a time, as students count.

16, 17, 18, 19, 20

Wait! Stay here at 20, or 2 ten. Keep counting the Say Ten way.



2 ten 1

Slide over each bead in the third row, one at a time, as students count.

2 ten 1, 2 ten 2, 2 ten 3, 2 ten 4, 2 ten 5

Wait! Now keep counting the regular way.

Continue to slide over each bead in the third row, one at a time, as students count.

26, 27, 28, 29, 30

Continue the process to 50, or 5 ten, alternating between the Say Ten way and the regular way during the count.

Launch

10

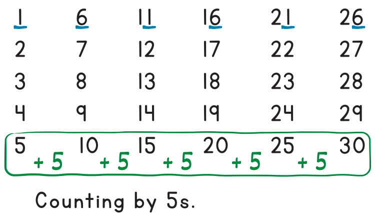
Materials—T: Chart paper, markers, choral counting chart from lesson 3

Students chorally count by ones from 1 to 30 and notice patterns.

Post a sheet of chart paper in landscape orientation.

Invite students to chorally count by ones starting at 1. Guide the class to count as one unified voice. Encourage students to watch the marker carefully, without counting too quickly or slowly, as you record the count.

Record up to 5 in the first column, leaving ample space around each number to record patterns and connections that students notice.



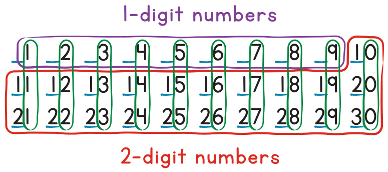
Starting at the top of the paper, begin a second column with 6. Continue to record the count up to 30.

Invite students to share what they notice. Use any combination of the following questions to facilitate discussion and to elicit student observations:

- What do you notice?
- What is changing in the count? What is staying the same?
- Is that happening anywhere else?
- If we keep going, what do you think will happen?

As needed, give students the opportunity to come up to the chart and point to help explain what they see. Use different-color markers to record patterns and connections students notice. Each class chart will be unique based on student responses.

If time permits, display the chart from lesson 3. Invite students to analyze the two charts as they think–pair–share about the following question.



Teacher Note

Planning how to record the choral count is essential to drawing out patterns and big ideas. Choral counts may be recorded in different ways to support students in thinking flexibly about the repeating patterns and to highlight specific concepts.

This choral count builds on students' knowledge of the $5 + n$ pattern and how it repeats in the count sequence.

Teacher Note

Students may notice some of the following patterns:

- The numbers 1–9 have one digit, and the rest of the numbers have two digits.
- As you move across the rows, the digits in the ones place alternate in an *AB* pattern.
- The bottom row shows the numbers said when counting by fives.
- As you move across the rows, the numbers increase by 5.

We counted from 1 to 30 in both charts. How are they different?

The first chart goes this way. *(Moves hand back and forth to show across.)* Today's chart goes up and down.

Transition to the next segment by framing the work.

Today, we will find out if some familiar number patterns continue when we count past 10.

Learn 30

Number Stairs

Materials—S: Student book

Students extend their understanding of the 1 more pattern to teen numbers.

Display the number stairs digital interactive, showing only stairs 1 to 10.

Who remembers the 1 more pattern we found in the number stairs at the beginning of kindergarten?

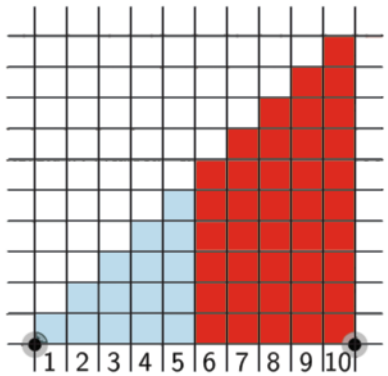
Lead the class in 1 more counting, pointing to each ascending stair as students count.

1; 1 more is 2. 2; 1 more is 3 … 9; 1 more is 10.

Turn and ask your partner: Do you think the 1 more pattern continues?

After partners have talked, distribute student books.

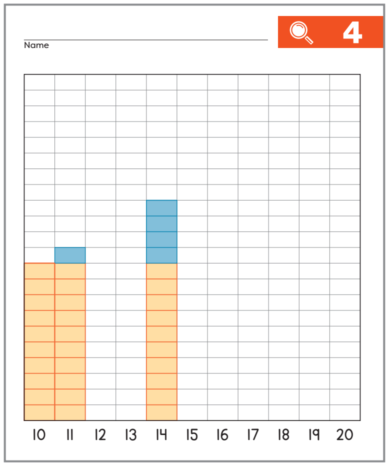
You are going to find out if the 1 more pattern continues.



Language Support

Choral counting helps build students' fluency, self-confidence, and motivation. Because students are counting together, they feel supported by the unified voice of the class. Expect that some students may only listen at times, especially if they are unsure of pronunciation or feel self-conscious about errors.

Instruct students to color each stair to match the number. Students should use two colors: one to highlight the group of 10 ones inside each number and another for the additional ones. Circulate as students work on their number stairs to ensure students are correctly coloring each stair.



Does the 1 more pattern continue with teen numbers? How do you know?

Yes. You can see the stairs, just like with counting to 10.

There is a 1 more pattern, see? *(Points to each stair.)* 1 more, 1 more, 1 more

Let's try our 1 more counting starting at 10 and ending at 20. Follow along on your number stairs.

10; 1 more is 11. 11; 1 more is 12 … 19; 1 more is 20.

In the digital interactive, expand the number stairs so students can see 0 to 20. If time permits, give students time to notice and wonder about the visual.

What happens to each number when we count back?

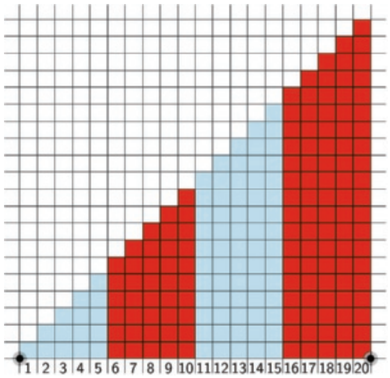
It's 1 less.

Use 1 less counting to count back from 20 to 1, pointing to each descending stair as students count.

1. What number is 1 less?

0

Write 0 on the number stairs.



UDL: Action & Expression

Support students in planning how to create the color change at 10. Avoid errors by having them first make a dot in each box as they count 1, 2, 3, … , 10. Then students switch to the other color to count the extra ones. Once they are certain each space has been assigned the correct color, they can go back and fill it in completely. Repeat this process for each number.

Observational Assessment

☑ Observe students as they color.

- Can students identify the 10 ones in each teen number?
- Can students show or describe how the 1 more pattern continues in teen numbers?

Number Path Game

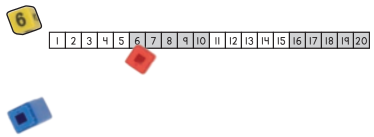
Materials—S: Number Path to 20, Unifix Cubes, 6-sided die

Students relate movement on a number path to increasing or decreasing quantity.

Invite students to play the Number Path game.

> **Let's play the Number Path game. The goal is to get both of your cubes to the number 13.**

Select a student to help demonstrate the game.



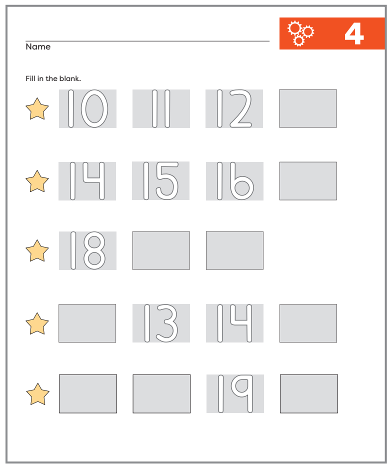
- Partners use different-color Unifix Cubes as game pieces. They each try to get their cube to 13.
- Partner A rolls the die and places their cube on the number they roll.
- Partner B rolls the die and places their cube on the number they roll.
- Partners take turns rolling the die and moving their cube the number of spaces that matches the roll. They may move their game piece forward or backward.
- Play continues until one partner lands on 13.
- Play again and let the winning partner pick the new target number.

Differentiation: Challenge

Challenge students by asking which number would get them to the target number. Ask them to describe how they know.

Problem Set

Not all classes will have time for the Problem Set. If time permits, review the directions before releasing students to work independently. The given numbers are traceable to support students with numeral formation.



Land 5

Debrief 5 min

Materials—S: Personal whiteboard, dry-erase marker

Objective: Order numerals 0–20.

Distribute a whiteboard and marker to each student.

I'm going to say a number and I want you to write the next number in the count. So if I say 8, you would write the number 9 on your whiteboard.

Ready? 16.

Continue saying teen numbers and having students write the next number in the count sequence. Consider asking students to write the number that comes before in the count sequence for an added challenge.

When I say a number, how do you know which number comes next?

I count and see what number comes after.

I know that 17 comes next because I know 15, 16, 17.

You can think about which number is 1 more.

How do you know which number comes before?

I think about which number I say first and then I write it.

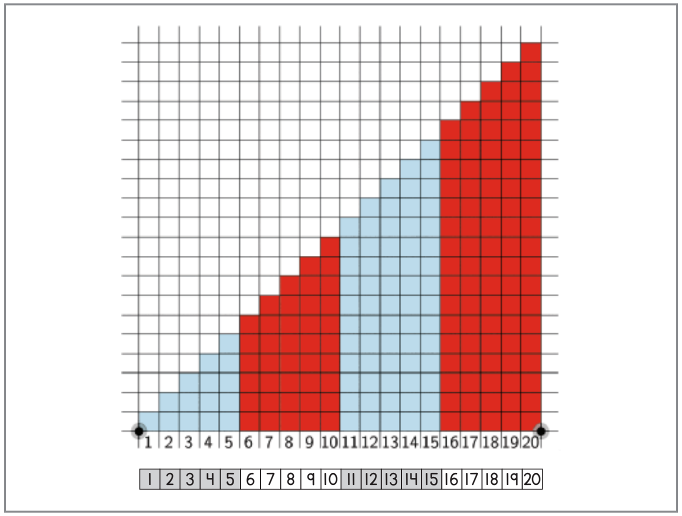
Sometimes I look at the number path and see which number is in front of the one you said.

Promoting the Standards for Mathematical Practice

When students name the number that is 1 more or 1 less than a given number, they look for and make use of structure (MP7).

Students who successfully name the correct number, even with the help of a tool like a number line, are showing they understand the structure of the counting sequence. They are showing they know the number that is 1 more or 1 less than a given number can be found by counting up or down from that number, instead of starting at 1.

Display the number stairs and number path.



How can the number stairs and the number path help us find out which number comes before or after?

You can look and see which number is in front. That's the one that comes before.

The number stairs and the number path are just like we count. You can see the number that comes before and after.

5

LESSON 5

Reason about a number’s position in the number sequence.

Observational Assessment Recording Sheet

Student Name

Grade K Module 6
Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than*, *fewer than*, or *the same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to*, *take from*, *put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

Students apply their understanding of the relationship among teen numbers to determine a number’s position on the number path. They become number detectives and strategize to identify an unknown number within the teen number sequence.

Key Question

- How do you know where to put a number on the number path?

Achievement Descriptors

K.Mod6.AD1 **Count** to 100 by ones and tens. (K.CC.A.1)

K.Mod5.AD1 **Count** forward from a number other than 1. (K.CC.A.2)

Agenda

Fluency 10 min

Launch 5 min

Learn 30 min

- Number Detective
- Number Detective Partners
- Problem Set

Land 5 min

Materials

Teacher

- Numeral Cards removable (in the teacher edition)

Students

- Subtract 1, 0, or All Sprint (in the student book)
- Numeral Cards (1 set per student pair)
- Scissors
- Glue
- Student book

Lesson Preparation

- Consider tearing out the Sprint pages in advance of the lesson.
- Ready numeral cards 1–10. Prepare a set of numeral cards 10–20 for each student pair. Copy or print numeral cards and cut them out ahead of the lesson. Consider printing the cards on cardstock and laminating them for use in subsequent lessons.
- The Problem Set removable is two pages. The number cards should be torn out and cut apart. The grid can be torn out or left in the book. Consider tearing out the number cards and cutting them apart before the lesson.

Fluency 10

Sprint: Subtract 1, 0, or All

Materials—S: Subtract 1, 0, or All Sprint

Students subtract 1, subtract 0, or subtract all to build subtraction fluency within 10.

Read the instructions to students and have them complete the sample problems.

Subtract.

$8 - 1 =$	7
$4 - 0 =$	4
$1 - 1 =$	0

Direct students to Sprint A. Frame the task.

I do not expect you to finish. Do as many problems as you can, your personal best.

Take your mark. Get set. Think!

Time students for 1 minute on Sprint A.

Stop! Underline the last problem you did.

I'm going to read the answers. As I read the answers, call out "Yes!" and mark your answer if you got it correct.

Read the answers to Sprint A quickly and energetically.

Count the number you got correct and write the number at the top of the page. This is your personal goal for Sprint B.

Celebrate students' effort and success.

Lead students in one fast-paced and one slow-paced counting activity, each with a stretch or physical movement.

Point to the number you got correct on Sprint A. Remember this is your personal goal for Sprint B.

Direct students to Sprint B.

Take your mark. Get set. Improve!

Time students for 1 minute on Sprint B.

Stop! Underline the last problem you did.

I'm going to read the answers. As I read the answers, call out "Yes!" and mark your answer if you got it correct.

Read the answers to Sprint B quickly and energetically.

Count the number you got correct and write the number at the top of the page.

Stand if you got more correct on Sprint B.

Celebrate students' improvement.

Teacher Note

Count forward by ones from 80 to 90 for the fast-paced counting activity.

Count backward by ones from 90 to 80 for the slow-paced counting activity.

Launch

5

Materials—T: Numeral Cards

Students reason about numbers based on their placement in a sequence.

Display a number path showing 10, 15, and 20 with empty spaces for other numbers as shown.

10					15					20

Some of the numbers are missing in the number path. Let's see if we can put the numbers back in the right place.

Pass out numeral cards to student pairs or trios. Give students time to discuss where they think their numeral card should be placed.

Let's start with the number 16. Raise your hand if that's your card.

Invite students with the numeral card to tape it onto the number path.

How did you know where 16 should go?

We see 15 and 16 comes next.

16 is 1 more than 15.

We counted from 10.

Continue inviting student pairs to place their numeral cards and explain their thinking.

What helped us figure out the missing numbers?

We counted.

Some numbers were there. I counted on from 10.

It was easier when we had more numbers filled in. You could see the numbers before and after.

UDL: Representation

The digital interactive Clothesline Number Path helps students order numbers by using the anchor numbers in this lesson.

Consider allowing students to experiment with the tool individually or demonstrate the activity for the whole class.

Let's check our work by counting the regular way and the Say Ten way.

10, 11, 12, 13 ...

Ten, ten 1, ten 2, ten 3 ...

Transition to the next segment by framing the work.

Today, we will use what we know about the number order to help us solve problems.

Learn 30

Number Detective

Materials—T: Numeral Cards

Students reason about numbers based on their placement in a sequence.

Using the sequenced numeral cards, turn over every other card starting with 11.

10		12		14		16		18		20

Point to one of the cards that is turned over. For example, number 19.

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 19.

Wow! You were right. What clues did you use to figure out that this is number 19?

18 was before it. 19 comes next.

I saw 20. 1 less is 19.

Number Detective Variations

There are many ways to vary this game. Use the suggestions below to support or challenge your class.

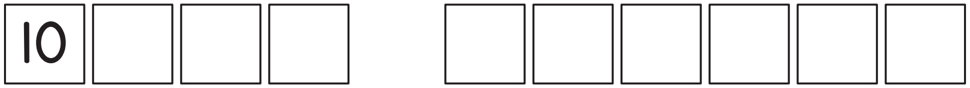
Support

- Use fewer cards (10–15).
- Create numeral cards with dots in 5-group formations on the back.
- Chorally say the number sequence before asking students to identify a hidden number.

Challenge

- Use cards 1–20.
- Place the number cards in a decreasing sequence beginning with 20.
- Arrange the cards in a 5-group rather than linear formation.

If needed, play again with some cards showing. If not, turn over all the cards except 10. The 10-card serves as a reminder that the count starts at a number other than 1. 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?

I think it's 14. I counted 10, 11, 12, 13, 14. *(Touches the cards and empty space.)*

Continue the game, inviting other students to choose a card, until students are ready to play with a partner. Challenge students to say the missing number the regular way and the Say Ten way.

Number Detective Partners

Materials—S: Numeral Cards

Students reason about numbers based on their placement in a sequence.

Have students work with a partner. Distribute a set of numeral 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 most 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 B reveals the number. Partner A determines if partner B is correct and responds with either a compliment or a suggestion. (For example, *Try using touch and count.*)
- Switch roles and play again, starting with all the cards in order.

Use suggestions from the Number Detective Variations to customize this activity to meet the needs of your class.

Promoting the Standards for Mathematical Practice

As students work in partners to play number detectives, they construct viable arguments and critique the reasoning of others **(MP3)**.

The instructions ask students to give their partner a suggestion if they guess the wrong number. If partner B still doesn't understand how to determine the correct number, partner A has the opportunity to construct a viable argument for their strategy. Encourage partner B to critique their reasoning by asking questions such as, *How do you know that strategy works?*

UDL: Engagement

This partner activity fosters collaboration by having peers give a compliment or a suggestion. Students not accustomed to these types of interactions may offer kind yet off-topic compliments. Likewise, if the meaning of the word *suggestion* is not well understood, they might provide the answer with the intention of being helpful. Consider brainstorming possible suggestions and compliments based on both strategies and effort.

Problem Set

Materials—S: Student book, scissors, glue

Students identify and order numbers.

Demonstrate the activity by using a document camera or interactive whiteboard. Begin by showing a number card, such as 14.

There are three places I can put this number.

Point to the blank squares on the grid.

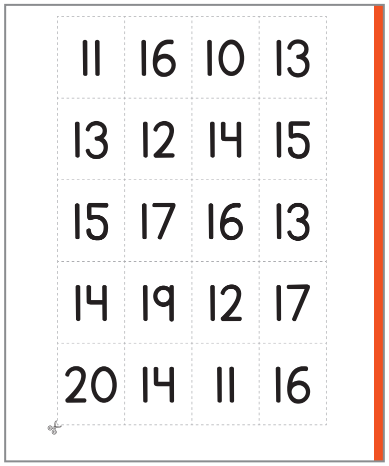
Where do you think I should put this number? Why?

It goes before 15. You count 14, 15.

It goes after 13. 14 is 1 more.

Invite students to cut out their numbers and sort them into the appropriate rows. Circulate and pause to ask students to explain their reasoning.

As students finish, pair them and have them check each other's work. Encourage them to explain their thinking, especially if a change is needed. (For example, *I think that the number goes here because …*) Students can then glue their numbers in place.



Observational Assessment

☑ Ask assessing questions as students complete the Nearby Numbers Problem Set.

- How do you know where this number goes? *(Point to a numeral card.)*
- Can you count on from this number?
- What number comes next?

Teacher Note

Additional nearby number sequences are available through digital download. Consider making copies of each sequence to allow differentiation according to student need.

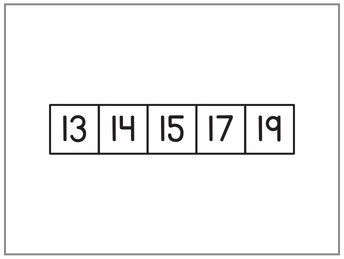
Copy each nearby number sequence onto a different color of paper. Cut, laminate, and place each into a bag or container. Place in centers for students to complete.

Land

Debrief 5 min

Objective: Reason about a number’s position in the number sequence.

Display the picture of an incorrect sequence.



> **Puppet worked on putting numbers in order. How can we check to see if Puppet put the numbers in the right order?**
>
> We can count.
>
> We can check with a number path.

Invite students to whisper count the regular way and the Say Ten way. Ask students to stand if they see a number in the wrong place.

Use a student’s response to correct the sequence and count to check.

> **How do you know where to put a number on the number path?**
>
> I count from 1.
>
> Add 1 more if it’s the next number.
>
> The number before is 1 less.

Sample Solutions

Expect to see varied solution paths. Accept accurate responses, reasonable explanations, and equivalent answers for all student work.

A

Number Correct: ________

Subtract.

3 - 1 = 2	3 - 0 = 3
6 - 1 = 5	6 - 0 = 6
10 - 1 = 9	10 - 0 = 10
5 - 1 = 4	5 - 0 = 5
5 - 5 = 0	7 - 0 = 7
2 - 2 = 0	7 - 7 = 0
8 - 8 = 0	7 - 1 = 6
10 - 10 = 0	4 - 1 = 3
3 - 3 = 0	14 - 1 = 13

28

B

Number Correct: ________

Subtract.

3 - 1 = 2	3 - 0 = 3
6 - 1 = 5	6 - 0 = 6
10 - 1 = 9	10 - 0 = 10
5 - 1 = 4	5 - 0 = 5
5 - 5 = 0	7 - 0 = 7
2 - 2 = 0	7 - 7 = 0
8 - 8 = 0	7 - 1 = 6
10 - 10 = 0	4 - 1 = 3
3 - 3 = 0	14 - 1 = 13

30

1	2	3
4	5	6
7	8	9

10	11	12
13	14	15
16	17	18

19	20

6

LESSON 6

Count out a group of objects to match a numeral.

Observational Assessment Recording Sheet

Grade K Module 6
Place Value Foundations

Student Name

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than*, *fewer than*, or the *same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to*, *take from*, *put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

Lesson at a Glance

Now that students can count an existing group of up to 20 objects to answer *how many* questions, they are ready to count out a group of 11–20 objects from a larger group. This lesson invites students to show teen numbers in different ways by using drawings and tools that use the structure of ten. Emphasis is placed on organizing so others can easily see the total.

Key Questions

- How can tools help you see how many without having to count by ones?
- How can organizing help you count out the right number of objects?

Achievement Descriptors

K.Mod6.AD6 **Count** out a given number of up to 20 objects from a larger group. (K.CC.B.5)

K.Mod6.AD8 **Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones. (K.NBT.A.1)

K.Mod6.AD9 **Record** teen numbers as ten ones and some more ones with a drawing or number sentence. (K.NBT.A.1)

Agenda

Fluency 5 min

Launch 5 min

Learn 35 min

- Show Me Teen Numbers
- Build Teen Numbers
- Problem Set

Land 5 min

Materials

Teacher

- 100-bead rekenrek
- Hide Zero® cards, demonstration set
- Numeral Cards

Students

- Hide Zero® cards
- Double 10-Frame (in the student book)
- Unifix® Cubes
- Student-made rekenrek
- Beans
- 10-frame cartons
- Personal whiteboard
- Dry-erase marker
- Student book

Lesson Preparation

- Ready numeral cards 11–20 from the last lesson.
- Consider placing the Double 10-Frame in a whiteboard before the lesson.
- Set up five stations or centers with the following materials:
  - Station 1: Unifix Cubes
  - Station 2: Student-made rekenrek
  - Station 3: Beans, 10-frame cartons
  - Station 4: No materials needed (students use their hands).
  - Station 5: Double 10-Frames in whiteboards, markers

Fluency 5

Beep Counting

Students determine the missing number in a sequence to build fluency counting within 20.

Invite students to participate in Beep Counting.

Listen carefully as I count. I will replace one of the numbers with the word *beep*. Raise your hand when you know the beep number. Ready?

Display the sequence 17, 18, ______.

17, 18, beep

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

19

Display the answer.

17 18 19

Repeat the process with the following sequence:

17 18 19	17 18 19	17 18 19 20	16 17 18 19

Teacher Note

This is the first instance of teen numbers in Beep Counting. It may seem counterintuitive to begin so far along in the counting sequence. However, number names in English, especially 11 and 12, pose a linguistic challenge. The structure of tens and ones is much more apparent in numbers 16–19, providing greater clarity about their position in the sequence. Although reversed, the ten is heard in the words ending in *-teen*.

Counting on the Rekenrek

Materials—T: Rekenrek

Students count the regular way or the Say Ten way to develop fluency with describing teen numbers as 10 ones and some more ones.

Show students the rekenrek. Start with 50 beads to the left side.

How many beads? *(Gesture to the 50 beads.)*

50

Let's count the Say Ten way. 50 is 5 ten.

Say how many beads there are as I slide them over.

Slide over each bead in the sixth row, one at a time, as students count.

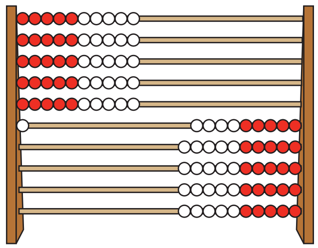
5 ten 1, 5 ten 2, 5 ten 3, 5 ten 4, 5 ten 5

Wait! Now keep counting the regular way.

Continue to slide over each bead, one at a time, as students count.

56, 57, 58, 59, 60

Continue the process to 99, or 9 ten 9, alternating between the Say Ten way and the regular way during the count.



5 ten 1

Teacher Note

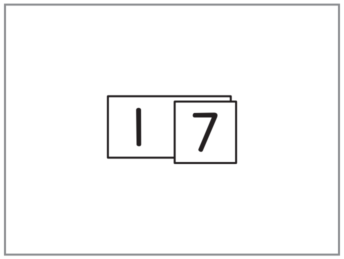
Alternating between counting the Say Ten way and by using conventional number names is challenging. Repeat this Fluency activity as needed to provide students with ample opportunity to practice.

Launch

5

Students use context to model a teen number as 10 ones and some more ones.

Display the image of 17 made with Hide Zero cards.

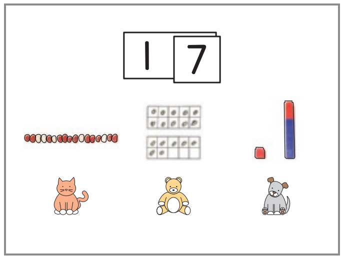


Puppet and his friends are playing school. Puppet is the teacher. Puppet shows this number to the students. What number is it?

17

Puppet's friends are the students. They each make 17 by using a different tool.

Show each student's work one at a time and have students briefly share what they notice about each piece of work. If students do not count each group independently, guide them to do so.



There is a problem with the dog's work. What is wrong?

1 and 7 makes 8, not 17.

He probably forgot that the 1 is really 10. You just can't see the 0 when you write 17 because it's hiding.

How could the dog fix his work?

He could switch the cube for a 10-stick.

Dog could add 9 cubes. 1 + 9 = 10

The cat and the teddy bear both counted out 17 correctly. Which piece of work was easier for you to count?

The teddy bear's work was easier for me because he used 10-frames. I can see 10 and 7.

The 10-frame is easier. I counted on from 10.

Today, you are going to count out objects to match a number. How can you use what we have learned from looking at this work? How can you organize your work to make it easy for someone else to see the total?

If you show the 10 ones inside, it makes it easier to count.

We can use 10-frames to make it easy to see the number.

Transition to the next segment by framing the work.

Today, we will try counting out our numbers the teddy bear's way. We will use 10-frames to help us organize our work.

Learn 35

Show Me Teen Numbers

Materials—T: Hide Zero cards; S: Double 10-Frame, whiteboard, dry-erase marker

Students utilize the structure of ten to model teen numbers accurately and efficiently.

Distribute a Double 10-Frame and marker to every student. Invite students to listen closely and use the 10-frame to draw the number you say.

Engage students in the following sequence briskly and energetically. Creating a sense of playful urgency will prompt students to seek more efficient ways of drawing and counting.

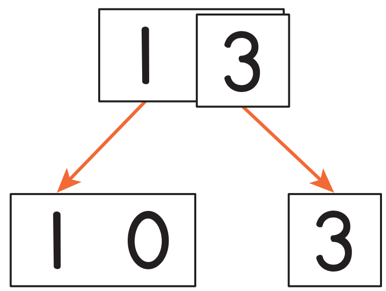
Show me 5 dots.

Show me 9 dots.

Show me 10 dots.

Write the number 13. *(Pause.)*

Now, show me 13 dots. If you need a hint, look up at my cards.



Silently pull apart the Hide Zero cards to reveal the 10 and 3 and then put them back together to form the number 13 once again. Repeat a few more times as needed until all students are drawing 13 dots.

Alternate playfully between 10 and 13 a few more times.

Have students cap their markers and place them out of reach while they pause to debrief the process.

What number are you showing now?

13

Did you use just one or both 10-frames?

Both

UDL: Action & Expression

Consider offering an alternative method of response. For students who would benefit from a concrete experience, use counters that fit neatly inside the 10-frame, such as beans. Observe to see whether students must recount each time, or whether they can adjust by adding or removing objects.

Teacher Note

Do not be alarmed if students initially erase their whiteboard and start from scratch with each new number. They may not realize that simply adding or removing part of the dots in their 10-frames is an option, or they may feel they need permission to do so. Prompt them to make adjustments without clearing their whiteboard.

Can you think of some numbers we showed that used just one of the 10-frames?

5, 9, 10

Can you think of a number we showed that filled exactly one 10-frame?

10

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

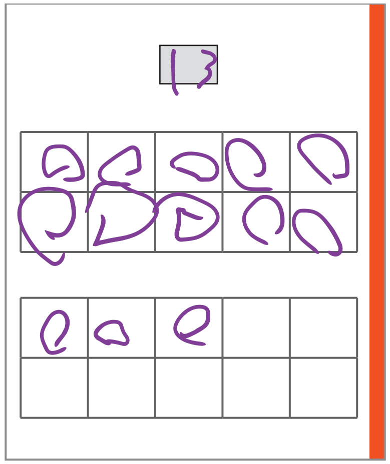
We went back and forth a few times between 10 and 13. How did you do that so quickly?

I just kept one of the 10-frames full the whole time.

I drew 3 right away. I didn't even have to count. I could just see it was 3.

I drew 3 more dots, and then I erased 3 dots because 13 is 10 and 3. *(Demonstrates Say Ten Push-Ups.)*

You can count on to make sure you have the right number, like this: tennnn, 11, 12, 13.



Continue with the following sequence, but use Hide Zero cards to indicate the number, pulling them apart to reveal the 10 as needed: 15, 17, 15, 16, 17.

Pause once again to debrief the process. For this sequence, highlight reasoning that includes building from 5, while making no adjustments to the ten.

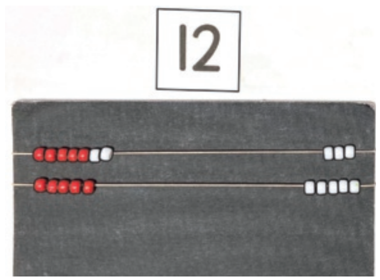
Teacher Note

During the teen number sequences, allow students to see you change the number of ones while still holding the Hide Zero card for 10. This will reinforce the meaning of the digit 1 in teen numbers and may support students in using the 10-frame to show the number.

Build Teen Numbers

Materials—T: Numeral Cards; S: Unifix Cubes, student-made rekenrek, beans, 10-frame carton, Double 10-Frame, dry-erase marker

Students use tools to model teen numbers and record with a drawing.

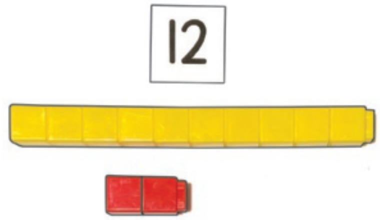


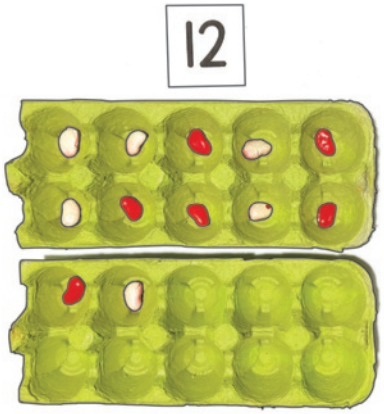
This activity is intended for partners working at stations. Introduce each station and briefly share the math tools students will use at each one.

- Unifix Cube station
- Rekenrek station
- Beans station (including 10-frame cartons)

- Hands station
- Drawing station (Double 10-Frames in whiteboards)

Assign partners and give each team a numeral card. Have them say the number the regular way and the Say Ten way. Students will move from station to station to make their number by using different math tools.





Give clear instructions on how partners should provide accountability and share responsibility. For example, partners can check each other's work for accuracy and suggest ways to improve the organization so others can see the total easily.

Circulate to observe how students make their numbers. Use the following questions and prompts to assess and advance student thinking:

- Show me the 10 ones inside your number.
- How did you organize your materials to make it easy for someone to see how many (cubes, beans, etc.) there are?
- Did you make a mistake? How did you fix it?
- How did this tool make it easy for you to show the number?
- Is there another way to build the number by using that tool?
- How are the math tools alike? Different?

Take photographs to project in Land, if possible. If not, set aside physical examples of student work.

Promoting the Standards for Mathematical Practice

At each of the stations, students look for and make use of structure (MP7) to represent their number. By repeatedly modeling the same number, students have the chance to experience how making use of the place value structure of the numbers 11–19 makes counting more efficient.

Having students model the number by using many different tools will help them use appropriate tools strategically (MP5) in the future, since they will be more familiar with the strengths of each tool.

Observational Assessment

☑ Observe as students build their numbers.

- Can students count out objects to match the written numeral? Can they count out objects to match the numeral when it is said aloud?
- Do students use the structure of ten to build their number?

Problem Set

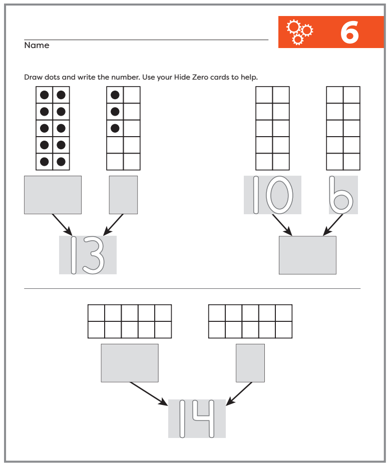
Not all classes will have time for the Problem Set. If time permits, review each section of the Problem Set before releasing students to work independently. Consider modeling the first problem with students if needed.

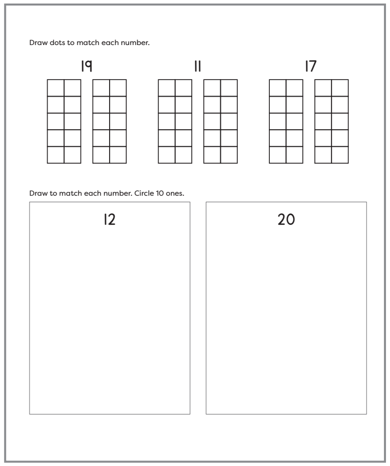
Circulate and check for understanding by pointing to a problem and asking the following questions.

10 and ____ make …?

___ is the same as 10 and …?

After the Problem Set is completed, consider asking a few students to model the last two problems on the board.





Land 5

Debrief 5 min

Materials—T: Work samples

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

Display photographs or samples of student work for reference during the discussion.

How did the tools help you count out the right number of objects?

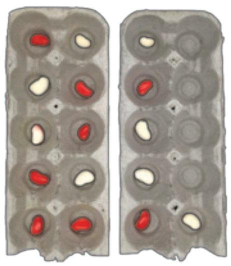
I knew I had 10 fingers, so my partner just had to show 4 more fingers to make 14. It's like Say Ten Push-Ups.

I got a 10-stick of cubes and then 2 more cubes to make 12.

My number was 17, that's ten 7. So I used red beans to show 10 and white beans to show 7.

I did the same thing but with cartons. My number was 16, so I just filled one up all the way, and then put 6 more in the other one.

I got interrupted when I was counting, but I didn't have to start over. I knew there were 10 in the first row of the rekenrek so I counted on from 10.



It's easier to remember what you already counted when you use 10-frames.

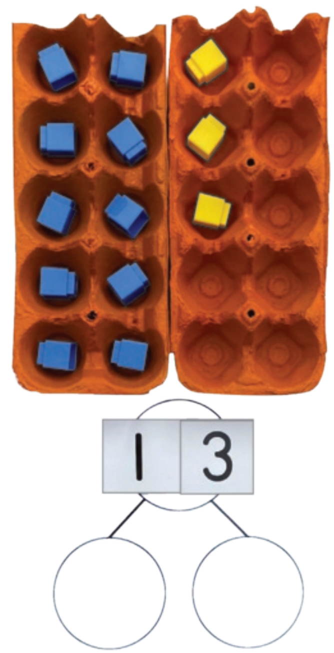
How can organizing help you see how many without having to count all the objects?

Sometimes you know how many when you see it organized, like in 5-groups or with fingers.

Organizing makes it easier to count on.

Emphasize the value of organizing materials and using math tools to count out a number accurately and efficiently.

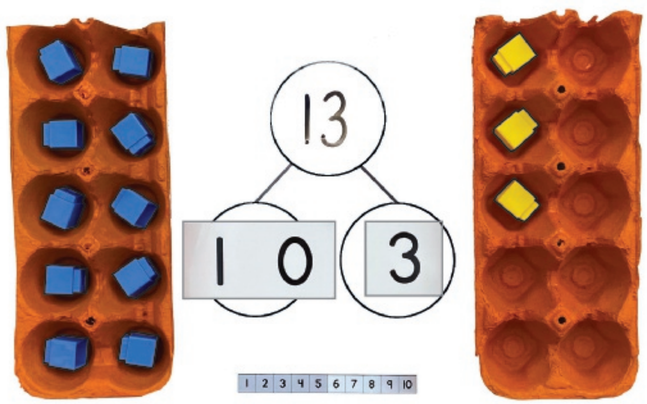
Topic B
Compose and Decompose Teen Numbers



In topic B, students apply what they know about composition and decomposition to their emerging understanding of teen numbers. Students learn to represent teen numbers by using number bonds and number sentences, expanding their experience with both place value and part–total relationships.

As students count collections and begin to think of teen numbers as 10 ones and some more ones in topic A, they are informally composing and decomposing. In topic B, students use a combination of tools and representations that bring the part–whole relationship to the forefront while supporting place value understanding. For example, students show 13 by using the 10-frame carton and Hide Zero® cards. Students use these tools to decompose 13 and record the decompositions in a number bond. The number bond emphasizes the part–total relationship while the tools show the decomposition of 13 as 10 and 3, which supports place value understanding: *13 is the total. 10 and 3 are the parts. 13 is 10 and 3.*

Students also represent teen numbers with number sentences, which reinforces their understanding of the part–total relationship. Students use addition and subtraction sentences to represent pictures and story situations involving teen numbers. As in previous modules, story contexts offer an entry point for students to connect real-life situations to abstract mathematical representations such as number sentences. Inclusion of teen number totals extends student learning beyond the scope of module 5, anticipating the work of grade 1. Using 10 as a part of each composition or decomposition in the story problems reinforces the understanding that teen numbers are made of 10 ones and some more ones.



Basing the composition and decomposition of teen numbers in story problems allows the class to return to key questions about number relationships and number sentences. As students' experience and vocabulary grow, they are able to discuss these questions in more depth. This also allows students to continue to develop mathematical practices such as making sense of problems and persevering in solving them, modeling with mathematics, and using appropriate tools strategically.

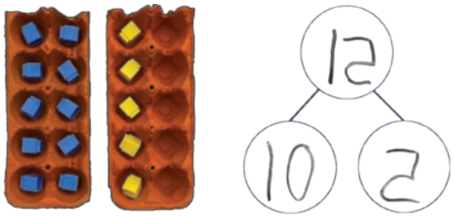
Lesson 12 shows multiple ways to decompose teen numbers. It is an optional lesson because the content extends beyond the scope of kindergarten standards. However, the exploration of number and area concepts is engaging and accessible to kindergarten students. It allows an alternative perspective on decomposing teen numbers before students work with numbers to 100 in topic C.

13 = 10 + 3

Progression of Lessons

Lesson 7

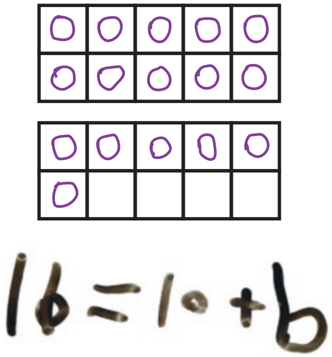
Decompose numbers 10–20 with 10 as a part.



15 is the total. 10 and 5 are the parts.

Lesson 8

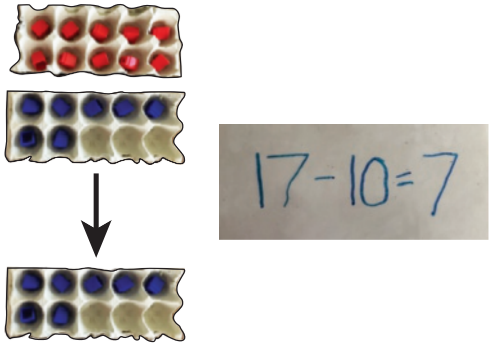
Represent teen number compositions and decompositions as addition sentences.



16 equals 10 plus 6.

Lesson 9

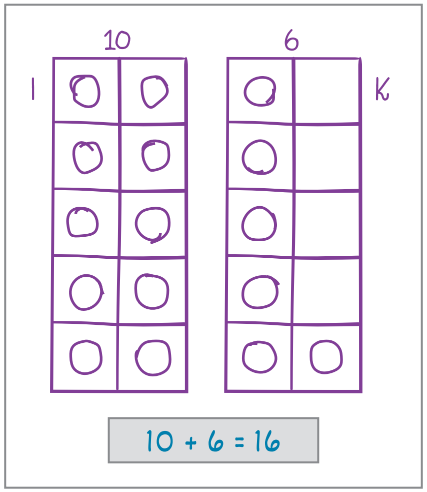
Represent teen number decompositions as subtraction sentences.



17 is 10 and 7, so 17 minus 10 is 7.

Lesson 10

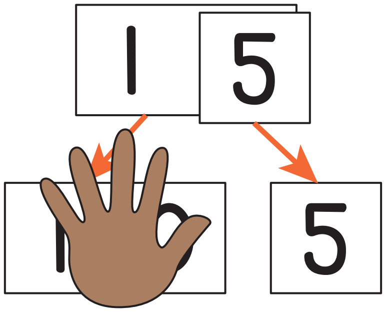
Make sense of word problems involving teen numbers.



Listening to the story helps me decide if I should add or subtract.

Lesson 11

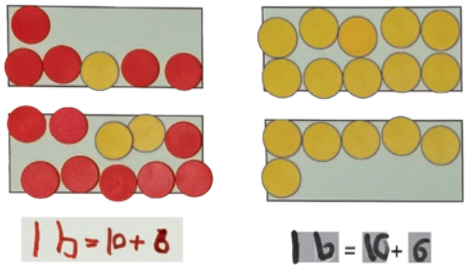
Represent teen number decompositions as 10 ones and some ones and find a hidden part.



15 is 10 and 5, so the hidden part is 10.

Lesson 12 (Optional)

Investigate different ways to decompose teen numbers.



There are many different ways to break 16 into parts.

7

LESSON 7

Decompose numbers 10–20 with 10 as a part.

Observational Assessment Recording Sheet

Grade K Module 6

Place Value Foundations

Student Name

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than, fewer than*, or the *same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to, take from, put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

This lesson brings what students already know about number bonds together with their emerging understanding of teen numbers. Students use the structure of the number bond to represent a teen total as 10 ones and some more ones. Practice decomposing teen numbers in this way supports place value understanding and prepares students to use Level 3 strategies in grade 1.

Key Question

- How can number bonds help us better understand numbers?

Achievement Descriptors

K.Mod6.AD5 **Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration. (K.CC.B.5)

K.Mod6.AD8 **Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones. (K.NBT.A.1)

K.Mod6.AD9 **Record** teen numbers as ten ones and some more ones with a drawing or number sentence. (K.NBT.A.1)

Agenda

Fluency 10 min

Launch 10 min

Learn 25 min

- Teen Number Bonds
- Whiteboard Exchange
- Teen Number Bond Game
- Problem Set

Land 5 min

Materials

Teacher

- Hide Zero® cards, demonstration set
- Unifix® Cubes (13)
- 10-frame carton

Students

- Two-color counters (10 per student pair)
- Cup (1 per student pair)
- Shake Those Disks removable (in the student book)
- Hide Zero® cards
- Work mat
- Number Bond removable (in the student book)
- Unifix® Cubes (20 per student pair)
- 10-frame carton
- 10-sided die (1 per student pair)
- Personal whiteboard
- Dry-erase marker
- Student book

Lesson Preparation

- The Shake Those Disks removable and the Number Bond removable must be torn out of the student book and placed in personal whiteboards. Decide whether to prepare these materials in advance or to have students assemble them during the lesson. It is okay to use Number Bond removables from previous lessons. Save the Shake Those Disks removable for use in lesson 12.
- Set aside 10 blue Unifix Cubes and 3 yellow Unifix Cubes to be used for demonstration.
- Partners need 10 Unifix Cubes of one color and 10 Unifix Cubes of another color.

Fluency 10

Shake Those Disks

Materials—S: Two-color counters, cup, Shake Those Disks removable, dry-erase marker

Students record a total and parts in a number bond to prepare for decomposing numbers.

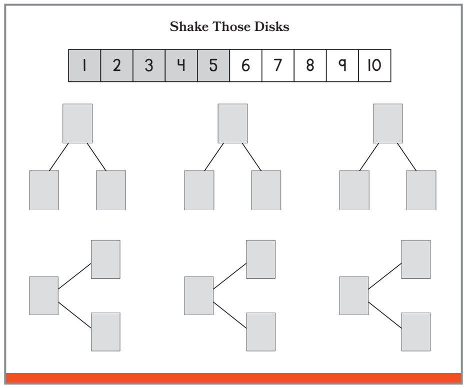
Form student pairs. Make sure the Shake Those Disks removables are inserted into personal whiteboards. Then distribute a marker and a cup of 10 counters to each pair and have them play according to the following rules. Consider doing a practice round with students.

- Partner A: Shake and spill the cup of counters.
- Partner A: Place the counters on the number path and count.
- Partner B: Write the total in the number bond.
- Partner B: Count the number of red and yellow counters, and then write the numbers in each part.
- Switch roles after each turn.

Circulate as students play and ensure they are correctly recording the parts and totals.

Differentiation: Support

Consider differentiating the activity by assigning different numbers of counters. Students can be given anywhere from 3 to 10 counters to support them as needed.

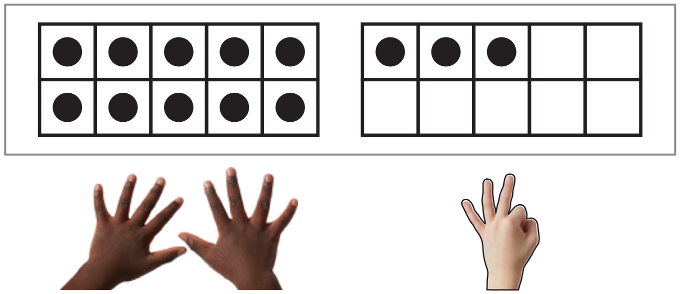


10-Frame Hands

Students model teen numbers with their hands to prepare for decomposing teen numbers.

Display the 10-frames showing 13.

Ask students to stand elbow to elbow with a partner and to face the 10-frames.



On my signal, say how many dots. Ready?

13

Say it the Say Ten way. Ready?

Ten 3

We can show this number with a partner.

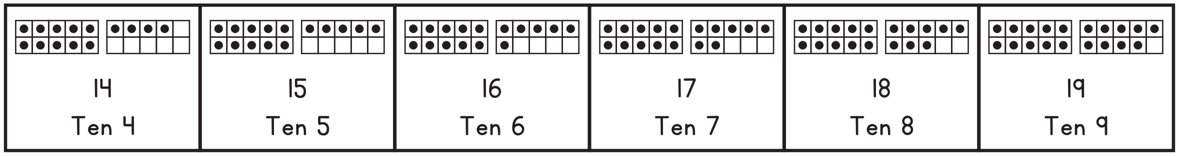
Invite a pair to demonstrate. Each student should stand directly below a 10-frame, facing the board.

Partner A, show this many. *(Point to the 10-frame showing 10.)*

Partner B, show this many. *(Point to the 10-frame showing 3.)*

(Partner A shows 10 and partner B shows 3 on their hands.)

Continue the process with the following sequence, alternating which partner shows 10:



Teacher Note

As partners alternate who shows 10, ensure they are swapping positions to physically align themselves with the corresponding 10-frame. This helps students make the connection between the pictorial model and the concrete.

Launch 10

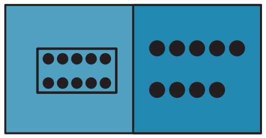
Materials—T: Hide Zero cards, Unifix Cubes; S: Hide Zero cards, work mat

Students build teen numbers to match a pictorial representation.

Distribute a set of Hide Zero cards to each student.

Put your cards in order from 1 to 10 and so that you can see the side that has numbers. Stand up when you've done this.

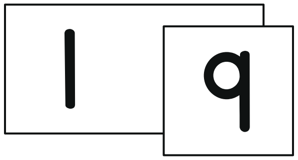
Have students sit down when everyone's cards are organized.



Teacher Cards

I'll show you dots. Make the number that matches my dots.

Show the cards with 10 dots and 9 dots. Move them together to form a total of 19 dots.

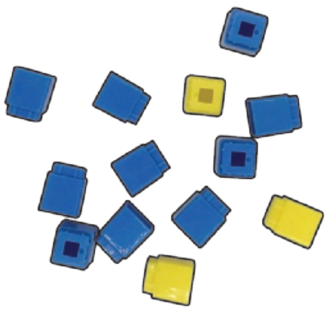


Student Cards

Have students place their cards directly in front of them or on a work mat. Scan them to check for accuracy and quickly provide feedback.

Have students return the cards to prepare for the next problem. Repeat with other teen numbers.

This time I'll show you some cubes. Make the number that matches my cubes.



Display the 13 Unifix Cubes in a scattered configuration. Expect students to respond with uncertainty and then invite them to share their reactions.

What's the matter?

It's so messy! I can't tell how many there are.

I wish I could do touch and count or line them up.

I know there's 3 yellow for sure. Maybe there are 10 blue?

Why didn't we have this problem when I showed dot cards?

The dot cards are in 5-groups so it's easy to see how many.

The dot cards are organized.

Transition to the next segment by framing the work.

Today, we will think about what makes some things easier to count than other things.

Learn 25

Teen Number Bonds

Materials—T: 10-frame cartons, Unifix Cubes, Hide Zero cards; S: Number Bond removable, dry-erase marker

Students show decomposing a teen number by using a number bond.

Make sure students have a marker and a personal whiteboard with a Number Bond removable inside.

I have some tools that might make it easier for us to see how many cubes there are.

Present a 10-frame carton.

Count the slots as I touch them. Ready?

1, 2, 3, ... , 10

Place 1 blue Unifix Cube in each slot until the carton is full.

How many blue cubes?

10

Place the 3 yellow cubes into another carton without counting.

Count with me. We will start with 10. Ready?

Tennnn … *(Gesture over the full carton.)* 11, 12, 13 *(Point to each yellow cube crisply.)*

Make 13 by using Hide Zero cards and place the cards where the total goes in the number bond. Invite students to write the total in their number bond.

Silently pull the cartons apart as shown. Then pull apart the Hide Zero cards and place them in the parts of the number bond. Write the total with a marker.

Make your number bond match mine.

Hold up the card with 10.

What does this number tell about?

The blue cubes

One of the parts

Hold up the card with 3.

What does this number tell about?

The yellow cubes

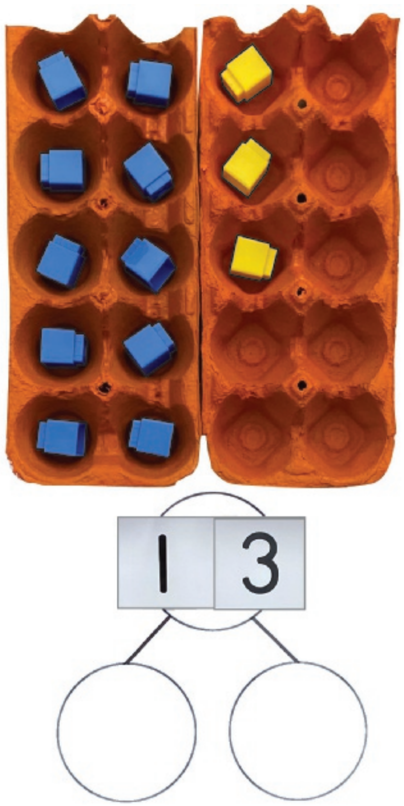
The other part

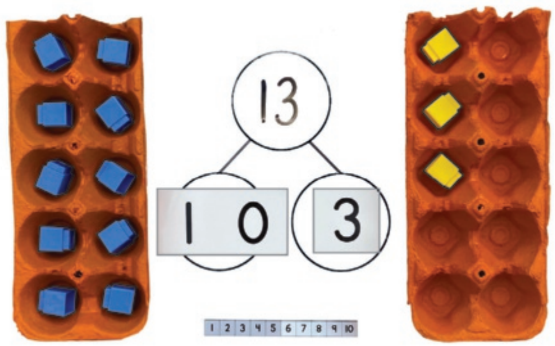
Hold up both cards to make 13.

What does this number tell about?

All of the cubes

The total





Differentiation: Support

The initial demonstration requires students to reason that if the carton has 10 slots and they are all full, there must be 10 cubes. Build up to this idea by showing all of the fingers on two hands as you ask the following questions:

- How many fingers?
- How many fingernails?
- How many rings can I wear if I put one on each finger?
- How many if I take off 1 ring?

The last question disrupts the pattern to maintain alertness.

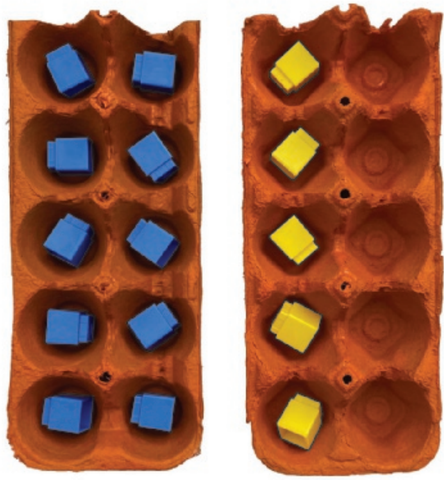
Return to the tray and cubes.

- How many cubes will there be if I put 1 in each slot?

Whiteboard Exchange

Materials—T: 10-frame cartons, Unifix Cubes, Hide Zero cards; S: Number Bond removable, dry-erase marker

Students write a number bond to represent a set of objects as 10 ones and some more ones.

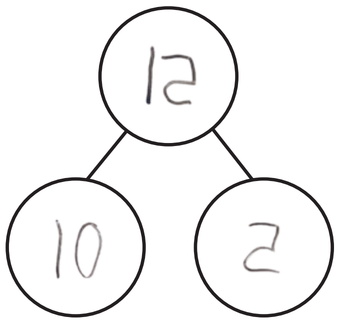


Add 2 more yellow cubes to the cartons from the previous segment for a total of 15. Show the cartons pushed together.

> **Raise your hand when you know the total. *(Pause and then signal.)***
>
> 15

Engage students in the Whiteboard Exchange routine. Pull the cartons apart and push them back together a few times.

- Ask students to write a number bond to match the cubes.
- Tell students to turn over their whiteboards so the red side is up when they are ready. Say, “Red when ready!”
- When most are ready, tell students to hold up their whiteboard to show you their work.



Give quick individual feedback such as “Yes!” or “Check your total.” For each correction, return to validate the corrected work.

> **Finish my sentence: 15 is 10 and …**
>
> 5

Add or remove cubes to continue with the following sequence: 16, 14, 11. Students need not completely erase their whiteboard each time. Some may discover the efficiency of keeping the 10 or the digit 1.

Promoting the Standards for Mathematical Practice

As students use number bonds to represent different teen numbers and recognize that the 10 or the digit 1 always stay the same, they look for and express regularity in repeated reasoning (MP8).

If you notice a student keeping the 10 or digit 1 instead of erasing every number, ask them how they know to keep the number(s).

Continue the Whiteboard Exchange routine but reverse the process to work with composition. First show two separate cartons: one with 10 blue cubes and the other with 7 yellow cubes.

Gesture to each carton as you give the following directions. Give students think time and then signal for the class to respond together.

Raise your hand when you know how many are in this tray.

10

Raise your hand when you know how many are in this tray.

7

Write a number bond to match my cubes. Look up if you need help. Red when ready.

Pull the cartons apart and push them back together a few times.

Finish my sentence: 10 and 7 make …

17

Have students show their work and then provide feedback. Add or remove cubes to continue with the following sequence: 18, 19, 12.

UDL: Representation

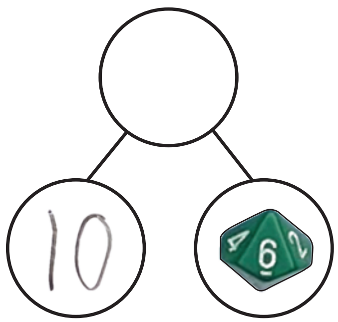
Use a kinesthetic activity to relate the arrangement of the cartons to the number bond model. Have students make the numbers by using the process from the 10-Frame Hands activity in the Fluency component. Have them relate the model they make with their hands to what the cartons show.

Teen Number Bond Game

Materials—S: 10-sided die, Number Bond removable, Unifix Cubes, 10-frame cartons

Students use cubes to compose a teen number and record that number with a number bond.

Demonstrate how to play according to the following procedure:

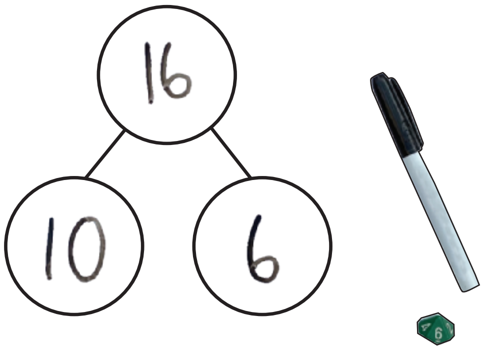


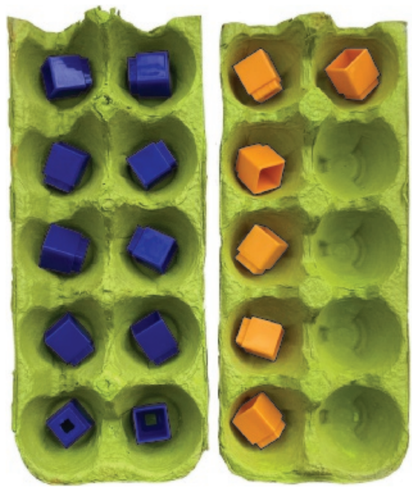
- Tell students that 10 will always be one part. Write 10 in one part of the number bond.
- The die determines the other part. Roll the die in the other part on the Number Bond removable.
- Use the cubes and cartons to build the number in two parts.

Teacher Note

Have students record both the parts and the total, rather than allowing the die to stand in for the written numeral. This supports future fact retrieval.

- Move the cartons together. Count to find the total.
- Record the second part and the total in the number bond.
- Say a number sentence to match.





Observational Assessment

☑ Observe students as they play the Teen Number Bond Game.

- Are students able to use objects to represent teen numbers as 10 ones and some more ones?
- Can students describe teen numbers with words and number statements such as “17 is 10 and 7”?

Problem Set

Not all classes will have time for the Problem Set. As time allows, use the following suggestion to orient students to the layout of the Problem Set.

Put your finger on the number bond that shows 10 and 7 as parts.

Where do we see a picture of 10 and 7?

The 10-frames on top of the number bond

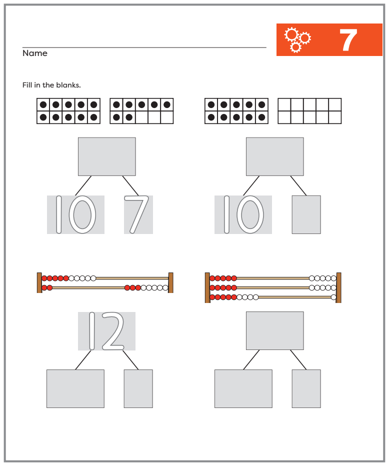
How can you use them to find the total?

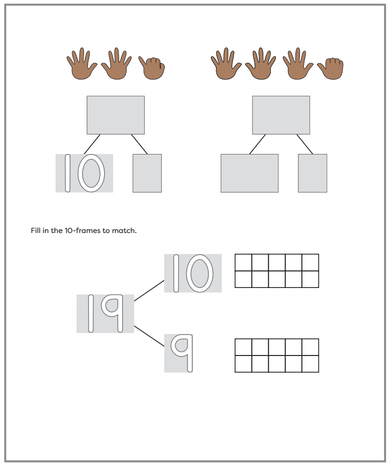
I’m going to count the dots.

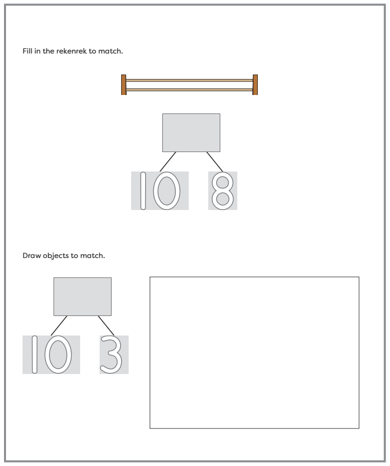
That 10-frame is full, so I’m going to count on.

I already know what 10 and 7 makes, so I’m just going to write the total.

Read the directions for problems in which students are asked to draw. Then release students to work independently.





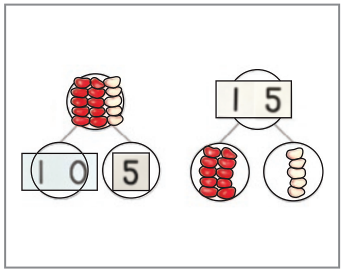


Land 5

Debrief 5 min

Objective: Decompose numbers 10–20 with 10 as a part.

Display the number bonds showing beans and Hide Zero cards.



Facilitate a discussion about the similarities and differences between the two representations. Begin by having students think–pair–share about the following questions. As students share, invite listeners to gesture in agreement or connection with classmates' statements.

How are these number bonds alike? How are they different?

They both make 15.

They are alike because they have the same parts, 10 and 5.

But they use different things to show the parts: beans and number cards.

Language Support

If needed, help students recall that we use *alike* when things are the same but not exactly the same. Practice using the term with a few classroom materials, such as the following:

- These pencils are alike. They are the same kind, but one is broken and one is sharpened.
- These markers are alike. They are the same kind but different colors.

That one has 10 beans in the part. *(Points.)* And that one has Hide Zero cards showing the number 10. *(Points.)*

I hear lots of good thoughts about the parts. What about the total?

They also have the same total, 15, because there are 15 beans in the total place on the number bond.

But they show it in different ways. It's like one picture shows 15 the regular way and the other one is the Say Ten way.

How can number bonds help us understand numbers better?

You can see if 10 is a part of a number.

Number bonds let you show how you can break a number into different parts.

You can move beans around the number bond to understand better.

It's exciting to see that we can use number bonds to show numbers greater than 10. I wonder if we could use a number sentence to show 15. What do you think?

I think yes. You could write 15 equals 10 plus 5.

Sure. 10 and 5 make 15.

$15 = 10 + 5$

$10 + 5 = 15$

If students suggest possible number sentences, record their suggestions. Students will use number sentences to solve problems in the following lessons.

8

LESSON 8

Represent teen number compositions and decompositions as addition sentences.

Observational Assessment Recording Sheet

Student Name

Grade K Module 6
Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than, fewer than*, or the *same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to, take from, put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

Students solve an *add to with result unknown* problem by using self-selected tools to represent the parts. A video sets the context for the problem. Then students use what they know about the structure of teen numbers to compose and decompose. They discuss how their thinking can be represented by using number sentences and number bonds.

Key Question

- How do you know when a number bond or number sentence matches a story or picture?

Achievement Descriptors

K.Mod6.AD7 **Solve** *add to*, *take from*, *put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction. (K.OA.A.2)

K.Mod6.AD8 **Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones. (K.NBT.A.1)

K.Mod6.AD9 **Record** teen numbers as ten ones and some more ones with a drawing or number sentence. (K.NBT.A.1)

Agenda

Fluency 10 min

Launch 5 min

Learn 25 min

- Represent a Story Problem
- Share, Compare, and Connect
- Write Addition Sentences
- Problem Set

Land 10 min

Materials

Teacher

- Empty can
- Pennies (5)
- Number Bond and Number Sentences removable (in the teacher edition)

Students

- Assorted math tools
- Personal whiteboard
- Dry-erase marker
- Student book

Lesson Preparation

- Gather various tools such as Unifix Cubes, Hide Zero® cards, the Number Bond removable, personal whiteboards, sticks of 10 cubes, 10-frame cartons, 10-frames, and number paths. Set them out so students can self-select tools as they solve story problems. Have enough available so students can choose the tools they want to use.
- The Number Bond and Number Sentences removable is a set of four representations. There are two number bonds and two number sentences. Hang them around the room for students to see. Students will form groups by moving to one of the representations.

Fluency 10

Coin Drop: Add or Subtract 1

Materials—T: Empty can, pennies

Students track the count mentally and add or subtract 1 to build addition and subtraction fluency within 5.

In your mind, count the pennies as I drop them into the can.

Drop 3 pennies into the can, one at a time, pausing between each penny.

On my signal, say how many pennies. Ready?

3

Watch closely!

Clearly drop another penny into the can.

Now how many pennies?

4

Clearly remove 1 penny from the can.

Now how many pennies?

3

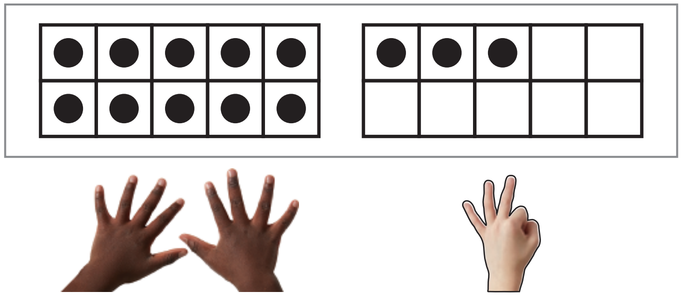
Empty the can, then repeat the process, adding 1 more or subtracting 1 from different amounts of pennies within 5.

10-Frame Hands

Students model teen numbers with their hands to build fluency with decomposing teen numbers.

Display the 10-frames showing 13.

Ask students to stand elbow to elbow with a partner and facing the 10-frames.



On my signal, say how many dots. Ready?

13

Say it the Say Ten way. Ready?

Ten 3

We can show this number with a partner.

Partner A, show this many. *(Point to the 10-frame showing 10.)*

Partner B, show this many. *(Point to the 10-frame showing 3.)*

(Partner A shows 10 and partner B shows 3 on their hands.)

Continue the process with the following sequence, alternating which partner shows 10:

15 Ten 5	19 Ten 9	17 Ten 7	14 Ten 4	18 Ten 8	16 Ten 6

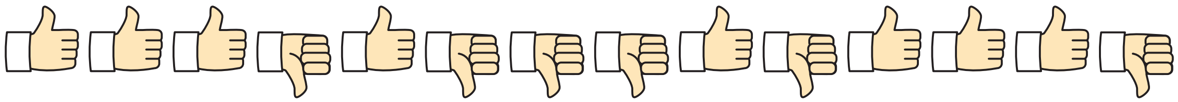
Happy Counting by Tens Within 30

Students visualize a number line while counting aloud to build fluency counting within 100.

Invite students to participate in Happy Counting.

Let's count by tens. The first number you say is 10. Ready?

Signal up or down accordingly for each count.



Continue counting by tens within 30. Change directions occasionally, emphasizing where students hesitate or count inaccurately.

Launch

5

Students watch a video to prepare to represent an *add to with result unknown* story problem.

Activate prior knowledge by asking students to describe a time they made a bracelet or went to a craft fair. Then set the context for the video. Tell the class that two children, Ko and Isaac, are selling bracelets they made at a craft fair.

Play part one of the video. Then have students turn and talk about what they noticed. When they finish sharing their initial observations, confirm that everyone knows the key information by asking the following questions.

How many bracelets does Ko have?

10

UDL: Action & Expression

Presenting the craft fair situation in a video format supports students' understanding of the problem context by removing barriers associated with written and spoken language.

How many bracelets does Isaac have?

7

Invite students to think–pair–share about the number of bracelets when they are put together.

When they put their bracelets together, do they have more bracelets or fewer bracelets?

More

When they put the bracelets together, they are adding. I think there are more.

Transition to the next segment by framing the work.

Today, we will try different ways to show stories such as the bracelet story.

Learn 25

Represent a Story Problem

Materials—S: Assorted math tools

Students represent and solve an *add to with result unknown* story problem.

Pose a question about the bracelet story for students to solve.

How many bracelets do Ko and Isaac have altogether?

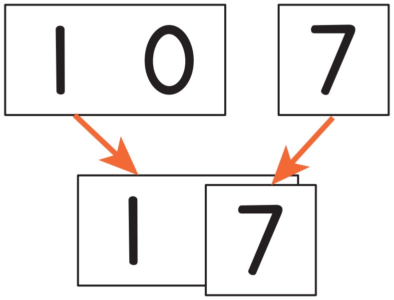
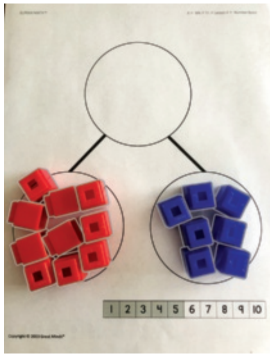
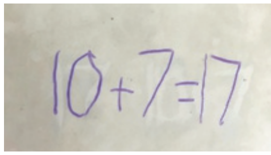
You may use any tools that will help you solve.

Give students time to self-select tools (e.g., Unifix Cubes, Hide Zero cards, 10-frame cartons, Number Bond removable, personal whiteboard). Use the following questions and prompts to assess and advance student thinking:

- Do you know the parts or the total in this story?
- Could you use a number bond or number sentence to tell about the bracelets?

Circulate and take a picture or make note of the strategies and tools students use. Select two or three students to share. If possible, select a variety of representations and include at least one student who uses a number sentence.

Students who finish early can try to solve a different way and see if they get the same total.

Hide Zero Cards	Number Bond	Number Sentence
		

Share, Compare, and Connect

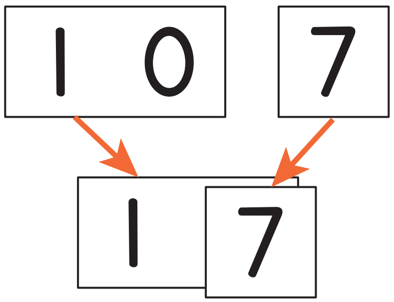
Materials—T: Student work samples

Students discuss different ways to represent and solve a story problem.

Gather the class for discussion and invite the students you identified in the previous segment to share. As each student shares, ask questions to elicit their thinking, clarify the representation, and to help the class make connections between different representations. The following sample dialogue demonstrates such discussion.

Refer to the Talking Tool for other ideas to support student-to-student discussion.

Hide Zero Cards (Samuel's Way)



Samuel, how did you use your Hide Zero cards to solve?

I took the 10 to show Ko's 10 bracelets. Then I took the 7 to show Isaac's 7 bracelets. I put the cards together to make 17.

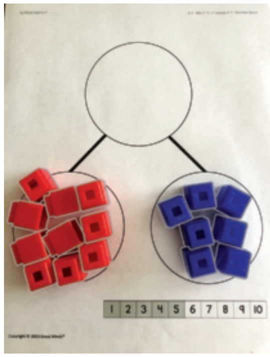
Zaden, tell us how you used the number bond.

I put 10 cubes in one part and 7 cubes in another part. Then I counted the cubes and there were 17.

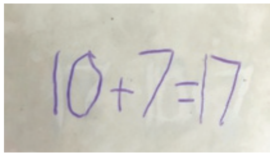
Tasha, how did you use a number sentence to solve?

I wrote 10 plus 7 because I knew I needed to add their bracelets to get the answer. 10 plus 7 is 17, so I knew they had 17 bracelets.

Number Bond (Zaden's Way)



Number Sentence (Tasha's Way)



Display the selected work samples so all students can see them. If none of the students wrote a number sentence, use the work samples to write an addition sentence as a class.

Ask the class to find the referents in each drawing or number sentence. They should identify where they see Ko's bracelets, Isaac's bracelets, and the total number of bracelets.

Write Addition Sentences

Materials—S: Personal whiteboard, dry-erase marker

Students write addition sentences to match pictures.

Make sure students have a whiteboard and a marker.

Let's see some other ways to show some bracelets. You will look at the picture and write an addition sentence to match. Ready?

Promoting the Standards for Mathematical Practice

As students work to solve the bracelets problem, they reason abstractly and quantitatively (MP2). Students decontextualize by using representations such as cubes, numbers, number bonds, and number sentences to represent the bracelets. They recontextualize by explaining which parts of the story the referents represent.

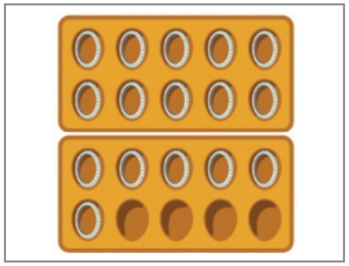
In this instance, students are also asked to reason abstractly by making connections between the different representations, recognizing that the parts and total can be represented in different, but equivalent, ways.

Observational Assessment

☑ Observe students as they work.

- Can students use a number sentence to represent the bracelets as 10 ones and some more ones?

Display the first bracelet image.



$$16 = 10 + 6$$
$$10 + 6 = 16$$

Stand up and share your addition sentence with a partner. Check whether your number sentences match.

After partners share, select a few samples of student work that show different ways of writing the number sentence.

Look at these two number sentences. Are they the same?

No.

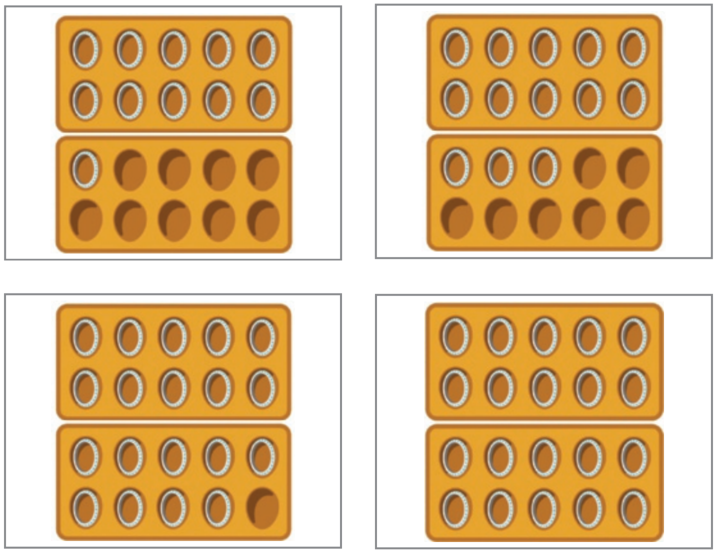
Which number sentence matches the picture? How do you know?

They are both right.

You can write the number sentence both ways.

If all students write the same number sentence, ask the class to generate another way to write it.

Display the next bracelet images. For each image, use the same sequence of questions.



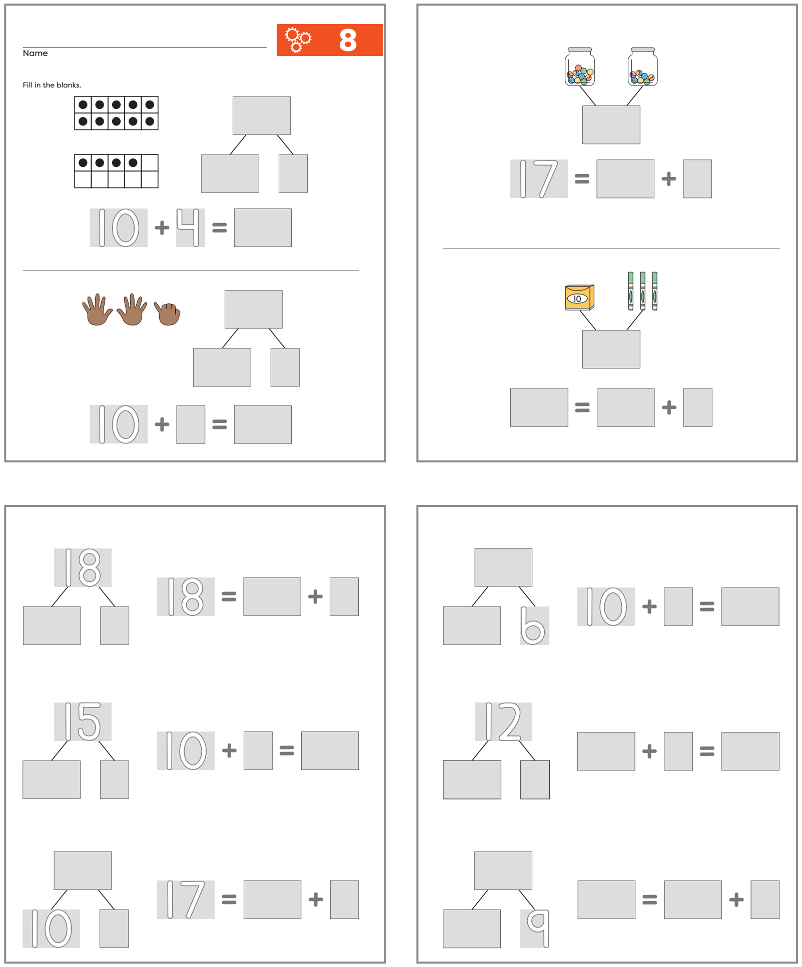
Teacher Note

There are several possible addition sentences for these visuals. Students may also write $16 = 6 + 10$ or $6 + 10 = 16$ for the first set of bracelets. Encourage discussion about how the different number sentences accurately represent the image.

Problem Set

Not all classes will have time for the Problem Set. Point out the pictures on the first two pages. Read the instructions to students and invite them to make connections between these problems and the previous activity.

Point out that there are no pictures on the last two pages and every problem has 10 as a part. Release students to complete the Problem Set independently.



Land 10

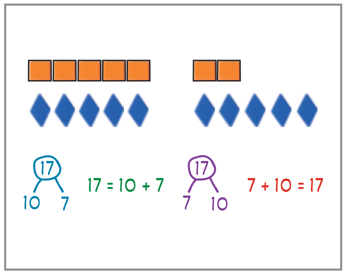
Debrief 10 min

Materials—T: Number Bonds and Number Sentences removable

Objective: Represent teen number compositions and decompositions as addition sentences.

Post the removables of number bonds and number sentences in plain sight around the room. Use the following variation on the Take a Stand routine to facilitate class discussion.

Display the image of the shapes, number sentences, and number bonds.



Look at the shapes. *(Point.)*

Think: Which number bond or number sentence would you use to tell about the shapes?

Once you decide, go stand near your choice. Share with the people in your group why you chose that number bond or number sentence. *(Gesture to the removables around the room.)*

Circulate and listen in. Gather students back together and facilitate a class discussion.

Which number sentences or number bonds match the shapes?

The green one

The blue number bond

They all do.

What is the same about all of them?

They all have 17 as the total.

They all have 10 and 7 as the parts.

What is different?

The parts aren't in the same spot.

The total is in different spots in the number sentences.

Some are number sentences and some are number bonds.

From where you are, point to the total in the purple number bond. What is the total?

17

Discuss the 17 in each representation. Point out that the total amount stays the same but its location changes.

From where you are, point to the parts in the blue number bond. What are the parts?

10 and 7

Are the parts the same in each number bond and number sentence? Why?

Yes, they all have 10 and 7.

The parts are the same but sometimes 10 comes first and sometimes 7 comes first.

Discuss the parts in each representation. Point out that the parts stay the same but their location changes.

How do you know when a number bond or a number sentence matches a story or picture?

It has to have the same parts and total as the story or picture.

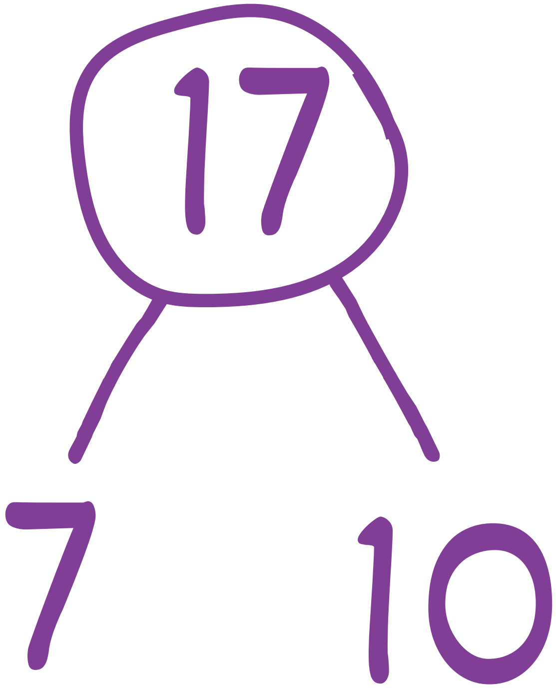
If the story is about putting together, the number sentence has to have a plus.

You have to be able to find all the important parts of the story in the number bond or number sentence.

17

10 7

$$17 = 10 + 7$$


17
7
10

$$7 + 10 = 17$$

9

LESSON 9

Represent teen number decompositions as subtraction sentences.

Observational Assessment Recording Sheet

Student Name

Grade K Module 6

Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than*, *fewer than*, or the *same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to*, *take from*, *put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

Students use what they know about subtraction to decompose a teen number. In this lesson, each decomposition includes 10 as a part. Students solve a *take away with result unknown* problem by using tools to represent the action. They see that the story can be represented with a subtraction sentence.

Key Question

- How do you know when a subtraction sentence matches a story or picture?

Achievement Descriptors

K.Mod6.AD7 **Solve** *add to*, *take from*, *put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction. (K.OA.A.2)

K.Mod6.AD8 **Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones. (K.NBT.A.1)

K.Mod6.AD9 **Record** teen numbers as ten ones and some more ones with a drawing or number sentence. (K.NBT.A.1)

Agenda

Fluency 10 min

Launch 5 min

Learn 30 min

- Craft Fair Problem
- Share, Compare, and Connect
- Notice and Wonder
- Problem Set

Land 5 min

Materials

Teacher

- Rekenrek
- Puppet

Students

- Circle Groups of 10 removable (in the student book)
- Assorted math tools
- Dry-erase marker
- Personal whiteboard

Lesson Preparation

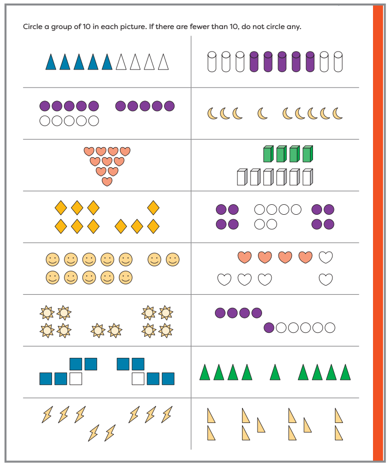
Gather various tools such as Unifix Cubes, Hide Zero® cards, the number bond removable, personal whiteboards, sticks of 10 cubes, 10-frame cartons, 10-frames, and number paths. Set them out so students can self-select tools as they solve story problems. Have enough available so students can choose the tools they want to use.

Fluency 10

Circle Groups of 10

Materials—S: Circle Groups of 10 removable

Students circle groups of 10 to build fluency with decomposing teen numbers pictorially.



Direct students to the circle groups of 10 activity in the student book.

Read the directions aloud. Tell students that if a set has fewer than 10, they should not circle it.

Let students work for 1 minute, or until most of the class nears completion. Do not extend beyond 2 minutes of written work.

Celebrate students' effort and success.

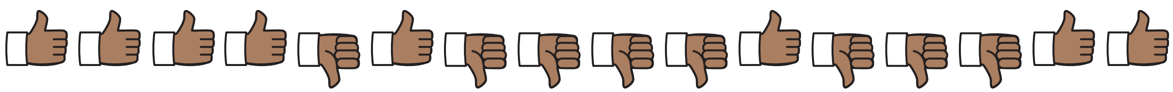
Happy Counting by Tens Within 60

Students visualize a number line while counting aloud to build fluency counting within 100.

Invite students to participate in Happy Counting.

Let's count by tens. The first number you say is 30. Ready?

Signal up or down accordingly for each count.



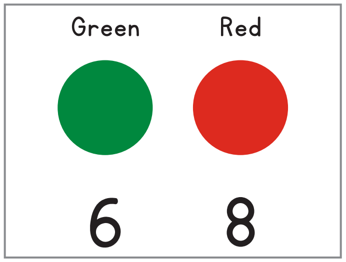
30 40 50 60 50 60 50 40 30 20 30 20 10 0 10 20

Continue counting by tens within 60. Change directions occasionally, emphasizing crossing over 50 and where students hesitate or count inaccurately.

Green Light, Red Light

Students count from different numbers to build fluency with counting from a number other than 1.

Display the green and red dots with the numbers 6 and 8.



On my signal, start counting with the green light number. Stop at the red light number.

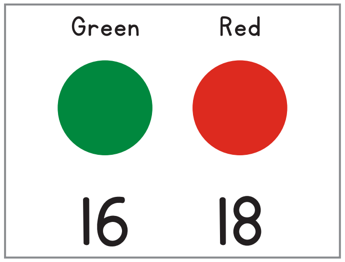
Look at the numbers.

Think. Ready? Green light!

6, 7, 8

Display the green and red dots with the numbers 16 and 18.

On my signal, start counting the Say Ten way with the green light number. Stop at the red light number.



Think. Ready? Green light!

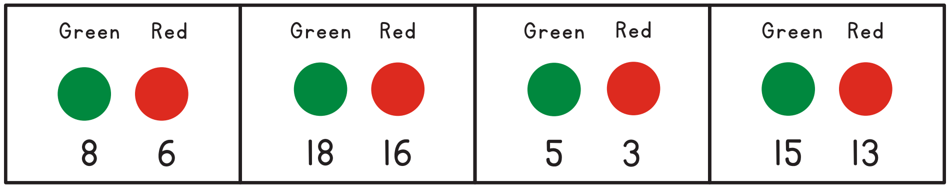
Ten 6, ten 7, ten 8

Now count the regular way.

Think. Ready? Green light!

16, 17, 18

Repeat the process with the following sequence, counting both the Say Ten way and the regular way for teen numbers:



Teacher Note

Consider incorporating movement. Invite students to run in place, hop, or engage in another physical exercise while counting.

Differentiation: Support

If students need support with counting down, model a think aloud. For example, "If we start at 8, and stop at 6, would we be counting up or counting down? Take a moment to practice in your mind before I say green light."

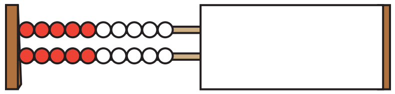
Launch

5

Materials—T: Rekenrek

Students tell how many on the rekenrek.

Display 20 on the rekenrek as shown.



How many beads?

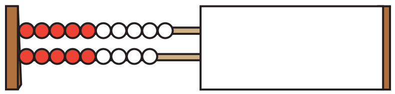
20

How do you see 20?

I see 10 beads on top and 10 beads on bottom.

I see 10 red and 10 white. I know that 10 and 10 make 20.

Display 19 on the rekenrek as shown.



How many beads?

19

How do you see 19?

I see 10 beads on top and 9 beads on bottom.

I saw that there were 20 beads and then 1 bead was taken away.

If no students use 20 – 1 to find how many, encourage discussion by using the following questions:

- How are the first rekenrek and second rekenrek the same? How are they different?
- Can you say a subtraction sentence to tell about the two rekenreks?

Transition to the next segment by framing the work.

Today, we will use subtraction sentences to show what is happening in stories and in pictures.

Learn 30

Craft Fair Problem

Materials—S: Assorted math tools

Students watch a video and solve a story problem.

Have students watch part two of the bracelet video from the previous lesson. Set the context for the new video by helping students recall that Ko and Isaac are selling bracelets at a craft fair.

Play the video. It shows 17 bracelets at first and then 10 are sold.

Have students turn to a partner and retell the story.

How many bracelets were there at the start?

If students are unsure, replay the beginning of the video to confirm that there were 17.

They sold a full carton of bracelets. How many bracelets are in a carton? How do you know?

There are 10 spaces in a carton. There are 5 on top and 5 on the bottom. That makes 10.

It's like our 10-frame carton. It's a group of 10.

I want you to find how many bracelets Ko and Isaac have left. You may use any tools that will help you solve.

Give students time to self-select tools (e.g., Unifix Cubes, Hide Zero cards, 10-frame cartons, number bond removable, personal whiteboard). Use the following questions and prompts to assess and advance student thinking:

- What numbers do you know in this story? What do they stand for?
- Could you use a number bond or number sentence to tell about the bracelets?

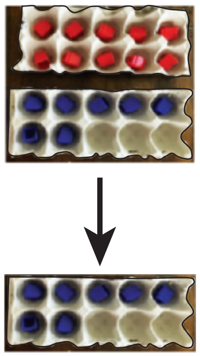
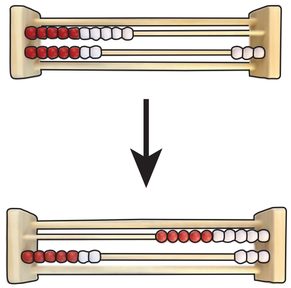
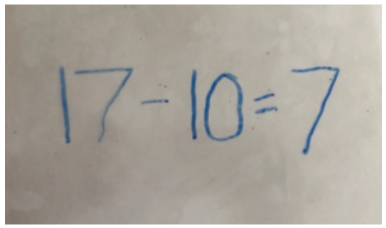
Differentiation: Challenge

Consider extending the problem for students who quickly solve and write a subtraction sentence by asking the following questions:

- If the children sold their bracelets for 2 cents each, how much money did they make?
- If the children sold their bracelets for 10 cents each, how much money did they make?
- If the children sold their bracelets for 5 cents each, how much money did they make?

Circulate and take a picture or make note of the strategies and tools students use. Select two or three students to share. If possible, select a variety of representations and include at least one student who uses a number sentence.

Students who finish early can try to solve a different way and see whether they get the same total.

Unifix Cubes in Cartons	Rekenrek	Number Sentence
		

Share, Compare, and Connect

Materials—T: Student work samples

Students discuss representations and confirm that a subtraction sentence can be used to represent the story.

Gather the class for discussion and invite the students you identified in the previous segment to share. As each student shares, ask questions to elicit their thinking, clarify the representation, and to help the class notice how the different representations are related.

> **Austin, tell us how you used the cubes in cartons.**
>
> I put 17 cubes in the cartons to show the bracelets. Then I took away the carton with 10 and the carton with 7 bracelets was left.

Promoting the Standards for Mathematical Practice

Encouraging students to write a number bond or number sentence to represent the bracelets helps them model with mathematics (MP4).

Some students may directly model the story by using 10-frame cartons. Asking students to write number bonds and number sentences nudges them toward using more abstract representations that can be generalized to more than one problem.

Lizzie, how did you use the rekenrek to solve?

I moved 10 beads on the first row and 7 beads on the second row to show the 17 bracelets. Then I slid the 10 back over since someone bought 10 bracelets. There were 7 left.

Denzel, tell us about your number sentence.

I knew that there were 17 bracelets at first, so I started my number sentence with 17. They sold 10 bracelets, so I wrote minus 10. I know that 17 is 10 and 7, so 17 minus 10 is 7.

Display the selected work samples so all students can see them. If no students wrote a number sentence, use the work samples to write a subtraction sentence as a class.

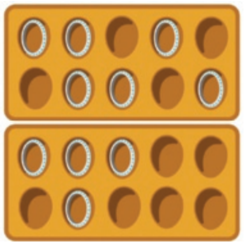
Ask students to find the referents in each piece of work, including the subtraction sentence. They should identify where they see the total number of bracelets Ko and Isaac started with, the bracelets that were sold, and the leftover bracelets.

Notice and Wonder

Materials—S: Personal whiteboards, dry-erase marker, assorted math tools.

Students write a subtraction sentence to match a picture.

If time permits, extend the bracelet story. Display the image of the bracelets.



Last weekend Ko and Isaac made other bracelets to sell at a craft fair. This picture shows their cartons at the end of the craft fair. What do you notice?

None of the cartons are full.

Some have been sold because there are missing bracelets.

I see 6 bracelets in that carton. *(Points.)* And I see 4 in that one. *(Points.)*

There are 10 bracelets left.

What do you wonder?

I wonder why they didn't sell those bracelets.

How many bracelets did they start with?

Teacher Note

This segment extends beyond the objective to give students exposure to a nonroutine problem that they can solve with direct modeling. Students have a chance to develop their own question, and after getting some additional information from the teacher, choose a solution path. The class can use a subtraction sentence to check their thinking after finding the unknown.

Start unknown and *change unknown* problem types are formally introduced in grade 1.

How many bracelets were sold?

I wonder how much money they made.

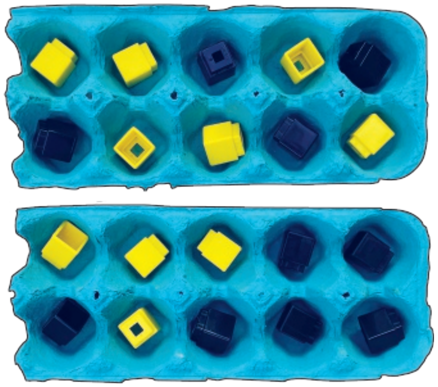
Use students' wonderings to decide on a problem to explore. Finding how many bracelets were sold (*change unknown*) is likely to be easier than finding how many bracelets the children had at the beginning (*start unknown*). The following dialogue is based on the *change unknown* problem type.

Ko and Isaac started with 20 bracelets. How can we figure out how many bracelets they sold?

We could make cartons. I would put in 20 cubes then take away cubes until the cartons look like the picture.

There are 10 bracelets now, so maybe we could add more until we get to 20.

I think the spaces used to be full because there are 20 spaces. We could count the empty spaces.



Invite students to choose a way to solve and gather any needed tools. After students try the suggested solution paths, review the results as a class.

Confirm student thinking with a subtraction sentence.

Earlier we used a subtraction sentence to show how many bracelets Ko and Isaac sold. Let's check our work with a subtraction sentence.

Walk students through the process of writing a subtraction sentence with the following questions. Then ask students to evaluate whether the subtraction sentence makes sense.

How many bracelets did they start with?

How many bracelets did they sell?

20 - 10 = 10

How many bracelets do they have left?

Problem Set

Have students put their finger on the doughnut problem. Direct their attention to the subtraction sentence.

What does the 13 represent or show?

All the doughnuts

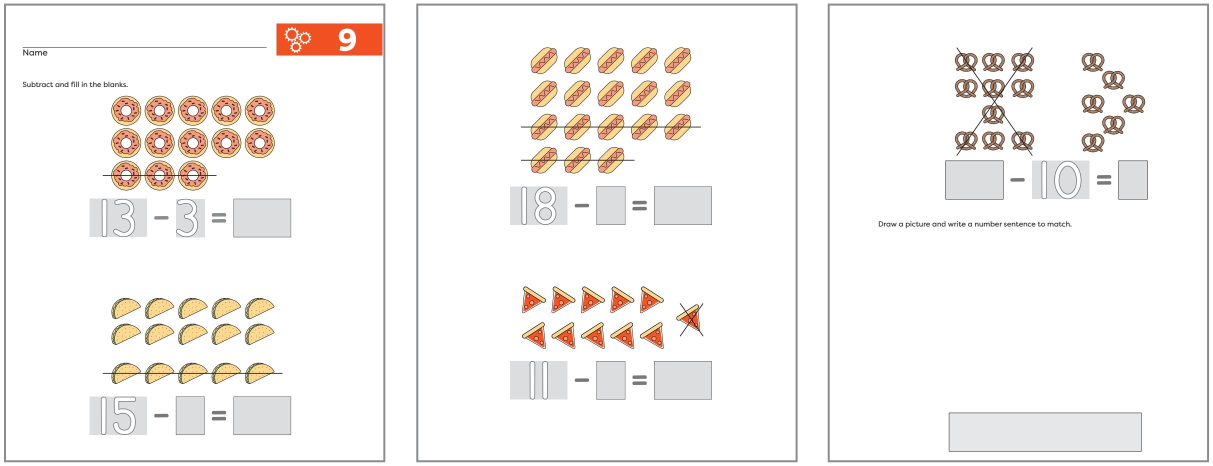
What part of the doughnuts does the 3 represent?

The doughnuts that are crossed off

How many doughnuts are left?

10

Prompt students to write the subtraction sentence. Point out that the directions are different for the last problem. Release students to complete the rest of the Problem Set independently.



UDL: Engagement

Support students in monitoring their own progress. Students have enough experience with addition and subtraction that they are probably beginning to recognize that problems vary in terms of difficulty. Choose one of the following tasks to prompt reflection:

- Circle the problems that were easy for you.
- Put a check by the problems that challenged you.
- Draw a smiley face by your favorite problem.

Observational Assessment

☑ Ask assessing questions as students work on the Problem Set.

- Where do you see 10 ones in the picture? Where do you see them in your number sentence?
- Where are the parts in your number sentence? Where is the total?

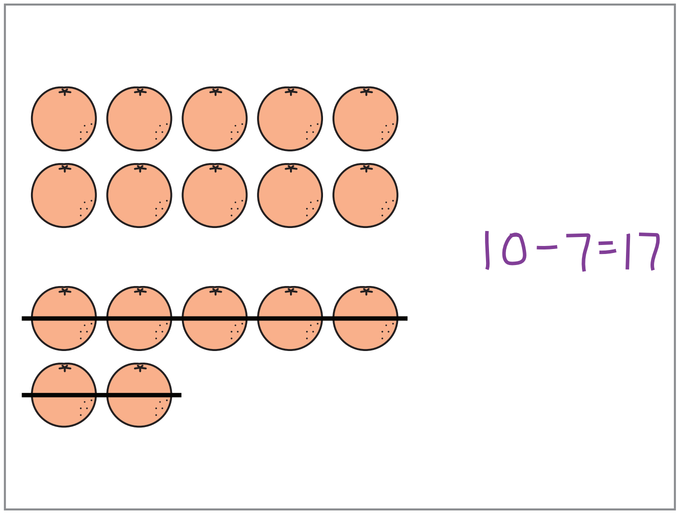
Land 5

Debrief 5 min

Materials—T: Puppet

Objective: Represent teen number decompositions as subtraction sentences.

Gather students and show them Puppet. Display the picture of the oranges.



Puppet wrote a number sentence to match the picture of the oranges. Do you agree with Puppet's number sentence? Why?

No, 10 minus 7 isn't 17.

No, Puppet put the numbers in the wrong order.

I hear you saying that Puppet put the numbers in the wrong order. Which number should go first? Why?

17 should go first because there are 17 oranges at the beginning.

So 17 is the total. What are the parts? *(Write 17.)*

$17 - 7 = 10$

10 and 7 are the parts.

If 10 and 7 are the parts, which part goes next in the number sentence? How do you know?

7 goes next because 7 oranges are crossed out.

Write – 7 = .

17 minus 7 equals?

10

Complete the number sentence.

How do you know when a subtraction sentence matches a story or picture?

It matches if you take away from the total.

You have to make sure the total comes before the minus and the part is after the minus.

The part that goes away is what you subtract. What's left is on the other side of the equal sign.

10

LESSON 10

Make sense of word problems involving teen numbers.

Observational Assessment Recording Sheet

Student Name

Grade K Module 6

Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than*, *fewer than*, or the *same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to*, *take from*, *put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

Students listen to a series of story problems and determine a solution pathway. They model each problem first by drawing and then by writing an addition or subtraction number sentence as a class.

Key Question

- How do you decide whether to write an addition or subtraction sentence for a story?

Achievement Descriptors

K.Mod6.AD7 **Solve** *add to*, *take from*, *put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction. (K.OA.A.2)

K.Mod6.AD8 **Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones. (K.NBT.A.1)

K.Mod6.AD9 **Record** teen numbers as ten ones and some more ones with a drawing or number sentence. (K.NBT.A.1)

Agenda

Fluency 5 min

Launch 10 min

Learn 30 min

- Take Away Ten
- Add With 10
- Create Your Own Story
- Match: Number Sentences

Land 5 min

Materials

Teacher

- Empty can
- Pennies (5)

Students

- Unifix® Cubes
- Match: Number Sentences cards (in the student book)
- Scissors
- Double 10-Frame removable (in the teacher edition)
- Personal whiteboard
- Dry-erase marker
- Student book

Lesson Preparation

- Consider having Unifix Cubes available as needed for students who benefit from making a concrete model before drawing.
- Consider copying or printing the Double 10-Frame (in the teacher edition) to support students with organizing their drawings if needed. Place the double 10-frames in a personal whiteboard.
- Decide whether students will work in pairs or individually during the Match: Number Sentences segment of the lesson. Tear out the Match cards from the student book and cut them apart. Make 1 set per student pair or 1 set per student, depending on the grouping structure you choose. If you have students assemble the materials during the lesson, provide scissors. One partner might be responsible for cutting the picture cards while the other cuts the number sentence cards.

Fluency 5

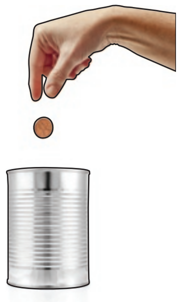
Coin Drop: Add or Subtract 2

Materials—T: Empty can, pennies

Students track the count mentally and add or subtract 2 to prepare for *add to* and *take from* word problems.

In your mind, count the pennies as I drop them into the can.

Drop 3 pennies into the can, one at a time, pausing between each penny.



On my signal, say how many pennies. Ready?

3

Watch closely!

Clearly drop 2 more pennies into the can.

Now how many pennies?

5

Clearly remove 2 pennies from the can.

Now how many pennies?

3

Empty the can, then repeat the process, adding 2 more or subtracting 2 from different amounts of pennies within 5.

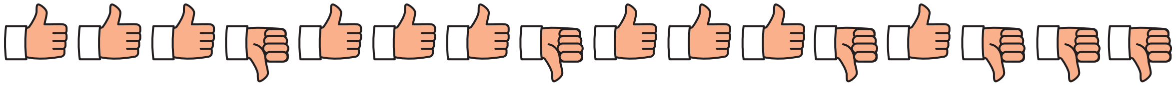
Happy Counting by Tens Within 100

Students visualize a number line while counting aloud to build fluency counting within 100.

Invite students to participate in Happy Counting.

Let's count by tens. The first number you say is 40. Ready?

Signal up or down accordingly for each count.



40 50 60 50 60 70 80 70 80 90 100 90 100 90 80 70

Continue counting by tens within 100. Change directions occasionally, emphasizing crossing over 50 and where students hesitate or count inaccurately.

Launch

10

Materials—S: Personal whiteboard, dry-erase marker, Unifix Cubes

Students visualize and represent a word problem.

Listen to my story about what happened next at the craft fair. Ko made 10 bracelets and put them in a carton. *(Pause.)* Isaac made 8 bracelets and put them in a carton. *(Pause.)*

Draw a picture to match the story.

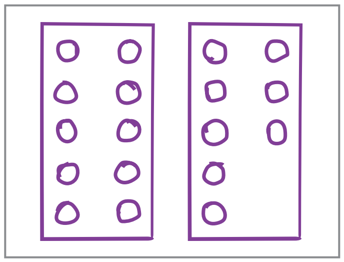
Give students a few minutes to draw. If needed, provide Unifix Cubes for students to recreate the story before drawing.

Show a student's drawing that uses 5-groups if one is available.

Look at Meghan's drawing. How did she show the bracelets?

She put them in groups of 5.

She put a box around the dots, like the cartons.



Organizing our drawing helps us count quickly, so we don't have to count by ones.

Quickly redraw the student's work so you can add to it.

We have two characters in our story. Let's put labels on our drawing to help us stay organized.

Language Support

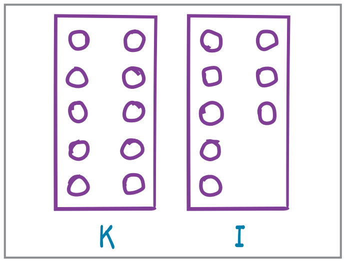
This is the first instance in which the term *fair* is used without the support of a video. *Fair* is a word that students may encounter in conversation or children's books. It has multiple meanings: *show or festival, just or equitable, reasonable*, and *light in color*. Take a moment to establish the context and link to familiar terms such as *show* or *festival*.

Demonstrate writing labels such as K and I to represent the characters' names.

What is the total number of bracelets? How do you know?

There are 18 bracelets. I counted them.

I see 10 and 8. I know that makes 18.



10 + 8 = 18

Write 10 + 8 = 18.

Transition to the next segment by framing the work.

Today, we will listen to story problems and make drawings to help us solve.

Learn 30

Take Away 10

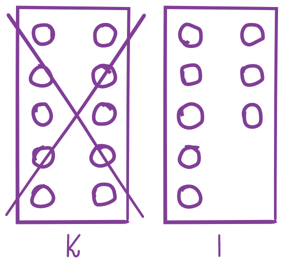
Materials—S: Personal whiteboard, dry-erase marker

Students subtract 10 all at once.

Let's keep the story going. Ko and Isaac had 18 bracelets. *(Pause.)* They sold a full carton. *(Pause.)* How many are left?

Turn and talk. What does it mean to sell a full carton? What do we know about the cartons?

Tell the story again and invite students to draw a picture to match. While students draw, circulate and observe. Select a student who crossed off 10 all at once to share their drawing.



Marcus, tell us about your picture and how you solved.

My picture already had 18 from the last story. I crossed out one carton because it got sold. A carton has 10. There are 8 left.

UDL: Representation

The craft fair context evolves throughout the lesson. Help students process information by marking the transition between scenarios. Imagine that the craft fair takes place over multiple days and use that structure to make the story comprehensible. Upon completing a problem, turn out the lights and have students pretend to sleep briefly. Turn them back on to initiate the next day of the craft fair.

The story said they sold a full carton. Marcus crossed out Ko's 10 bracelets all at once. That was a fast way to solve.

If students do not make the connection that the carton holds 10 items, model crossing off the full carton and ask students how many bracelets were crossed off.

Let's write a number sentence to match the story. Do we write an addition or subtraction sentence? How do you know?

We write a subtraction sentence because it's take away. The bracelets were sold.

Write 18 – 10 = 8.

$18 - 10 = 8$

Add With 10

Materials—S: Personal whiteboard, dry-erase marker, Double 10-Frame

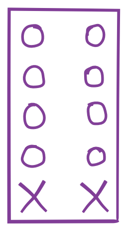
Students add with 10 as a total and with 10 as a part.

Invite students to use the double 10-frame or to draw the scenario on a whiteboard.

Pose a scenario that uses partners to 10.

Now they have 8 bracelets. How many more does Isaac need to make 10? You can use your old picture or draw a new picture to help you solve.

Circulate and observe. Select a student to share their drawing.



2

Sara, tell us about your picture and how you solved.

Isaac had 8 bracelets. I drew 1 more for 9, then 1 more for 10.

That sounds like counting on. Eiiiight, 9, 10. How many bracelets did you draw to get to 10?

2 bracelets

Promoting the Standards for Mathematical Practice

As students think about the stories in this lesson to determine whether they would represent them with an addition or subtraction sentence, they make sense of problems **(MP1)**.

Rather than encouraging students to listen for specific keywords or phrases to make sense of whether to add or subtract, have students make sense of the whole story. Ask questions such as, "Do they have more or fewer bracelets now?" or, "Is this number a part or the total?"

Differentiation: Support

The double 10-frame is offered to support students with organizing their drawings. Offer students a choice of organizing their drawings on a double 10-frame or drawing on a whiteboard.

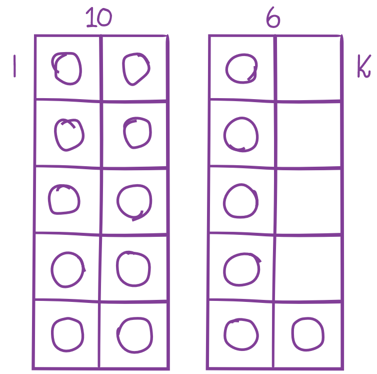
Let's write a number sentence to match the story. Do we write an addition or subtraction sentence? How do you know?

We write an addition sentence. We had to draw more, not take away.

Elicit help from the class to write 8 + 2 = 10.

$8 + 2 = 10$

Pose a scenario that requires crossing 10.



Isaac has 10 bracelets in his tray. Listen carefully to what happens next. Ko makes 6 bracelets. How many do they have now?

Prompt students to think about how they can use what they have already drawn to help show the new problem. Circulate and observe as students adjust their drawings. Select a student to share.

Libby, tell us about your picture and how you solved.

Isaac had 10 bracelets from the last story. I drew 6 more for Ko.

Libby labeled her drawing with numbers. How many bracelets do they have now?

16

Ask students whether to use addition or subtraction to write a number sentence for the story. Elicit help from students to write 10 + 6 = 16.

$10 + 6 = 16$

Create Your Own Story

Materials—S: Personal whiteboard, dry-erase marker

Students create their own story problem and solve.

How many bracelets are there now?

16 bracelets

It's your turn to decide what happens. Take a moment to make up a story. Draw a picture to match.

Circulate and observe. If time allows, provide students with an opportunity to share their story with a partner.

Match: Number Sentences

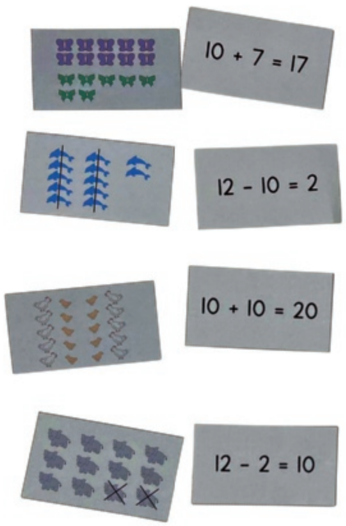
Materials—S: Match: Number Sentences cards, scissors

Students match pictures to number sentences.

Decide whether students will work individually or in pairs. Distribute Number Sentence Match cards to each student or pair, or provide scissors and have students assemble the materials.

Ask students to sort their picture cards into a yellow pile and a blue pile. Have students start with the blue pile. Students or partners match a picture card with a number sentence card.

Circulate to listen for strategies such as counting the total and parts or telling a story that has a beginning, middle, and end. When students match all the blue cards, they can move on to the yellow cards.



Observational Assessment

☑ Observe students as they play.

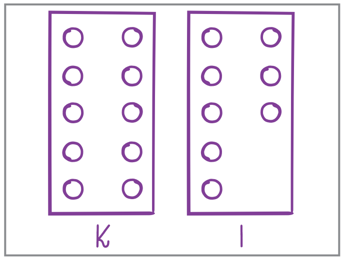
- Can students match the composition or decomposition shown in the picture with a number sentence?
- Can students identify the parts and the total in the picture? In the number sentence?

Land 5

Debrief 5 min

Objective: Make sense of word problems involving teen numbers.

Display the drawings of 10-frame cartons.



Ko and Isaac always use cartons to hold their bracelets. Why are the cartons helpful to us as we solve problems?

The cartons hold 10. If a carton is full, I don't have to count. I just know there are 10.

It is easy to take away 10. You just cross out the carton.

You can count empty spaces to see how many you need to get to 10.

How do you decide whether to write an addition or subtraction sentence for a story?

You have to listen to the story. If they made bracelets, it was adding because they had more.

When they sold bracelets, it was subtraction. Someone took the bracelets away.

11

LESSON 11

Represent teen number decompositions as 10 ones and some ones and find a hidden part.

Observational Assessment Recording Sheet

Student Name

Grade K Module 6
Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than, fewer than*, or the *same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to, take from, put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

This lesson reinforces place value concepts as students find a hidden part within teen numbers. Based on their understanding of the structure of teen numbers as 10 ones and some ones, students are able to figure out the hidden part. They model problems with various tools and by writing number sentences.

Key Question

- How can tools help you find a hidden part?

Achievement Descriptors

K.Mod6.AD7 **Solve** *add to*, *take from*, *put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction. (K.OA.A.2)

K.Mod6.AD8 **Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones. (K.NBT.A.1)

K.Mod6.AD9 **Record** teen numbers as ten ones and some more ones with a drawing or number sentence. (K.NBT.A.1)

Agenda

Fluency 10 min

Launch 10 min

Learn 25 min

- Hidden Crayons
- How Many Are Hiding?

Land 5 min

Materials

Teacher

- None

Students

- Add 2 or Add Doubles Sprint (in the student book)
- Assorted math tools
- 10-frame carton (2 per student pair)
- Unifix® Cubes (20 per student pair)
- Number Bond removable (per student pair, in the student book)
- Personal whiteboard
- Dry-erase marker

Lesson Preparation

- Consider tearing out the Sprint pages in advance of the lesson.
- Gather various tools such as Unifix Cubes, 10-frames, 10-frame cartons, number paths, and Hide Zero cards. Set them out so students can self-select tools as they represent story problems. Have enough available so students can choose the tools they want to use.
- Consider tearing out the Number Bond removable and placing it inside a whiteboard. Each student pair needs one removable.

Fluency 10

Sprint: Add 2 or Add Doubles

Materials—S: Add 2 or Add Doubles Sprint

Students add 2 or add a doubles fact to build addition fluency within 10.

Read the instructions to students and have them complete the sample problems.

Add.

3 + 2 = 5
3 + 3 = 6

Direct students to Sprint A. Frame the task.

I do not expect you to finish. Do as many problems as you can, your personal best.

Take your mark. Get set. Think!

Time students for 1 minute on Sprint A.

Stop! Underline the last problem you did.

I'm going to read the answers. As I read the answers, call out "Yes!" and mark your answer if you got it correct.

Read the answers to Sprint A quickly and energetically.

Count the number you got correct and write the number at the top of the page. This is your personal goal for Sprint B.

Celebrate students' effort and success.

Lead students in one fast-paced and one slow-paced counting activity, each with a stretch or physical movement.

Teacher Note

Count forward by tens from 0 to 100 for the fast-paced counting activity.

Count backward by tens from 100 to 0 for the slow-paced counting activity.

Point to the number you got correct on Sprint A. Remember this is your personal goal for Sprint B.

Direct students to Sprint B.

Take your mark. Get set. Improve!

Time students for 1 minute on Sprint B.

Stop! Underline the last problem you did.

I'm going to read the answers. As I read the answers, call out "Yes!" and mark your answer if you got it correct.

Read the answers to Sprint B quickly and energetically.

Count the number you got correct and write the number at the top of the page.

Stand if you got more correct on Sprint B.

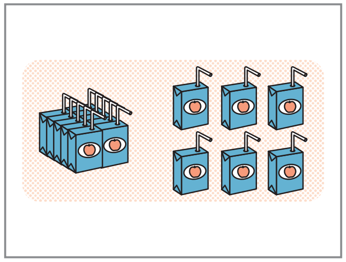
Celebrate students' improvement.

Launch 10

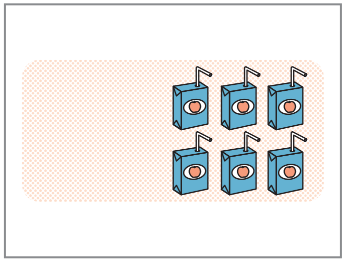
Students reason about an unknown change.

Display the picture of 16 juice boxes.

This picnic blanket is set up for a soccer team's snack. Turn and talk to your partner about what you notice.



Display the picture of 6 juice boxes.



The soccer game is over. Now the picnic blanket looks like this.

Invite students to think–pair–share about what they observe.

What do you notice? What do you wonder?

I notice some juice boxes are gone.

I wonder how many kids are on the team.

I wonder if they brought extras because there are 6 juice boxes left on the blanket.

What can we do to figure out how many juice boxes are gone?

We have to see the first picture again and count all the juice boxes, except for the 6 that are still there.

We could look at how many there were at the beginning and cover the 6 to know how many kids took drinks.

As needed, display the 16 juice boxes again and help students identify the 6 juice boxes that stay on the blanket. Use student ideas to determine the number of juice boxes that were taken.

How many juice boxes were taken?

10

How did you count them?

I see 5 and 5.

I counted them by ones.

Transition to the next segment by framing the work.

You are good detectives. Today, we will count and use tools to figure out the hidden parts in other problems.

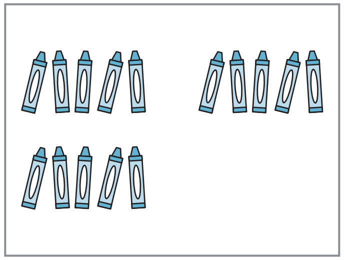
Learn 25

Hidden Crayons

Materials—S: Assorted math tools

Students solve a story problem involving a hidden part.

Have math tools available such as personal whiteboards, Unifix Cubes, copies of the Double 10-Frame removable, and Hide Zero cards.



Display the picture of the crayons.

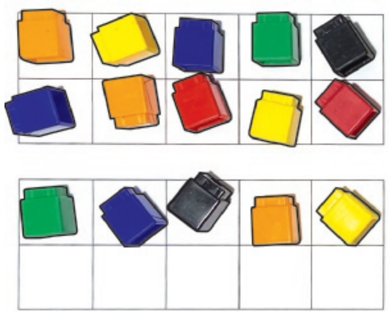
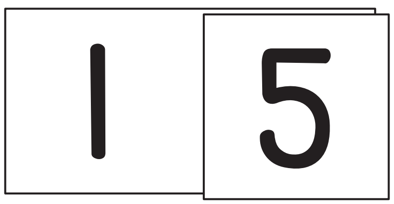
These are Mark's crayons. How many crayons does Mark have?

Use your whiteboard or choose a tool to show how many.

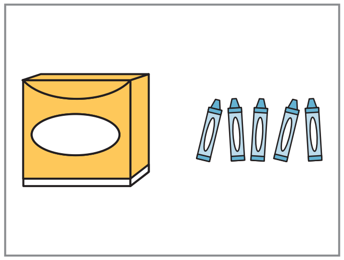
Pause to let students work.

Turn and talk. Share how many crayons Mark has and how you counted. If you used a tool, tell how it helped you count.

Select two or three students to share their work. If possible, select samples that use different representations. For each sample, briefly discuss how the picture of crayons relates to the representation. Tell students to keep their work for the next part of the problem.

10-Frame	Hide Zero Cards	Number Sentence
		10 + 5 = 15

Display the picture of the crayon box and loose crayons.



Mark put some of his crayons into the crayon box.

Facilitate a series of turn and talks with the following prompts.

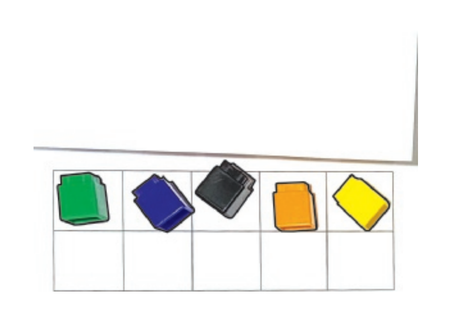
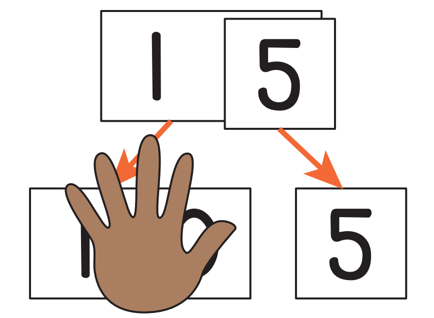
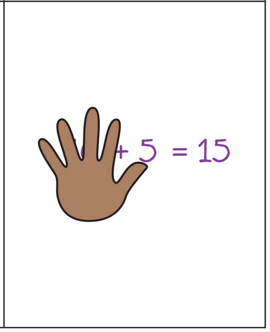
Use your work to show and tell your partner how many crayons there were at the beginning.

Use the picture to show and tell your partner how many crayons you can see.

Use your work to show and tell your partner how many crayons are in the box.

Once students have shared with a partner, have them use a piece of paper or a hand to hide the part of their representation that shows the crayons in the box.

Have the class view and discuss the same selected work samples again, now with one part hidden.

10-Frame	Hide Zero Cards	Number Sentence
		

How does this work help us know how many crayons are in the box, even though we can't see them?

The number bond shows the 15 crayons at the beginning. There are only 5 outside the box. I know there are 10 inside the box because that is the other part in the number bond.

$10 + 5 = 15$ tells about all the crayons. 15 is all of them. 5 tells about the crayons you can see. That just leaves the 10, so there are 10 inside the box.

Promoting the Standards for Mathematical Practice

Students choose appropriate tools strategically **(MP5)** when they use a tool that takes advantage of the structure of teen numbers as 10 and some ones. Students use their tool to model with mathematics **(MP4)** by finding a way to represent and solve the crayon story problem.

As students work, encourage them to think about whether their tool makes it easy to see which crayons are in the box. The questions in this section are designed to promote MP4.

We know there are 15 crayons. The 5 cubes show us how many we can see. We can count on from 5 to 15 to figure out how many are under the paper.

How is this work like the crayons in the story? How is it different?

The cubes are like the crayons because the numbers are the same, but crayons are longer and they can color.

The crayons are in parts and you can see the parts in the number bond. You can't see the crayons.

The numbers match the crayons.

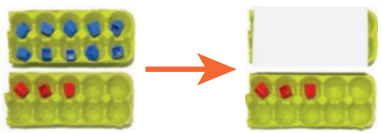
Set aside a few work samples to use in Land.

How Many Are Hiding?

Materials—S: Unifix Cubes, 10-frame cartons, Number Bond removable, personal whiteboard, dry-erase marker

Students hide part of the total, tell a story, and represent the situation.

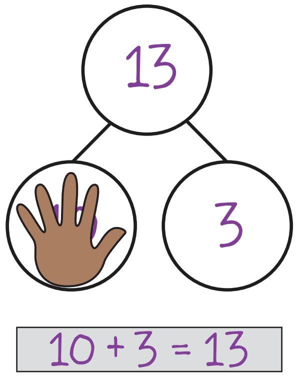
Partner students. Make sure each pair has 20 Unifix Cubes, two 10-frame cartons, and a whiteboard with a Number Bond removable inside.



Partner A models a teen number and hides a part.

Give the following directions for the activity. Consider modeling a problem with a partner before letting pairs work at their own pace.

- Partner A uses 20 cubes and the 10-frame cartons. Partner B uses a whiteboard with the removable inserted.
- Partner A models a teen number with cubes in the 10-frame cartons. Then partner B writes the total and parts in the number bond.
- Partner B closes their eyes and partner A hides one of the 10-frame cartons.
- Partner B opens their eyes and covers the part in their number bond they think is hiding.



UDL: Engagement

Add a playful story to the activity. Invite students to select a context that is personal or familiar and offer them a choice of tools to represent it. To maintain focus on the math concept, the chosen context must allow for one part to be hidden, such as foxes in a den or toys in a toy box.

Observational Assessment

☑ Ask assessing questions as students play How Many Are Hiding?

- Which objects does this number show? *(Point to a number in the number sentence or number bond.)*
- Where are the parts in your number sentence? Where is the total?

- Partners confirm that their parts and total match and work together to write a number sentence.
- Partners switch roles and repeat.

Circulate and support students as needed. Encourage students to talk about how the numbers in the number bonds match the cubes. Ask students to tell what the numbers in the bond and sentence refer to.

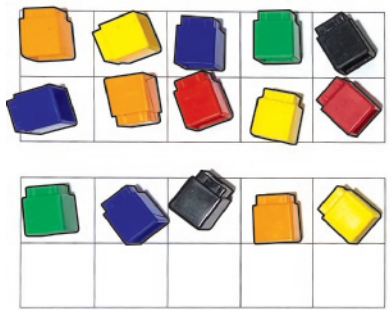
Land 5

Debrief 5 min

Materials—T: Student work samples

Objective: Represent teen number decompositions as 10 ones and some ones and find a hidden part.

Show the work samples you set aside in Learn.



Which math tools did you use today?

We used number bonds and cubes and the cartons.

I used Hide Zero cards.

I used my brain because I knew 10 was one part and the other part is on top, hiding the 0 in the 10.

I used cubes and 10-frames.

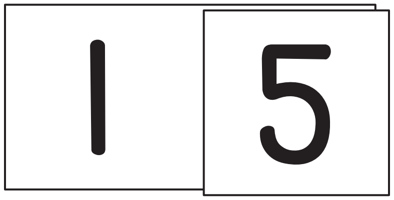
How do tools help us find the hidden part?

The cartons make it easy to know how many without counting, so it's easy to remember what's missing. You can see it in your mind.

If you cover a carton that is all filled, then 10 is hiding. Same with a 10-frame.

If you make the total with Hide Zero cards, it's easy to break it into parts. If you can see one part, it must be the other part that is hiding.

Number sentences and number bonds are like pictures, except with numbers, so you can tell what's hiding and what's not.



Sample Solutions

Expect to see varied solution paths. Accept accurate responses, reasonable explanations, and equivalent answers for all student work.

A

Number Correct: ______

Add.

2 + 1 = 3	0 + 0 = 0
1 + 2 = 3	1 + 1 = 2
2 + 2 = 4	5 + 5 = 10
2 + 0 = 2	2 + 2 = 4
3 + 2 = 5	3 + 3 = 6
5 + 2 = 7	4 + 4 = 8
8 + 2 = 10	2 + 1 + 1 = 4
7 + 2 = 9	2 + 2 + 2 = 6
6 + 2 = 8	3 + 3 + 3 = 9

68

B

Number Correct: ______

Add.

2 + 1 = 3	0 + 0 = 0
1 + 2 = 3	1 + 1 = 2
2 + 2 = 4	5 + 5 = 10
2 + 0 = 2	2 + 2 = 4
3 + 2 = 5	3 + 3 = 6
5 + 2 = 7	4 + 4 = 8
8 + 2 = 10	2 + 1 + 1 = 4
7 + 2 = 9	2 + 2 + 2 = 6
6 + 2 = 8	3 + 3 + 3 = 9

70

12

LESSON 12

Investigate different ways to decompose teen numbers. (Optional)

Observational Assessment Recording Sheet

Student Name

Grade K Module 6

Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than, fewer than*, or *the same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to, take from, put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

This optional lesson provides a doughnut shop context that invites students to decompose teen numbers in many different ways. They see that 10 is not always one part. Students explore basic area concepts as they consider different ways to fit doughnuts into boxes of varied sizes.

Key Question

- Does 10 always have to be a part when we decompose teen numbers? How do you know?

Achievement Descriptor

K.Mod6.AD5 **Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration. (K.CC.B.5)

Agenda

Fluency 10 min

Launch 5 min

Learn 30 min

- Decompose a Given Set
- Doughnut Shop

Land 5 min

Materials

Teacher

- Chart paper
- Marker

Students

- Two-color counters (16 per student pair)
- Cup (1 per student pair)
- Shake Those Disks removable
- Doughnut Box removable (in the student book)
- Numeral Cards (1 set per student pair, from lesson 5)
- Doughnut Box Cutouts (1 set per student pair, in the student book)
- Personal whiteboard
- Dry-erase marker
- Student book

Lesson Preparation

- Ready the Shake Those Disks removables by placing them inside personal whiteboards. This material was assembled in lesson 7.
- Assemble cups of 16 two-color counters per student pair.
- Consider tearing out the Doughnut Box removable from the student book in advance of the lesson.
- Tear out the Doughnut Box Cutouts removable from the student book and cut the boxes out in advance of the lesson. Create a set for each student pair.

Fluency 10

Shake Those Disks

Materials—S: Two-color counters, cup, Shake Those Disks removable, dry-erase marker

Students record a total and parts in a number bond to prepare for work with *both addends unknown* situations.

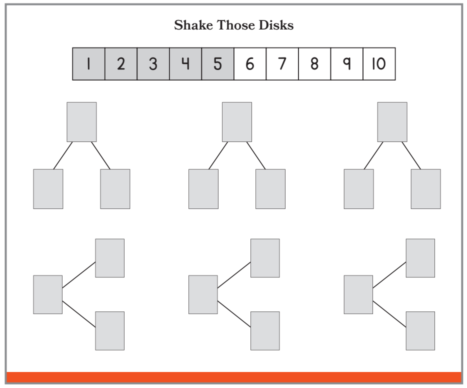
Form student pairs. Distribute the Shake Those Disks removable in a personal whiteboard, a marker, and a cup of counters to each pair. Have pairs set aside 6 of their counters; they only need 10 for this activity. Have students play according to the following procedure. Consider doing a practice round with students.

- Partner A: Shake and spill the cup of counters.
- Partner A: Place the counters on the number path and count.
- Partner B: Write the total in the number bond.
- Partner B: Count the number of red and yellow counters, and then write the numbers in each part.
- Switch roles after each turn.

Circulate as students play, and ensure they are correctly recording the parts and totals.

Differentiation: Support

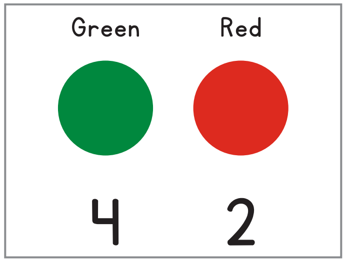
Consider differentiating the activity by assigning different numbers of counters. Students can be given anywhere from 3 to 10 counters to support them as needed.



Green Light, Red Light

Students count from different numbers to build fluency with counting from a number other than 1.

Display the green and red dots with the numbers 4 and 2.



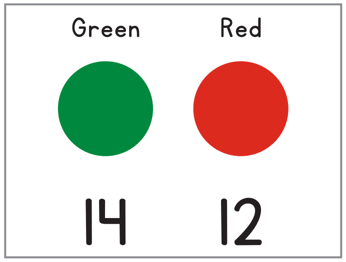
On my signal, start counting with the green light number. Stop at the red light number.

Look at the numbers.

Think. Ready? Green light!

4, 3, 2

Display the green and red dots with the numbers 14 and 12.



On my signal, start counting the Say Ten way with the green light number. Stop at the red light number.

Think. Ready? Green light!

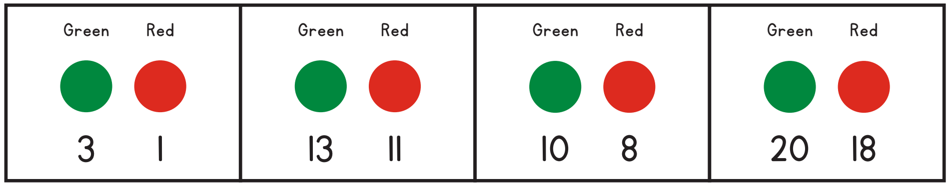
Ten 4, ten 3, ten 2

Now count the regular way.

Think. Ready? Green light!

14, 13, 12

Repeat the process with the following sequence, counting both the Say Ten way and the regular way for teen numbers:



Teacher Note

Consider incorporating movement. Invite students to run in place, hop, or engage in another physical exercise while counting.

Launch 5

Students share strategies for counting a set.

Display the picture of doughnuts.

Show thumbs-up when you know how many doughnuts there are.

Call on a few students to share. Once the class agrees that there are 16, Explore students' counting methods.

How do you see 16?

I counted across like this. *(Gestures to indicate rows.)* 1, 2, 3, ... , 16

I did that too, but I went this way. *(Gestures to indicate columns.)*

I counted by twos: 2, 4, 6, ... , 16.

I found a 4 and another 4. That makes 8, so then I counted on from 8: eiiight, 9, 10, ... , 16.

When you buy doughnuts, what do they put them in?

If it's just a few, they put them in a bag.

When you buy a lot, they put them in a box or a couple of boxes.

Transition to the next segment by framing the work.

Today, we will use what we know about breaking apart numbers to help us think about different ways to put the 16 doughnuts into boxes.

Differentiation: Challenge

If students can count by fives, or repeatedly add fives efficiently, have them imagine that there are 5 doughnuts in each row. How might they use the friendlier number 5 to arrive at the total? If necessary, draw the additional doughnut in each row to support students in the use of subtractive reasoning.

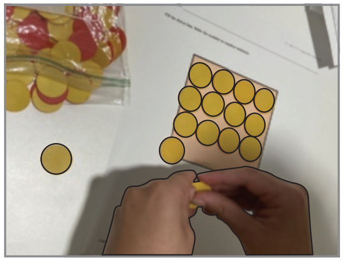
Learn 30

Decompose a Given Set

Materials—T: Chart paper, marker; S: Two-color counters, Doughnut Box removable

Students decompose a group and arrange the objects in various ways based on the area of containers.

Place the sets of two-color counters within students' reach and distribute the Doughnut Box removable. Have students look at the orange square.



What do we call this orange shape?

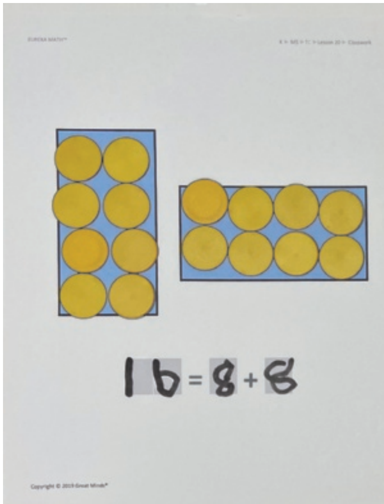
A square

(*Hold up a counter.*) Use your imagination. These are not counters, they're doughnuts. Yum!

Pretend the orange square is a doughnut box. How many doughnuts will fit in the box?

Encourage students to answer the question by using counters to fill the box. Tell them to write the total, 16.

Have students look at the blue rectangles.



Pretend that the store ran out of orange boxes. Will your 16 doughnuts fit in the blue boxes?

Give students time to explore the question by using their counters. When most students are ready, guide the class to represent the decomposition with a number sentence.

You broke your total number of doughnuts into two parts. What are the parts?

There are 8 in that box and 8 in this box.

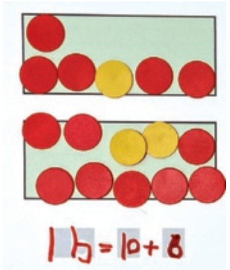
Write a number sentence to show how you broke 16 into two parts.

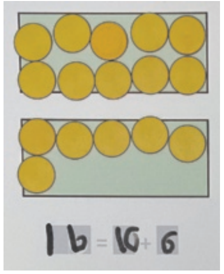
Promoting the Standards for Mathematical Practice

Students look for structure (MP7) when they use the doughnut boxes to decompose 16 in different ways.

This activity gives students a chance to relate concepts such as shape and size to the parts a number can be decomposed into. For example, although this isn't made explicit to students, if a given number of doughnuts fills a square box, then that number is the square of another number (e.g., $4 = 2^2$, $9 = 3^2$, $16 = 4^2$).

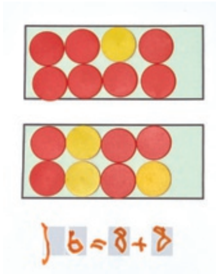
After students have written their number sentences, write 16 = 8 + 8 on chart paper to begin a class list of partners to 16.





Have students look at the green rectangles. Invite students to put their 16 doughnuts in the green boxes and to write a number sentence to match.

When they finish, display samples that show different ways to break 16 into parts. Add to the list of partners to 16.

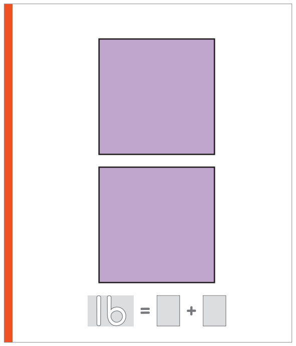


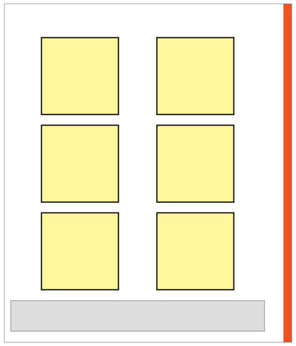
We all had the same number sentences for the orange box and the blue boxes. Why do you think we could break apart 16 in different ways with the green boxes?

There was extra room in the green boxes. You couldn't fill them both all up.

Some people filled up one box and some people made the boxes even.

As time permits, invite students to continue experimenting by filling the purple and yellow boxes in different ways. Add new partners to 16 discoveries to the list.





What is the same about all the boxes?

They all hold our doughnuts.

They all have colors.

What is different about the boxes?

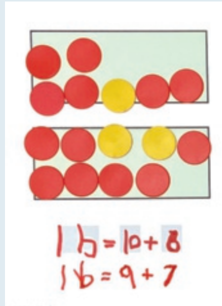
Sometimes we use one box and sometimes we use two boxes. We use a lot of yellow boxes.

The size of the boxes is different. Some hold a lot of doughnuts, and some hold a little bit of doughnuts.

Some of the boxes are squares, but some aren't.

Teacher Note

Many students like to fill entire boxes before moving to the next box. If students finish quickly, invite them to think of other ways to fill the boxes. This will enrich the discussion about partners to 16.



Language Support

The language of equal groups, _____ *boxes of* _____, may require clarification. If needed, gesture to examples of each option as you describe it. Invite students to point to indicate their selection, and as they do, revoice their choice with the corresponding equal groups statement.

Invite students to think–pair–share to compare quantities of doughnuts.

Would you rather have two boxes of 8 doughnuts, or four boxes of 4 doughnuts?

I would rather have two boxes so they're easy to carry—one box in each hand.

I would want four boxes so I can share them with my family.

It doesn't matter to me because they both have 16 doughnuts.

Be prepared to address the misconception that more boxes mean more doughnuts. If a student responds in this manner, invite other students to critique the idea. Verify by finding the total number of doughnuts in each set of boxes.

Doughnut Shop

Material—S: Numeral cards 10–20, Doughnut Box Cutouts, two-color counters

Students decompose a teen number in various ways based on the area of containers.

Introduce a doughnut shop scenario. Model the roles of worker and customer. Workers need two-color counters and the doughnut box cutouts. Customers need numeral cards 10–20.

The customer approaches the counter. The workers greet the customer and ask for their order.

How many doughnuts would you like?

The customer gives a numeral card to one of the workers and says their order.

I'd like 14 doughnuts please.

One worker counts out 14 doughnuts. Another worker finds boxes to hold the doughnuts and places them inside. The customer counts to check that they received the right number of doughnuts.

Make small groups to role-play. Switch roles from time to time so that every student has an opportunity to count out doughnuts and find boxes that can fit all of the doughnuts.

UDL: Engagement

Provide a choice of materials to use. Students can make their own doughnut boxes by cutting, folding, or drawing on construction paper.

Creating their own boxes based on the customer's order invites students to hone spatial reasoning skills and experiment with estimation, which has not yet been formally taught.

Differentiation: Challenge

Ask students to identify how many doughnuts fit in each of the doughnut boxes (4, 9, 16). Use some or all of the following questions:

- Could you fill a square box with exactly 5 doughnuts? Why?
- What do you notice about the columns or rows of doughnuts in the square boxes you filled? *(Gesture.)*
- Make a square box that fits an exact number of doughnuts without any big spaces or any doughnuts on top of each other. How many can you fit in your square?

Circulate and observe. Ask the following assessing and advancing questions to probe student thinking:

- Why did you pick the orange box?
- Would the doughnuts fit in the yellow box? How many yellow boxes would you need to fit this order?
- How do you make sure that there isn't a lot of empty space left in a box?

Observational Assessment

☑ Ask assessing questions as students role-play the doughnut shop scenario.

- How do you know the customer has the right number of doughnuts?
- Can you say a number sentence that tells about your doughnuts?

Land

5

Debrief 5 min

Materials—T: Partners to 16 chart

Objective: Investigate different ways to decompose teen numbers.

Display the Partners to 16 chart created in Learn. Highlight any number sentences with 10 as a part.

Lately we've been breaking apart teen numbers with 10 as one part. Is 10 and 6 the only way to break apart 16?

No.

What are some new ways you broke apart 16 today?

8 + 8

9 + 7

Did anyone find ways to break 16 into more than two parts?

I had 4 and 4, and then another 4 and 4.

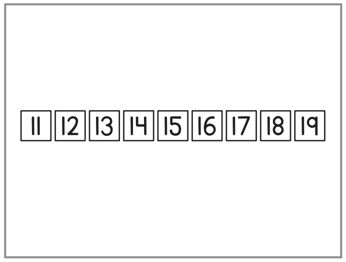
Mine had lots of 2s.

I had 4 and 4 and then some 2s.

Partners to 16

16 = 8 + 8
16 = 10 + 6
16 = 6 + 10
16 = 9 + 7
16 = 7 + 9
16 = 4 + 4 + 4 + 4
16 = 4 + 4 + 4 + 2 + 2
16 = 4 + 4 + 2 + 2 + 2 + 2

Display the picture of numbers 11 to 19.

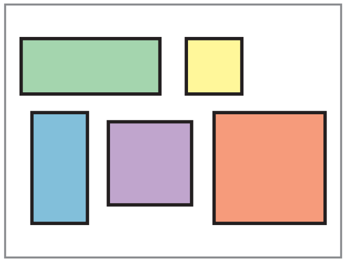


Look at these numbers. When we break these numbers into parts, does 10 always have to be a part?

No, we found lots of other ways to break 16 apart. I think we can find other ways to break apart these numbers too.

There are a lot of ways to break apart all numbers. Breaking numbers into a group of 10 ones and some more ones can be helpful, but sometimes we need to break up numbers in different ways.

Display the picture of the different doughnut boxes.



How did the size of the box change the way you broke your doughnuts into groups?

You can fit more in the bigger boxes.

The yellow box was really small, so I needed a lot of those boxes to fit all of the doughnuts.

You only needed two boxes if you used the green, blue, or purple boxes.

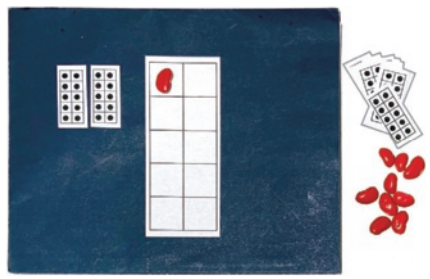
Pretend you are in charge of the doughnut store. You can only pick one kind of box to use for your doughnuts. Turn and ask your partner: Which box would you choose?

Topic C
Count to 100

Having tackled the linguistically challenging number word list to 20, students are ready to extend the count to 100. In a sense, the number word list that comes after 20 is less formidable. Students can rely on a consistent pattern and their emerging place value understanding to piece together the count to 100.

The topic begins with a focus on counting by tens. Students consider the efficiency of organizing materials into groups, including groups of 10, in a counting collection lesson. Then they make rekenrek bracelets to explore the differences between counting by ones and counting by tens. The individual beads serve as units of one and can be counted by ones, while the entire bracelet represents 10 ones and can be counted by tens. Students have seen this structure of units within a larger whole throughout the year: dots on a 10-frame, rows on a rekenrek, and fingers on their hands. Now they are asked to use the structure to gain efficiency and accuracy in counting by choosing when to count by tens or by ones.

In topic C, students learn about pattern and structure to meaningfully master the count to 100. Through examination of math tools, students find that every time they make a new group of 10, they hear a number said when counting by tens: ten, twenty, thirty, forty .... Between each of those decade words is a steady pattern in the ones place, a familiar segment of the count sequence: numbers 1 through 9. Students catch on to the fact that number words after 20 can be formed easily by pairing a decade word with a number word *one* through *nine*.

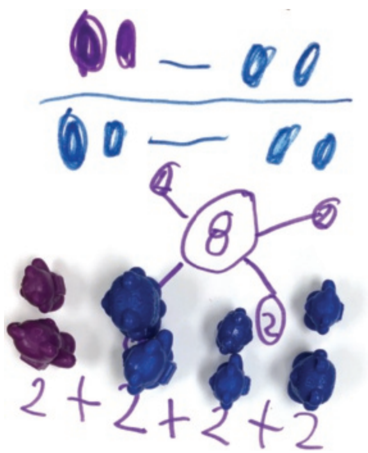


The prevalence of choral counting throughout this topic furthers awareness of pattern and structure. Counting in unison with the teacher as recorder provides access to the above grade level content of recognizing numbers to 100 in print. Students note the number patterns and use them to make observations about what changes and stays the same in the digits of a selected counting sequence. In doing so, they develop an appreciation of the repetition and logic of the base-ten number system. Students finish topic C with a strong place value foundation for writing, composing, decomposing, and comparing numbers to 120 in grade 1.

Progression of Lessons

Lesson 13

Organize, count, and represent a collection of objects.



I can use groups to help me count and record.

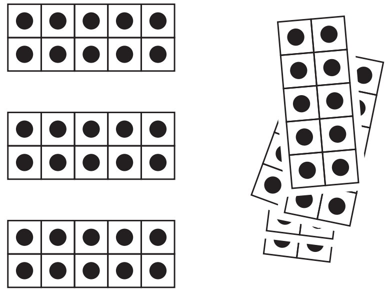
Lesson 14

Count by tens.

Counting by tens is faster than counting by ones.

Lesson 15

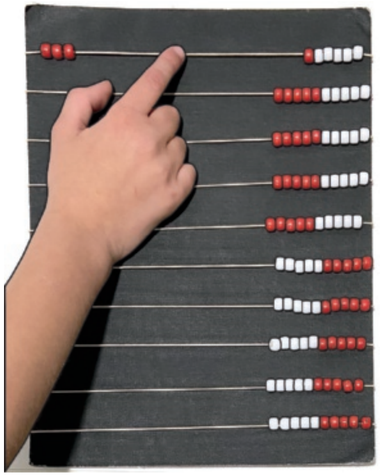
Count by tens by using math tools.



Some math tools help me see 10 quickly.

Lesson 16

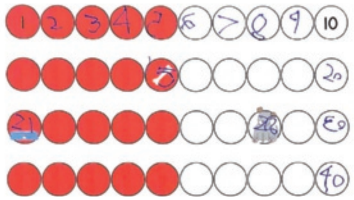
Use the structure of ten to count to 100.



I can count by tens to find what number comes next.

Lesson 17

Use patterns in the number sequence to count by ones within 100.



The numbers 1–9 repeat as we count.

Lesson 18

Count within and across decades when counting by ones, part 1.

50					55

The next number is 1 more. The number before is 1 less.

Lesson 19

Count within and across decades when counting by ones, part 2.

55					60	

At 60, the pattern of 1–9 starts again: 61, 62, 63, … , 69.

13

LESSON 13

Organize, count, and represent a collection of objects.

Observational Assessment Recording Sheet

Student Name

Grade K Module 6
Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than, fewer than*, or the *same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to, take from, put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

This lesson invites students to count and record a collection of objects by using tools and strategies of their choice. Students demonstrate and celebrate growth with counting concepts and written recordings while teachers gather formative assessment data. Class discussion focuses on how to use groups to make counting easier.

There is no Fluency component in this lesson.

Key Question

- How can you group objects to make counting easier?

Achievement Descriptor

This lesson supports K.CC.1–5, the counting and writing numeral standards. These concepts build from the work in module 1 and get more sophisticated as the counting quantities get larger in subsequent modules. This content is intended to serve as a formative assessment and is therefore not included on summative assessments in this module.

Agenda

Launch 10 min

Learn 35 min

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

Land 5 min

Materials

Teacher

- Puppet

Students

- Counting Collection (1 per student pair)
- Work mat
- Organizing tools
- Recording Sheet (in the student book)

Lesson Preparation

- Assemble counting collections that can be sorted into groups such as red Unifix Cubes and blue Unifix Cubes. Use student work from the last counting collection (module 5, lesson 27) to determine how many objects to put in each collection.
- Decide if 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, and 10-frames.
- Place the observational assessment checklist on a clipboard for observational notes.
- Consider gathering tools and recording sheets from the counting collections students did at the beginning of the year. Show students to help them reflect on their growth.

Launch

10

Materials—T: Puppet

Students view artwork and count to find a total.

Display Faith Ringgold's *The Sunflower Quilting Bee at Arles* (1996).

Look at the artwork. Let's think about a question we could ask that begins with the words *how many*.

How many flowers are on the blanket?

How many people are in the picture?

How many leaves are on the blanket?

How many flowers are there altogether?

Let's think about the question, *How many flowers can you see on the blanket?* Show thumbs-up once you know the total.

Invite students to turn and talk about how they found the total. Listen for different ways of counting and select a student to share who notices the flowers are in groups of 5. If no one notices, then have Puppet demonstrate.

Jarod, show us how you counted 25 flowers.

I started at the top and counted this way. *(Motions across the picture.)* I counted 1, 2, 3, 4, 5. Then I realized the flowers are in groups of 5.

You saw the flowers in groups of 5, like the dot cards. Are there other groups we can see in the flowers on the blanket?

I see a group of 10.

I can put 5 and 5 together to make a group of 10.

Transition to the next segment by framing the work.

Today, we will think about how to group objects to make them easier to count.

Teacher Note

Faith Ringgold is an American painter and children's book writer and illustrator. She is well known for her quilts that tell a story, such as *The Sunflower Quilting Bee at Arles*.

In this lithograph, Ringgold honors eight important African American women who have contributed to our country's shared history. She also included one fictional woman to represent all the others who contributed to the nation's story but who are not shown individually.

Learn 35

Organize, Count, and Record

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

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

Briefly reorient students to the counting collection materials and procedure:

- Partners collaborate to count a collection.
- Each partner makes their own recording in their student book to show how the pair counted.

Present organizational tools students may choose from 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.

Circulate and notice how students organize, count, and record. Use the following questions and prompts to assess and advance student thinking:

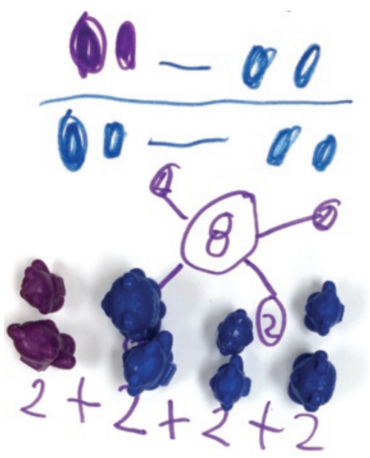
- How did you organize or group your collection? How did that make it easier to count?
- Could you try another way to organize or group your collection to make counting easier?
- How can you show your groups in your recording?
- What number sentence could you use to show your count?

Observational Assessment

☑ Watch students as they count. Check whether students are doing the following as they count:

- Accurately tracking the number of things they have counted (one-to-one)
- Saying the correct number sequence
- Saying the last number in their count to tell the total (cardinality)

Select pairs to share their counting work in the next segment. Look for samples in which objects are grouped to make counting easier. Take photographs to project, if possible. If not, set aside selected work for sharing.

Groups of 2	Groups of 10
	

Share, Compare, and Connect

Materials—T: Student work samples, Puppet

Students discuss strategies for counting and recording a collection.

Gather the class to view and discuss the selected work samples. If none of the students grouped their collection into groups of 2, 5, or 10, consider having Puppet demonstrate these ways.

Groups of 2 (Michael and Beckett's Way)

Invite a pair who organized their collection into groups of 2 to show their work.

What do you notice?

I see groups of 2.

Promoting the Standards for Mathematical Practice

Students look for and make use of structure **(MP7)** when they find a way to sort their collection and use their sort to help them count. Making use of this structure allows students to advance their thinking at their own pace.

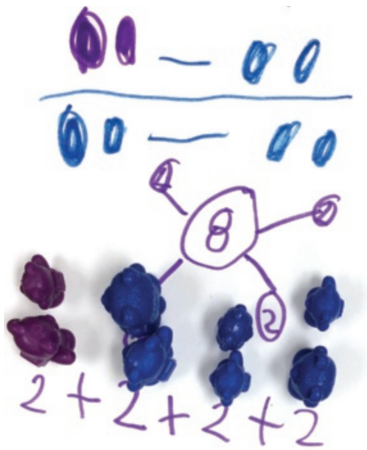
- Some students will still count all of the items, starting at 1, by using their sort to break the count into smaller chunks.
- Other students will begin to incorporate principles of counting on, noticing that they can count one group all at once, "20," and continue to count the other group "21, 22, … , 32."

The top has 4. The bottom has 4.

There are 6 blue bears and 2 purple bears.

They wrote a number sentence.

I see a number bond. 8 is the total.



Michael and Beckett, how did you organize your collection?

We put them in groups of 2.

How did making groups of 2 help you count?

It helped because then we could count by twos. 2, 4, 6, 8

How else could we use these groups to help us count?

There are 4 at the top. We could count from 4.

Let's start our count from 4.

Fooouuur, 5, 6, 7, 8

How do the groups help us count?

We didn't have to start at 1. It was faster to count.

Groups of 10 (Ilyas and Sofia's Way)

Invite a pair who organized their collection into groups of 5 or 10 to show their work.

Ilyas and Sofia, how did you organize your collection?

We made groups of 5.

How did you use groups of 5 to help you count?

We put 2 fives together to make 10. Then we counted by tens.

What bigger group did Ilyas and Sofia make with their fives?

They made groups of 10.

Teacher Note

When you notice errors in grouping, help students attend to precision by asking questions such as the following:

- What do you notice about this group?
- Do all the groups have 5?
- How could we fix it?

How do you think making groups of 10 helped them count?

They didn't have to start at 1.

Counting by tens is fast. They have a lot of beans in their collection.

Ask students to return to their collection. Have them try to find groups of 10 and use them to count.

Land 5

Debrief 5 min

Materials—T: Student work

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

How did putting your collection into groups help you count?

It was faster. If I had a group of 10, I didn't have to count each one.

How did math tools help you count?

The carton helped me make groups of 10.

I used 10-frames because they are like the carton. If it's full, then it is 10.

I lined things up on the number path. That way I make sure to count everything, and I only count it one time. The last number tells me how many.

How has your counting changed this year?

I can put things in groups and count from a bigger number.

I can count really big collections now.

It's easier to count when objects are organized. Now I'm good at organizing.

Teacher Note

In *One Hundred Angry Ants* by Elinor J. Pinczes, 100 ants group themselves in different ways in their effort to get to the picnic as quickly as possible. Consider reading this book aloud before or after this lesson.

UDL: Action & Expression

Support students in monitoring their progress. Land offers an opportunity for students to reflect on their overall experience with counting collections at the end of the school year. In addition to tools and strategies, consider reflecting on growth in terms of cooperation, maturity, stamina, and improvements in drawing and writing.

14

LESSON 14

Count by tens.

Observational Assessment Recording Sheet

Student Name

Grade K Module 6
Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
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K.Mod6.AD7	**Solve** *add to*, *take from*, *put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

Students make rekenrek bracelets with exactly 10 beads. They use their bracelets as tools to count by ones and tens. This lesson reinforces the efficiency of counting by tens rather than ones in certain situations.

Key Question

- When is counting by tens helpful?

Achievement Descriptor

K.Mod6.AD1 **Count** to 100 by ones and tens. (K.CC.A.1)

Agenda

Fluency 10 min

Launch 10 min

Learn 25 min

- Make Rekenrek Bracelets
- Count by Ones and Tens
- Problem Set

Land 5 min

Materials

Teacher

- Chart paper
- Rekenrek

Students

- 5 + *n* Sprint (in the student book)
- Pony beads (5 red, 5 white)
- Pipe cleaners
- Container (e.g., resealable plastic bag or bin)
- Student book

Lesson Preparation

- Consider tearing out the Sprint pages in advance of the lesson.
- Assemble containers that have a pipe cleaner and different ratios of red and white pony beads so each student has access to at least 5 red and 5 white beads.

Fluency

10

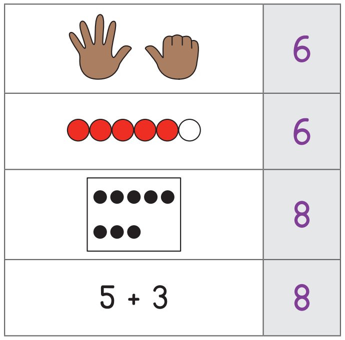
Sprint: 5 + *n*

Materials—S: 5 + *n* Sprint

Students add 5 and another number to build addition fluency within 10.

Read the instructions to students and have them complete the sample problems.

Write the total.



Direct students to Sprint A. Frame the task.

I do not expect you to finish. Do as many problems as you can, your personal best.

Take your mark. Get set. Think!

Time students for 1 minute on Sprint A.

Stop! Underline the last problem you did.

I'm going to read the answers. As I read the answers, call out "Yes!" and mark your answer if you got it correct.

Read the answers to Sprint A quickly and energetically.

Count the number you got correct and write the number at the top of the page. This is your personal goal for Sprint B.

Celebrate students’ effort and success.

Lead students in one fast-paced and one slow-paced counting activity, each with a stretch or physical movement.

> **Point to the number you got correct on Sprint A. Remember this is your personal goal for Sprint B.**

Direct students to Sprint B.

> **Take your mark. Get set. Improve!**

Time students for 1 minute on Sprint B.

> **Stop! Underline the last problem you did.**

> **I’m going to read the answers. As I read the answers, call out “Yes!” and mark your answer if you got it correct.**

Read the answers to Sprint B quickly and energetically.

> **Count the number you got correct and write the number at the top of the page.**

> **Stand if you got more correct on Sprint B.**

Celebrate students’ improvement.

Teacher Note

Count forward by ones from 85 to 95 for the fast-paced counting activity.

Count backward by ones from 95 to 85 for the slow-paced counting activity.

Launch 10

Materials—T: Chart paper

Students chorally count by ones to 10 and by tens to 100.

Post a sheet of chart paper in landscape orientation.

Invite students to chorally count by ones starting at 1. Guide the class to count with one unified voice. Encourage students to watch the marker carefully, without counting too quickly or slowly, as you record the count.

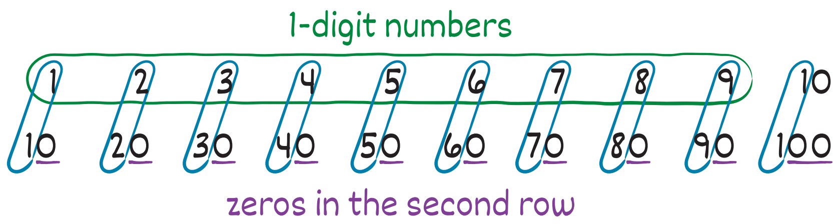
Record up to 10 in the first row, leaving ample space around each number to record patterns and connections that students notice.

Alert the class that the count pattern is about to change. Invite students to chorally count by tens starting at 10. On the left side of the paper, begin a second row with 10. Continue to record the count up to 100. Consider recounting the bottom row the Say Ten way.

Invite students to share what they notice about the two counts. Use any combination of the following questions to facilitate discussion and elicit student observations:

- What do you notice?
- What changes in the count? What stays the same?
- What is the same and different between the two rows?

As needed, give students the opportunity to come up to the chart and point to help explain what they see. Use different-color markers to record patterns and connections students notice. Each class chart will be unique based on student responses.



Transition to the next segment by framing the work.

Today, we will practice counting by ones and by tens as we make rekenrek bracelets.

Language Support

As students share, revoice their responses by using precise terminology such as *digit*, *number*, or *tens*.

For example, if a student says, "The numbers in the top row go in order but the second row skips numbers," point to the relevant part of the chart and revoice as "Yes, the numbers in the top row don't skip any numbers. In the bottom row we are skip-counting by tens."

Teacher Note

Students may notice the following about the numbers:

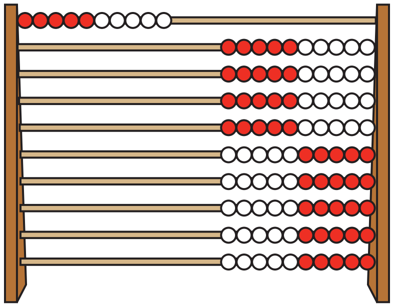
- The numbers 1–9 have one digit, and the rest of the numbers have two digits.
- The numbers in the second row all have zeros.
- As you move down each column, the single digit in the top row is in the tens place in the second row.
- The second row skip-counts by ten.

Learn 25

Make Rekenrek Bracelets

Materials—T: Rekenrek; S: Pipe cleaner, pony beads, container

Students reason about not enough or extras to make rekenrek bracelets with exactly 10 beads.



Invite students to make rekenrek bracelets. Show the class a rekenrek.

A rekenrek bracelet looks just like a row of the rekenrek. *(Point.)* How many beads do you need to make a rekenrek bracelet?

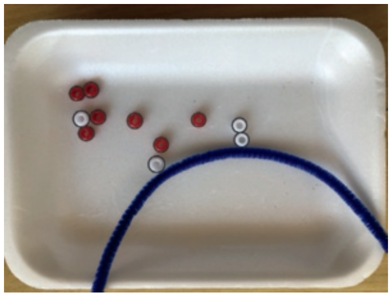
10

I heard that we need 10 beads. Can they be 10 beads of all different colors?

No.

Would it match if I made a pattern like red, white, red, white, red, white?

No.



Give students a chance to describe how the colors should be organized, emphasizing that there are 5 red beads and 5 white beads in a row.

Distribute a container with one pipe cleaner and 7–15 pony beads to each student. Containers should have different ratios of red to white beads, so that every student either needs red or white beads or has extra beads to share. See the examples.

Look at your materials. Quietly decide if you can make a bracelet that has 10 beads, 5 red and 5 white.

Teacher Note

Consider making a loop at the end of each pipe cleaner before distributing them to students. It keeps the beads on the bracelet and makes fastening the bracelet easier at the end.

Help students give away or ask for more beads so that everyone has 5 red beads and 5 white beads. Collect extra beads.

How can we organize our beads to be sure we have 5 red and 5 white?

We could put them in a line with all the red beads and white beads together.

Put them in 5-groups with the red beads on top and the white beads on the bottom.

Choose an organization strategy to make sure you have the right number of red and white beads.

Once students confirm, invite them to make a rekenrek bracelet by stringing the beads onto the pipe cleaner. Anticipate that students will need help to fasten the ends of the bracelet.

Count by Ones and Tens

Materials–S: Rekenrek bracelets

Students count bracelets by ones and beads by tens.

Gather students with their completed bracelets. Ask the class to help inventory the bracelet materials they used so that the materials can be reordered for next year's class.

What do we need to count?

We need to count the bracelet strings.

We also need to count all the beads.

Let's count the bracelet strings first. Stand up with your bracelet.

Let's go around the room and count the bracelet strings. After we count your string, sit down.

Teacher Note

The mathematical purpose of the bead exchange is to help students think about how to make 5 and 10. Do they need more? How many more? Do they have extras? How many extras?

Organize the bead exchange to fit your classroom. For example, students may be able to complete the exchange independently at tables. If more teacher guidance is needed, consider using the following statements:

- Stand if you need more beads to make 10. Use your fingers to show how many more beads you need.
- If you are sitting, you either have 10 beads or some extras. If you have extras, put them in your hand.
- Take your extra beads and give them to someone who needs more to make 10.

Begin the choral count by pointing to a student. Continue around the room until the bracelet strings are counted.

1 string, 2 strings, 3 strings, …

Now let’s count the beads. Can we count the beads the same way we counted the bracelet strings?

I think maybe yes.

There are more beads.

No, because there is only 1 string but there are 10 beads.

Counting by ones would be very slow. Do we know another way to count that could help?

Counting by tens—we know how to do that.

Stand up with your bracelet. Let’s count again, but this time we will count by tens. After we count your beads, sit down.

Start the choral count with a different student. Expect to support students with the count across 100, and across 200 if needed. Continue around the room until all the beads are counted.

10 beads, 20 beads, 30 beads, …

Turn and talk: Why did we count the bracelet strings and the beads differently?

If time permits, have small groups of students put their bracelets together and count their beads by ones and by tens.

Problem Set

Ask students to turn and tell a partner how many dots are in each group.

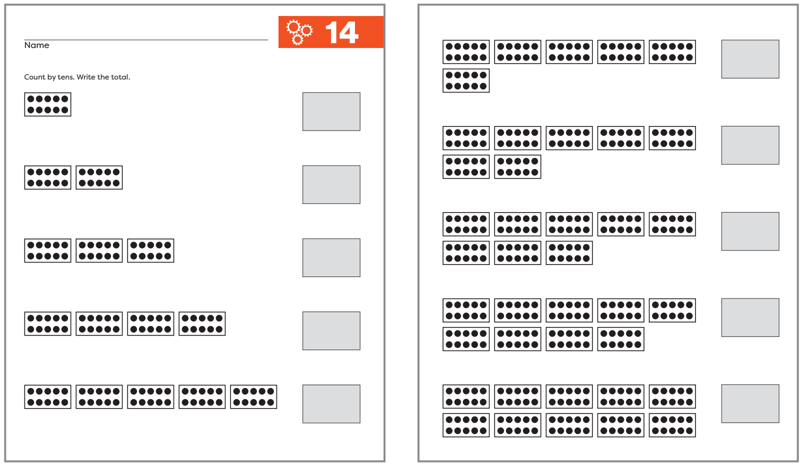
For each problem, students count by tens (ten, twenty, thirty, … , one hundred) and write the number. Consider chorally counting the Say Ten way (1 ten, 2 ten, 3 ten, … , 10 ten) to reinforce place value concepts.

Promoting the Standards for Mathematical Practice

As students take inventory of the bracelet strings and the beads, they attend to precision **(MP6)**. Students are precise as they think about which part of the bracelet they’re counting and whether to count by ones or tens when counting that part.

Naming what’s being counted as a unit (e.g., 1 string, 2 strings, … and 10 beads, 20 beads, …) draws attention to the precision needed. This precision becomes increasingly important in later grades when students are introduced to different place value and measurement units.

Post the choral count from Launch to support students in writing the numerals.



UDL: Representation

Highlight patterns and big ideas in the Problem Set. Have students turn their Problem Set sideways to make connections to number stairs. Bring out the 5-group configuration on the second page by having them place a bean on each 10-frame. Relate 6 beans to 6 tens to 60, for example.

Observational Assessment

☑ Observe students as they complete the Problem Set.

- Can students say the correct number sequence to 100 by tens?

Land 5

Debrief 5 min

Materials–T: 2 rekenrek bracelets; S: Rekenrek bracelet

Objective: Count by tens.

Choose two students to come to the front of the class with their bracelets. Hold two other bracelets in your hands.

Lev and Bar are going to count the beads on their bracelets by tens. I am going to count my beads by ones. Watch us.

Count the beads on your bracelets by ones while the two students quickly count the beads on their bracelets by tens.

We each counted 20 beads. Why did Lev and Bar finish counting so fast?

They counted by tens.

Counting by tens is faster than counting the beads 1 at a time.

When is counting by tens helpful?

When we have a lot of things to count it's faster.

When the things we are counting are in groups of 10.

Invite students to think–pair–share about counting the beads.

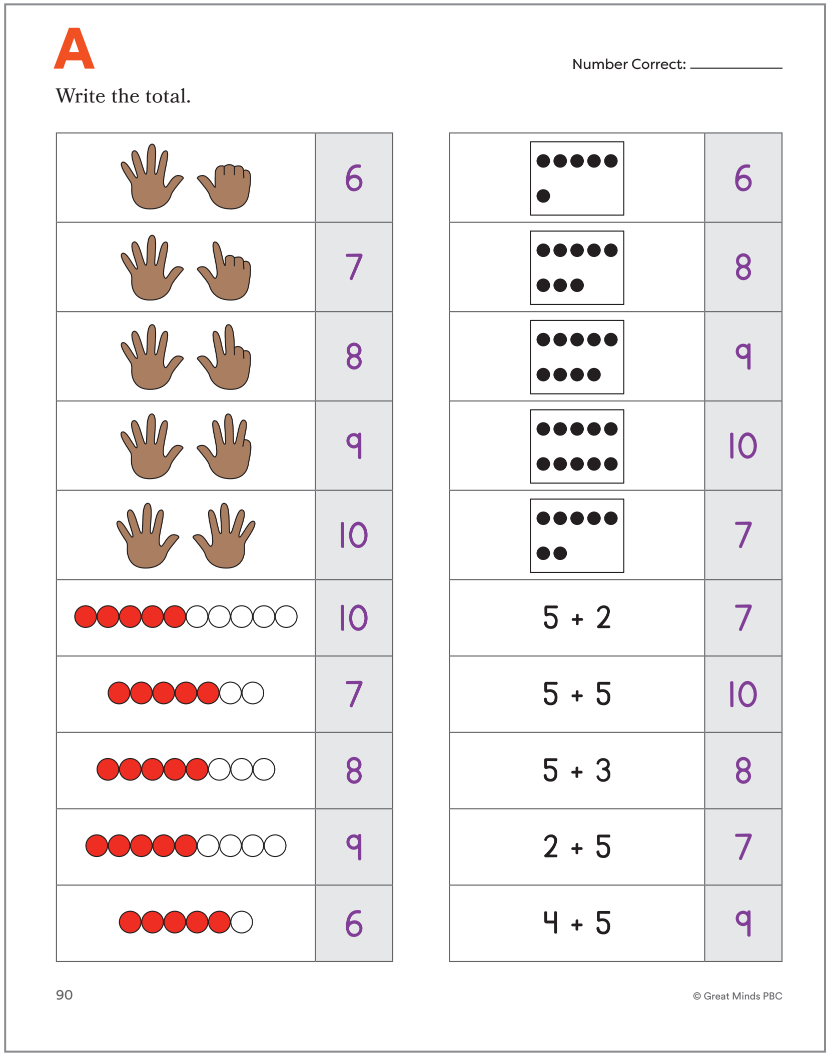
How would you count if there were 7 beads on each bracelet?

That's hard. I would count them 1 at a time.

I would count by fives first and then count the extras.

Sample Solutions

Expect to see varied solution paths. Accept accurate responses, reasonable explanations, and equivalent answers for all student work.



A

Number Correct: ________

Write the total.

	6		6
	7		8
	8		9
	9		10
	10		7
	10	5 + 2	7
	7	5 + 5	10
	8	5 + 3	8
	9	2 + 5	7
	6	4 + 5	9

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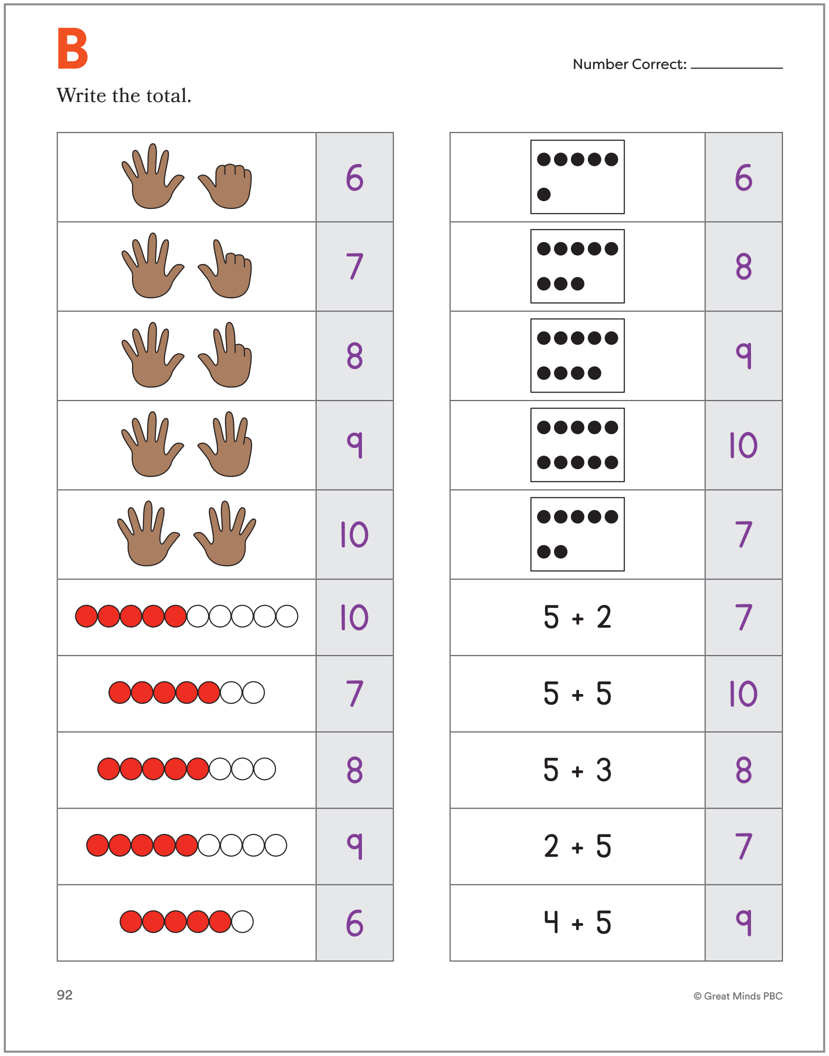

B

Number Correct: ________

Write the total.

	6		6
	7		8
	8		9
	9		10
	10		7
	10	5 + 2	7
	7	5 + 5	10
	8	5 + 3	8
	9	2 + 5	7
	6	4 + 5	9

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15

LESSON 15

Count by tens by using math tools.

Observational Assessment Recording Sheet

Student Name

Grade K Module 6
Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than, fewer than,* or the *same number as,* e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to, take from, put together,* and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

Students search for math tools that allow them to easily see and count by tens. They model numbers by using ones or tens and decide which unit to use by thinking about the efficiency and precision of each type of counting. A Math Past exploration of infinity appeals to students' curiosity about counting beyond 100.

Key Question

- How do you decide whether to count by tens or ones?

Achievement Descriptor

K.Mod6.AD1 **Count** to 100 by ones and tens. (K.CC.A.1)

Agenda

Fluency 10 min

Launch 5 min

Learn 25 min

- Scavenger Hunt
- Show Me
- Problem Set

Land 10 min

Materials

Teacher

- Chart paper
- Mini 10-Frame cards (in the teacher edition)
- Rekenrek
- Math Past module resource (in the teacher edition)

Students

- Assorted math tools
- Two-color beans (9)
- Mini 10-Frame cards
- Two-Hands Mat (in the student edition)
- Student book

Lesson Preparation

- Gather assorted math tools for a scavenger hunt. Use tools that clearly show tens such as rekenreks, rekenrek bracelets, two-hands mats, dot cards, 10-frames, 10-frame cartons, pattern blocks organized in groups of 10, and 10-sticks of Unifix Cubes. Place enough tools around the room so either student pairs or individual students can each find one. For some tools that only show 1 ten, group several together so students have opportunities to find *exactly ten* or *lots of tens*. For example, rather than setting out one two-hands mat, set out a pile of four. Students will use some of the tools they find to count by tens.
- Read the Math Past module resource in the teacher edition to prepare for the lesson.
- Copy or print the Mini 10-Frame cards. Make sure that every student has at least ten cards. Consider cutting out the cards and placing them in resealable plastic bags for easy distribution. Save for use in subsequent lessons.

Fluency 10

Sunrise, Sunset Counting

Students engage in a physical counting exercise to prepare for counting by tens or ones.

Hold your arms out in a great big circle. Pretend you are the sun! It's morning, and the sun is rising. Let me see your sunrise.

Gradually rise from a crouching position to standing on tiptoes as students do the same.

Return to a crouching position as students do the same.

Let's count to 10 as we make the sun rise. Ready?

1, 2, 3, … , 10 *(Rises from a crouching position to standing on tiptoe while counting.)*

Return to a crouching position as students do the same.

Now let's count by tens to 100 as we make the sun rise. Ready?

10, 20, 30, … , 100 *(Rises from a crouching position to standing on tiptoe while counting.)*

Divide the class in half. One side of the room will count by ones to 10. The other side will count by tens to 100. Encourage students to whisper as they rise and count, then shout the final number when they get to the top. Consider modeling the sunrise movement without counting along to support students in maintaining an even pace.

Switch roles and repeat.

Teacher Note

In this physical counting exercise, students observe the efficiency of counting by tens as compared to ones. Although they arrive at the same standing position and count at the same pace, students who counted by tens will have counted to a greater number.

Ten and Tuck

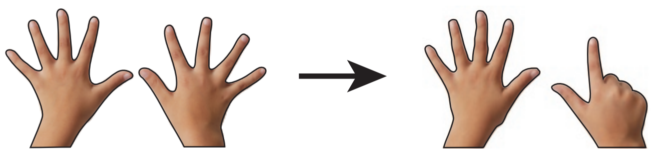
Students use their hands to represent a partner to 10 and say a related addition sentence to build fluency with partners to 10.

Show me 10.

(Shows 10 fingers)

Show me 7.

(Puts down 3 fingers)



How many fingers are up? *(Wiggle the 7 fingers that are up.)*

7

How many fingers are tucked? *(Wiggle the 3 fingers that are tucked.)*

3

I have 7. How many more to make ten?

3

Say the addition sentence with me. Ready?

7 + 3 = 10

Repeat the process with the following sequence, beginning with 10 fingers each time:

Tuck 1	Tuck 5	Tuck 4	Tuck 6	Tuck 7	Tuck 8

Offer more practice with Ten and Tuck as a partner activity. Partner A says how many fingers to tuck. Partner B says the addition sentence. Switch roles after each turn.

Launch

5

Materials—T: Chart paper

Students chorally count and use patterns to determine missing numbers in the sequence.

Post a piece of chart paper in landscape orientation.

Invite students to chorally count by ones starting at 3. Guide the class to count as one unified voice. Encourage students to watch the marker carefully without counting too quickly or slowly as the count is recorded.

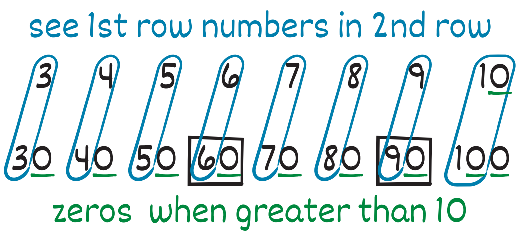
Record up to 10 in the first row, leaving ample space around each number to record patterns and connections that students notice.

Alert the class that the count pattern is about to change. Invite students to chorally count by tens starting at 30. On the left side of the paper, begin a second row with 30.

Record the count to 50 and then pause. Draw a box in the next space.

What number goes in the box? How do you know?

It's 60 because we are counting by tens: 30, 40, 50, 60.



Write 60 in the box. Begin again at 30 and count and record up to 80.

Pause at 80. Draw a box in the next space.

What number goes in the box? How do you know?

90 goes there because we are still counting by tens: 70, 80, 90.

When you write 90, you write 9 and then 0, and there's a 9 right above it, so it fits there.

Write 90 in the box. Begin again at 70 and count and record up to 100. Consider recounting the bottom row the Say Ten way.

Invite students to share what they notice about the two counts. Use any combination of the following questions to facilitate discussion and elicit student observations:

- What do you notice?
- What changes in the count? What stays the same?
- What is the same and different between the two rows?

As needed, give students the opportunity to come up to the chart and point to help explain what they see. Use different-color markers to record patterns and connections students notice. Each class chart will be unique based on student responses.

Transition to the next segment by framing the work.

Today, we will use tools to count by tens and ones.

Teacher Note

Students may notice the following about the numbers:

- The numbers 3–9 have one digit, while the rest of the numbers have two digits.
- The numbers in the second row all have zeros.
- As you move down each column, the single digit in the top row is in the tens place in the second row.
- The second row skip-counts by ten.

Learn 25

Scavenger Hunt

Materials—S: Assorted math tools

Students look for the structure of ten on math tools.

Place assorted math tools that clearly show tens around the room. Depending on the number of tools you place, consider pairing students so that everyone, or each student pair, has something to find.

Invite students to participate in a scavenger hunt. Designate which areas of the classroom are part of the hunt and which are not.

Let's look for tools that help us count by tens.

Consider pretending to search as if by looking through binoculars. Invite students to do the same.

Language Support

Use gestures to communicate the distinctions between exactly ten and lots of tens.

- Show 10 fingers to communicate *exactly ten.*
- Repeatedly flash 10 fingers to show *lots of tens.*

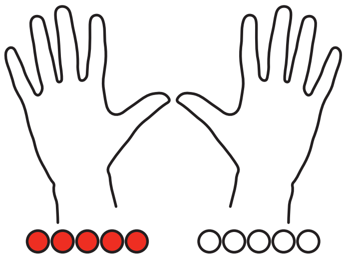
You're looking for a certain kind of math tool: One that makes it easy to see 10. Show me 10 on your hands.

(Shows 10 fingers)

The tool you find could show exactly 10, or it could show lots of tens.

Find one kind of tool and bring it back to the meeting area.

Be prepared for unexpected finds and accept them as long as students have solid justification.



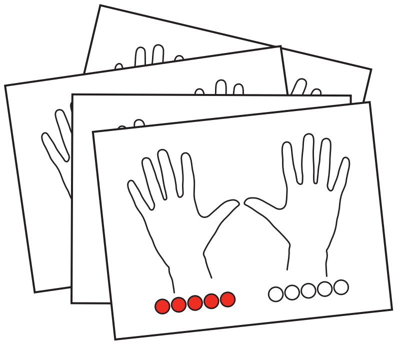
Have students demonstrate to a partner how to use their tool to count by tens. Circulate and select a few students or student pairs to share.

Shu'aib, how does the two-hands mat make it easy to see 10?

There are two hands and you have 5 fingers on each hand. 5 and 5 makes 10.

How could we use this tool to count by tens?

You need a few of them. Then you can count like this: 10, 20, 30, 40. *(Sets down one mat at a time.)*



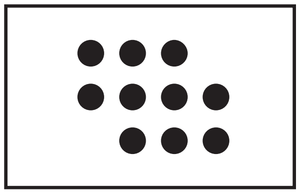
I heard counting to 40. What does 40 tell us about?

40 fingers

40 dots

Invite other students to share their tools. Close this segment by introducing a nonexample.

Hold up a dot card in which 10 is not as easily recognizable.



Is it easy to see 10 on this tool?

No.

Promoting the Standards for Mathematical Practice

Students choose appropriate tools strategically **(MP5)** when they search for a tool that makes it easy to see 10. Specifically instructing students to look for a tool with this property will help them choose tools more strategically when problem solving in the future.

The discussion in this segment is designed to highlight MP5.

UDL: Representation

Presenting a nonexample provides a contrast to the other tools. Noticing characteristics that *do not* make it easy to see 10 supports students in defining what does. The contrast draws out the key features of color, linear arrangement, and equal groups that make it easy to see 10.

What makes it hard to see ten?

The dots are all the same color.

It's hard to find a group of 5 to help you figure out the rest.

They don't have the same number in each row.

I found a 3 and a 4 and another 3. It's hard to add those numbers in your mind.

Show Me

Materials—S: Mini 10-Frame cards, two-color beans

Students count out a group of objects by tens or ones to match a number.

Show mini 10-frame cards.

This tool shows 10 easily.

Turn and talk: How are the 10-frame cards the same as and different from this tool? *(Wiggle fingers.)*

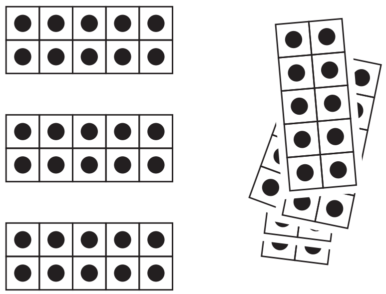
Listen for responses that mention similarities, such as groups of 5 and 10, and differences in representation, such as dots and fingers.

Show me 3 beans. Let me hear you count them.

1, 2, 3 *(Moves beans one at a time.)*

When you counted the beans, did you count by ones or by tens?

I counted by ones.



Show me 30 dots. Let me hear you count them.

10, 20, 30 *(Moves cards one at a time.)*

When you counted the dots, did you count by ones or by tens?

I counted by tens.

Show me 5.

1, 2, 3, 4, 5 *(Moves 5 beans.)*

Show me 50.

10, 20, 30, 40, 50 *(Moves 5 cards.)*

Did you count to 50 by ones or by tens?

Tens

Why did you count by tens to 50?

Because 50 is a big number.

50 is a number you say when you count by tens.

Because there are 10 dots on a 10-frame.

You don't need to count each one since you already know there are 10. That would take too long.

Have students continue to work with 10-frame cards and beans, or switch to a preferred tool for the following sequence: 3, 30, 7, 70, 60, 6, 100, 10. Pause occasionally to ask how students decided to count by tens or ones.

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

How do you decide whether to count by tens or ones?

I think about if it is a small number or a big number. Small numbers are easy to count by ones. Big numbers are easier to count by tens.

I listen for a counting-by-tens number. 60 is one of them. They are mostly the numbers you write with zeros. Then you should count by tens.

I count by ones when the numbers are less than 10.

Problem Set

Read the directions for the first page. Ask students to point to a group they will count by ones. Then have them point to a group they will count by tens. If necessary, clarify that any of the pictured objects could be counted by ones. Students should make choices about how to count.

Read the directions for the second page and release students to work independently.

Teacher Note

Anticipate that students may count the dots by ones, a valid but sometimes error-prone choice.

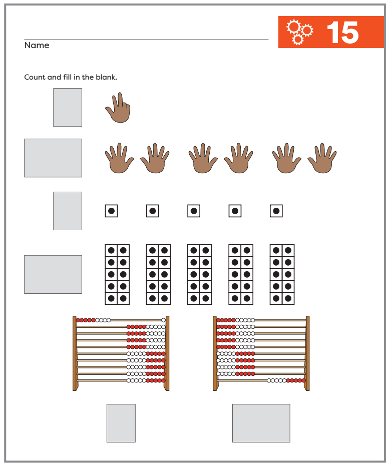
If a student makes an error when counting by ones, use this opportunity to highlight both the efficiency and accuracy of counting by tens.

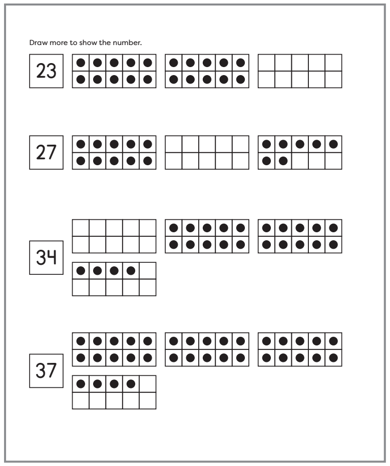
Differentiation: Challenge

Pose the following problem to early finishers:

The students in pre-kindergarten are making handprints. 7 students put their handprints on a poster. How many fingers are on the poster?

If students use fingers to track the count, ask them to verbalize what they count: the hands or the fingers, the tens or the ones.





Observational Assessment

☑ Observe students as they complete the Problem Set.

- Can students say the correct number sequence when they count by tens and ones?

Land 10

Debrief 10 min

Materials—T: Rekenrek

Objective: Count by tens by using math tools.

Show the rekenrek and have students count by tens to 100.

10, 20, 30, … , 100.

Do numbers stop at 100?

Anticipate that some students may be unsure.

What is the biggest number you can think of?

1 million

97 billion

Teacher Note

Students may use nonsense units such as *bazillion* or *kajillion* when naming the biggest number they know. This commonly used slang describes an unspecified large number. Consider sharing a list of real place value units if students are very interested in large numbers.

What if you added all of those numbers together?

You'd get an even bigger number.

Could we add 1 to that really big number?

Yes.

Continue with this discussion until it becomes evident that students will not be able to determine the greatest number possible. It is always possible to add 1 to any number, no matter how large.

Very, very long ago in a place called India, mathematicians thought a lot about how there is no greatest number. They knew you could keep counting forever and thought about how to show that in their math. We call this idea infinity.

Display the iconic images of India to help establish a sense of place.

Another mathematician, from not as long ago in a place called England, decided how to write infinity.

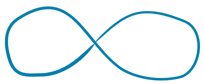
Display the iconic images of England to help establish a sense of place.

Write the infinity sign, ∞.

This is the infinity sign. What sign is it?

Infinity

Trace it in the air with your finger. Imagine it's a path or a track that you are walking, running, or skating on. Does it ever end?



No, you just keep going around and around and around.

Math Past

The Math Past resource includes more information about the concept of infinity and how people came to understand numbers and counting. Consider sharing other information from the resource with students.

While tracing, have students rote-count by millions or the highest unit mentioned, such as billion or trillion.

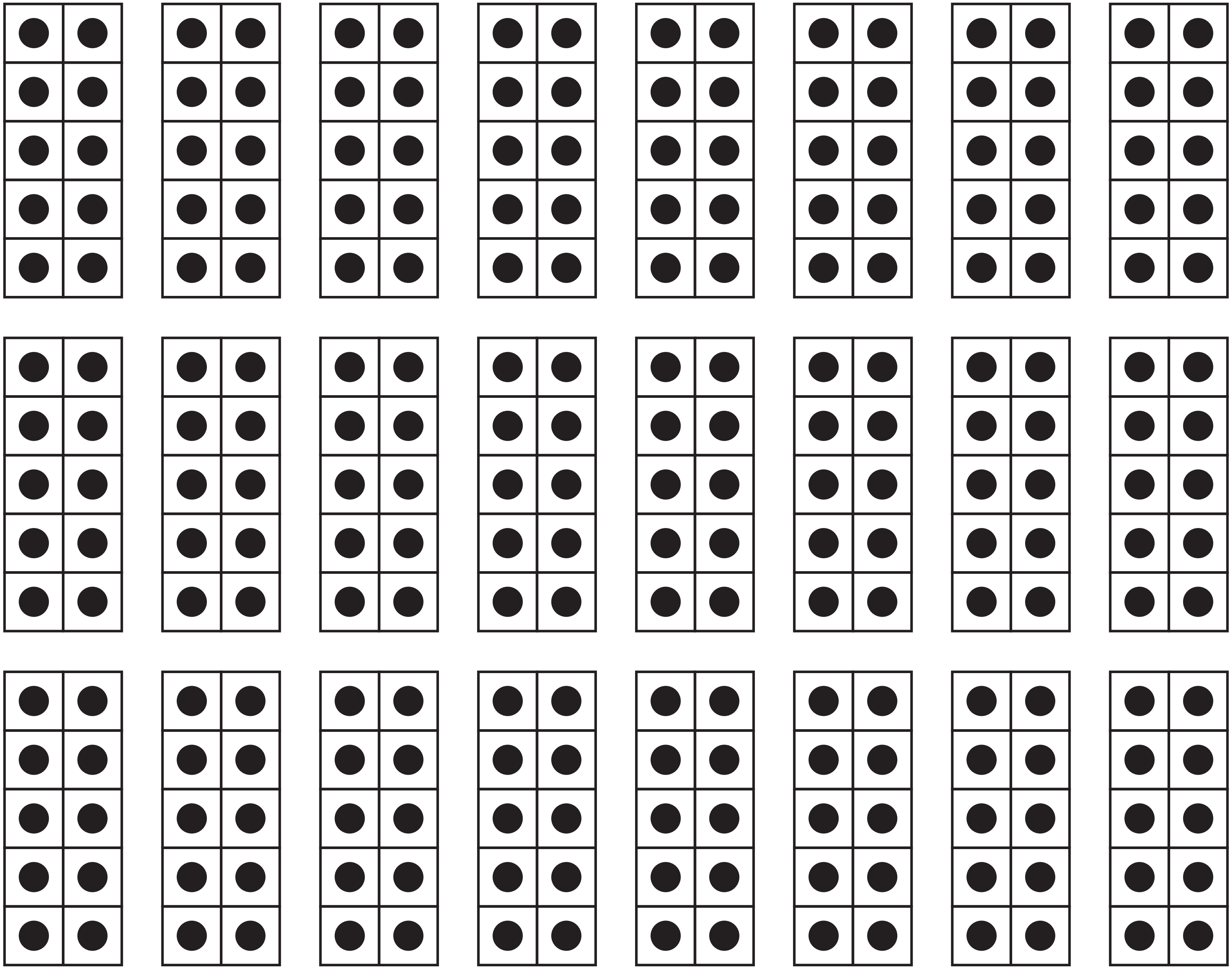
Someone mentioned millions. Let’s keep tracing while we count by millions.

1 million, 2 million, 3 million, ... *(Traces.)*

The repetitive motion of air tracing is intended to kinesthetically illustrate that numbers continue indefinitely. Count long enough to leave that impression, but not so long that students lose stamina.

Numbers never end. They just keep going and going. We’ll never be able to count to infinity, even if we kept counting all day and all night.

Since no number we can write down is as big as infinity, mathematicians use the infinity sign.



16

LESSON 16

Use the structure of ten to count to 100.

Observational Assessment Recording Sheet

Student Name

Grade K Module 6

Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than, fewer than*, or the *same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to, take from, put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

The activities in this lesson are presented as stations. Students practice counting to 100 by using what they know about counting by tens to help cross each decade number.

Key Question

- How can you use what you know about counting by tens to help you count by ones to 100?

Achievement Descriptors

K.Mod6.AD1 **Count** to 100 by ones and tens. (K.CC.A.1)

K.Mod5.AD1 **Count** forward from a number other than 1. (K.CC.A.2)

Agenda

Fluency 5 min

Launch 5 min

Learn 35 min

- Introduce Stations
- Rekenrek Counting
- Number Path Game
- 10-Frames and Beans

Land 5 min

Materials

Teacher

- Chart paper
- Choral counting chart (from lesson 3)

Students

- Rekenrek paper (in the student book)
- 100-bead rekenrek (1 per student pair)
- Number Path to 20 (from lesson 4, 1 per student pair)
- 6-sided die (1 per student pair)
- Unifix® Cube
- Work mat
- 10-Frames removable (in the teacher edition)
- Mini 10-Frame cards (in lesson 15, 1 per student pair)
- Two-color beans (10)
- Student book

Lesson Preparation

- The rekenrek paper must be torn out of the student book for Fluency. Consider whether to prepare this material in advance or have students tear it out during the lesson. Student-made rekenreks from module 4 can be used as an alternative.
- Copy and cut out enough 10-Frames removables so that each student has one. Save for use in subsequent lessons.
- Designate three spaces in the classroom for three stations. The class divides into three groups and groups rotate through each station.
- At the Rekenrek Counting station, place enough 100-bead rekenreks for each student pair to have one. If there are not enough, then partners may use rekenrek paper instead.
- At the Number Path Game station, place number paths and dice so that each pair of students has one of each. The number path from lesson 4 may be reused. You may also print or copy more challenging number paths from the teacher edition. Set out enough Unifix Cubes for each student to have one. Use two colors so partners can have different color cubes.
- At the 10-Frames and Beans station, students need a work mat, 10 two-color beans, 10 Mini 10-Frame cards (from lesson 15), and a 10-Frame (in the teacher edition). Consider placing these materials in a resealable plastic bag. Reserve a set of materials for demonstration. Save for use in subsequent lessons.
- Save the choral counting chart made in this lesson for use in lesson 17.

Fluency 5

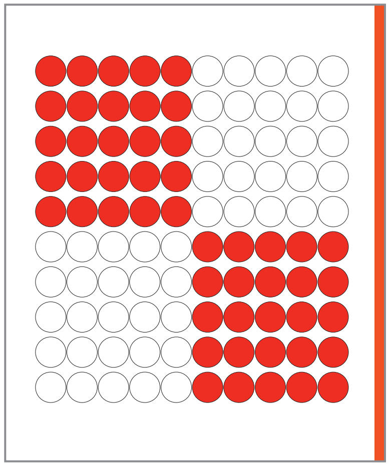
Counting on the Rekenrek

Materials—S: Rekenrek paper

Students utilize the structure of five and ten to build fluency with counting to 100.

Make sure each student has a rekenrek paper.

Form student groups. Each group will take a turn counting a row on the rekenrek in a whisper voice. When they get to the end of the row, they shout the number. Tell students to touch and count the beads on their own rekenrek to follow along. Consider softly clapping to support students in maintaining an even pace.



- Group A: 1, 2, 3, ... , 9 *(Whispers.)*, 10 *(Shouts.)*
- Group B: 11, 12, 13, ... , 19 *(Whispers.)*, 20 *(Shouts.)*
- Group C: 21, 22, 23, ... , 29 *(Whispers.)*, 30 *(Shouts.)*

Continue until each group has counted a decade. Consider incorporating movement by having students jump up when they shout the number. If interest or stamina fades, pause at the nearest decade.

Next, divide the class in half. Group A counts the red beads, and group B counts the white beads. Remind students to touch and count to follow along.

- Group A: 1, 2, 3, 4, 5
- Group B: 6, 7, 8, 9, 10
- Group A: 11, 12, 13, 14, 15
- Group B: 16, 17, 18, 19, 20

Continue to the selected number range. Consider incorporating movement by having groups stand or sit when it is their turn to count. If interest or stamina fades, pause at the nearest decade.

UDL: Engagement

Select a sequence based on the needs of the class. For example, count 1 through 40, or 41 through 100.

Launch

5

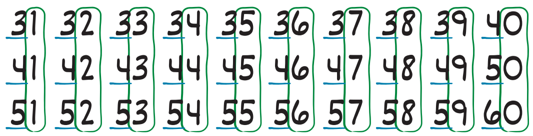
Materials—T: Chart paper, choral counting chart from lesson 3

Students chorally count by ones from 31 to 60 and notice patterns.

Post a piece of chart paper in landscape orientation.

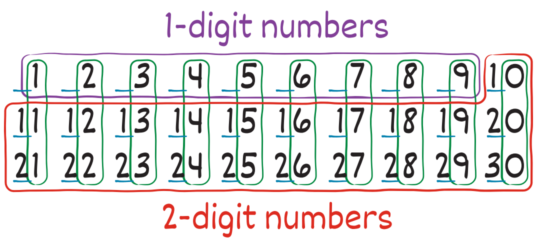
Invite students to chorally count by ones starting at 31. Remind students to watch the marker carefully and count as one unified voice as the count is recorded.

Record up to 40 in the first row, leaving ample space around each number to record patterns and connections that students notice. Begin a second row with 41.



Continue to record the count up to 60, as shown. Invite students to share what they notice about the count.

As needed, give students the opportunity to come up to the chart and point to help explain what they see. Record patterns and connections by using the same color markers that were used to make the chart in lesson 3.



Show the choral counting chart the class made in lesson 3.

Invite students to analyze the two charts. Use any combination of the following questions to facilitate discussion and elicit student observations about the two charts:

- What is the same and different about the two choral counts?
- What patterns do you notice? Do you see that happening anywhere else?
- If we keep counting, what do you think will happen?

Transition to the next segment by framing the work.

Today, we will practice counting to 100 by using other tools.

Teacher Note

In lesson 17 the recordings of choral counts from lessons 3, 16, and 17 are posted together to create a continuous count from 1 to 100. Use the same-color markers to record patterns and connections students notice for each count. Students can use the charts to look for additional patterns, to confirm how to write certain numbers, or simply to enjoy recounting.

Teacher Note

Students may notice some of the following patterns:

- As you move down each column, the digit in the ones place stays the same.
- As you move across each row, the digit in the tens place is the same until the last number.
- As you move down the last column, the numbers in the tens place follow the counting sequence 4, 5, 6.

Learn 35

Introduce Stations

Students learn procedures for station rotations.

The following three activities described in Learn are stations that groups rotate through:

- Rekenrek Counting: Partners take turns counting decades on the rekenrek.
- Number Path Game: Students move forward or backward on a number path to land on the target number.
- 10-Frames and Beans: Students practice counting to 100 and represent given numbers by using 10-frame cards and beans. This is a teacher-led station.

Take a few minutes to give directions for Rekenrek Counting and the Number Path Game.

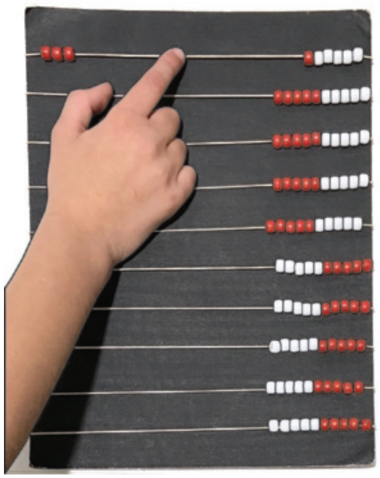
Rekenrek Counting

Materials—S: Rekenrek

Invite partners to take turns counting decades on the rekenrek. If there aren't enough 100-bead rekenreks for each pair at the station, use the rekenrek paper from Fluency.

- Partner A counts from 1 to 10. Partner B moves each bead.
- Partner B counts from 11 to 20. Partner A moves each bead.
- Partners continue to count, switching with each decade, until they reach 100.

Tell students to count on pace with the movement of each bead.



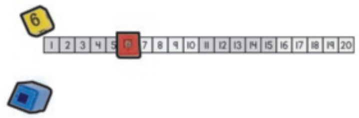
UDL: Engagement

The rekrenrek counting station fosters peer collaboration. It requires coordination and synchronicity between the voice of one partner and the hand of the other to maintain an accurate count.

Number Path Game

Materials—S: Number path, Unifix Cube, 6-sided die

Pair students. Give pairs a target number or let them select their own target number. Help students recall how the game is played.



- Partners use different-color Unifix Cubes as game pieces. They both try to get their cube to the target number.
- Partner A rolls the die and places their cube on the number they roll.
- Partner B rolls the die and places their cube on the number they roll.
- Partners take turns rolling the die and moving their cube the number of spaces that matches the roll. They may move their game piece forward or backward.
- Play continues until one partner lands on the target number.
- Play again and let the winning partner pick the new target number.

Differentiation: Challenge

Consider providing number paths with 2 decades that are more challenging than 1–20. Look in the teacher edition for removables that provide other options.

10-Frames and Beans

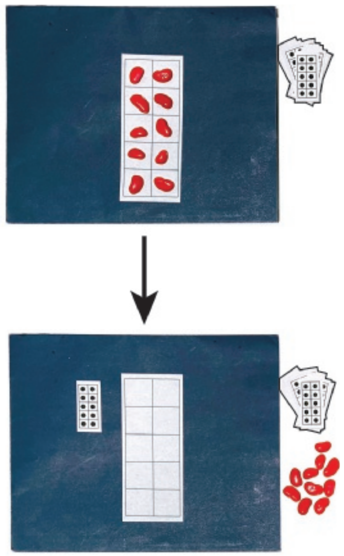
Materials—S: Work mat, 10-Frame, Mini 10-Frame cards, two-color beans

Students count to 100 and represent given numbers by using 10-frames and beans.

This is a teacher-led station. Follow the same process with each group that rotates through.

Set out a work mat and put a 10-frame on it. Place the beans and the mini 10-frame cards next to the mat. Invite students to count with you from 1 to 10 as you move the beans onto the 10-frame one at a time.

I want to keep counting, but I don't have any more beans. I'm going to use a 10-frame card to stand for the 10 beans we just counted.



Push the beans off of the mat. Place a mini 10-frame card next to the empty 10-frame.

We stopped at 10. What number comes next?

11

Invite students to count with you from 11 to 20 as you move the beans onto the 10-frame one at a time.

What can I do to keep counting? How can I show that we already counted 11 to 20?

Take another 10-frame card and put it with the first one.

Trade the beans for a 10-frame card.

Trade the beans for a mini 10-frame card. Place a bean on the empty 10-frame.

We stopped at 20. What number comes next?

21

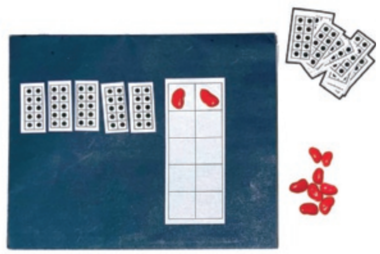
Distribute materials to each student. Invite them to count independently starting at 1 and ending at 100.

Once they finish, have students push their mini 10-frame cards and beans to the side of the mat.

I'll give you a number. Show the number by using your 10-frame cards and beans. Ready?

50. Will you use 10-frame cards, beans, or both?

10-frame cards



Now show 52. Will you use 10-frame cards, beans, or both? Why?

Both. You need 10-frame cards to show 50 and beans to show 2.

Observational Assessment

☑ Observe students as they complete the 10-Frames and Beans station.

- Can students say the correct number sequence to 100 by counting by tens?
- Can students count forward beginning at a number other than 1?

Promoting the Standards for Mathematical Practice

Students look for and make use of structure (MP7) when they use a combination of mini 10-frame cards and beans to represent numbers. Successfully representing numbers this way requires students to recognize and use the place value structure of a number.

In this activity, students are still able to see all of the ones that make up a number because the 10-frame cards show 10 ones. This lays a foundation for place value in grade 1, which requires students to represent numbers in terms of tens and ones without showing all of the ones in each ten.

Notice which students count out 50 again and which add 2 beans to the 10-frame cards already in front of them.

As time permits, continue the sequence by using 62, 40, 45, 55, 58, 68, and 69.

Land 5

Debrief 5 min

Objective: Use the structure of ten to count to 100.

What patterns do you notice when you count to 100 by using beans and 10-frame cards?

The numbers repeat over and over again. 1, 2, 3, 4, 5, 6, 7, 8, 9 again and again.

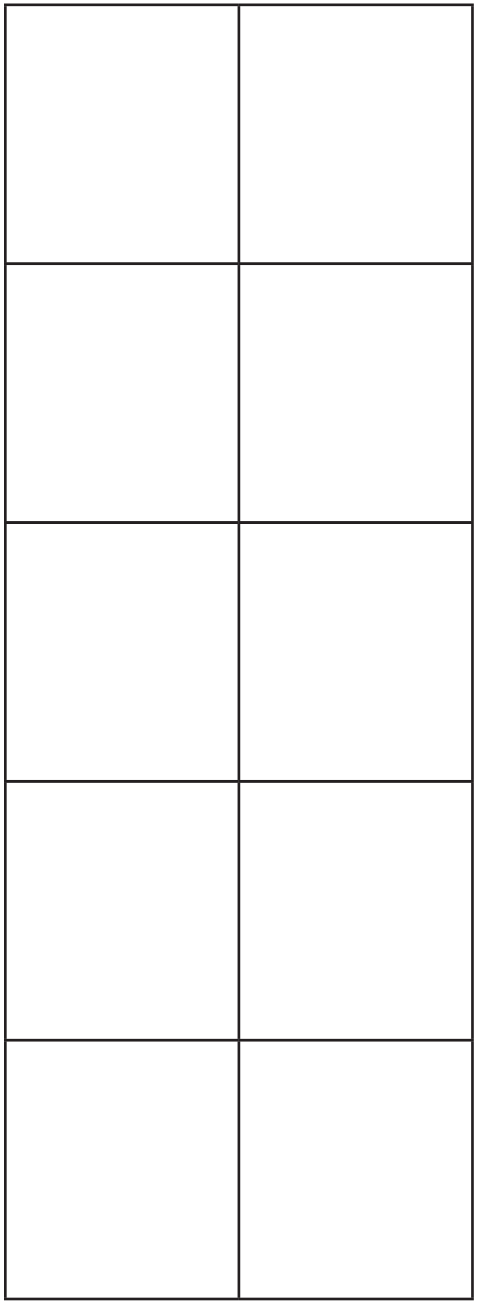
Every time we get 10 beans, we show it by adding another 10-frame card.

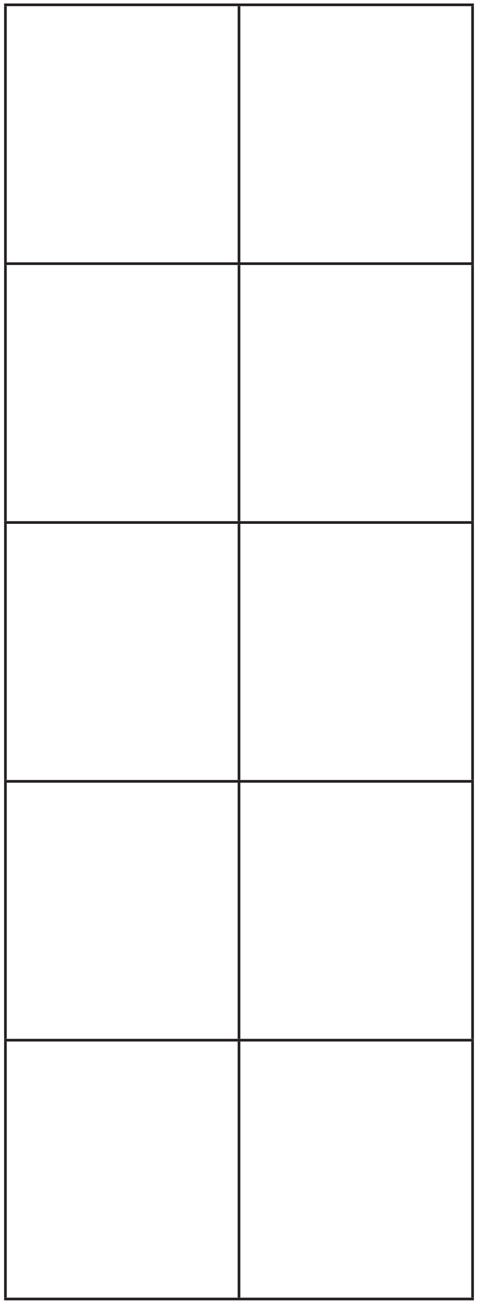
Invite students to think–pair–share about the following question.

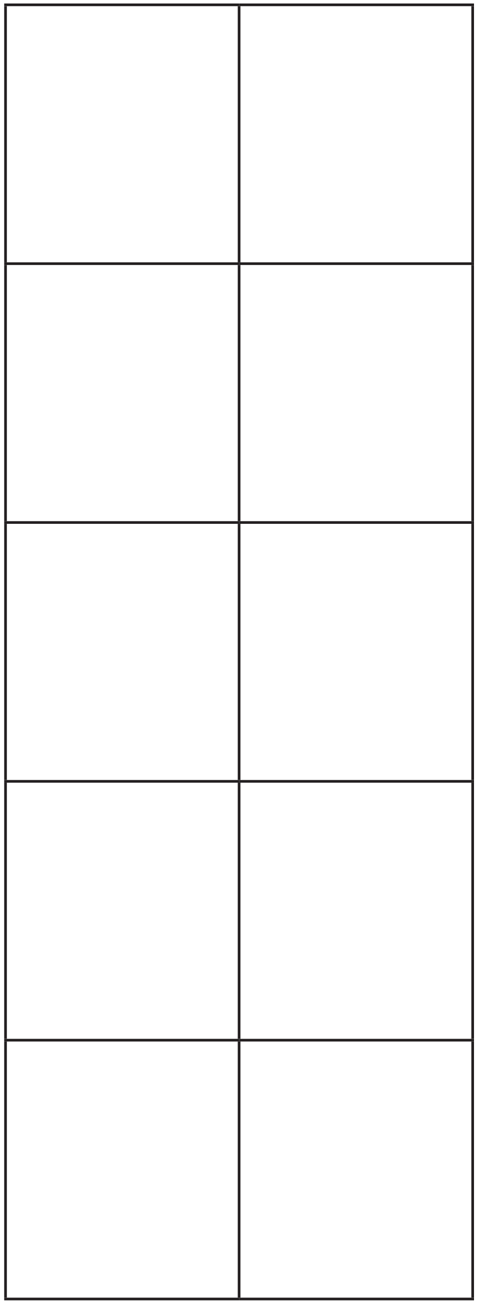
How can you use what you know about counting by tens to help you count by ones?

When I can't remember what number comes next after 59, I count by tens to see which ten comes next.

If you know counting by tens, you just add 1, 2, 3 or something like that to the end. Like I know *fifty*, so then I can just keep counting: 51, 52, 53.







1	2	3	4	5	6	7	8	9	10	*glue here*
11	12	13	14	15	16	17	18	19	20	*glue here*
21	22	23	24	25	26	27	28	29	30	*glue here*
31	32	33	34	35	36	37	38	39	40	*glue here*
41	42	43	44	45	46	47	48	49	50	*glue here*

51	52	53	54	55	56	57	58	59	60	*glue here*
61	62	63	64	65	66	67	68	69	70	*glue here*
71	72	73	74	75	76	77	78	79	80	*glue here*
81	82	83	84	85	86	87	88	89	90	*glue here*
91	92	93	94	95	96	97	98	99	100	*glue here*

17

LESSON 17

Use patterns in the number sequence to count by ones within 100.

Observational Assessment Recording Sheet

Student Name

Grade K Module 6
Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than, fewer than*, or the *same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to, take from, put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

After multiple experiences with choral counting, students notice the repetition of numbers 0–9 as they count to 100. They use this foundational place value understanding to count to 100 and order numbers in a series of stations.

Key Question

- How can the repeating pattern of numbers 0–9 help us count to 100?

Achievement Descriptors

K.Mod6.AD1 **Count** to 100 by ones and tens. (K.CC.A.1)

K.Mod5.AD1 **Count** forward from a number other than 1. (K.CC.A.2)

K.Mod6.AD3 **Represent** a group of objects with a written numeral 0–20. (K.CC.A.3)

Agenda

Fluency 5 min

Launch 10 min

Learn 30 min

- Introduce Stations
- Nearby Numbers
- 10-Frames and Beans
- Rekenrek Counting

Land 5 min

Materials

Teacher

- Chart paper
- Choral counting chart (from lesson 3)
- Choral counting chart (from lesson 16)
- Puppet

Students

- Scissors
- Glue
- Work mat (1 per student pair)
- 10-Frames removable (in lesson 16, 1 per student pair)
- Mini 10-Frame cards (in lesson 15, 1 per student pair)
- Two-color beans (10 per student pair)
- Student book

Lesson Preparation

- Designate three spaces in the classroom for three stations. The class will divide into three groups and the groups will rotate through each station.
- At the Nearby Numbers station, place enough scissors for each student to have their own pair. Student pairs can share glue if necessary. Students will need their student books at this station.
- The Problem Set removable is two pages. The number cards should be torn out and cut apart. The grid can be torn out or left in the book. Consider tearing out the number cards and cutting them apart before the lesson.
- At the 10-Frames and Beans station, pairs of students will need a work mat, 10 two-color beans, 10 Mini 10-Frame cards (in lesson 15), and a 10-Frame (in lesson 16). Consider organizing these materials into a resealable plastic bag for each student pair. Save these materials for use in future lessons.
- For the Rekenrek Counting station, students will need their student book.

Fluency

5

Fitness Counting

Students collaboratively count by ones to 100, taking turns at irregular intervals, to build fluency with counting to 100.

Select a physical exercise that can be done safely in the classroom and is accessible to all students such as squats, arm raises, swimming strokes, or jogging in place.

Select a pair of students to demonstrate according to the following procedure:

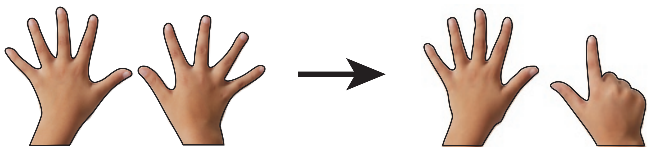
- Partner A begins at 1, doing the physical exercise while counting until the teacher gives a signal. Meanwhile partner B observes, while counting along in their mind.
- Signal for partners to switch.
- Partner B continues the count from where partner A left off and does the same physical exercise. Partner A rests and observes.
- Signal to switch again and repeat the process for 2–3 minutes, or until a pair reaches 100. Surprise students and challenge their rote counting skills by varying the length of each partner's turn. For example, a series of short counts followed by an extended one sharpens their rote counting skills.

Ten and Tuck

Students use their hands to represent a partner to 10 and say a related addition sentence to build fluency with partners to 10.

Show me 10.

(Shows 10 fingers)



Show me 7.

(Puts down 3 fingers)

How many fingers are up? *(Wiggle the 7 fingers that are up.)*

7

How many fingers are tucked? *(Wiggle the 3 fingers that are tucked.)*

3

I have 7. How many more to make ten?

3

Say the addition sentence with me. Ready?

7 + 3 = 10

Repeat the process with the following sequence, beginning with 10 fingers each time:

Tuck 7	Tuck 4	Tuck 6	Tuck 5	Tuck 2	Tuck 8	Tuck 1	Tuck 9	Tuck 10

Offer more practice with Ten and Tuck as a partner activity. Partner A says how many fingers to tuck. Partner B says the addition sentence. Switch roles after each turn.

Launch

10

Materials—T: Chart paper, choral counting chart from lesson 3, choral counting chart from lesson 16

Students chorally count by ones from 61 to 100 and notice patterns to determine missing numbers in the sequence.

Post a piece of chart paper in landscape orientation.

Invite students to chorally count by ones starting at 61 as you record the numbers. Help students recall that they should watch the marker carefully and count as one unified voice as the count is recorded.

Record up to 70 in the first row, leaving ample space around each number to record patterns and connections that students notice. Begin a second row with 71.

Pause after 80 and draw a box below 71.

61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
$\boxed{81}$	82	83	84	85	86	$\boxed{87}$	88	89	90
$\boxed{91}$	92	93	94	95	96	$\boxed{97}$	89	90	100

Language Support

As students describe how to edit numbers to form new ones, listen for colloquial use of the language of operations. For example, “take away the 7,” or “add an 8.” Revoice these ideas by using precise terminology. For example, “You’d like me to write the digit 8 so the number will be 81. Is that what you mean?” Avoid beginning a discussion about place value.

What number goes in the box? How do you know?

81 goes in the box because that's the next number you say.

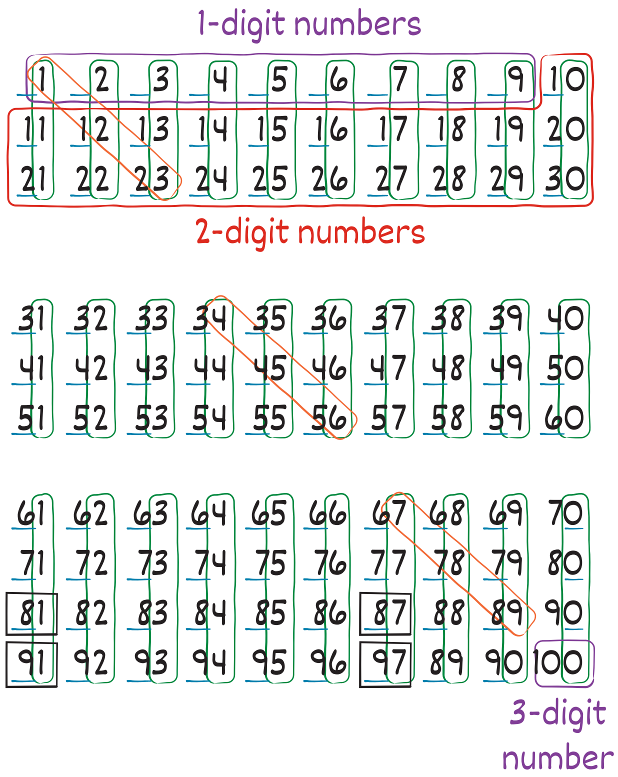
The line down goes 61, 71. So 81 must be next.

Write 81 in the box. Restart the count at 78 so students can hear that 81 fits in the counting sequence. Continue to count and record through 86.

Pause after 86 and draw a box below 77. Repeat the process of making and testing predictions about which number goes in the box. Write 87 in the box. Restart the count at 83 and continue to count and record through 90.

Pause after 90 and draw boxes below 81 and 87. Repeat the process of making and testing predictions about which number goes in each box, and then restart the count at 87 and continue the count to 100.

Show the choral counting charts the class made in lessons 3 and 16. Invite students to share what they notice about the three charts. Record patterns and connections by using the same color markers that were used to make the other charts.



Use any combination of the following questions to facilitate discussion and elicit student observations about the three charts:

- What do you notice?
- What changes about the count? What stays the same?
- What is the same and different between rows?
- If we keep counting, what do you think will happen?

Transition to the next segment by framing the work.

Today, we will use the patterns in our numbers to count by ones.

Promoting the Standards for Mathematical Practice

When students predict what number comes next in the choral count, they look for and make use of structure **(MP7)**.

The particular way the choral count is recorded provides different kinds of structure that students can use. They can look horizontally to use the structure of the counting sequence or look vertically to use place value structure.

Teacher Note

Students may notice some of the following patterns:

- As you move down each column, the digit in the tens place increases by one: 1, 2, 3, 4, 5, 6, 7, 8, 9.
- As you move down each column, the digit in the ones place remains the same (e.g., 63, 73, 83, 93).
- As you move across each row, the digit in the ones place follows the pattern 1–9, then 0.
- Moving diagonally from the top left, the digit in the ones place increases by one: 1, 2, 3, 4, 5, 6, 7, 8, 9.

Learn 30

Introduce Stations

Students learn procedures for station rotations.

The following three activities described in Learn are stations that groups rotate through:

- Nearby Numbers: Students order numbers in a chart by using benchmark numbers.
- 10-Frames and Beans: Partners do a variation on the activity from lesson 16. They count to 100 and represent given numbers by using 10-frame cards and beans.
- Rekenrek Counting: Students use the structure of the rekenrek and patterns in the number sequence to count. This is a teacher-led station.

Take a few minutes to give directions for Nearby Numbers and 10-Frames and Beans.

Nearby Numbers

Materials—S: Student book, scissors, glue

Students identify and order numbers.

Give the following directions for this station:

- Turn to the number cards in the student book. Cut them out.
- Turn to the Nearby Numbers chart in the student book. Put the number cards in order on the chart. Use the numbers that are already written on the chart to help.
- Partners check each other's work.
- Glue the numbers in place.

Teacher Note

Additional Nearby Number sequences are available via digital download. They vary in difficulty. Consider printing or making copies of sequences to differentiate according to student need.

Differentiation: Support

Support students with visual discrimination by cutting the Nearby Numbers chart into individual rows. Working with only one sequence of numbers at a time may reduce distraction and increase focus.

UDL: Representation

There is a Nearby Numbers digital interactive. Consider using it to demonstrate the procedure for the activity or allowing students to experiment with the tool individually.

10-Frames and Beans

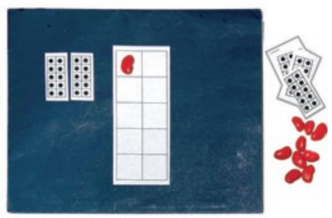
Materials—S: Work mat, 10-Frame, Mini 10-Frame cards, two-color beans, choral counting charts

Students count to 100 and represent numbers by using 10-frames and beans.

Post the choral counting charts where students at this station and at the Rekenrek Counting station can see them.

Pair students. Have each pair set out a work mat and put a 10-frame on it. Tell them to place the beans and the mini 10-frame cards next to the mat.

Give the following directions for this station:



- Partner A counts from 1 to 10, placing beans on the 10-frame.
- Partner B exchanges the 10 beans for a mini 10-frame card.
- Partner B counts from 11 to 20, placing the beans on the 10-frame.
- Partner A exchanges the 10 beans for a mini 10-frame card.

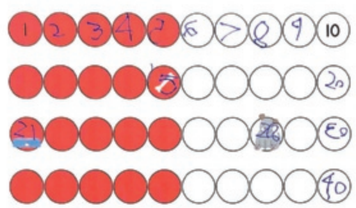
Partners continue alternating decades until they count to 100.

After they finish, have partners choose numbers on the choral counting charts and represent them by using 10-frames and beans.

Rekenrek Counting

Materials—S: Student book, choral counting charts

Students make use of structure to predict numbers in a sequence.



This is a teacher-led station. Follow the same process with each group that rotates through.

Ask students to turn to the rekenrek paper in their student book.

Differentiation: Challenge

Make the activity more challenging by having students work with larger numbers. Consider the following adjustments. Replace the numbers 1 and 10 with the following numbers:

- 41 and 50 (rekenrek shows 41–80)
- 61 and 70 (rekenrek shows 61–100)

If students notice that the numerals do not match the quantity of beads they can see, then help them recall that the image shows only part of a rekenrek. Consider telling a story about a rekenrek that is broken or that has invisible rows.

Does this picture remind you of a math tool? Which one?

Yes, it looks like the rekenrek.

It is part of a rekenrek. What do you see on some beads?

I see a dog bone, a dog bowl, and a dog.

Let's touch and count the first row.

After students count, have them write the numbers on the first row.

Count on from 10. When you get to the end of the row, write the number.

Ask the following questions. Expect some students to answer immediately and others to count first. Ask students who answer immediately to share how they know.

What number did you say when you got to the dog bone?

What number did you say when you got to the dog bowl?

What number did you say when you got to the dog?

Start counting from 15, the dog bone, to test students' answers about the dog bowl and the dog.

If time permits, invite students to continue writing numbers on the rekenrek beads. Encourage students to use the choral counting charts to support them with writing numbers.

Observational Assessment

☑ Observe students as they complete the Rekenrek Counting station.

- Can students say the correct number sequence to 40?
- Can students count forward beginning at a number other than 1?
- Can students write numbers 1–20?

Land 5

Debrief 5 min

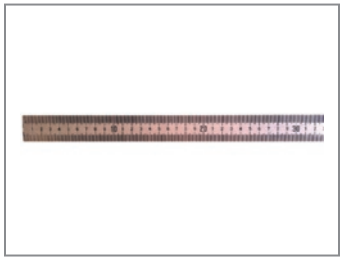
Materials—T: Puppet

Objective: Use patterns in the number sequence to count by ones within 100.

Display the picture of the meter stick.

This is a kind of ruler. It's a math tool that shows numbers from 1 to 100. Let's count from 10 to 20 the way the ruler shows the numbers.

10, 1, 2, 3, 4, 5, 6, 7, 8, 9, 20

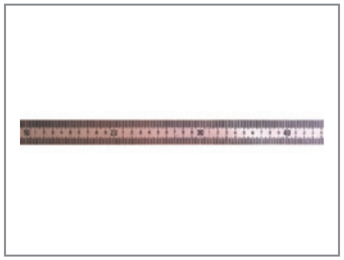


Let's use the ruler to count from 20 to 40.

20, 1, 2, 3, ... , 40

Let's count from 50 to 70. This time see if you can count without looking at the math tool.

50, 1, 2, 3, ... , 60, 1, 2, 3, ... , 70



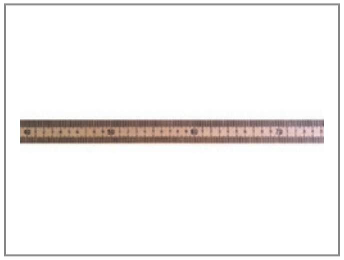
Show thumbs-up if you noticed a pattern. What is the part that keeps repeating on this math tool?

1, 2, 3, 4, 5, 6, 7, 8, 9

Puppet is counting the regular way: 55, 56, 57, 58, 59, 60. Puppet is not sure what comes next. How could we use the pattern to help?

Puppet should start over again with 1, 2, 3, like on the math tool, but say "sixty" first. 61 is next.

It's like counting 1 more. 60; 1 more is 61.



Whisper the next few numbers to help Puppet get going again.

(Whispers.) 61, 62, 63

Puppet has it now: 64, 65, 66, ... , 70.

18

LESSON 18

Count within and across decades when counting by ones, part 1.

Observational Assessment Recording Sheet

Student Name

Grade K Module 6
Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than, fewer than*, or the *same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to, take from, put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

The activities in this lesson are presented as stations. Students practice counting within and across tens by ones. The familiar patterns that students see and highlight during a choral counting activity help them count, order, and represent numbers independently while at the stations.

Key Question

- How do you know where to put a number on the number path?

Achievement Descriptors

K.Mod6.AD1 **Count** to 100 by ones and tens. (K.CC.A.1)

K.Mod5.AD1 **Count** forward from a number other than 1. (K.CC.A.2)

Agenda

Fluency 10 min

Launch 5 min

Learn 30 min

- Introduce Stations
- 10-Frames and Beans
- Nearby Numbers
- Clothesline Math

Land 5 min

Materials

Teacher

- Chart paper
- Index cards (33)
- Puppet

Students

- Subtraction with 5 as a Part Sprint (in the student book)
- Scissors
- Glue
- Work mat (per student pair)
- 10-Frames removable (in lesson 16, 1 per student pair)
- Mini 10-Frame cards (in lesson 15, 1 per student pair)
- Two-color beans (10 per student pair)
- Student book

Lesson Preparation

- The Subtraction with 5 as a Part Sprint pages must be torn out of the student book. Consider tearing these out in advance of the lesson.
- Designate three spaces in the classroom for three stations. The class will divide into three groups and the groups will rotate through each station.
- At the Nearby Numbers station, place enough scissors for each student to have their own pair. Student pairs can share glue if necessary. Students will need their student books at this station.
- The Problem Set removable is two pages. The number cards should be torn out and cut apart. The grid can be torn out or left in the book. Consider tearing out the number cards and cutting them apart before the lesson.
- At the 10-Frames and Beans station, pairs of students will need a work mat, 10 two-color beans, 10 Mini 10-Frame cards (in lesson 15), and a 10-Frame (in lesson 16). Consider organizing these materials into a resealable plastic bag for each student pair. These materials were created in lesson 17 and can be reused.
- For the Clothesline Math station, write numerals 50–60 on index cards. Have 11 blank index cards as placeholders on the clothesline. For the second round of the activity, write numerals 45–55.

Fluency 10

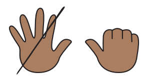
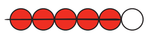
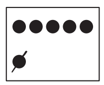
Sprint: Subtraction with 5 as a Part

Materials—S: Subtraction with 5 as a Part Sprint

Students subtract 5 or subtract to find a difference of 5 to build subtraction fluency within 10.

Read the instructions to students and have them complete the sample problems.

Write how many are left.

	1
	1
	5
6 - 1	5

Direct students to Sprint A. Frame the task.

I do not expect you to finish. Do as many problems as you can, your personal best.

Take your mark. Get set. Think!

Time students for 1 minute on Sprint A.

Stop! Underline the last problem you did.

I'm going to read the answers. As I read the answers, call out "Yes!" and mark your answer if you got it correct.

Read the answers to Sprint A quickly and energetically.

Count the number you got correct and write the number at the top of the page. This is your personal goal for Sprint B.

Celebrate students' effort and success.

Lead students in one fast-paced and one slow-paced counting activity, each with a stretch or physical movement.

Point to the number you got correct on Sprint A. Remember this is your personal goal for Sprint B.

Direct students to Sprint B.

Take your mark. Get set. Improve!

Time students for 1 minute on Sprint B.

Stop! Underline the last problem you did.

I'm going to read the answers. As I read the answers, call out "Yes!" and mark your answer if you got it correct.

Read the answers to Sprint B quickly and energetically.

Count the number you got correct and write the number at the top of the page.

Stand if you got more correct on Sprint B.

Celebrate students' improvement.

Teacher Note

Count forward the Say Ten way from ten to ten 10 for the fast-paced counting activity.

Count backward the Say Ten way from ten 10 to ten for the slow-paced counting activity.

Consider including the Say Ten push-up motions.

Launch 5

Materials—T: Chart paper

Students chorally count by ones crossing decades.

Post a piece of chart paper in landscape orientation. Write 35 in the top left corner.

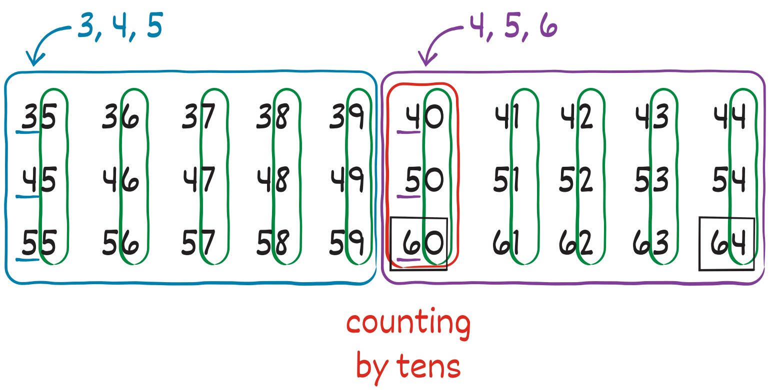
We are going to count by ones beginning with the number 35.

Think about what the next few numbers will be. Show me thumbs-up when you are ready.

Invite students to chorally count by ones starting at 35 as you record the count. Help students recall that they should watch the marker carefully and count as one unified voice as the count is recorded.

Record through 44 in the first row, leaving ample space around each number to record patterns and connections that students notice. Begin a second row with 45. Count and record up through 54.

Pause after 54 and draw a box below 50.



What number goes in the box? How do you know?

60 comes next. I counted by tens going down the line. 40, 50, 60

Write 60 in the box. Draw a box below 54. Ask students to predict what number goes in the box and have them explain their thinking. Start counting again at 53 and continue to record through 64.

Use any combination of the following questions to facilitate discussion and elicit student observations about the chart:

- What do you notice?
- What changes about the count? What stays the same?
- What patterns do you notice? Do you see that happening anywhere else?
- If we keep counting, what do you think will happen?

Transition to the next segment by framing the work.

Today, we will use the patterns in our count to help us remember all the numbers to 100.

Teacher Note

Students may notice some of the following patterns:

- As you move down each column, the digit in the ones place stays the same.
- As you move down each column, the digit in the tens place increases by 1.

Learn 30

Introduce Stations

Students learn procedures for station rotations.

The following three activities described in Learn are stations that groups rotate through:

- 10-Frames and Beans: Students count and represent numbers to 100 by using 10-frame cards and beans.
- Nearby Numbers: Students order numbers by using benchmark numbers in a chart.
- Clothesline Math: Students find missing numbers in a sequence. This is a teacher-led station.

Take a few minutes to give directions for Nearby Numbers and 10-Frames and Beans, which are both familiar from lesson 17.

10-Frames and Beans

Materials—S: Work mat, 10-Frame, Mini 10-Frame cards, two-color beans, choral counting chart

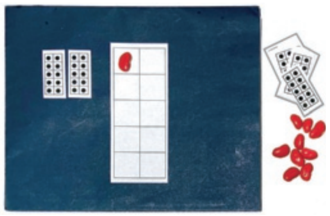
Students count to 100 and represent numbers by using 10-frames and beans.

Post the choral counting chart from Launch where students can see it.

Pair students. Have each student pair set out a work mat and put a 10-frame on it. Tell them to place the beans and the mini 10-frame cards next to the mat.

Give the following directions for this station:

- Partner A counts from 1 to 10, placing beans on the 10-frame.
- Partner B exchanges the 10 beans for a mini 10-frame card.
- Partner B counts from 11 to 20, placing the beans on the 10-frame.
- Partner A exchanges the 10 beans for a mini 10-frame card.



Partners continue alternating decades until they count to 100.

After they finish, have partners choose numbers on the choral counting chart and represent them by using 10-frames and beans.

Nearby Numbers

Materials—S: Student book, scissors, glue

Students identify and order numbers.

Give the following directions for this station.

- Turn to the number cards in the student book. Cut them out.
- Turn to the Nearby Numbers chart in the student book. Put the number cards in order on the chart. Use the numbers that are already written on the chart to help.
- Partners check each other's work.
- Glue the numbers in place.

Teacher Note

Additional Nearby Number sequences are available via digital download in lesson 17. They vary in difficulty. Consider printing or making copies of sequences to differentiate according to student need.

Consider copying each Nearby Number sequence onto a different color of paper. Prepare the materials and put them into containers so they can be used at other times of day in centers.

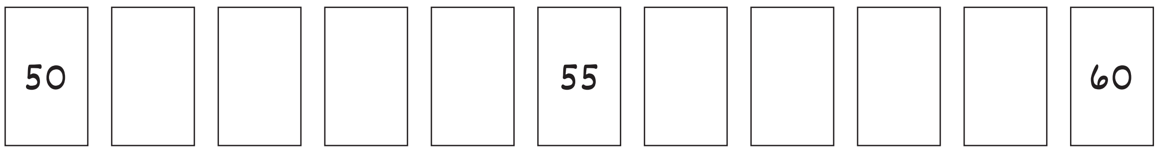
Clothesline Math

Materials—T: Index cards

Students reason about numbers to determine their placement in a sequence.

This is a teacher-led station. Follow the same process with each group that rotates through.

Post 11 blank index cards in line. Place the numeral 50 on top of the first card, 55 on top of the sixth card, and 60 on top of the last card, with blank cards for other numbers, as shown.



UDL: Representation

There is a Clothesline Math digital interactive. Consider using it to facilitate the group activity. Or invite students or student pairs to experiment with the tool to complete the second round.

Some of the numbers are missing. Let's see if we can figure out which numbers are missing and put them in the right place.

Distribute a numeral card from the sequence to each student, or to student pairs. Have partners discuss where they think their cards go.

Let's start with number 56. Hold it up if that's your card.

Ask the student with 56 to place it on top of the card where it belongs.

How did you know where 56 should go?

I counted from 50.

56 comes after 55. It is 1 more.

Continue inviting students to place their numeral cards and explain their thinking. When the cards are placed, check the work by having the group count the regular way and the Say Ten way.

If time permits, repeat the process with new cards that show 45, 50, and 55 to start.

45					50					55

Observational Assessment

☑ Ask assessing questions as students complete Clothesline Math.

- How do you know where this number goes? *(Point to a numeral card.)*
- Can you count on from this number? What number comes next?

Land 5

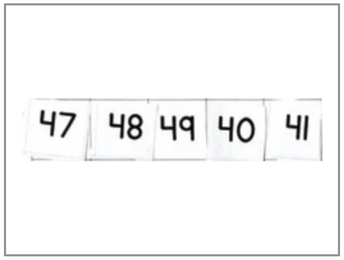
Debrief 5 min

Materials—T: Puppet

Objective: Count within and across decades when counting by ones.

Puppet put numbers in order today, just like you did.

Display the picture of an incorrect sequence.



How could we check Puppet's work?

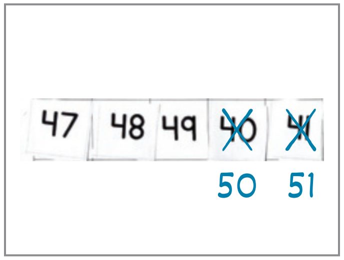
We can count.

We can look at the chart.

We can check on the number path.

Invite students to whisper count from 45 to 50 the regular way. Ask students to stand if they see a number in the wrong place.

Invite students to correct the sequence. Count from 47 to check the new sequence.



How can you figure out where to put a number on the number path?

I can count to see if the numbers are in the right place.

You can add 1 more if you need to find the next number from one you know.

You know the number before is 1 less, so you could take away.

Promoting the Standards for Mathematical Practice

As students consider Puppet's work and determine whether the numbers are in the right order, they construct viable arguments and critique the reasoning of others (MP3).

The questions in Land are designed to promote MP3. As needed, use the following questions to further engage students in critiquing Puppet's work:

- What is confusing about Puppet's work?
- What questions could you ask Puppet about this work?

Sample Solutions

Expect to see varied solution paths. Accept accurate responses, reasonable explanations, and equivalent answers for all student work.

A

Number Correct: ______

Write how many are left.

	5		5
	1		4
	5		5
	2		5
	3		1
	3	10 - 5	5
	5	7 - 5	2
	4	9 - 4	5
	5	8 - 5	3
	5	7 - 2	5

108

B

Number Correct: ______

Write how many are left.

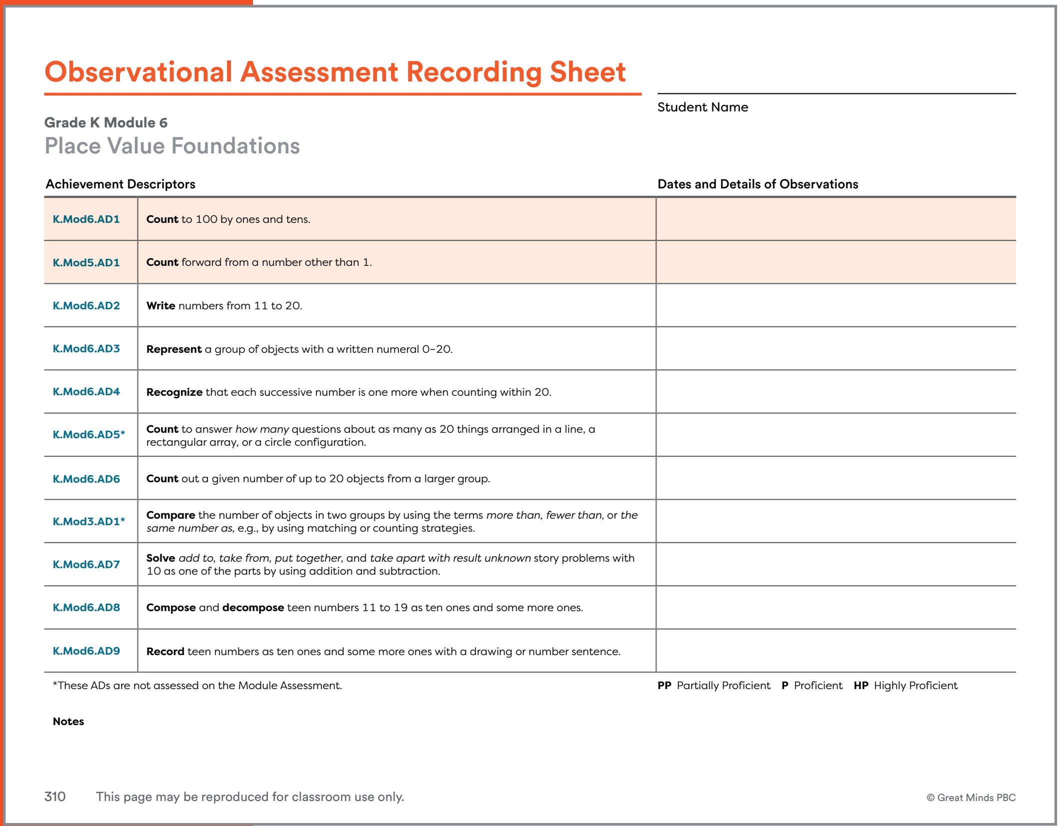
	5		5
	1		4
	5		5
	2		5
	3		1
	3	10 - 5	5
	5	7 - 5	2
	4	9 - 4	5
	5	8 - 5	3
	5	7 - 2	5

110

19

LESSON 19

Count within and across decades when counting by ones, part 2.



Observational Assessment Recording Sheet

Student Name

Grade K Module 6

Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than*, *fewer than*, or the *same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to*, *take from*, *put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

To count across decade numbers, students combine understanding of the repeating pattern of 0–9 in the count sequence with the ability to count by tens. They practice the skill up to 100 by using the same stations from previous lessons. The familiar patterns that students see and highlight during a choral counting activity help them count, order, and represent numbers independently while working in stations.

Key Question

- How can math tools and patterns help you know what number comes next?

Achievement Descriptors

K.Mod6.AD1 **Count** to 100 by ones and tens. (K.CC.A.1)

K.Mod5.AD1 **Count** forward from a number other than 1. (K.CC.A.2)

Agenda

Fluency 5 min

Launch 10 min

Learn 30 min

- Introduce Stations
- 10-Frames and Beans
- Nearby Numbers
- Clothesline Math

Land 5 min

Materials

Teacher

- Chart paper
- Index cards (22)
- Puppet

Students

- Work mat (per student pair)
- 10-Frames removable (in lesson 16, 1 per student pair)
- Mini 10-Frame cards (in lesson 15, 1 per student pair)
- Two-color beans (10 per student pair)
- Student book
- Scissors
- Glue

Lesson Preparation

- This lesson includes the same three stations that were used in the previous lesson.
- Designate three spaces in the classroom for three stations. The class will divide into three groups and the groups will rotate through each station.
- At the Nearby Numbers station, place enough scissors for each student to have their own pair. Student pairs can share glue if necessary. Students will need their student books at this station.
- The Problem Set removable is two pages. The number cards should be torn out and cut apart. The grid can be torn out or left in the book. Consider tearing out the number cards and cutting them apart before the lesson.
- At the 10-Frames and Beans station, pairs of students will need a work mat, 10 two-color beans, 10 mini 10-frame cards, and a 10-frame. Consider organizing these materials into a resealable plastic bag for each student pair. These materials were created in a previous lesson and can be reused.
- For the Clothesline Math station, write numerals 55–65 on index cards. Have 11 blank index cards as placeholders on the clothesline. Keep a second set of 11 cards handy for doing a second round of the activity.

Fluency 5

Fitness Counting

Students collaboratively count by ones to 100, taking turns at irregular intervals, to build fluency with counting to 100.

Select a physical exercise that can be done safely in the classroom and is accessible to all students such as squats, arm raises, swimming strokes, or jogging in place.

Select a pair of students to demonstrate according to the following procedure:

- Partner A begins at 1, doing the physical exercise while counting until the teacher gives a signal. Meanwhile partner B observes, while counting along in their mind.
- Signal for partners to switch.
- Partner B continues the count from where partner A left off and does the same physical exercise. Partner A rests and observes.
- Signal to switch again and repeat the process for 2–3 minutes, or until a pair reaches 100. Surprise students and challenge their rote counting skills by varying the length of each partner's turn. For example, a series of short counts followed by an extended one sharpens their rote counting skills.

Launch 10

Materials—T: Chart paper

Students chorally count by ones crossing decades.

Post a piece of chart paper in portrait orientation. Write 75 in the top left corner.

We are going to count by ones beginning with the number 75.

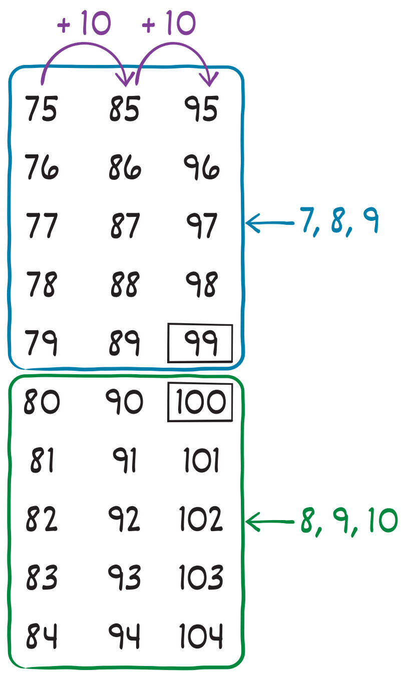
Think about what the next few numbers will be. Show me thumbs-up when you are ready.

Invite students to chorally count by ones starting at 75 as you record the count. Help students recall that they should watch the marker carefully and count as one unified voice as the count is recorded.

Record through 84 in the first column, leaving ample space around each number to record patterns and connections that students notice. Begin a second column with 85. Count and record up through 94.

Before counting the third column, draw boxes where 99 and 100 will be. Ask students to predict which numbers go in the boxes. Have them explain their thinking.

Fill in the boxes according to student responses. Begin the third column with 95 and count through 104.



Use any combination of the following questions to facilitate discussion and elicit student observations about the chart:

- What do you notice?
- What changes about the count? What stays the same?
- What patterns do you notice? Do you see that happening anywhere else?
- If we keep counting, what do you think will happen?

Transition to the next segment by framing the work.

Today, we will use these patterns as we practice counting to 100.

Language Support

As students count 101, 102, 103, and 104, voice the count with them to model saying each number correctly. Avoid inserting the word *and*. For example, rather than *one hundred and one*, the number 101 is pronounced as *one hundred one*.

Teacher Note

Students may notice some of the following patterns:

- As you move across each row, the digit in the ones place stays the same.
- As you move across each row, the digit in the tens place increases by 1.
- As you move across each row, the number increases by 10.

Learn 30

Introduce Stations

Students learn procedures for station rotations.

The following three activities described in Learn are stations that groups rotate through:

- 10-Frames and Beans: Students count and represent numbers to 100 by using 10-frame cards and beans.
- Nearby Numbers: Students order numbers by using benchmark numbers in a chart.
- Clothesline Math: Students find missing numbers in a sequence. This is a teacher-led station.

Take a few minutes to give directions for Nearby Numbers and 10-Frames and Beans, which are both familiar from lesson 18.

10-Frames and Beans

Materials—S: Work mat, 10-Frame, Mini 10-Frame cards, two-color beans, choral counting chart

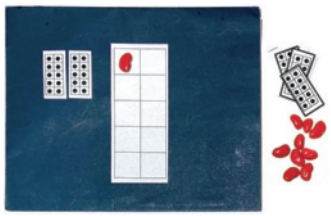
Students count to 100 and represent numbers by using 10-frames and beans.

Post the choral counting chart from Launch where students can see it.

Pair students. Have each student pair set out a work mat and put a 10-frame on it. Tell them to place the beans and the mini 10-frame cards next to the mat.

Give the following directions for this station:

- Partner A counts from 1 to 10, placing beans on the 10-frame.
- Partner B exchanges the 10 beans for a mini 10-frame card.
- Partner B counts from 11 to 20, placing the beans on the 10-frame.



- Partner A exchanges the 10 beans for a mini 10-frame card.
- Partners continue alternating decades until they count to 100.

After they finish, have partners choose numbers on the choral counting chart and represent them by using 10-frames and beans.

Nearby Numbers

Materials—S: Student book, scissors, glue

Students identify and order numbers.

Give the following directions for this station:

- Turn to the number cards in the student book. Cut them out.
- Turn to the Nearby Numbers chart in the student book. Put the number cards in order on the chart. Use the numbers that are already written on the chart to help.
- Partners check each other's work.
- Glue the numbers in place.

UDL: Representation

There is a Nearby Numbers digital interactive. Consider using it to demonstrate the procedure for the activity or allow students to experiment with the tool individually.

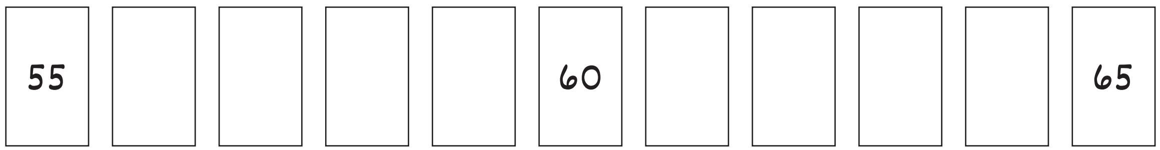
Clothesline Math

Materials—T: Index cards

Students reason about numbers based on their placement in a sequence.

This is a teacher-led station. Follow the same process with each group that rotates through.

Post 11 blank index cards in line. Place the numeral 55 on top of the first card, 60 on top of the sixth card, and 65 on top of the last card, with blank cards for other numbers, as shown.



Teacher Note

To provide challenge or support, modify the starting numbers. For today's objective, select starting numbers that provide practice with counting across decades.

Some of the numbers are missing. Let's see if we can figure out which numbers are missing and put them in the right place.

Distribute a numeral card from the sequence to each student, or to student pairs. Have partners discuss where they think their cards go.

Let's start with number 62. Hold it up if that's your card.

Ask the student with 62 to place it on top of the card where it belongs.

How did you know where 62 should go?

I counted from 60. 61, 62

It is 2 more than 60, so I know it goes there. *(Points.)*

Continue inviting students to place their numeral cards and explain their thinking. When the cards are placed, check the work by having the group count the regular way and the Say Ten way.

If time permits, ask students to help make cards to go before 55 and after 65.

Observational Assessment

☑ Listen and prompt as students complete Clothesline Math.

- Can students accurately count by ones when crossing decade numbers?
- Can students identify where a numeral card goes?
- Can students count on from a number you select? Can they say what number comes next?

Land 5

Debrief 5 min

Materials—T: Puppet

Objective: Count within and across decades when counting by ones.

Puppet counted 65, 66, 67, 68, 69, and then stopped. How could you help Puppet figure out which number comes next?

Puppet could look at a number path.

We could count the Say Ten way. The last number is 6 ten 9, so that means 7 ten is next.

We can show it on the rekenrek.

Puppet could ask a friend. I know that 70 comes next.

Promoting the Standards for Mathematical Practice

In Land students reason about how different tools can help them count. Reasoning about the usefulness of tools will help students use appropriate tools strategically **(MP5)** in the future.

As kindergarten comes to a close, look for students who are choosing tools for mathematical reasons, rather than choosing tools they personally prefer. Encourage students to choose tools more strategically by asking questions such as, "Is there another tool that could be more helpful?"

How can math tools and patterns help you know what number comes next?

Some math tools tell you the next number, like the number path.

When I see 9, I know it's about to change. After 9, you change the beginning part.

You can build the number you're on and add 1 more.

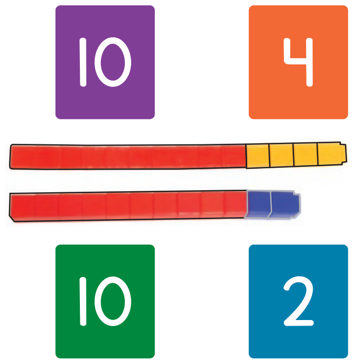
Topic D
Compare

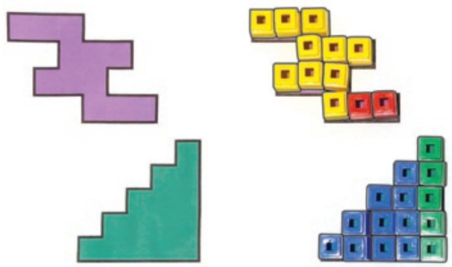
Topic D weaves together comparison of numbers and measurable attributes much like module 3 does. Students apply previously learned comparison strategies to new situations involving greater numbers. The majority of the lessons in this topic are optional because they go beyond the expectations of most kindergarten standards. However, all of the comparisons are accessible to kindergarten students because they can be made through direct modeling.

The topic begins with a focus on number comparison. Students use what they know about part–total relationships to compare groups with more than one part. They decompose teen numbers into 10 ones and some ones before comparing. *14 is 10 and 4. 12 is 10 and 2.* Because both numbers have 10 as a part, students can focus on the easier comparison of the other parts, 4 and 2. They combine their understanding of number comparison from module 3 with their emerging place value understanding to make an easier problem.

Later lessons in the topic use measurement contexts to support and extend number comparison to numbers greater than 10. Students experience that as the size of a collection or number increases, familiar strategies like matching, counting, or using a tool become less efficient. These experiences create a need for using place value concepts to compare numbers in grade 1.

In lesson 22, students explore ways to compare area, or the amount of flat space that shapes take up. They tile, or completely cover a shape, with Unifix Cubes, and compare the number of cubes they use for each shape. Lesson 23 engages students with familiar length comparison situations, but now the length of the objects requires use of both 10-sticks and individual cubes. Students find the need to count by tens and then ones. This lesson previews the indirect comparison concepts that students will investigate in depth in grade 1.



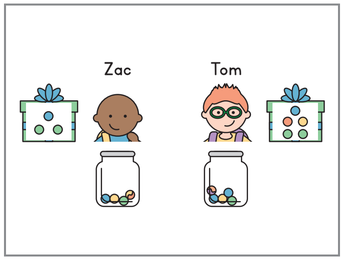


The culminating activity for module 6, and the final lesson of the year, is a counting collection. Students apply the knowledge they have gained in kindergarten to efficiently count and represent pregrouped objects. They compare work from the beginning and end of the year and celebrate their growth.

Progression of Lessons

Lesson 20 (Optional)

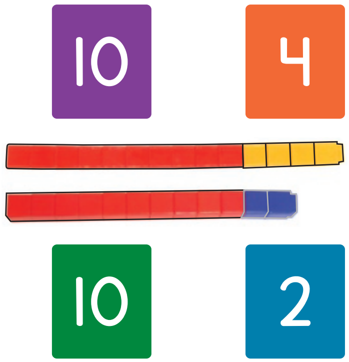
Compare totals in story situations.



I can compare totals by adding the parts or comparing the parts that are different.

Lesson 21 (Optional)

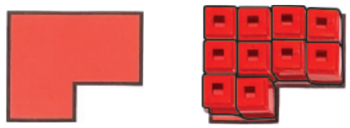
Count and compare sets with more than 10 objects.



Both of the sticks have 10 red cubes, so I can compare the 4 orange cubes and the 2 blue cubes.

Lesson 22 (Optional)

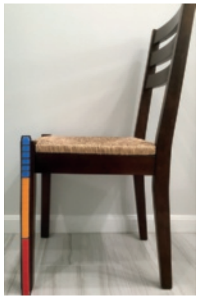
Compare area by comparing number.



I can compare two shapes by covering each with cubes. The shape that needs more cubes takes up more space.

Lesson 23 (Optional)

Compare lengths of objects by using 10-sticks and individual cubes.



I can line up the 10-sticks or count the cubes to see which object is longer.

Lesson 24

Organize, count, and represent a collection of objects.

I count larger collections by making groups and counting by tens.

20

LESSON 20

Compare totals in story situations. (Optional)

Observational Assessment Recording Sheet

Student Name

Grade K Module 6

Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than, fewer than*, or *the same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to, take from, put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

Earlier this year, students learned ways to compare groups and numbers. This lesson introduces the idea of comparing groups with more than one part. Students discover when they need to add and find totals to compare versus when they can simply compare parts. The structure of this lesson makes use of the Five Framing Questions routine.

Key Question

- What are some ways to compare groups that have more than one part?

Achievement Descriptor

K.Mod3.AD1 **Compare** the number of objects in two groups by using the terms *more than*, *fewer than*, or *the same number as*, e.g., by using matching or counting strategies. (K.CC.C.6)

Agenda

Fluency 10 min

Launch 5 min

Learn 25 min

- Who Has More?
- Compare Totals Game

Land 10 min

Materials

Teacher

- Boxes (2)
- Marbles or pom-poms (16)
- Clear cups (2)

Students

- Match cards (1 set per student pair)
- Personal whiteboard
- Dry-erase marker

Lesson Preparation

- Consider using pom-poms to represent marbles. Place 5 marbles or pom-poms in each clear cup. Place 4 marbles or pom-poms in one small box and 2 in the other small box.
- Each pair of students needs a set of Match cards for Fluency. In Learn, they will need a set of Match cards with 6–10 removed.

Fluency

10

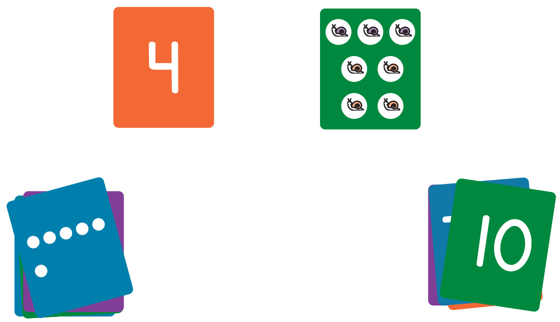
Ready, Set, Compare with Cards

Materials—S: Match cards

Students compare sets or numerals to prepare for comparing totals in story situations and to build fluency with comparing numbers.

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

- Shuffle the cards and give about half to each partner.
- Place your cards into a pile. Keep your pile of cards close to you so your partner cannot see them.
- Say "Ready, set, compare!" At "compare," place the top card from your pile in front of you.
- Say the number or amount shown on your card.
- Compare the amounts by using the words *greater than*, *less than*, or *equal to*, starting with the amount on your own card.
- The partner with the card showing the greater amount keeps both cards. If the cards show equal amounts, return your card to the bottom of your pile and play again.
- Continue playing until one partner runs out of cards.

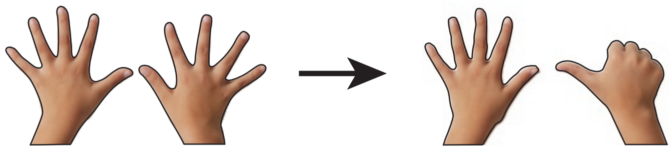


Partner A: "I have 4."
Partner B: "I have 7."
Partner A: "4 is less than 7."
Partner B: "7 is greater than 4."

Circulate as students play the game and provide support as needed.

Ten and Tuck

Students use their hands to represent a partner to 10 and say a related addition sentence to build fluency with partners to 10.



Show me 10.

(Shows 10 fingers)

Tuck 4.

(Puts down 4 fingers)

How many fingers are up? *(Wiggle the 6 fingers that are up.)*

6

How many fingers are tucked? *(Wiggle the 4 fingers that are tucked.)*

4

I have 6. How many more to make ten?

4

Say the addition sentence with me. Ready?

6 + 4 = 10

Repeat the process with the following sequence, beginning with 10 fingers each time:

Tuck 6	Tuck 3	Tuck 7	Tuck 5	Tuck 1	Tuck 9	Tuck 2	Tuck 8	Tuck 10

Offer more practice with Ten and Tuck as a partner activity. Partner A says how many fingers to tuck. Partner B says the addition sentence. Switch roles after each turn.

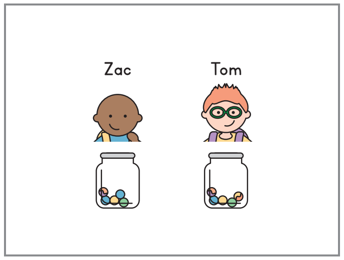
Teacher Note

As students become familiar with the routine, consider reducing the questions to as few words as possible. For example, say, “Show me 10. Tuck 4. Say the other part—the addition sentence.” Using this economy of language allows students to complete a greater volume of problems in a short time while maintaining an energetic pace.

Launch 5

Students notice and wonder about a comparative situation.

Display the picture of students and their marbles.



Use the Five Framing Questions routine to engage students in discussion.

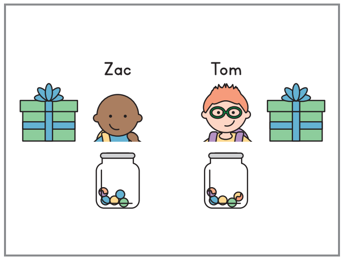
Notice

Zac and Tom both have some marbles. What do you notice about their marbles?

There are 5 marbles in each jar.

They have the same amount.

Display the picture with the presents.



Wonder

They get presents. There are more marbles in their presents.

What do you wonder?

How many marbles are in the presents?

How many marbles will they have after they open their presents?

Who will have more marbles?

Transition to the next segment by framing the work.

Today, we will compare groups.

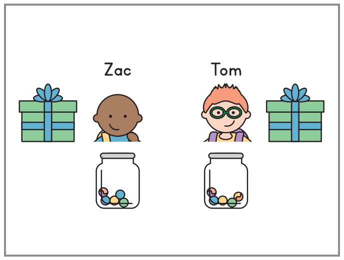
Learn 25

Who Has More?

Materials—T: Boxes, cups, marbles or pom-poms; S: Personal whiteboard

Students compare totals and parts.

Continue to display the picture with presents.



Split the class into two groups. Groups do not have to be even in number. Give each group a cup with 5 marbles in it. Show the boxes, or the "presents" with marbles inside.

These are Zac's and Tom's presents.

Designate Zac's group and Tom's group. Give each group a box.

How many marbles are in Zac's present?

4

How many marbles are in Tom's present?

2

Continue using the Five Framing Questions routine to facilitate discussion.

Organize

Let's organize each student's marbles to find out who has more.

Ask students from each group to set out the 5 marbles in their cup so the class can see. Line up the marbles from each group to compare them.

Can we tell who has more?

No, at the beginning they both had 5 marbles.

You have to put the marbles from the presents in line too.

Language Support

Later in this lesson students are asked to use the terminology *greater than* and *less than* in a turn and talk. As needed, refresh them on the language of comparison in advance by modeling it and have them echo the phrasing as shown in these examples:

"The number of marbles in Zac's present is greater than the number of marbles in Tom's present."

"The number of marbles in Tom's present is less than the number of marbles in Zac's present."

Teacher Note

If the class is using real marbles, consider using 10-frame cartons to organize and keep the marbles from rolling away.

If using pom-poms, tell students that the pom-poms represent marbles.

Ask students to bring their group's box to the front of the class and set out the marbles in line with the marbles from their group's cup.

Who has more marbles? How do you know?

Zac has more. His line of marbles is longer.

Have students turn and talk to make a *more than* or *fewer than* statement about the marbles.

Help groups return their marbles to the cups and boxes.

How can we use addition sentences to find each student's total number of marbles?

We can add the marbles in the cups and the marbles in the present together. Whoever has the bigger number has more.

Distribute whiteboards. Guide students to write a number sentence to show each student's marbles. Ask students to turn and talk to make *greater than* or *less than* statements using the totals.

$$5 + 4 = 9$$
$$5 + 2 = 7$$

One way to compare groups that are made up of parts is to add the parts and compare the totals.

Reveal

Point to the cups and then to the 5s in the number sentences.

Did knowing that each student has 5 marbles in their cup help us figure out who has more?

Yes, because you need the 5s to get the totals.

No, 5 and 5 are the same. Those marbles don't really matter.

Two parts go together to make each student's total marbles. *(Point to the cups and the boxes.)*

This part is the same, so we can use the other part to compare. Let's try. *(Point to the cups and the 5s in the number sentences.)*

Which number is greater, 4 or 2? *(Point to the 4 and the 2 in the number sentences.)*

4

UDL: Representation

Consider annotating the slide to support students in reducing the scope of their attention. After establishing that the jars contain equal amounts, cover or cross them out to communicate that students can momentarily ignore the parts that are the same. That way, they can pay more attention to the parts that are different to facilitate the comparison.

Differentiation: Challenge

The next complexity in terms of comparison problems is to ask how many more or how many fewer. Use the following questions as appropriate:

- How many more marbles does Zac have?
- How many more marbles are in Zac's present than in Tom's?

The box with 4 marbles belongs to Zac. That means Zac has more marbles than Tom. How do we know that's true?

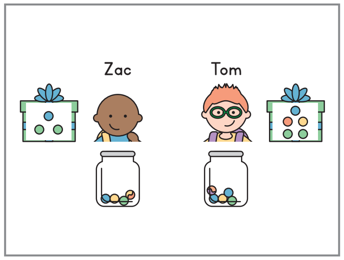
When we lined up all the marbles before, Zac's line was longer.

I know it's true because Zac has a total of 9 and Tom only has 7.

Did it work to compare just the parts that are different?

Yes.

Display the picture that shows different amounts of marbles in the jars and presents. Invite students to think–pair–share about how to determine who has more marbles.



Look at each student's marbles now. How could you figure out who has more?

I'm not sure because they don't have any parts that are the same.

We could line up each of their marbles and compare the lines.

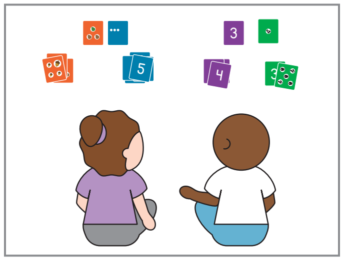
We could add the marbles in their presents and the marbles in their jars to find out how many they each have. Then we could compare the totals.

Compare Totals Game

Materials—S: Match Cards

Students add to find totals and compare.

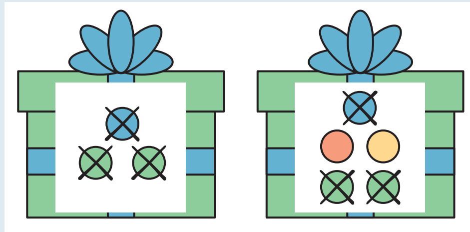
Partner students. Distribute a set of Match cards to each pair. Give the following directions. Consider doing a practice round with students.



- Partner A gets cards 1–5 in two colors. Partner B gets cards 1–5 in the other two colors.
- Partners each separate their cards into piles by color, mixing whether pictures or numbers are faceup.

Differentiation: Support

If needed, use color to help show that 3 is embedded in 5. Cross off the blue marble in both groups. Then cross off the green marbles in both groups. Students can see that there are 2 marbles left in Tom's present.



Promoting the Standards for Mathematical Practice

As students play the Compare Totals Game, they construct viable arguments and critique the reasoning of others (MP3). Since students know two viable strategies for comparing (comparing the part that doesn't match or adding and comparing), partners may disagree about how to compare the totals.

Use the following questions to promote MP3:

- What is confusing about your partner's thinking?
- What questions could you ask your partner to understand their thinking?

- Each partner flips their top two cards and finds the total. They look at their partner's cards to notice whether they have parts that match.
- Starting with their own total, each partner makes a comparison statement about the totals by using the words *greater than*, *less than*, or *equal to*.
- The partner with the greater total keeps all the cards. If the totals are equal, each partner flips another card and adds it to their total. Partners compare their new totals.

Partners play until time is up, reshuffling their cards as needed.

Land 10

Debrief 10 min

Objective: Compare totals in story situations.

Continue using the Five Framing Questions routine to help students synthesize their learning.

Distill

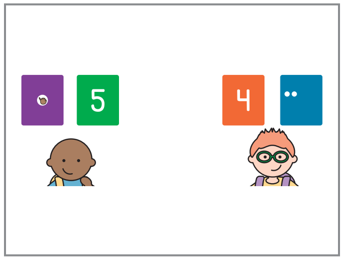
When you compare, why is it helpful to see if parts match?

Because if you have the same part in both groups, you don't have to use that part. You can just compare the parts that don't match.

When is it helpful to add parts and compare the totals?

That's what you have to do if all the parts are different.

Display the picture of Zac and Tom with Match cards.



Zac and Tom played the card game too. Who wins these cards? How do you know?

No one does. They both have six. $1 + 5 = 6$ and $4 + 2 = 6$.

Let's see what the next card is for both of them.

Differentiation: Support

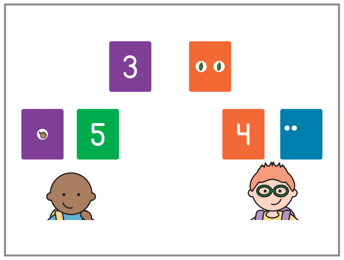
As needed, students may place cards picture side up in both piles and use the pictures to count all. They may also make one pile of numerals and another pile of pictures to help them count on.

Observational Assessment

☑ Listen as students play the game.

- Can students say a comparison statement or phrase such as the following sentences?
  "4 is less."
  "5 is greater than 4."
- Can students explain the tool or strategy they used to find the total and compare?

Display the picture of Zac and Tom with extra Match cards.



Know

How can you figure out who wins without adding?

They both have 6 already. You just have to look at their new cards.

Who wins all the cards? How do you know?

Zac wins. 3 is more than 2.

We can compare groups by comparing totals, or just by comparing the parts that are different.

21

LESSON 21

Count and compare sets with more than 10 objects. (Optional)

Observational Assessment Recording Sheet

Student Name

Grade K Module 6

Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
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K.Mod6.AD7	**Solve** *add to, take from, put together,* and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

Students use comparison strategies from earlier this year to compare groups with more than 10 objects. While some totals in this lesson exceed grade-level expectations, the comparisons can be made through direct modeling. These experiences help students recall comparison strategies and create a need for the more efficient place value comparison strategies in grade 1.

Key Question

- What are some ways to compare groups with more than 10 objects?

Achievement Descriptor

K.Mod3.AD1 **Compare** the number of objects in two groups by using the terms *more than*, *fewer than*, or *the same number as*, e.g., by using matching or counting strategies. (K.CC.C.6)

Agenda

Fluency 10 min

Launch 10 min

Learn 25 min

- Compare Groups
- Share, Compare, and Connect
- Compare Totals Game

Land 5 min

Materials

Teacher

- Comparison Strategies chart (from module 3)
- Match cards
- Unifix® Cubes (30)
- Puppet

Students

- Unifix® Cubes (30)
- Double 10-Frame (in the student book)
- Assorted math tools
- Match cards (1 set per student pair)
- Personal whiteboard
- Dry-erase marker
- Sunflower Quilting Bee (in the student book)
- Student book

Lesson Preparation

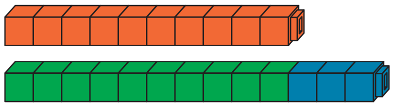
- Assemble sets of 30 Unifix Cubes for each student, 10 of each color.
- For demonstration, assemble a set of 30 Unifix Cubes—20 in one color and 10 in another color.
- The Double 10-Frame must be torn out of the student book and placed into personal whiteboards. Decide whether to prepare these materials in advance or have students prepare them during the lesson. Save for use in the next lesson.
- Gather assorted math tools such as number paths, mini 10-frame cards, beans, cubes, and Hide Zero cards for students to self-select. Make sure there are enough available so that students can choose the tool they want.
- If it is available, set out the Comparison Strategies chart from module 3 for students to reference. If it is not available, consider recreating it.
- Determine whether to provide students with a work mat for the Compare Totals Game. If they will use work mats, then use the suggestion in that segment to create them.

Fluency 10

Build and Compare: Length

Materials—S: Unifix Cubes

Students build and compare cube sticks to prepare for comparing teen numbers.



Let's build and compare cube sticks.

Build a 10-stick.

Build a 13-stick.

Compare the length of the cube sticks. Raise your hand when you can compare by using the words *longer than*.

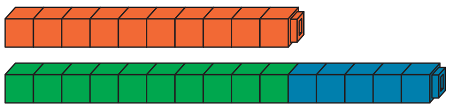
"The 13-stick is longer than the 10-stick."
"The 10-stick is shorter than the 13-stick."

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

The 13-stick is longer than the 10-stick.

This time compare the length of the cube sticks by using the words *shorter than*. Raise your hand when you know.

The 10-stick is shorter than the 13-stick.



Keep your 10-stick. Pick up your 13-stick. Turn it into a 15-stick.

Have students compare the lengths of the Unifix Cube sticks by using a *longer than* and a *shorter than* statement.

"The 15-stick is longer than the 10-stick."
"The 10-stick is shorter than the 15-stick."

Continue the process with the following sequence, always comparing to the 10-stick:

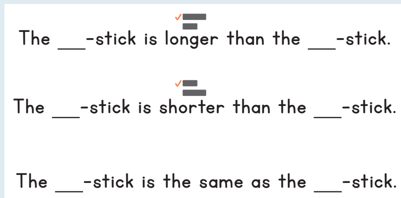
7-stick	9-stick	10-stick	17-stick	12-stick	20-stick

Teacher Note

If there are not enough cubes for each student, form student pairs to share the cubes. Partners will take turns building the cube stick before comparing.

Language Support

Display the following sentence frames to support students with using comparison language.



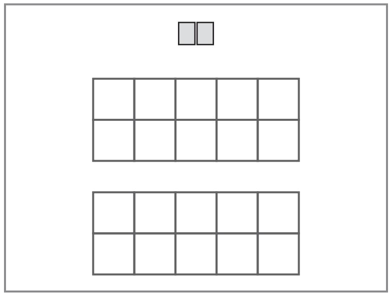
Whiteboard Exchange: Decompose Teen Numbers

Materials—S: Double 10-Frame, personal whiteboard, dry-erase marker

Students represent teen numbers as 10 ones and some ones to build fluency with decomposition.

Make sure students have a personal whiteboard with a Double 10-Frame inside.

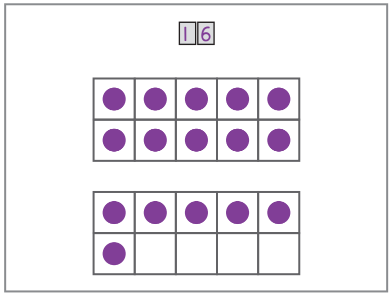
Display the blank Double 10-Frame.



Show me 16.

Give students time to work. When most students are ready, signal for students to show their whiteboards. Provide immediate and specific feedback. If students need to revise, briefly return to validate their corrections.

Display the answer.



Repeat the process with the following sequence:

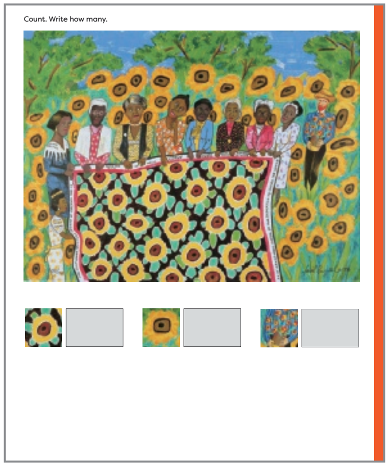
17	15	13	9	11	10	12	20

As students work, notice who can adjust by simply erasing or drawing more dots, and which students must erase the board each time.

Launch 10

Materials—S: Sunflower Quilting Bee removable

Students count objects in a picture.



Help students turn to Faith Ringgold's *The Sunflower Quilting Bee at Arles* in the student book. The artwork is familiar from lesson 13.

Last time we looked at this artwork we counted the sunflowers on the blanket. How did we count?

We found groups of flowers instead of counting one by one.

There are groups of 5 going across the blanket. I counted by fives.

Have students recount the sunflowers on the blanket and check their work with a partner. Confirm that there are 25. Help students record 25 at the bottom of the page.

Where do you see more sunflowers in this artwork?

There are lots of them going around the people.

If there are 25 sunflowers on the blanket, then how many do you think might be around the people?

Invite students to share estimates and explain their thinking. Then have them work in pairs to count the sunflowers around the people.

Ask a few pairs to share the total and how they counted. Confirm that there are 40. Help students record 40 at the bottom of the page.

Look at the artist behind the others in the painting. *(Point.)* He holds another group of sunflowers. Do you think he holds more sunflowers or fewer sunflowers than the 40 you just counted? Why?

Teacher Note

Faith Ringgold is an American painter, children's book writer and illustrator, and is well known for her quilts that tell a story, such as *The Sunflower Quilting Bee at Arles.*

Ringgold acknowledges her use of Vincent van Gogh's iconic sunflower design by including him in the piece.

Teacher Note

Kindergarten students are expected to recognize and write numbers to 20. Support students in writing 25 and 40 by writing the number as you narrate, "First you write the digit 4, then the digit 0. That's how you write the number forty."

I think he's holding fewer sunflowers. They're smaller than the rest. It's just a little bunch. The other ones are everywhere.

Tell students to count how many sunflowers the artist holds and check their work with a partner. Confirm that there are 13. Tell students to record 13 at the bottom of the page.

Transition to the next segment by framing the work.

We can compare groups when they have 10 or fewer objects. Today, we will try comparing groups like the sunflowers that have more than 10 objects.

Learn 25

Compare Groups

Materials—S: Sunflower Quilting Bee removable, assorted math tools, Comparison Strategies chart

Students select tools and strategies to compare groups.

Have students turn and talk about which group has the most sunflowers and how they know.

I heard you say that the group around the people has the most sunflowers because 40 is a bigger number than 13 or 25.

Let's compare the groups to prove our thinking. What are some ways to compare groups?

If we could move them, we could line them up like the marbles. Maybe we could use cubes or beans to show them lined up.

You can just look at the number path to see which numbers come first, next, and last. The first number on the number path is the smallest.

Choose a way to compare the groups of sunflowers. Then get the tools you need. Be ready to tell how your tools help you.

Teacher Note

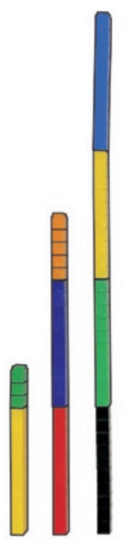
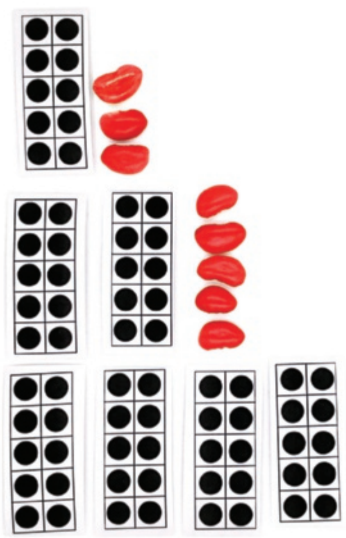
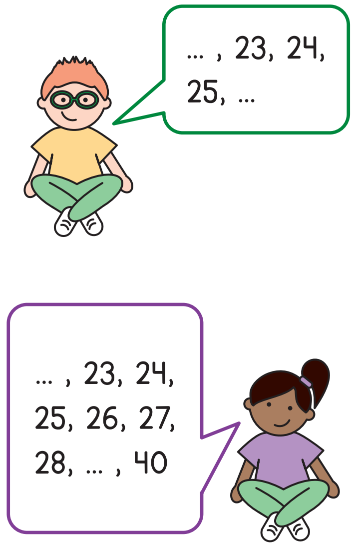
Students might misidentify the largest group or express uncertainty during the turn and talk. If they do, then frame comparing groups as a way to figure out which group has the most instead of framing it as a way to confirm.

Pair students or have them work independently. Provide materials for students to self-select such as number paths, mini 10-frame cards, beans, cubes, and Hide Zero cards.

Circulate and observe how students compare. Use the following questions and prompts to assess and advance student thinking:

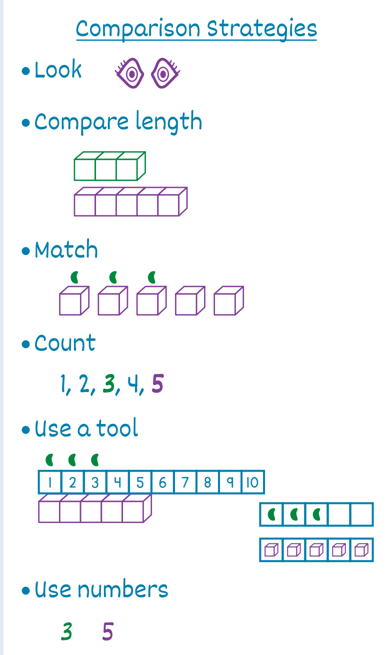
- What did you do to compare the groups?
- Which group has the most sunflowers? Which group has the fewest sunflowers? How do you know?
- How does your math tool help you compare groups? Is there a different math tool that could be more helpful?
- How could you use *greater than* to tell about the numbers?

Take a picture or make note of how students use tools. Select two or three students who use different representations to share in the next segment

Cubes	Mini 10-Frames and Beans	Counting Sequence
		

Teacher Note

Consider posting the Comparison Strategies chart from module 3 to support the discussion about comparing groups of sunflowers.



Observational Assessment

☑ Observe as students compare groups.

- Can students say a comparison statement or phrase like the one shown? 25 is greater than 13.”
- Can students explain how they used tools to compare?

Share, Compare, and Connect

Materials—T: Student work samples

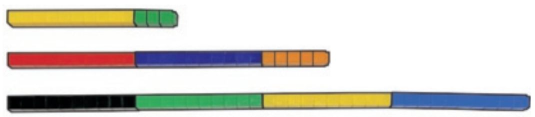
Students share and discuss strategies for comparing groups.

Gather the class to view and discuss the selected work samples. Ask questions to elicit student thinking, clarify the use of tools, and to help the class make connections between different strategies. The following sample dialogue demonstrates such discussion.

Cubes (Rasheen's Way)

Rasheen, how did you use cubes to compare the groups?

I made cube sticks and lined them up to see which was the longest. The 40-stick was so long I had to get on the floor to build it. It was easy though, I just grabbed 10-sticks and counted 10, 20, 30, 40.



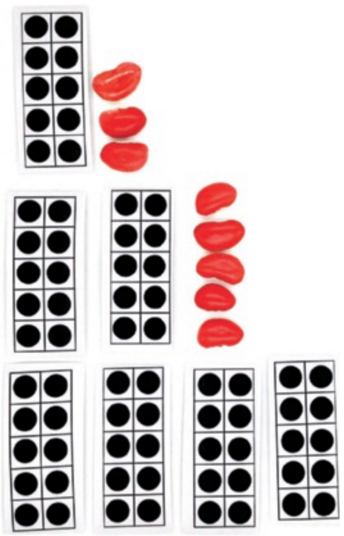
Rasheen says the 40-stick is the longest. How does that help us prove which group has the most sunflowers?

The stick with the most cubes is the longest and it has the most. 40 is the most, so the group with 40 sunflowers wins.

Mini 10-Frames and Beans (Camila's Way)

Camila, tell us about your work.

I made all the numbers with 10-frames and beans. I lined up the 10-frames across. Each group has at least one 10-frame.



Promoting the Standards for Mathematical Practice

Students use appropriate tools strategically (MP5) as they work to compare the groups of sunflowers. Because these numbers are greater than the numbers kindergarten students typically compare, they have the opportunity to work strategically, for example, by choosing tools that make it easy to see groups of 10.

How did you count?

I counted my 10-frames like Rasheen. For 40, I counted 10, 20, 30, 40. For 25 I had to count by tens and ones, like this: 10, 20, 21, 22, 23, 24, 25.

What is the same about Rasheen's way and Camila's way?

They both showed each of the groups.

They both counted by tens.

You can see 10 in both of their tools.

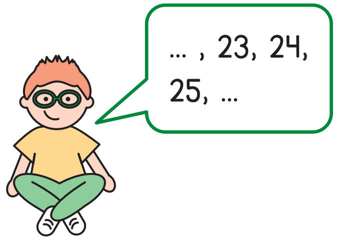
How does Camila's work prove that 40 is the greatest number?

40 has more 10-frames, so it's the greatest.

Counting Sequence (Jaime and Fibi's Way)

Jaime and Fibi, how did you use counting to compare?

My partner and I had a counting contest to see which was greater, 25 or 40. We started counting at the same time. I had to keep counting to get to 40 after my partner stopped, so 40 is greater.

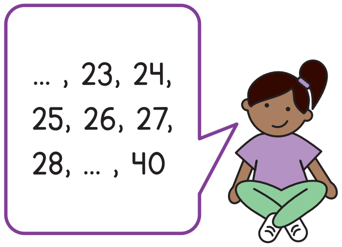


Why do you think they chose to leave out 13 when they compared?

13 isn't very many. You just know it's less than 25 and 40. You can see on the picture that it's a little bunch of flowers.

You always see 13 on the little number path. The other numbers go way past it on the big number path, so 13 must be smallest.

13 is so little you can show it with a partner, like this. *(Has a partner show 10 fingers and then shows 3 fingers.)*



What is different about Jaime and Fibi's way?

They used tools but not ones that you touch and move.

They used their voice and then their ears to hear which one took longer.

UDL: Representation

If students use a counting strategy to compare numbers, consider making their strategy visible by showing their count on the number path. Or ask another student to use the number path to explain their classmate's counting strategy.

You used many different tools, but all of them show that the same group has the most sunflowers. Which group?

The group with 40 sunflowers.

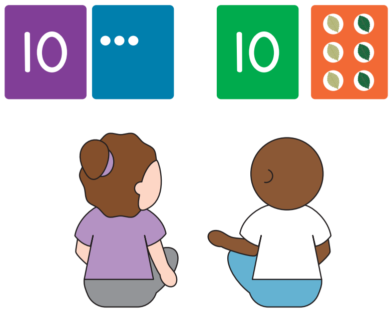
The sunflowers around the people.

Compare Totals Game

Materials—S: Match cards

Students strategize to compare teen numbers.

Partner students. Distribute a set of Match cards to each pair. Give the following directions, which are a variation on the game from lesson 20. Consider doing a practice round with students.



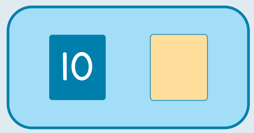
- Partner A gets cards in two colors. Partner B gets cards in the other 2 colors.
- Partners each find a card with the number 10 and set it aside. They put the rest of their cards in a pile. Students might use the picture or the numeral side to compare.
- Partners each draw a card from their pile and put it next to their 10-card. They take turns to say their total the regular way and the Say Ten way, for example, *thirteen* and *ten 3*.
- Starting with their own total, each partner makes a comparison statement about the totals by using the words *greater than*, *less than*, or *equal to*. Students might use the picture or numeral side of the card they draw to compare.
- The partner with the greater total keeps all of the cards. If the totals are equal, each partner flips another card and adds it to their total. Partners compare their new totals.

Partners play until time is up, reshuffling their cards as needed.

Notice which students use the strategy of setting aside their 10-cards and comparing the other parts. Ask them to share during Land. If no one uses the strategy, then Puppet can demonstrate.

UDL: Action & Expression

Help students remember to keep the 10-card throughout the game by offering a simple mat for organizing the cards. Write 10 in the box for the number 10-card as a reminder. Leave the other box empty for a card to be drawn from the pile.



Land 5

Debrief 5 min

Materials—T: Match cards, Unifix Cubes, Puppet

Objective: Count and compare sets with more than 10 objects.

What are some ways that we compared groups?

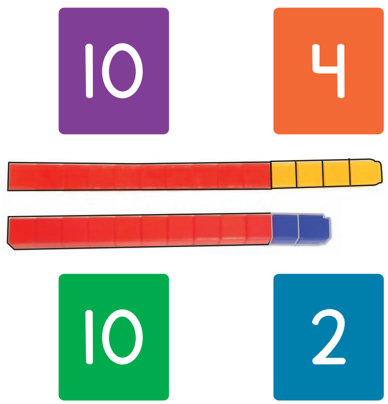
We counted to see which number comes first.

I made cube sticks to see which one was longest.

We added the cards together and compared the totals.

Camila used the 10-frame cards and beans to show the numbers.

Use the work of a student pair from the Compare Totals Game to facilitate the following discussion. If needed, set out the cards as shown and tell the class they belong to Puppet and Puppet's partner.



Puppet played Compare Totals with a partner like you did. Puppet's partner said she doesn't need the 10-card to know which total is greater. She used cubes to show Puppet what she means.

Represent the cards with cubes. Make the 10-sticks the same color. Invite students to think–pair–share about the following questions.

Do you need the 10-card to know which total is greater? Why?

You need the card. If you don't have the 10-card it's just 4 and 2, not 14 and 12. The 14 is longer than 12, so 14 is greater than 12.

No, you don't need the 10. In both groups the 10 is the red cubes. That part is the same. Pretend you cut it off and just look at the blue and orange. The blue is shorter, so 12 is still less than 14.

You don't need the 10-card. You don't think about the 10 because it's equal. You just look at the extra ones.

As needed, point out that 10 is a part in both numbers. It's the same. Ask students to point to the cubes that represent 4 and 2 and tell which part is longer.

22

LESSON 22

Compare area by comparing number.

(Optional)

Observational Assessment Recording Sheet

Student Name

Grade K Module 6

Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than, fewer than*, or *the same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to, take from, put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

Students informally find the area of two shapes by covering them with cubes. They use comparison strategies from earlier in the year to compare the areas. Students discover that shapes that look different can have the same area.

Key Question

- How can we compare shapes to see which takes up more space?

Achievement Descriptor

K.Mod3.AD1 **Compare** the number of objects in two groups by using the terms *more than*, *fewer than*, or *the same number as*, e.g., by using matching or counting strategies. (K.CC.C.6)

Agenda

Fluency 10 min

Launch 5 min

Learn 30 min

- Relate Area and Number
- Compare Area
- Share, Compare, and Connect
- Problem Set

Land 5 min

Materials

Teacher

- Red and Blue Shapes removable (2, in the teacher edition)
- Unifix® Cubes (10)

Students

- Double 10-Frame
- Red and Blue Shapes removable (in the student book)
- Yellow and Blue Shapes removable (in the student book)
- Purple and Green Shapes removable (in the student book)
- Unifix® Cubes (20)
- Scissors
- Assorted math tools
- Personal whiteboard
- Dry-erase marker

Lesson Preparation

- Place the Double 10-Frames in whiteboards. This material was assembled for lesson 21.
- Print or make two copies of the Red and Blue Shapes removable in the teacher edition. One copy is used intact. Cut out the shapes from the other copy. Consider printing or copying onto cardstock so that the shapes lay flat once they are cut out.
- Tear out the Red and Blue Shapes, Yellow and Blue Shapes, and Purple and Green Shapes removables from the student book in advance of the lesson. Use the Purple and Green Shapes removable as time allows.
- Make assorted math tools such as number paths, 10-frames, and Hide Zero cards available to support students with comparing numbers.

Fluency 10

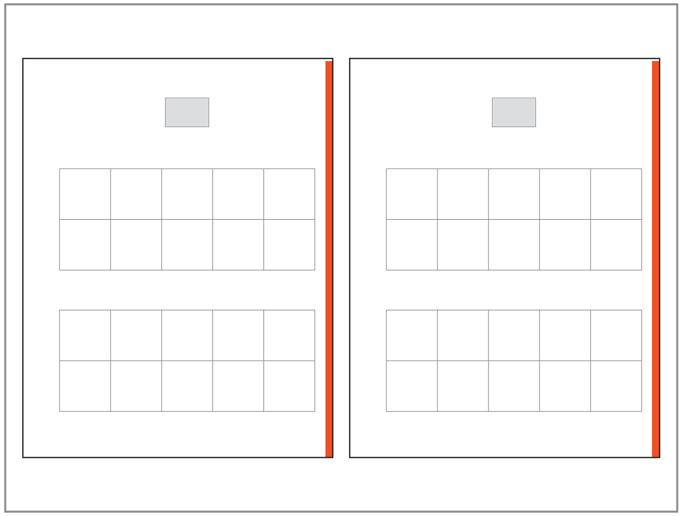
Whiteboard Exchange: Decompose Teen Numbers and Compare

Materials—S: Double 10-Frame, personal whiteboard, dry-erase marker

Students represent teen numbers as 10 ones and some ones and compare to build fluency with decomposition and comparing numbers.

Have students form pairs. Make sure each student has a personal whiteboard with a Double 10-Frame inside.

Display the Double 10-Frames.

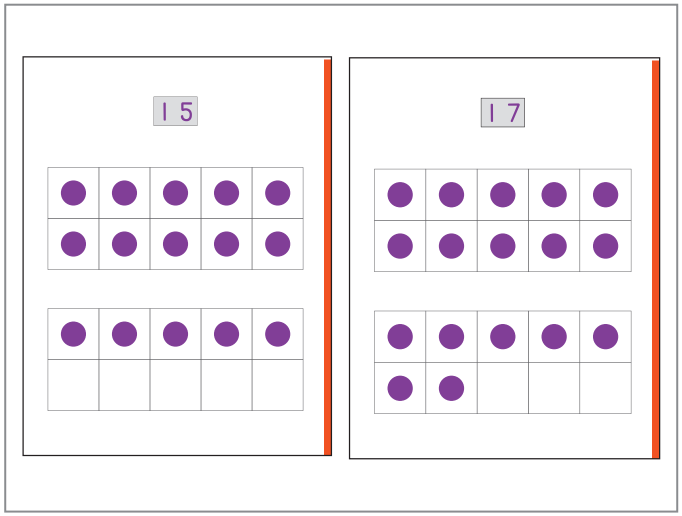


Partner A, show me 15.

Partner B, show me 17.

Give students time to work. When most students are ready, signal for students to show their whiteboards. Provide immediate and specific feedback. If students need to revise, briefly return to validate their corrections.

Display the answer.



Say a comparison statement by using either *greater than* or *less than*. Whisper your comparison statement to your partner.

Differentiation: Support

If students need more practice with representing teen numbers as 10 ones and some ones, omit the partner comparison work.

Differentiation: Challenge

If students display proficiency with comparing numbers by using the 10-frames, consider using a choral response routine and ask students to compare the numbers mentally.

Provide time for students to share with their partners.

15 is less than 17.

17 is greater than 15.

Repeat the process with the following sequence:

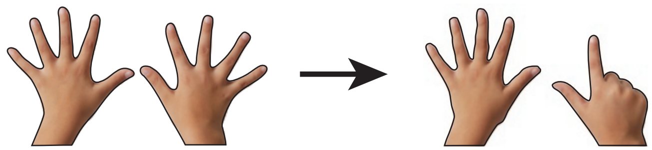
13 compared to 15	20 compared to 19	13 compared to 9

Ten and Tuck

Students use their hands to represent a partner to 10 and say a related addition sentence to build fluency with partners to 10.

Show me 10.

(Shows 10 fingers)



Tuck 3.

(Puts down 3 fingers)

How many fingers are up?

7

Say the addition sentence with me. Ready?

7 + 3 = 10

Repeat the process with the following sequence, beginning with 10 fingers each time:

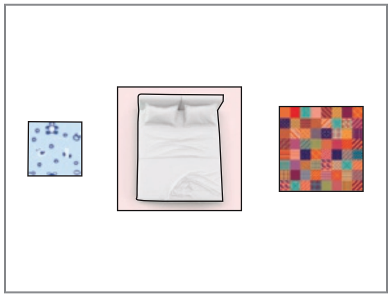
Tuck 6	Tuck 4	Tuck 7	Tuck 5	Tuck 1	Tuck 2	Tuck 9	Tuck 8	Tuck 10

Offer more practice with Ten and Tuck as a partner activity. Partner A says how many fingers to tuck. Partner B says the addition sentence. Switch roles after each turn.

Launch 5

Students consider a real-life situation involving area.

Display the picture of the baby blanket, bed, and quilt. Invite students to think–pair–share about which blanket would be better for the large bed.

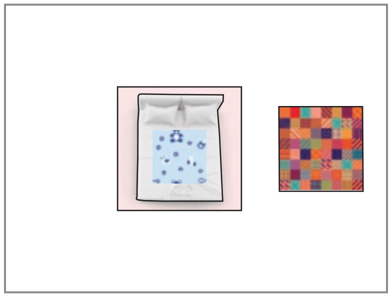


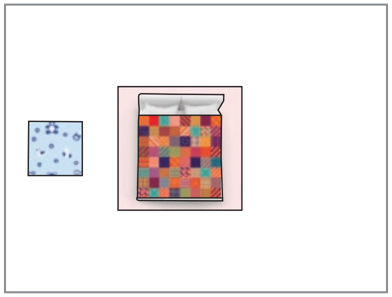
Which blanket is best for the grown-ups' bed? Why?

The ducky blanket is for babies. Grown-ups would like the squares one better.

Grown-ups need the squares blanket. That one is big enough. The other one isn't big enough for the bed.

Advance the images to show the baby blanket on the bed and then the quilt on the bed.





The squares blanket is big enough to cover anyone who lies in the bed. It takes up more space on the bed.

Transition to the next segment by framing the work.

Today, we will find ways to compare two things and see which one takes up more space.

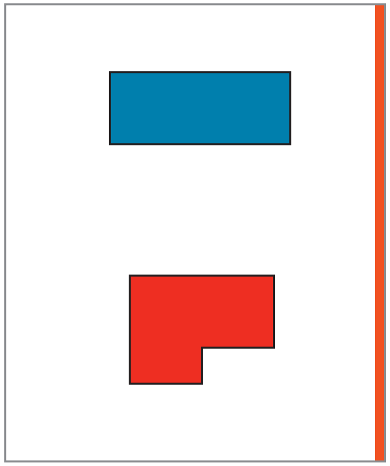
Learn 30

Relate Area and Number

Materials—T/S: Red and Blue Shapes removable, Unifix Cubes

Students recognize that different shapes can have the same area.

Show the Red and Blue Shapes removable.



Take a silent moment to think: Which shape takes up more space?

If you think the blue shape takes up more space, stand.

If you think the red shape takes up more space, stay seated.

Select two or three students to share their reasoning.

The red one is bigger because it has a little piece hanging down.

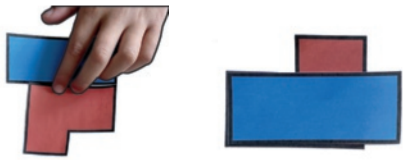
The blue one takes up more space because it is longer.

Show the shape cutouts.

How could we compare the shapes to find out which takes up more space?

Select two or three volunteers to test their ideas. Engage the class by inviting them to narrate volunteers' actions. Anticipate that students will compare side lengths, fold, or cover the shapes.

One way to compare and be sure is to see how many cubes it takes to cover each shape.



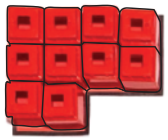
Distribute the Red and Blue Shapes removable and Unifix Cubes to each student.

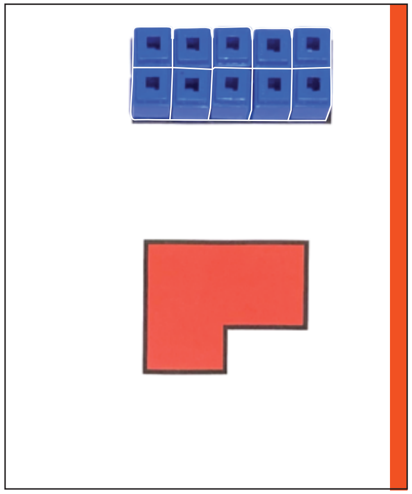
I will cover the red shape with cubes. You cover the blue shape.

Teacher Note

Area is formally introduced in grade 3. This lesson exposes students to the concept without using formal terminology. The lesson invites students to intuitively make sense of thinking about size in terms of the amount of space an object takes up, similar to how in module 3 students compare the lengths of objects without quantifying their length.

Demonstrate placing the first few cubes on the red shape, leaving no gaps and lining them up within the perimeter of the shape. Have students start on the blue shape while you finish placing cubes on the red shape. As students work, highlight organizing behaviors such as aligning endpoints or starting from one corner.





How many cubes did you use to cover your shape?

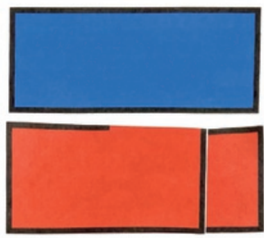
10

Me too!

Let's use the words *is equal* to tell about our numbers.

10 is equal to 10.

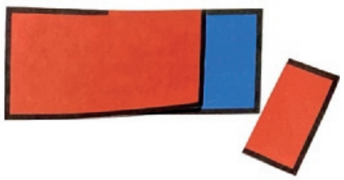
The red shape is the same size as 10 cubes and the blue shape is the same size as 10 cubes. Do the shapes take up the same amount of space? How do you know?



They have the same amount of cubes so I think they take up the same amount of space. They just look different.

10 cubes and 10 cubes are the same.

So you think they take up the same amount of space even though they look different?



Yes.

You think they take up the same amount of space even though the red shape has a dangling piece?

Yes.

Cut off the dangling piece from the red shape. Move it to compose a rectangle as shown.

What do you notice?

Teacher Note

If students need to see another example to understand that the red and blue shapes have the same area, invite a student to transfer their cubes from their blue shape to the teacher's red shape.

They look the same now.

Now it's easy to see they take up the same amount of space.

They are equal.

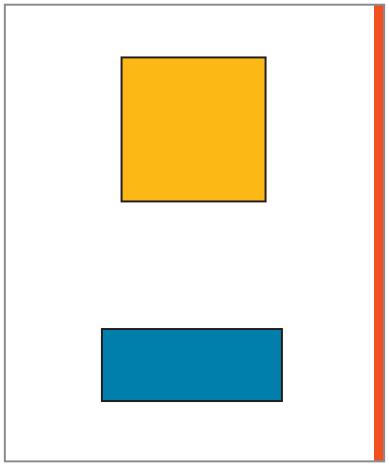
Verify by covering the blue shape entirely by using the pieces of the red shape.

Compare Area

Materials—S: Yellow and Blue Shapes removable, Unifix Cubes, scissors, assorted math tools

Students compare the area of 2 shapes.

Distribute the Yellow and Blue Shapes removable and make sure students have cubes. Decide whether students will work in pairs or individually and assign partners if needed.



How can we compare the yellow and blue shapes to find out which one takes up more space?

We could cover the shapes with cubes and see which one needs more.

The blue rectangle looks smaller. I could cut it out and show that it doesn't cover the yellow shape.

Invite students to compare the shapes. Make scissors available to those who want to use them.

Anticipate that students covering the shapes with cubes may need additional tools to compare numbers. Make Hide Zero cards, 10-frames, and number paths available.

Take photos or make note of the strategies students use to compare. Select one or two students who use different strategies for finding the area or comparing number to share their work.

Observational Assessment

☑ Watch as students compare area.

- Can students show how they compared the two shapes?
- Can students say a comparison statement or phrase such as the following examples?
  "____ is greater than ____."
  "____ is less than ____."

Promoting the Standards for Mathematical Practice

As students compare how much space different shapes take up, they attend to precision **(MP6)**. Students make use of numbers to add precision to their intuitive understanding of how much space a shape takes up.

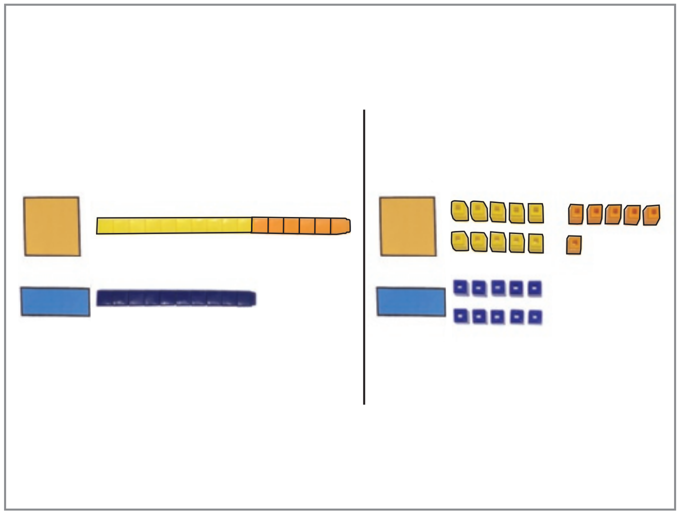
This strategy allows students to use cubes as a measurement unit for area while still relying on comparison language rather than the language of direct measurement, as in this example: "The yellow shape takes up more space than the blue shape" instead of, "The area of the yellow is 16 square units."

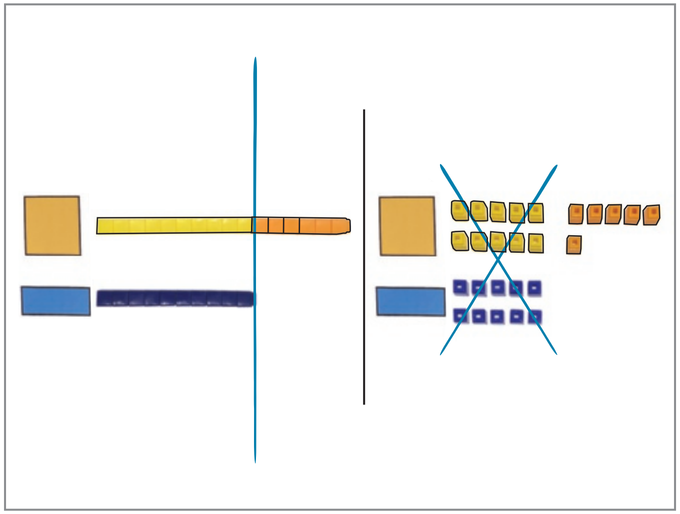
Share, Compare, and Connect

Materials– T: Student work samples; S: Purple and Green Shapes removable, Unifix Cubes

Students share and discuss strategies for comparing area.

Display work samples from Puppet and Puppet's friend.





Puppet and Puppet's friend covered their shapes with cubes to see which takes up more space. What do you notice about the ways they compared their cubes?

Puppet made long sticks out of the cubes. The yellow and orange stick is longer.

Puppet's friend put the cubes in 5-groups.

There are 16 cubes that covered the yellow square. There are 10 cubes that covered the blue rectangle. I got the same numbers with sticks and cubes.

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

Could you use this work to take away a part that is the same and compare what's left?

I think so. Both shapes have a group of 10 inside but only the square has 6 more.

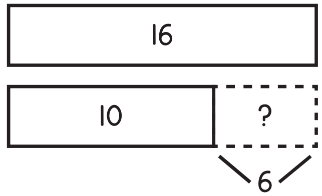
Yes. If you cover up the yellow and blue cubes then you just see the orange cubes. Only the yellow square uses those extra cubes, so it must be bigger.

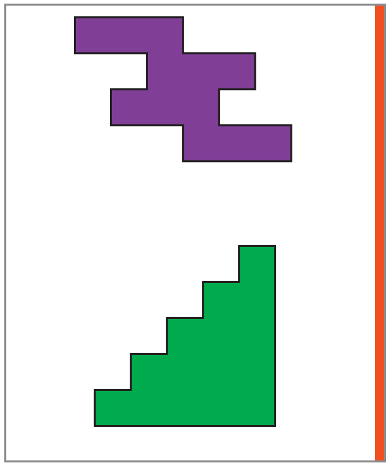
Teacher Note

Directly comparing lengths in kindergarten is foundational for modeling and solving comparison word problems using tape diagrams in grades 1 and 2.

10 + ___ = 16

16 − 10 = ___





Annotate the samples to show students' thinking.

Invite the students you selected in the previous segment to briefly share their strategies for comparing area or number.

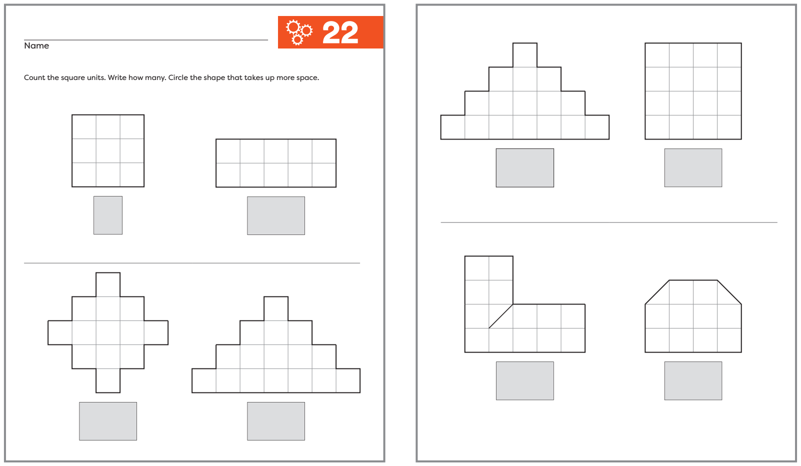
> I used my Hide Zero cards to make 16 and 10. They both have 10, so I just looked at the 6 and the 0.
>
> Six is greater than 0.
>
> I cut up the blue rectangle and it didn't cover the whole square, so I know the square takes up more space.

Confirm that 16 is greater than 10 and that the yellow shape takes up more space.

If time permits, invite students to compare the area of the shapes on the Purple and Green Shapes removable.

Problem Set

Review the directions for the Problem Set before releasing students to work independently.



UDL: Representation

The last two problems provide an opportunity to activate prior knowledge of shape composition from modules 2 and 4. Rather than describe a triangle as half of a square, prompt students to consider what shape can be made by putting two triangles together. Use pattern blocks as needed. Composing and decomposing shapes is foundational to fraction concepts.

Land 5

Debrief 5 min

Materials—S: Problem Set

Objective: Compare area by comparing number.

What are some ways you can compare shapes to see which takes up more space?

If one is really big and the other one is really small, you might be able to just see which one takes up more space.

You can put one shape on top of the other and see if it covers it all the way.

You can put cubes on the shapes and count the cubes. Whichever has more cubes takes up more space.

Look at the first shape on your Problem Set. Imagine it's a blanket. What does the number below the shape tell about?

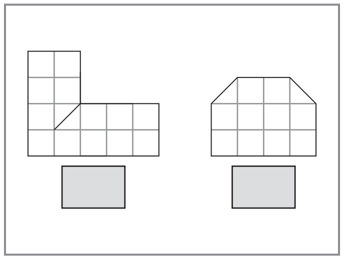
It tells how many cubes someone put on the blanket.

It tells you how much space the blanket takes up.

If students attempted the final question on the Problem Set, display the shapes and ask students to share how they counted.

I counted 13 squares and 2 triangles in the L-shape. The house shape has 10 squares and 2 triangles.

The triangles make a square in the L-shape. There are 14 squares.



If time permits, facilitate a discussion about using 2 triangles to create a square in each shape. Encourage students to try using triangles to compose a square.

23

LESSON 23

Compare lengths of objects by using 10-sticks and individual cubes. (Optional)

Observational Assessment Recording Sheet

Student Name

Grade K Module 6

Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than*, *fewer than*, or the *same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to*, *take from*, *put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

Students use 10-sticks and individual cubes to create cube sticks that are the same length as classroom objects. They count the total cubes in the stick. Students compare and order objects from shortest to longest by using cube sticks or number.

Key Questions

- How can you compare the lengths of objects?
- How can you count by tens and ones?

Achievement Descriptor

K.Mod3.AD1 **Compare** the number of objects in two groups by using the terms *more than*, *fewer than*, or *the same number as*, e.g., by using matching or counting strategies. (K.CC.C.6)

Agenda

Fluency 10 min

Launch 5 min

Learn 30 min

- Count by Tens and Ones
- Measure Lengths
- Order by Length

Land 5 min

Materials

Teacher

- Book
- Big book
- Unifix® Cubes (35)
- Classroom Objects removable (in the teacher edition)
- Bag

Students

- Unifix® Cubes
- Number Bond Dash: Partners to 10 (in the student book)
- Student book

Lesson Preparation

- Copy or print the Classroom Objects removable from the teacher edition. Cut out the cards and place them in a bag.
- Make 10-sticks with Unifix Cubes. Groups of three students need 10-sticks of cubes in different colors. The number of cubes each group needs varies depending on the classroom object they measure. Set aside three 10-sticks and a 5-stick in different colors for demonstration.
- Set out a big book and a smaller classroom book that measures between 10 and 20 cubes long.

Fluency 10

Number Bond Dash: Partners to 10

Materials—S: Number Bond Dash: Partners to 10

Students find the missing total or part to build fluency with partners to 10.

Direct students to the Number Bond Dash activity in the student book.

Read the directions aloud. Have students use their finger to practice completing a number bond on their paper. Then invite students to begin the activity by using a pencil.

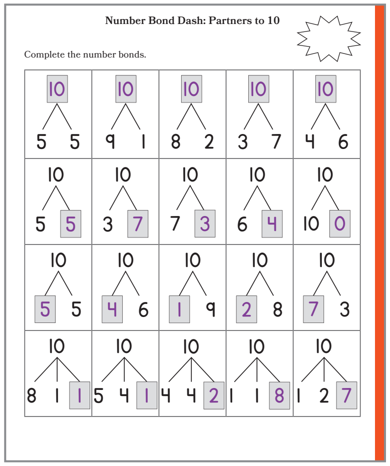
Let students work for 1 minute or until most of the class nears completion. Do not extend beyond 2 minutes of written work. If some students finish early, they should count from 10 to the highest number they can, recording their count on the back of the paper.

Read the number bonds aloud as students correct their own papers. When you have finished reading all problems, tell students to write the number they got correct in the star at the top of the page.

Celebrate student effort and success.

Differentiation: Support

To support students in solving for the missing part, encourage them to use Ten and Tuck.



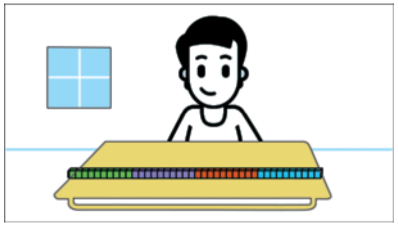
Teacher Note

Students may be interested to know that the Number Bond Dash is part of grade 1 Fluency.

Launch 5

Students discuss effective measurement practices.

Play part 1 of the 10-sticks video, which shows a child placing 10-sticks of Unifix Cubes across a table to make a cube stick as long as the table.



What do you notice?

Someone is putting 10-sticks on the table. It looks like they're measuring.

The last 10-stick doesn't fit.

The first 10-stick isn't lined up with the end of the table.

The student is making a cube stick as long as the table. Did they do that? How do you know?

No, it's too long. Cubes are sticking off the end.

No, there is space at the front where there aren't any cubes.

You can't tell. Some cubes are sticking off the end. But at the beginning there's space on the table with no cubes.

When we want to make a cube stick that is the same length as an object such as a table, what do we have to do?

You have to line up the ends.

You keep adding 10-sticks until you get to the other end.

Play part 2 of the video, which shows the student aligning the first 10-stick with the end of the table.

Are the cube stick and the table the same length?

Yes.

How many cubes are in the stick?

Have students count the number of 10-sticks, then count to find the total number of cubes. Confirm that there are four 10-sticks and 40 total cubes.

Transition to the next segment by framing the work.

Today, we will use cubes to make sticks that are the same length as objects in our classroom.

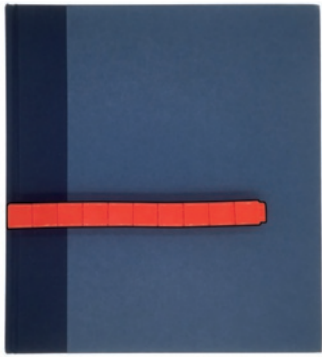
Learn 30

Count by Tens and Ones

Materials—T: Book, big book, 30 Unifix Cubes

Students count by tens and ones to measure objects with cubes.

Show a book that is as long as a 10-stick and some individual Unifix Cubes.



Invite students to make a cube stick that is exactly as long as the book. Lay a 10-stick on the book, deliberately aligning the endpoints. Lay another 10-stick in a different color on the book.

Another 10-stick is too long. What can I do to make a cube stick that is exactly as long as the book?

Put down 1 cube at a time until you get to the end.

It looks like you need 3 or 4 more cubes. Make a 3-stick and try.

Break individual cubes off the 10-stick and place them until the cube stick is as long as the book.

Teacher Note

The words *long*, *tall*, and *short* were introduced in an earlier module. Rather than introduce the term *wide*, this lesson continues to use the term *long*. Finding the width of an object is a measurement of length.

Let's count to see how many cubes are as long as our book. How should we count? Why?

There's a 10-stick so you have to count by tens.

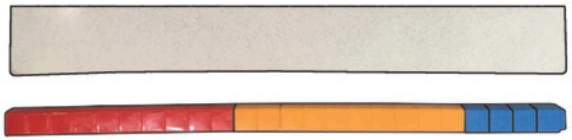
There's only one 10-stick. You have to count the orange cubes by ones. We can count 10 and then keep counting orange cubes.

Let's try counting on from ten.

Point to the 10-stick and then individual cubes as students count.

Tennnn, 11, 12, 13

Show a big book. Work with the class to create a cube stick that is as long as the big book. Begin with 10-sticks in different colors and then add individual cubes in a third color.



How should we count the cubes in this stick? Why?

I think we have to count by ones.

We can count 10, 20, but there aren't enough cubes to count to 30. I don't think we can count by tens.

Maybe we can count on from 10 again, or maybe 20.

Invite students to try counting by tens first and then by ones. Point to each 10-stick and then individual cubes as students count.

Notice whether students transition from counting by tens to ones correctly. If needed, count again. Pause when transitioning from tens to ones to help students recall the change.

Promoting the Standards for Mathematical Practice

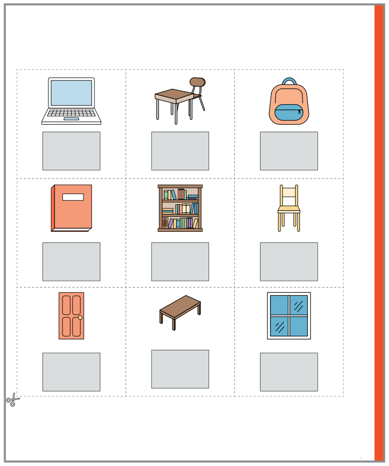
Students look for and make use of structure (MP7) when they count by tens and ones. The measurement context allows students to see how numbers greater than 10 are made up of tens and ones and to use this place value structure to efficiently count the cubes.

The different color cubes and suggested questions throughout this lesson draw attention to this structure and help students make use of it to count efficiently.

Measure Lengths

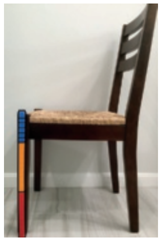
Materials—T: Bag, Classroom Objects removable; S: Unifix Cubes

Students use cubes to measure classroom objects.



Form groups of three students. Show a bag that has cards from the Classroom Objects removable inside.

Each group takes a card from the bag. The card shows an object in the classroom. *(Demonstrate.)*



Find the object in our classroom. Work together to make a cube stick that is as long as the object. Write the number of cubes on the card.

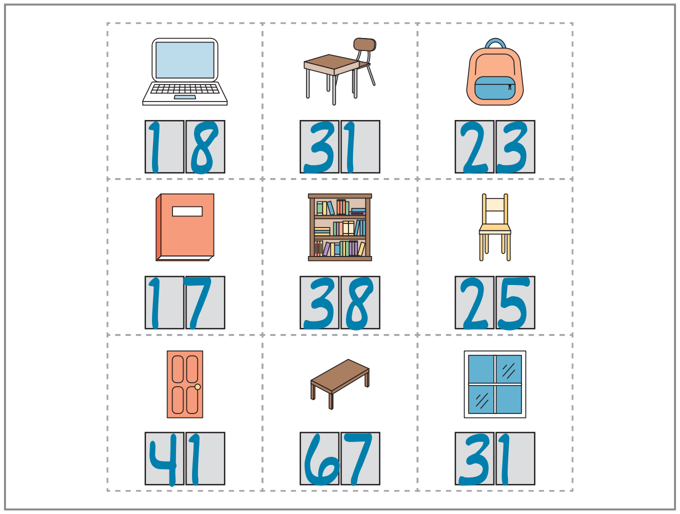
Give each group a few 10-sticks in different colors to start. Set out extras. Check for accuracy as students count, especially when they switch from counting by tens to counting by ones.

Invite groups to bring their cube stick and completed Classroom Object card to a central location.

Order by Length

Materials—S: Unifix Cube stick, Classroom Objects removable

Students place objects in order by length.



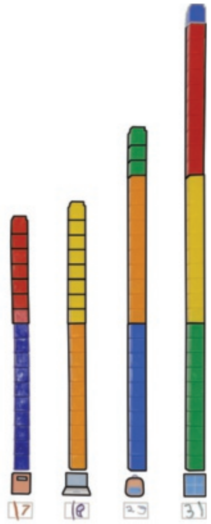
Display the picture of the Classroom Objects removable.

Record how many cubes each group used to measure their object. Invite the class to order the objects from shortest to longest.

How can we figure out which object is the shortest?

We can look at the cube sticks next to each other and see which one is the shortest.

We can look at the numbers and see which number is smallest.



Use students' ideas to determine which object is shortest. Set out the shortest cube stick with the completed Classroom Objects card below it.

Select another object. Ask that group to place their cube stick and card in line with the shortest object according to whether they think their object is a shorter item or a longer one. Ask them to tell their reasoning.

As each group places their object, engage the class by asking the following questions:

- Where in line do you think this object should go?
- Is this stick shorter or longer than the _____ stick?
- How do you know that the _____is longer than the _____?

Once all objects are placed, have partners turn and talk about how they know the objects are in order from shortest to longest.

UDL: Representation

As partners turn and talk about how they know the objects are in order from shortest to longest, consider recording their observations.

The window  is longer than the backpack .

31 is greater than 23.

Observational Assessment

☑ Listen as students turn and talk.

- Can students say a comparative sentence or phrase about the number of cubes in each stick?
- Do students use the precise terminology (*more*, *less*, *greater*, or *fewer*) as they make comparative statements?

Land 5

Debrief 5 min

Materials—T: Unifix Cubes

Objective: Compare lengths of objects by using 10-sticks and individual cubes.

How did you compare the length of objects?

I looked at how many cubes. If the number is greater that means the stick is longer.

I put the sticks right next to each other to see which one is bigger.

How did you count by tens and ones?

I counted all 10-sticks by tens. When I ran out of 10-sticks, I counted by ones.

Show a stick of 35 cubes so all students can see.

How should we count the cubes in this stick? Why?

I think we have to count by ones.

We can count 10, 20, 30, then keep counting by ones like we did before.

Invite students to count by tens first and then by ones. Point to each 10-stick and then individual cubes as students count.

Would we get the same amount if we just counted by ones?

Yes.

Invite students to count by ones. Point to each cube as students count.

Could we count all the cubes if we only count by tens?

I'm not sure.

No, we couldn't count the last ones that aren't a 10-stick.

Demonstrate counting only by tens, leaving off the final 5.

Did we count all the cubes?

No.

Which ways of counting let us count all of the cubes?

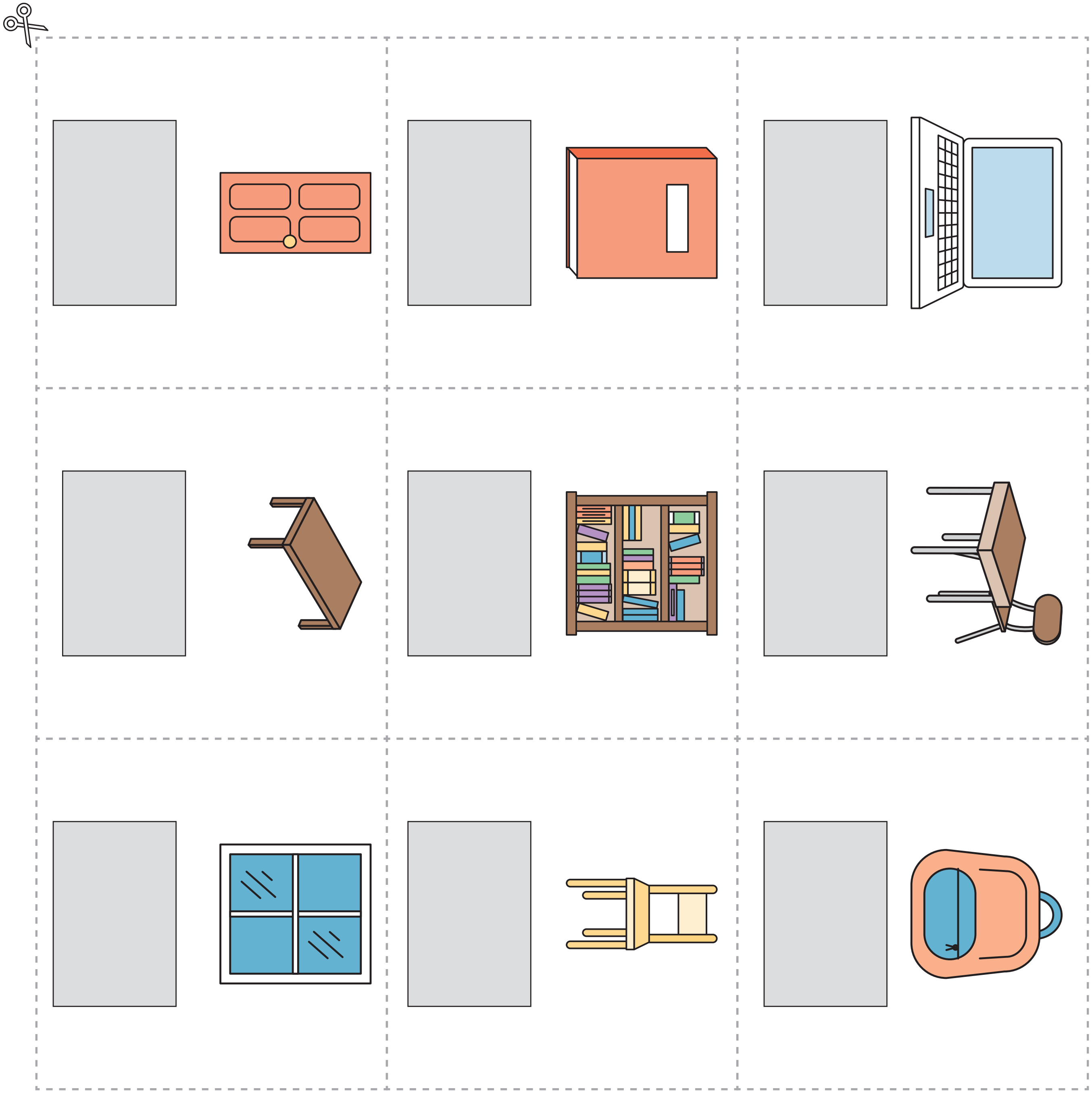
When we counted just by ones.

When we counted by tens and then ones.

Why don't we just count by ones all the time?

Sometimes you mess up the count when you are counting a lot of things by ones.

It's way faster to count by tens.



24

LESSON 24

Organize, count, and represent a collection of objects.

Observational Assessment Recording Sheet

Student Name

Grade K Module 6

Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than, fewer than*, or the *same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to, take from, put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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Lesson at a Glance

This lesson invites students to count and record a collection of pregrouped objects. They use tools and strategies of their choice. Class discussion focuses on how groups can make counting easier. Students demonstrate and celebrate growth with counting concepts and written recordings while teachers gather formative assessment data.

There is no Fluency component in this lesson.

Key Question

- Why does counting by tens sometimes make it easier to count?

Achievement Descriptor

This lesson supports K.CC.1–5, the counting and writing numeral standards. These concepts build from the work in module 1 and get more sophisticated as the counting quantities get larger in subsequent modules. This content is intended to serve as a formative assessment and is therefore not included on summative assessments in this module.

Agenda

Launch 10 min

Learn 35 min

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

Land 5 min

Materials

Teacher

- Counting Collection removable (in the teacher edition)
- Small bag or envelope (1 per student pair)

Students

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

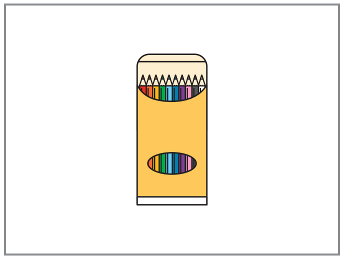
Lesson Preparation

- Decide whether to use the suggested Launch or to challenge students with a counting routine. You choose the signals, start number, and count-by number. Students may count forward, backward, or both. If you choose the challenge, then prepare chart paper and markers.
- Copy or print the Counting Collection removable from the teacher edition. Use each page of the removable as one collection or cut the images apart to make a custom collection. Place in a small bag or envelope.
- Select organizing tools that students can choose to organize their count such as Unifix Cubes, beans, 10-frame cartons, number paths, and 10-frames.
- Place the observational assessment checklist on a clipboard for observational notes.
- Gather prior counting collection samples for each student to reflect on.

Launch 10

Students discuss ways to find the total of a collection.

Display the picture of boxed colored pencils.



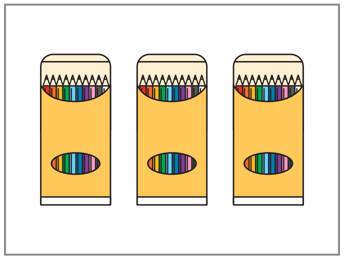
How many pencils are in the box? Show thumbs-up when you know.

10 pencils

Model counting to confirm that there are 10 pencils.

Each box can hold 10 pencils, like a 10-frame.

Display the picture of the 3 pencil boxes.



How can we find the total?

We can count each pencil.

We can count by tens. 10, 20, 30

We can add. It's 10 + 10 + 10.

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

Suppose there are 6 boxes. How could we find the total then?

We could keep adding tens. It's 3 more tens.

There would be 6 tens because each box is 1 ten.

We can Say Ten count, like 1 ten, 2 ten, 3 ten.

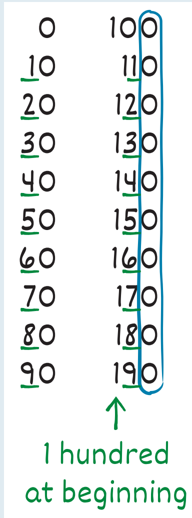
I know 3 and 3 is 6. So 3 tens and 3 tens is 6 tens or 60.

Transition to the next segment by framing the work.

Today, we will count a collection that has already been put into groups, like the pencils. You can use math tools to help you count and record.

Differentiation: Challenge

Instead of the suggested Launch, lead the class through a counting routine by tens, recording as shown. This routine prepares students to count groups greater than 100.



Learn 35

Organize, Count, and Record

Materials—S: Counting Collection, work mat, organizing tools, student book

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

Briefly reorient students to the counting collection materials and procedure.

- Partners collaborate to count a collection.
- Each partner makes their own recording in the student book to show how they counted.

Present organizational tools that students may choose to use. Tools such as Unifix Cubes, beans, number paths, 10-frame cartons, or 10-frames will support one-to-one correspondence and may be beneficial, especially for larger collections. Providing a work mat may help students organize their collection.

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

Circulate and notice how students organize, count, and record. Use the following questions and prompts to assess and advance student thinking:

- How many objects are in your collection? Can you show me how you counted?
- Can you count your collection a different way? How?
- Do you see a pattern in your counting? In your recording?
- What number sentence could you use to show your count?

Select two or three student pairs to share their counting work in the next segment. Look for samples that show counting by ones and tens. Take photographs to project if possible. If not, set aside selected work for sharing.

Have students who are not sharing their work leave it in place for a gallery walk. Encourage them to make it easy for others to see their collection and recording.

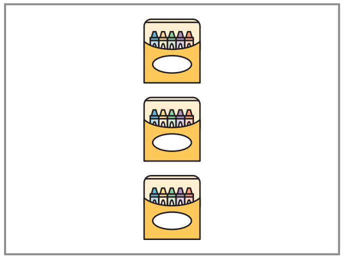
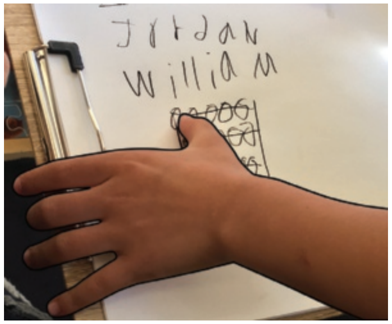
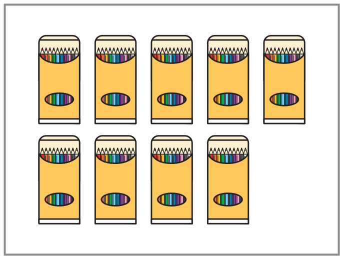
Differentiation: Support

The collections in this lesson are pictorial. Support students to count pictures by having them model the count by using concrete objects. For example, provide real packages of 10 pencils for students to count and then have them count the pictures.

Observational Assessment

☑ Listen as students count.

- Are students saying the correct number sequence?
- Are students saying the last number in their count to tell the total (cardinality)?

Count by Ones	Count by Tens
 	 

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.

Count by Ones (Jordan and William's Way)

Invite a student pair who counted by ones to share.

> **Jordan and William, tell us how you counted your collection.**
>
> We put the pictures of crayons in a line.

Promoting the Standards for Mathematical Practice

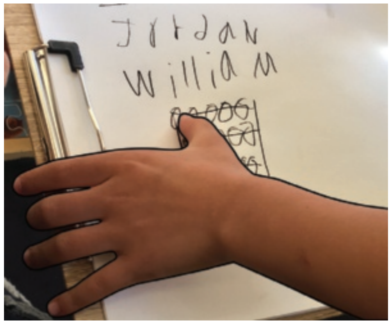
Students look for and make use of structure (MP7) when they find a way to sort their collection and use their sort to help them count. Making use of this structure allows students to advance their thinking at their own pace.

- Some students will still count all of the items, starting from 1, by using their sort to break the count into smaller pieces.
- Other students will begin to incorporate principles of counting on, noticing that they can count one group all at once, "20," and continue to count the other group "21, 22, ... , 32."

I counted the crayons like this: 1, 2, 3, ...
He drew circles to show the crayons.

What did you notice as you were counting?

Each picture has 5 crayons.



If students do not notice groups, support them to recognize the pattern by modeling how to count and label the total for each group.

Their collection is in groups of 5.

What do you notice about their recording?

The circles kind of look like a rekenrek.

They drew circles in groups of 5.

Jordan and William counted by ones to find the total. How could we use the groups to find the total a different way?

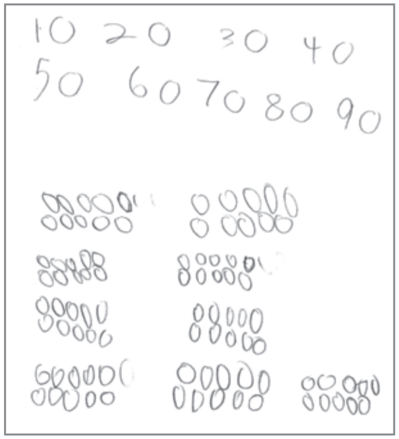
We can add the fives, like 5 + 5 + 5.

We can make a 10. 5 and 5 make 10.

Demonstrate counting by fives to check the total.

Count by Tens (Oliver and Sofia's Way)

Invite a student pair who counted by tens to share.



Oliver and Sofia, how did you count your collection?

We had pencils. They were in groups of 10.

We counted by tens.

What do you notice about their recording?

All the numbers end in 0.

It looks like the 10-frame cartons.

They drew groups of 10. It looks like Jordan and William's drawing, like the rekenrek.

We can see groups of 10 circles. Let’s count by tens together.

10, 20, 30, 40, 50, 60, 70, 80, 90

Why was counting by tens helpful for this collection?

It was fast.

We didn’t have to count each pencil.

There are a lot of pencils, so you might make a mistake if you count by ones.

Gallery Walk

Materials—T: Student work samples

Students do a gallery walk to examine others’ work.

Invite the class on a gallery walk to view each other’s work.

While we do our gallery walk, think about something you notice or like about a classmate’s work.

Help students recall the following norms:

- Look but don’t touch, just like in a museum or gallery. Hold your hands behind your back as a reminder.
- Be very quiet as you look and think about the collections and recordings.

Observe students during the gallery walk. Once students complete their walk around the room, gather the class together.

Let’s talk about what you noticed or like about a classmate’s work. You can start your sentence by saying, “I notice ...” or “I like ....”

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.

What was different about our counting collections today?

They were pictures, not things we could hold and move.

Everything was in groups already. Before, the collections were just piles of things.

Did having your collection in groups make you think differently about how to count or record? How?

Yes. We had bags of 12 balloons in our collection. We don't know how to count by twelves, so we drew groups of 10 instead and then drew the extra 2 from each bag in another group.

We had bunches of 10 carrots and some extras. Once we saw they were in groups of 10, it was easy to count by ten. We made our recording look like 10-frame cartons to make it easy to draw.

Lots of partners had groups of 10 in their collection, or made groups of 10. Why does counting by tens sometimes make it easier to count?

When you have a lot of things, it's easy to make mistakes when you count by ones.

It's way faster to count by tens. You don't have to say as many numbers.

Show student work samples from prior counting collections.

How has your counting changed since you started kindergarten?

Now I put my collection into groups. Before, I made a long line.

I can count bigger collections. I can count to 100.

I count by tens. Before I could only count by ones.

UDL: Engagement

Consider inviting members of the school community to celebrate students' growth with counting concepts and written recordings. Show students' early recordings so that observers can appreciate their progress over time.

Ask students to reflect on their own progress by providing prompts such as the following:

- What do you notice about your recording from the beginning of the year?
- How has your counting changed or improved?

Language Support

Provide sentence frames to distinguish between past and present levels of functioning such as the following:

- I used to ______.
- Now I know how to ______.

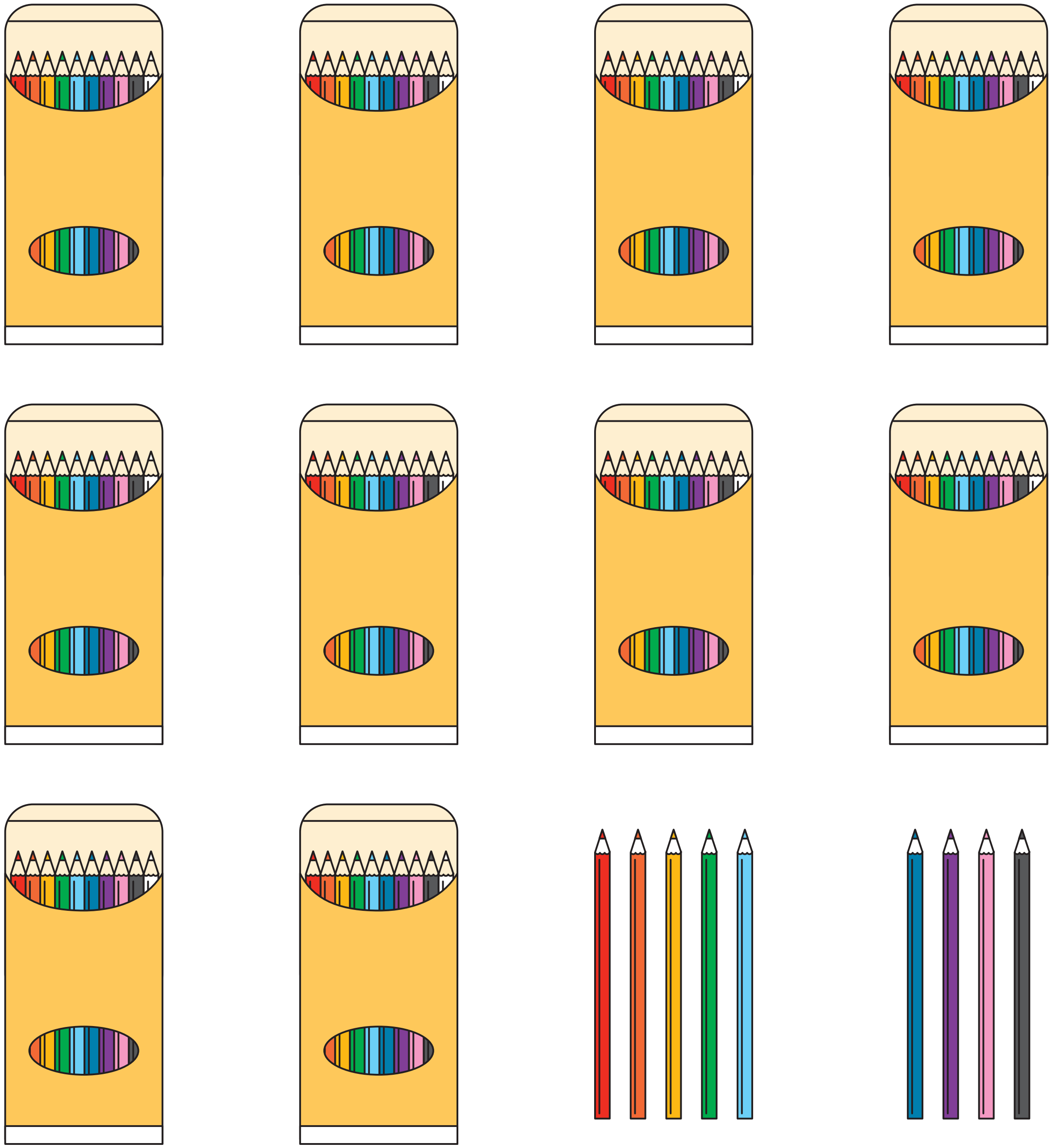
How has the way you record, or draw your collection on paper, changed?

I used to try to draw everything just like it looks. Now I draw circles. It is faster.

Now I know how to write numbers, like teen numbers.

I can write number sentences.

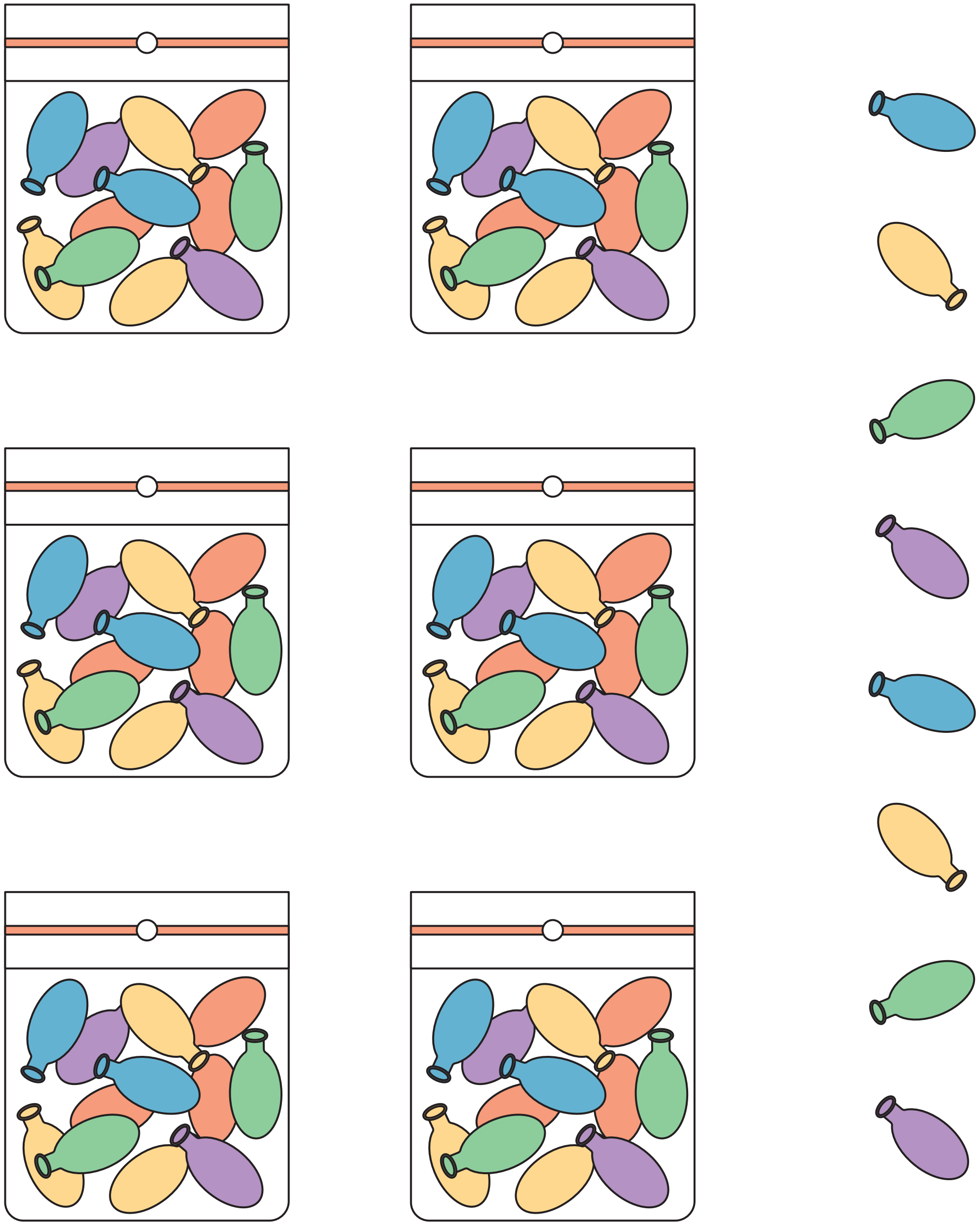
Celebrate all the things students know how to do.

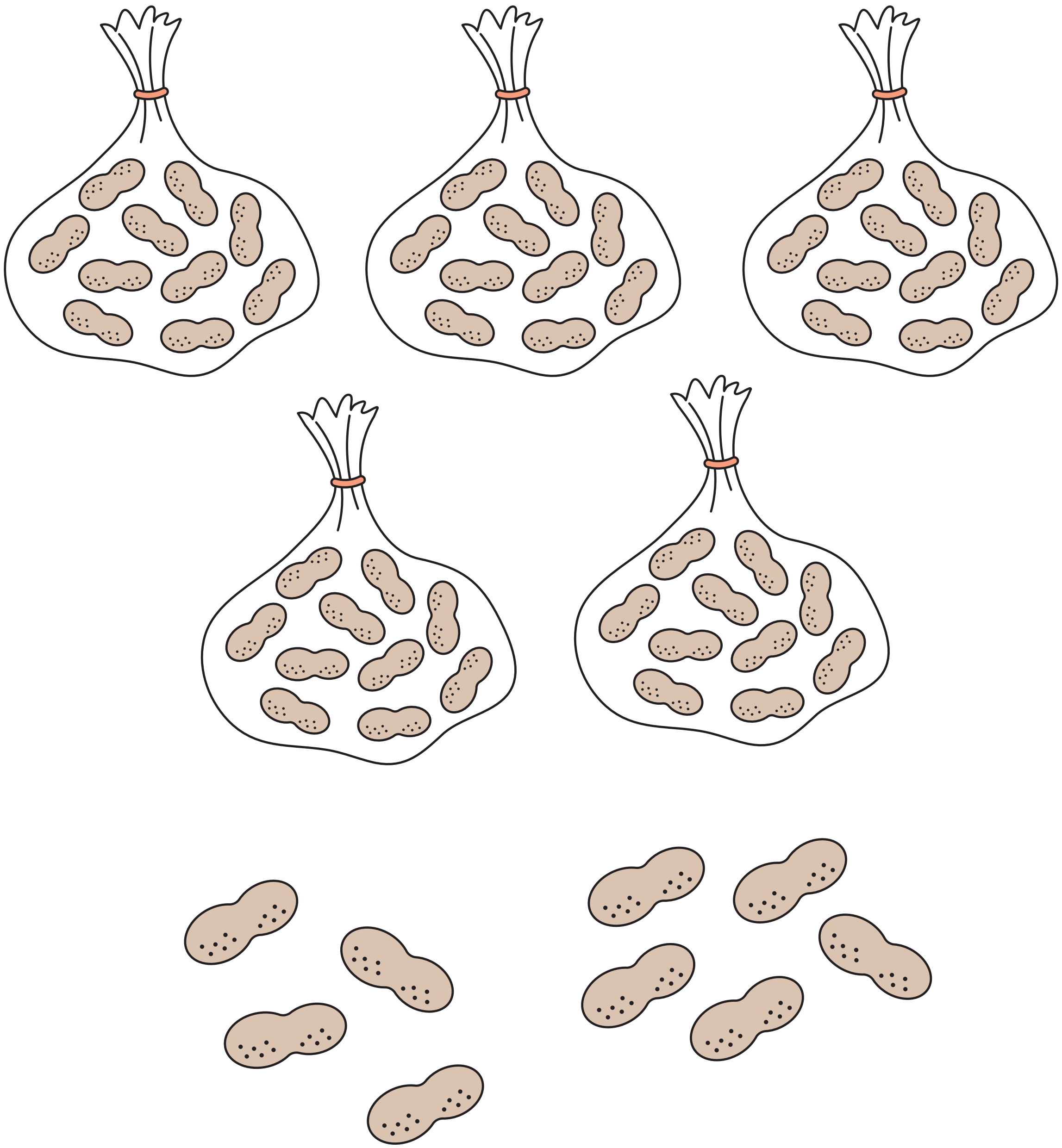


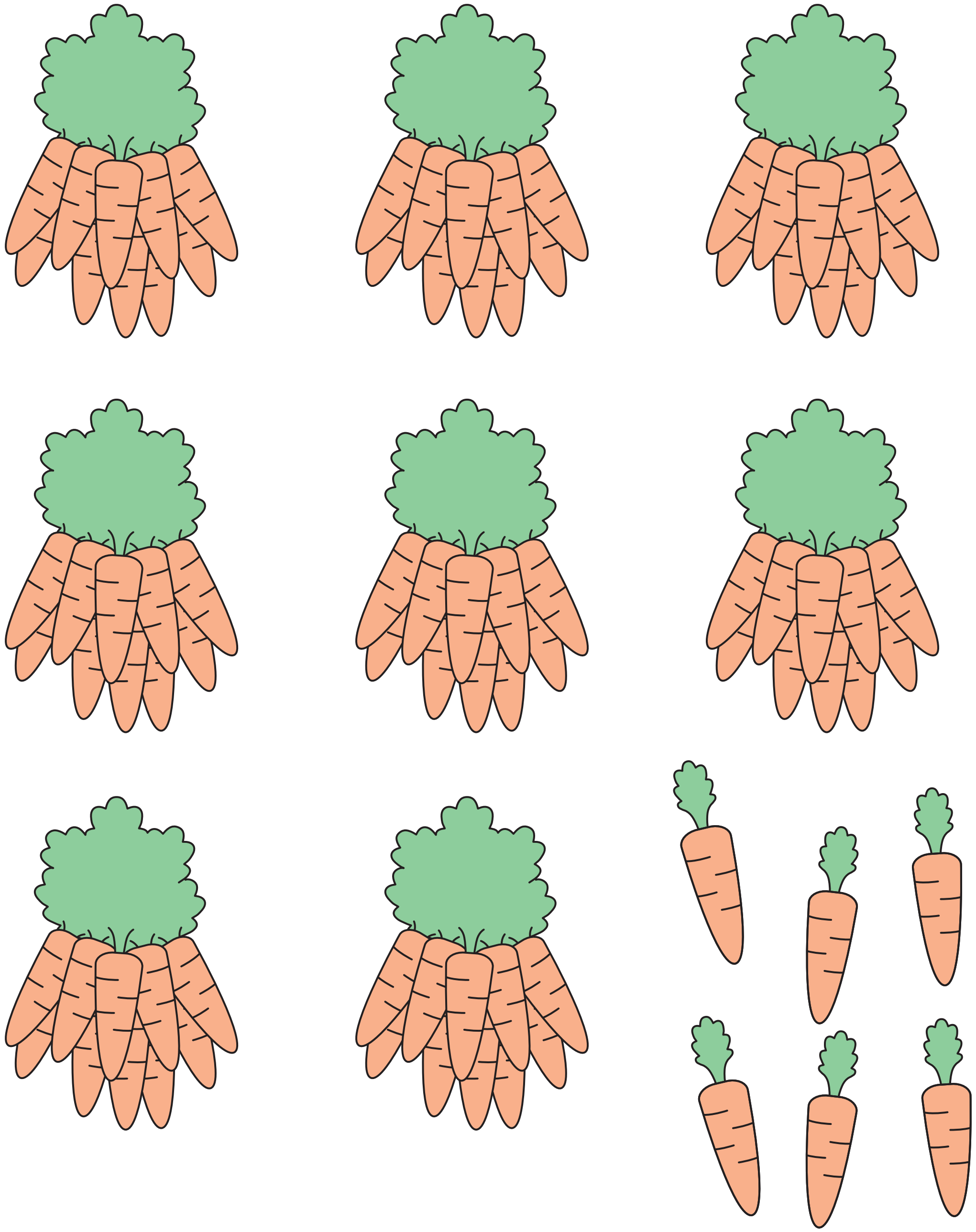


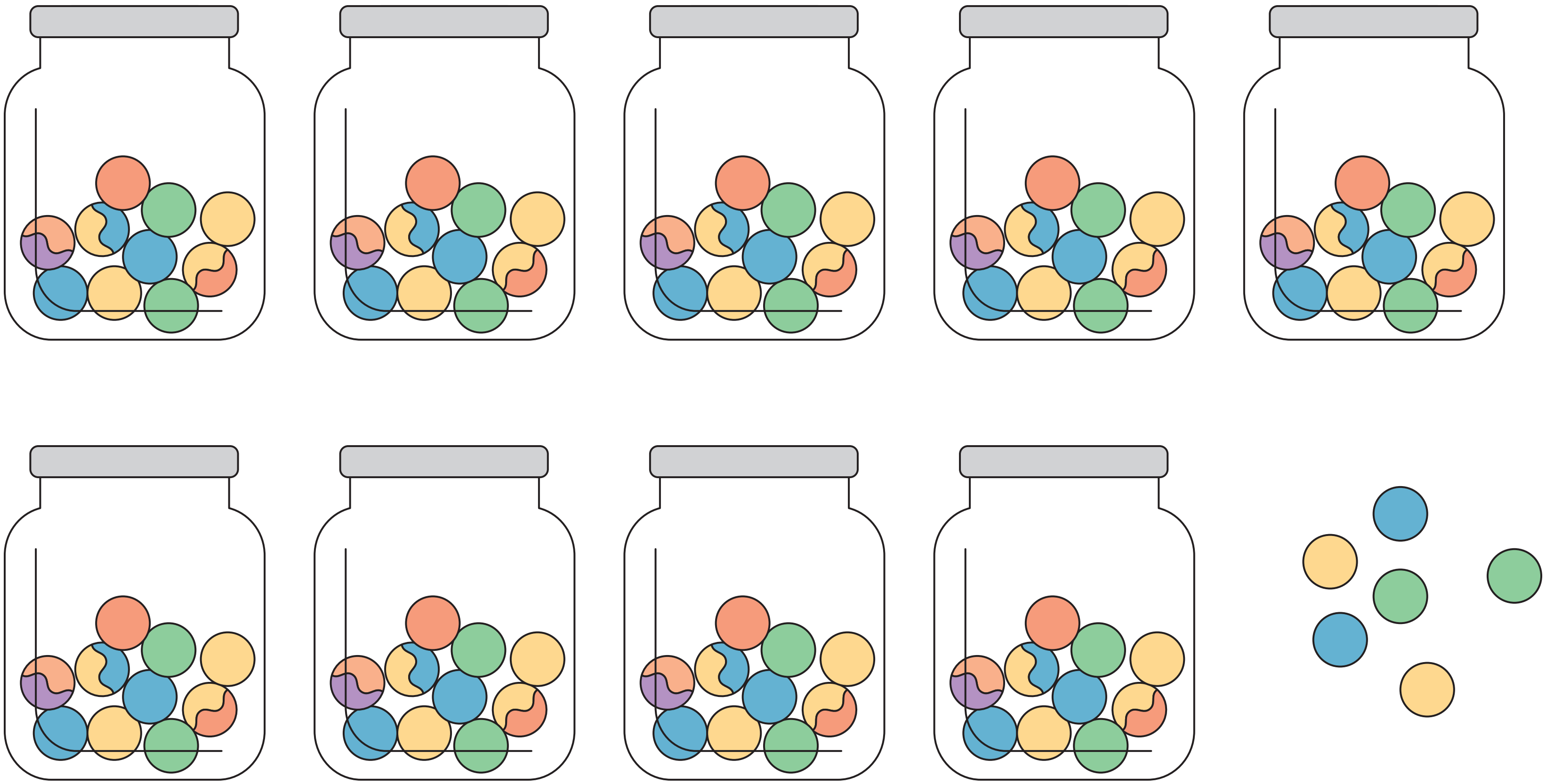


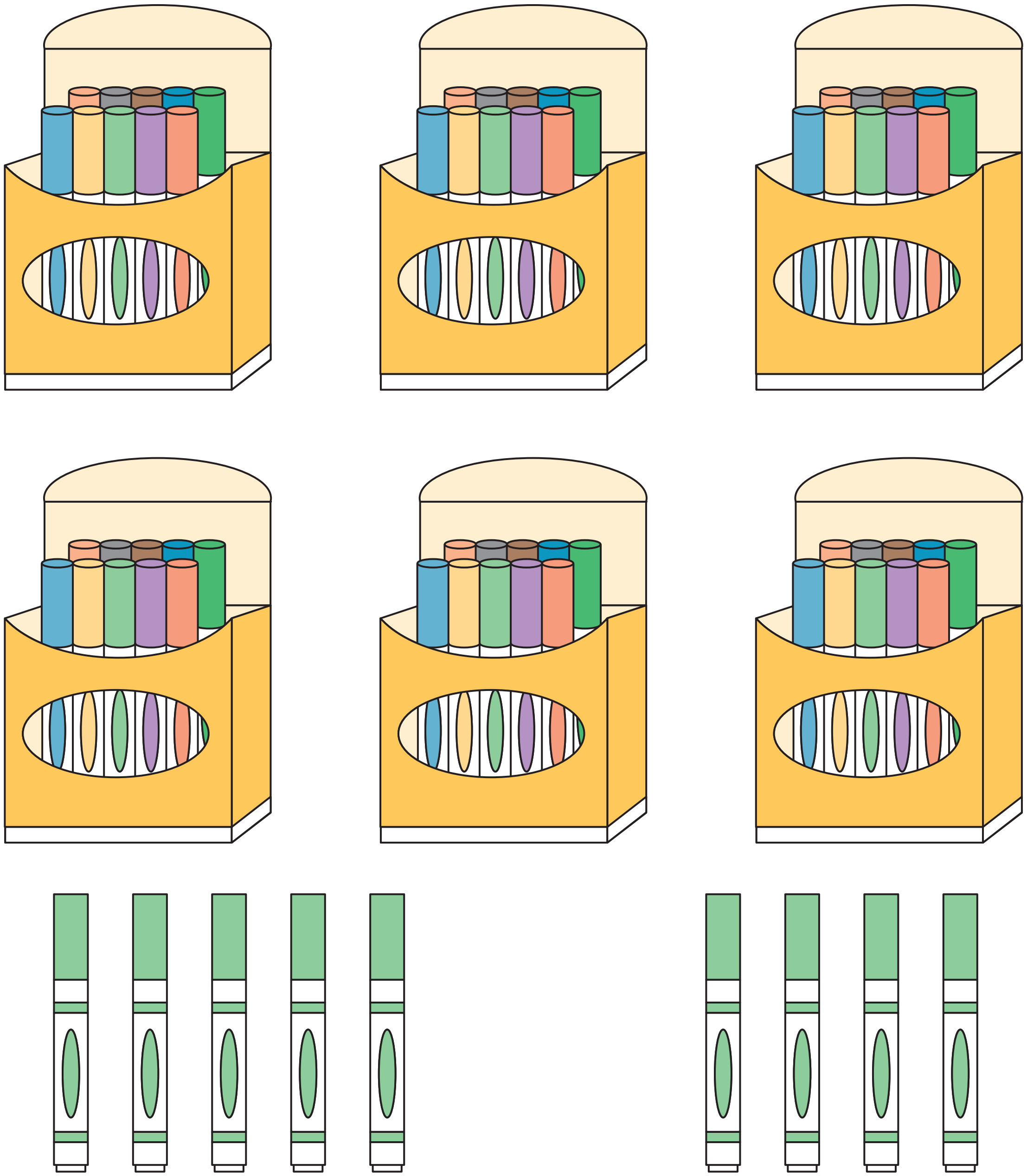


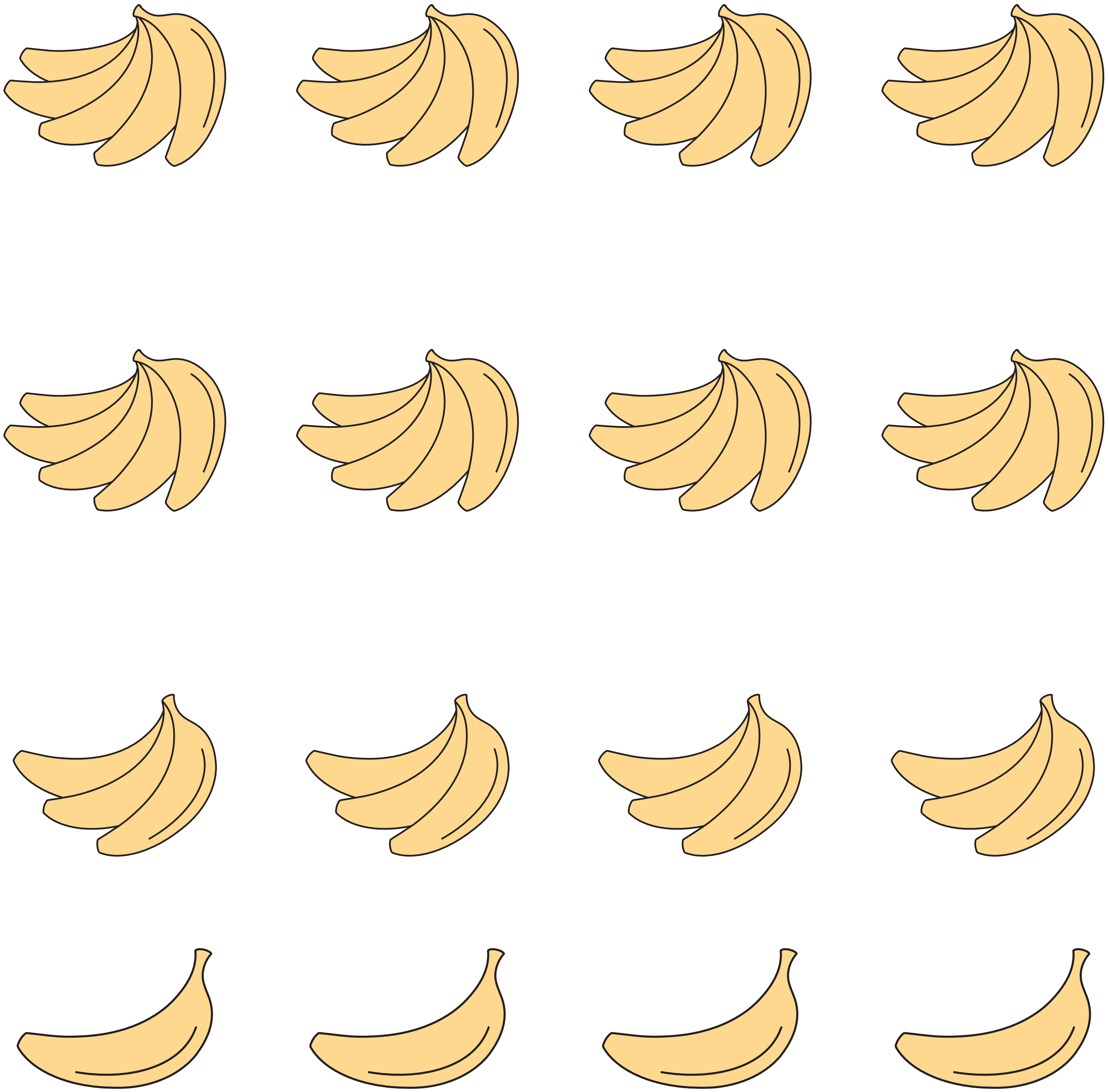


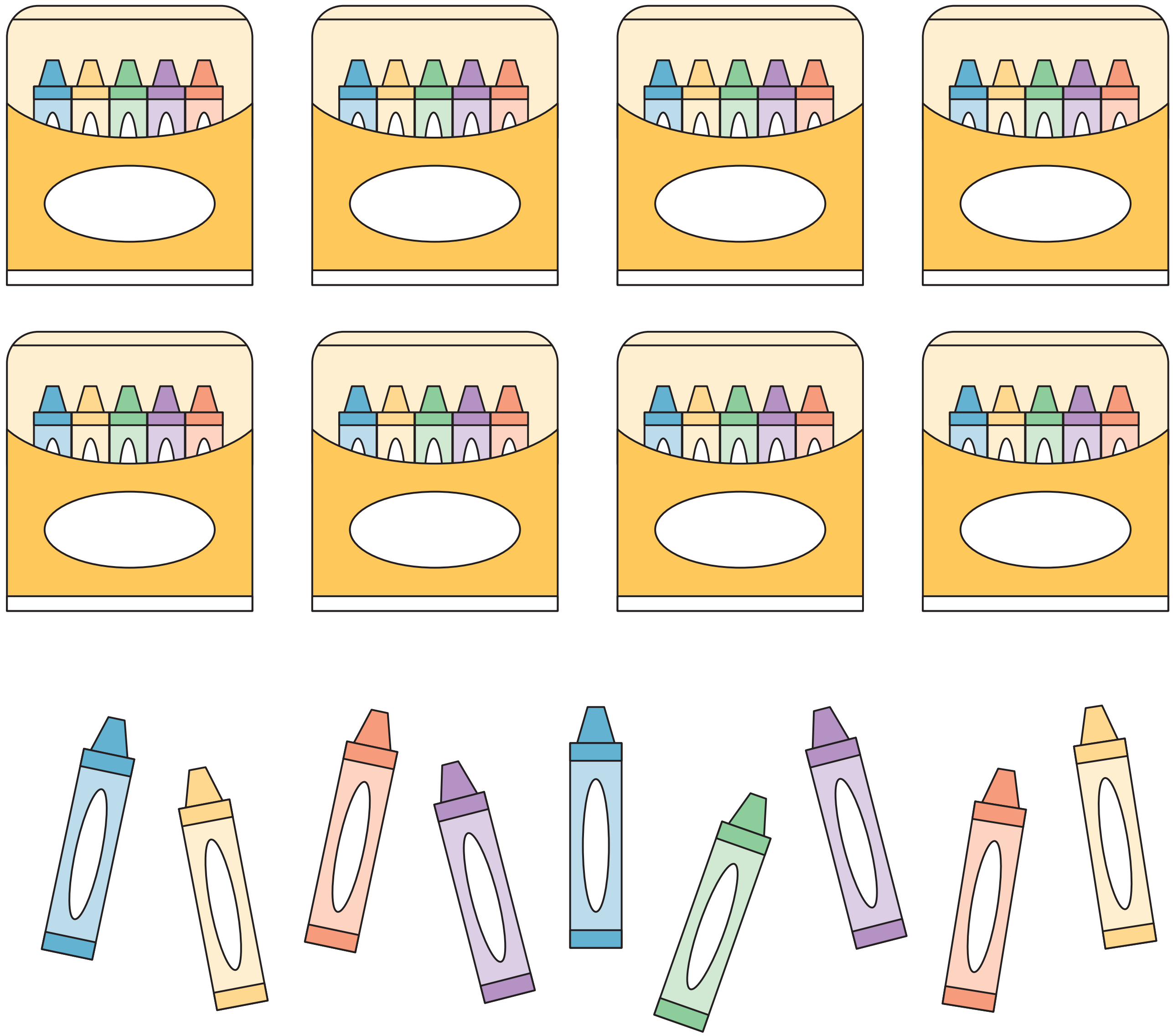












Observational Assessment Recording Sheet

Student Name

Grade K Module 6

Place Value Foundations

Achievement Descriptors		Dates and Details of Observations
K.Mod6.AD1	**Count** to 100 by ones and tens.	
K.Mod5.AD1	**Count** forward from a number other than 1.	
K.Mod6.AD2	**Write** numbers from 11 to 20.	
K.Mod6.AD3	**Represent** a group of objects with a written numeral 0–20.	
K.Mod6.AD4	**Recognize** that each successive number is one more when counting within 20.	
K.Mod6.AD5*	**Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.	
K.Mod6.AD6	**Count** out a given number of up to 20 objects from a larger group.	
K.Mod3.AD1*	**Compare** the number of objects in two groups by using the terms *more than*, *fewer than*, or *the same number as*, e.g., by using matching or counting strategies.	
K.Mod6.AD7	**Solve** *add to*, *take from*, *put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.	
K.Mod6.AD8	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.	
K.Mod6.AD9	**Record** teen numbers as ten ones and some more ones with a drawing or number sentence.	

*These ADs are not assessed on the Module Assessment.

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

Notes

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				
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
K.Mod6.AD1	K.CC.A.1		●	○	○	●									●	●	●	●	●	●					
K.Mod5.AD1	K.CC.A.2	○	○			●											●	●	●	●		○			
K.Mod6.AD2	K.CC.A.3			●																					
K.Mod6.AD3	K.CC.A.3			●	○	○	○	○										●							
K.Mod6.AD4	K.CC.B.4.c				●																				
K.Mod6.AD5	K.CC.B.5	●	○	○	○			●					●		○	○	○	○							
K.Mod6.AD6	K.CC.B.5						●	○			○														
K.Mod3.AD1	K.CC.C.6																				●	●	●	●	
K.Mod6.AD7	K.OA.A.2							○	●	●	●	●	○												
K.Mod6.AD8	K.NBT.A.1	●	●	●	●		●	●	●	●	●	●													
K.Mod6.AD9	K.NBT.A.1				●		●	●	●	●	●	●										○			

Module Assessment

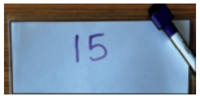
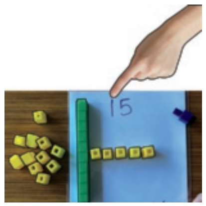
Grade K Module 6

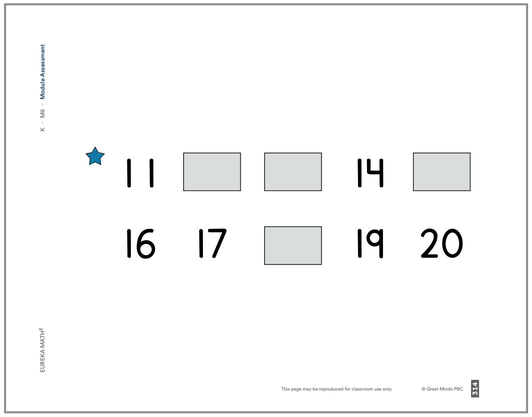
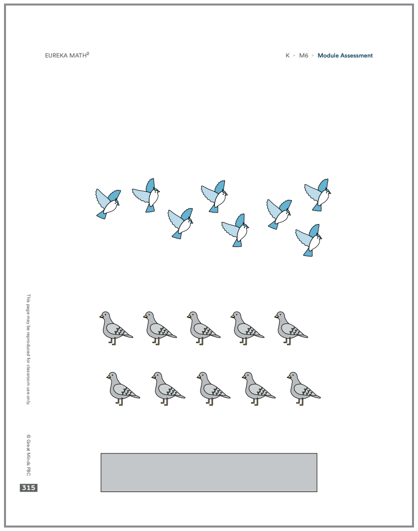
Place Value Foundations

Administer this assessment only to students whose observational assessments show inconsistent proficiency throughout the module. Use the suggested language, or support students in their native language to better ascertain the student's understanding of math content. If a student is unable to answer the first few questions, end the assessment and retry after more instruction.

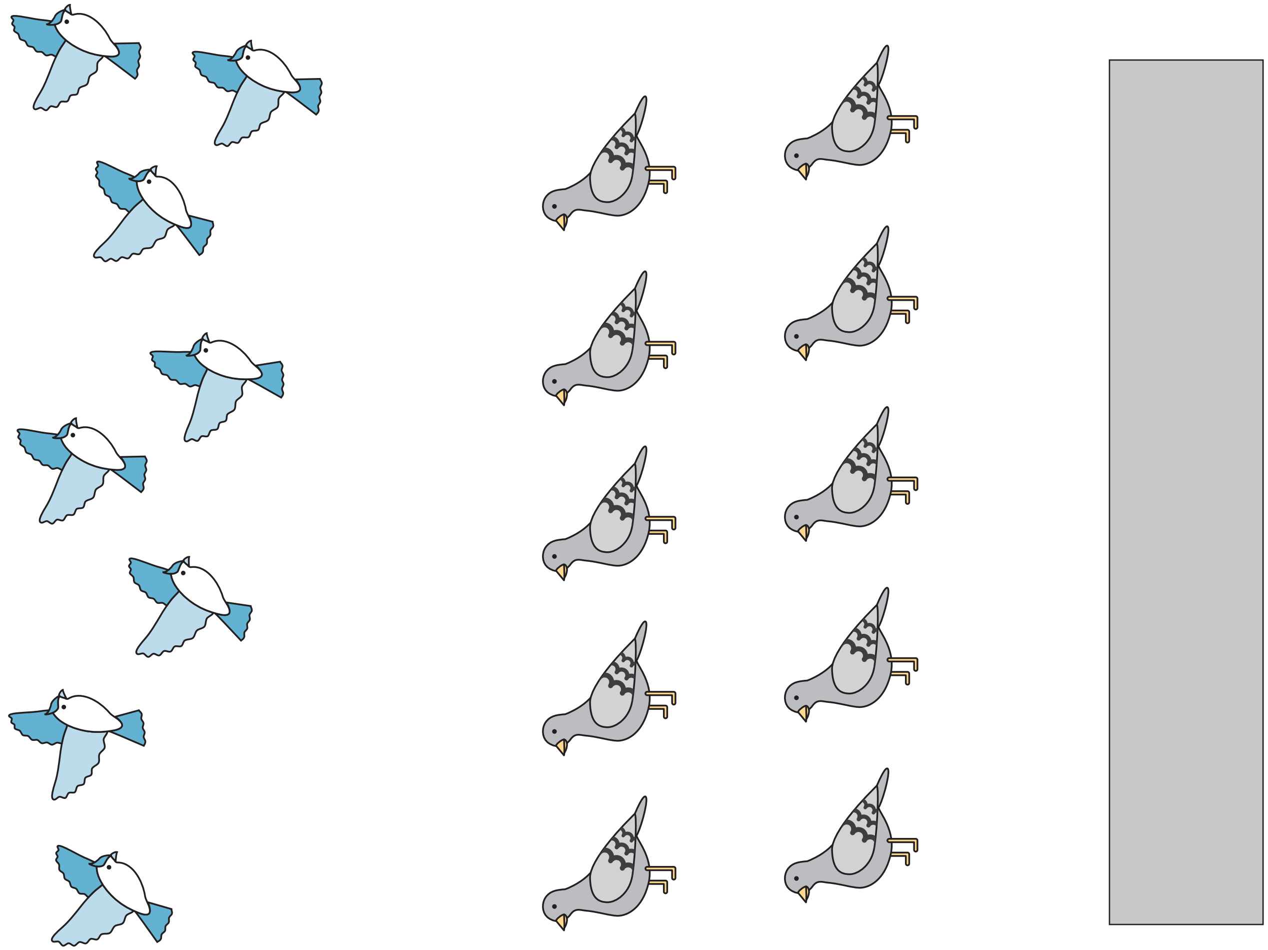
Materials

- Whiteboard and marker
- 10-stick, 16 loose Unifix Cubes
- Numeral writing page
- Bird picture

Achievement Descriptors and Standards	Assessment Question
K.Mod6.AD2 Write numbers from 11 to 20. (K.CC.A.3) **K.Mod6.AD3 Represent a group of objects with a written numeral 0–20.** (K.CC.A.3) **K.Mod6.AD4 Recognize that each successive number is one more when counting within 20.** (K.CC.B.4.c) **K.Mod6.AD6 Count out a given number of up to 20 objects from a larger group.** (K.CC.B.5) **K.Mod6.AD8 Compose and decompose teen numbers 11 to 19 as ten ones and some more ones.** (K.NBT.A.1)	1. Write 15 on a whiteboard.  **What number is this?**  Place a connected 10-stick and 16 loose cubes in front of the student. **Use cubes to show me this number.** *Teacher note: Note whether students use the connected 10-stick or count out 15 from the loose cubes.*  ***(Point to the 1.)*** **Show me the cubes this digit tells about.** ***(Point to the 5.)*** **Show me the cubes this digit tells about.**  **Write the next number.**

Achievement Descriptors and Standards	**Assessment Question**
K.Mod6.AD1 Count to 100 by ones and tens. (K.CC.A.1) **K.Mod5.AD1 Count forward from a number other than 1.** (K.CC.A.2) **K.Mod6.AD2 Write numbers from 11 to 20.** (K.CC.A.3)	2. Clear all tools from in front of the student. **Count out loud by ones starting at 63.** **(Have student stop at 73.)** **Count out loud by tens starting at 0.** **(Have student stop at 50.)** *Teacher note: Adjust sequences to start at higher or lower numbers within 100 based on student needs.* Place numeral writing page in front of the student and ask the student to fill in the sequence. **Fill in the missing numbers.** 
K.Mod6.AD7 Solve *add to, take from, put together,* and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction. (K.OA.A.2) **K.Mod6.AD8 Compose and decompose teen numbers 11 to 19 as ten ones and some more ones.** (K.NBT.A.1) **K.Mod6.AD9 Record teen numbers as ten ones and some more ones with a drawing or number sentence.** (K.NBT.A.1)	3. Place the bird picture in front of the student. Then tell this story: "There were 8 blue birds flying and 10 pigeons walking on the ground. How many birds are there?" **Write a number sentence that tells about all the birds.** Prompt students to write a number sentence to show their thinking and explain it. Point to different parts in their number sentence and use the following questions to check for understanding. **Which birds does this number tell about?** **Where is the total number of birds in your number sentence?** **Where are the parts?** 

11			14	
16	17		19	20



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.2 Count forward beginning from a given number within the known sequence (instead of having to begin at 1).

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.

- **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.

Compare numbers.

K.CC.C.6 Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies[1].

1 Include groups with up to ten objects.

Understand addition as putting together and adding to, and understand subtraction as taking apart and taking from.

K.OA.A.2 Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.

Work with numbers 11–19 to gain foundations for place value.

K.NBT.A.1 Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.

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.

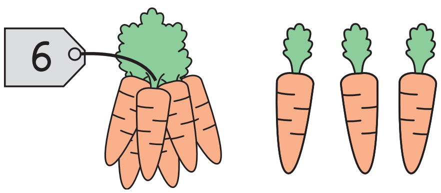
MP6 Attend to precision.

MP7 Look for and make use of structure.

MP8 Look for and express regularity in repeated reasoning.

Achievement Descriptors: Proficiency Indicators

<table>
<tr><td colspan="3">K.Mod6.AD1 Count to 100 by ones and tens.</td></tr>
<tr><td colspan="3">RELATED CCSSM
K.CC.A.1 Count to 100 by ones and tens.</td></tr>
<tr><th>Partially Proficient</th><th>Proficient</th><th>Highly Proficient</th></tr>
<tr><td>Count to 100 by ones and tens by using a tool, such as a choral counting chart or a rekenrek.
(Teacher shows 0 on the rekenrek.)
Say how many beads as I slide them over.
10, 20, 30, 40, 50, 60, 70, 80, 90, 100</td><td>Count to 100 by ones and tens without the help of a tool.
Count out loud by tens starting at 0.
0, 10, 20, 30, 40, 50, 60, 70, 80, 90, 100</td><td></td></tr>
</table>

<table>
<tr><td colspan="3">K.Mod5.AD1 Count forward from a number other than 1.</td></tr>
<tr><td colspan="3">RELATED CCSSM
K.CC.A.2 Count forward beginning from a given number within the known sequence (instead of having to begin at 1).</td></tr>
<tr><th>Partially Proficient</th><th>Proficient</th><th>Highly Proficient</th></tr>
<tr><td>Count forward from a number other than 1 with the help of a visual aid.
Count the carrots. Start at 6.

</td><td>Count forward from a number other than 1.
Count to 10 starting at 3.</td><td></td></tr>
</table>

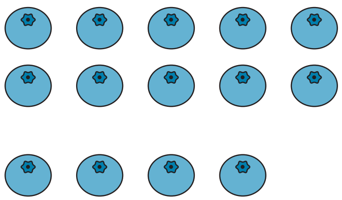
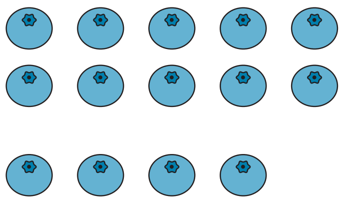
K.Mod6.AD2 **Write** numbers from 11 to 20.

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 numbers from 0 to 10. *Write the number 9.*	**Write** numbers from 11 to 20. *Write the number 14.*	

K.Mod6.AD3 **Represent** a group of objects with a written numeral 0–20.

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
Count a group of up to 20 objects. *Count the berries.* 	**Represent** a group of objects with a written numeral 0–20. *Count the berries and write the number.* 	

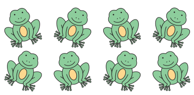
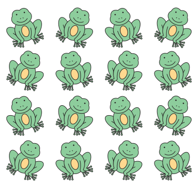
K.Mod6.AD4 **Recognize** that each successive number is one more when counting within 20.

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 1 more, within 20. *I have 12 cubes. 1 more is …* 1, 2, 3, …, 12, 13. 13. *I have 13 cubes. 1 more is …* 1, 2, 3, …, 13, 14. 14.	**Use** knowledge of the counting number relationships **to state the number that is 1 more.** *(Teacher places 12 cubes in the cup, 1 at a time.) How many cubes are in the cup?* 12 *(Teacher adds 1 more cube to the cup.) How many cubes are in the cup now? How do you know?* 13. 13 is 1 more than 12.	

K.Mod6.AD5 **Count** to answer *how many* questions about as many as 20 things arranged in a line, a rectangular array, or a circle configuration.

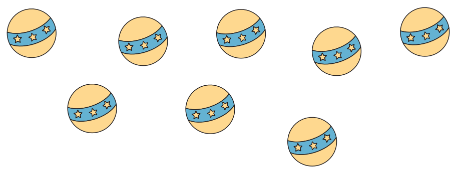
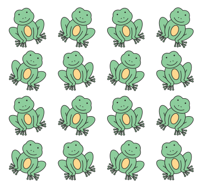
RELATED CCSSM
K.CC.B.5 Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.

Partially Proficient	Proficient	Highly Proficient
Count to answer *how many* questions about **as many as 10 things** arranged in a line, a rectangular array, or a circle configuration. *How many frogs?* 	**Count** to answer *how many* questions about **as many as 20 things** arranged in a line, a rectangular array, or a circle configuration. *How many frogs?* 	

K.Mod6.AD6 **Count** out a given number of up to 20 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.**

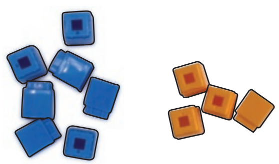
Partially Proficient	Proficient	Highly Proficient
Count out a given number of **1–10 objects** from a larger group. *Circle 6 balls.* 	**Count** out a given number of **11–20 objects** from a larger group. *Circle 15 frogs.* 	

K.Mod3.AD1 **Compare** the number of objects in two groups by using the terms *more than*, *fewer than*, or *the same number as*, e.g., by using matching or counting strategies.

RELATED CCSSM

K.CC.C.6 **Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.[1]**

[1] Include groups with up to ten objects.

Partially Proficient	Proficient	Highly Proficient
Compare the number of objects in two groups **with like units** by using the terms *more than*, *fewer than*, or *the same as*. *Compare the number of cubes in each color. Point to the group with more.* 	**Compare** the number of objects in two groups **with unlike units** by using the terms *more than*, *fewer than*, or *the same as*. *Compare the number of cubes and the number of crayons. Point to the group with fewer.* 	

K.Mod6.AD7 **Solve** *add to*, *take from*, *put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction.

RELATED CCSSM

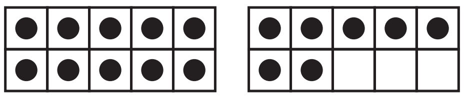
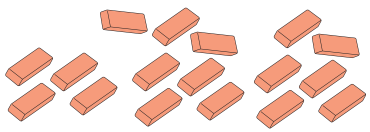
K.OA.A.2 **Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.**

Partially Proficient	Proficient	Highly Proficient
	Solve *add to, take from, put together*, and *take apart with result unknown* story problems with 10 as one of the parts by using addition and subtraction. *Ko and Isaac had 18 bracelets. They sold a full carton of 10 bracelets. How many bracelets are left?*	

K.Mod6.AD8 **Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones.

RELATED CCSSM

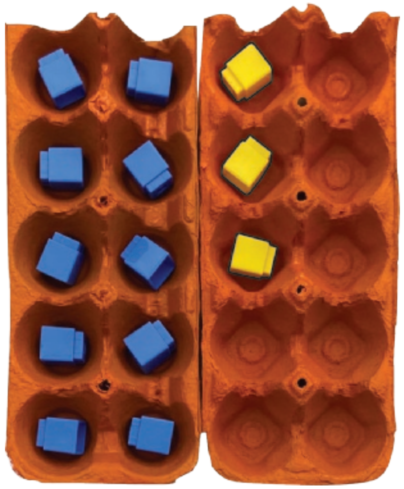
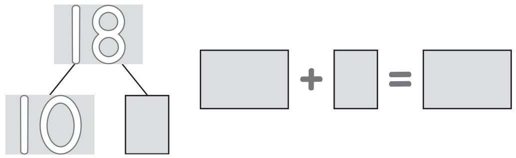
K.NBT.A.1 **Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings,** and record each composition or decomposition by a drawing or equation (such as 18 = 10 + 8); **understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.**

Partially Proficient	Proficient	Highly Proficient
Count a collection of 11 to 19 objects shown as 10 ones and some more ones by counting on from 10. *Count on from 10 to find the number of dots.* 	**Compose** and **decompose** teen numbers 11 to 19 as ten ones and some more ones. *Circle a group of 10. Fill in the blanks.*  ___ ones and ___ ones	

K.Mod6.AD9 **Record** teen numbers as ten ones and some more ones with a drawing or number sentence.

RELATED CCSSM

K.NBT.A.1 Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and **record each composition or decomposition by a drawing or equation (such as 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.**

Partially Proficient	Proficient	Highly Proficient
Represent teen numbers as ten ones and some more ones **by using objects.** *Show 13 with cubes. Where do you see 10 ones?*  The blue cubes show 10.	**Record** teen numbers as ten ones and some more ones **with a drawing or number sentence.** *Fill in the number bond. Write a number sentence that matches the number bond.* 	

Terminology

The following terms are critical to the work of grade K module 6. This resource groups terms into categories called New, Familiar, 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 Familiar category are discipline-specific words introduced in prior modules.

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

ones
When we count things one at a time, we call that counting by ones. (Lesson 1)

Familiar

addition

count

equals

fewer

greater

length

less

line

long

minus

more

number

number sentence

part

partners to *x*

pattern

plus

short

sort

strategy

subtraction

total

whole

Academic Verbs

Module 6 does not introduce any academic verbs from the grade K list.

Math Past

From One to Infinity

When did people start counting?
What is the biggest number you can think of?
Do mathematicians think about infinity?

Humans have used numbers to keep track of crops, livestock, and other goods for so long that any evidence of the first people to count predates recorded history. However, we can use archaeological evidence to unearth a story of how people came to understand numbers and counting.

Tell your students to imagine the following. You are a farmer in ancient times, before anyone knew how to count. You have a big flock of sheep and every morning you open the gate to let the sheep out to graze in the field. You need to keep track of your sheep so you can be sure they all come home at the end of the day, but you can't count them. What could you do instead?

Here is one theory for how ancient people solved this problem you can share with your class.[1] One way to keep track of the sheep is by placing a pebble or stone on the ground each time a sheep walks out through the gate. After all the sheep have left, you can use the pebbles as a representation of how many sheep you have. Ask students whether this reminds them of their own work with math drawings.

Ask how students think they could use this method to make sure all the sheep come home. Without counting, the easiest way is to pick up one of the pebbles each time a sheep comes back in through the gate. If you don't have any pebbles left on the ground, you know that all the sheep came home!

Some scholars think this is the origin of humanity's concept of numbers and counting. It is easy to see how early humans would have progressed from laying physical stones on the ground to making marks on a bone or wood, like the Ishango bone from the module 5 Math Past.

In fact, specifically using pebbles or stones to learn to count occurred in different civilizations throughout time. Among the Yoruba people of western Africa, who have their own very interesting way of thinking about numbers, children are taught to count and do arithmetic with pebbles, including by playing games like Ayo, or Oware, a version of Mancala.[2] You can find more information about how Yoruba children are taught to count in the grade 1 module 5 Math Past.

1 Georges Ifrah, *The Universal History of Numbers: From Prehistory to the Invention of the Computer*, 96.
2 Claudia Zaslavsky, *Africa Counts: Number and Pattern in African Culture*, 209–10.

In ancient Rome, pebbles, numbers, and mathematics were so closely linked that the Latin word for pebble is "calculus," from which we get the English word calculate.

Ask your students how many sheep they think a farmer could keep track of by using pebbles. Some students might realize that we run into a practical problem. What do we do if we run out of pebbles? This is a good reason to start writing down numbers! In fact, there is evidence that this work with pebbles and sheep directly led to the earliest known systems of written numerals, which were developed in and around Mesopotamia.

The archaeological evidence suggests that people first created stone tokens and used them to represent different quantities of goods and livestock, such as a number of sheep. Eventually, to solve the problem of running out of pebbles, these tokens were pressed into wet clay to make impressions that represented the tokens. These markings came to be standardized over time so people who knew how to read and write could make the markings without the tokens.[3]

Archaeologists have found hollow clay balls, or bulla, with ancient numerals written on the outside and small stone tokens inside. They believe that an ancient accountant would use these to make an official record of how many goods and livestock someone had, by writing it on the outside of the bulla. However, someone who did not know how to read and write could still use the stones to ensure that the accounting was correct.

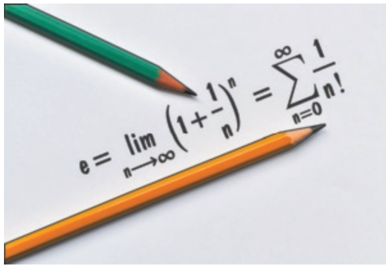
Ask your class how many sheep we can keep track of by writing down numbers. Ask: *If we had to keep track of a lot of sheep, what might the number that we write down look like?* Some students might point out that we can also write down the number that is 1 more. Other students may realize that we can keep adding zeros to the end of a number to make it bigger and bigger. Ask: *Is there a biggest number we could count to?*

Did anyone mention infinity? Or "infinity plus 1"? Or "infinity plus infinity"? Infinity isn't a number we can count to, but mathematicians have still found ways to make sense of infinity and use it to solve problems.

Mathematicians in India were considering the mathematical properties of infinity as far back as 628 CE, when Indian mathematician Brahmagupta defined infinity as "the opposite of zero" and attempted to lay out rules for how to do arithmetic with infinity.[4]

3 Ifrah, *Universal History of Numbers*, 99–101.
4 Ifrah, *Universal History of Numbers*, 419.

The infinity symbol we are familiar with today, ∞, called the lemniscate, was first used mathematically by English mathematician John Wallis in his 1655 book *De sectionibus conicis*. Wallis was just in time, as infinity became a widespread part of formal mathematics with the development of calculus in the second half of the seventeenth century. (Hey, there's that word *calculus* again!)



However, it was German mathematician Georg Cantor who gave the world a full understanding of infinity. Interestingly, Cantor was able to make sense of infinity by returning to the idea of the farmer and his sheep and thinking about pairing objects in one-to-one correspondence. Tell your students that the mathematician who helped other mathematicians understand infinity also spent time thinking about how the farmer would keep track of his sheep.

For millennia, counting has been an important part of human societies. As time goes on, it is natural to count higher and higher, just as we learned how to count all the way to 100. And while we can't ever count all the way to infinity, mathematics gives us the tools we need to understand and explore the concept of infinity. We've come a long way from using pebbles to keep track of sheep!

Materials

The following materials are needed to implement this module. The suggested quantities are based on a class of 24 students and one teacher.

1	10-sided dice, set of 24
1	20-bead demonstration rekenrek
1	100-bead demonstration rekenrek
1	Big book
13	Books
2	Boxes, small
1	Chart paper, tablet
12	Clear cups
12	Counting collections
24	Crayons, set of 8
2	Dot dice, set of 12
25	Dry-erase markers
1	Empty can
24	*Eureka Math²*™ 10-frame carton
1	*Eureka Math²*™ Hide Zero® cards, demonstration set
2	*Eureka Math²*™ Hide Zero® cards, basic student set of 12
2	*Eureka Math²*™ Match cards, set of 12
12	*Eureka Math²*™ Numeral Cards
24	Glue sticks
55	Index cards
24	*Learn* books
16	Marbles or pom-poms
4	Markers, assorted colors
20	Paper clips
25	Pencils
5	Pennies
25	Personal whiteboards
25	Personal whiteboard erasers
25	Pipe cleaners
250	Pony beads (125 red, 125 white)
1	Projection device
1	Puppet or stuffed animal
50	Resealable plastic bags (small)
25	Scissors

1	*Teach* book
1	Teacher computer or device
250	Two-color beans, red and white
1	Two-color counters, 200 pieces
1	Unifix® Cubes, set of 1,000
24	Work mats

Visit http://eurmath.link/materials to learn more.
Please see lesson 13 for a list of organizational tools suggested for the counting collection.

Daily Tool Kits

In module 6, 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 6. 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.

Student Daily Tool Kit

Unifix® Cubes (10)

Two-color beans (5)

Dry-erase marker

Glue

Pencil

Personal whiteboard

Scissors

Teacher Daily Tool Kit

100-bead rekenrek

Chart paper

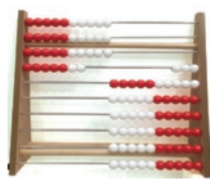
Unifix® Cubes (15)

Empty can

Pencil

Pennies (5)

Eureka Math²™ Hide Zero® cards, demonstration set



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