

KEY CONCEPT OVERVIEW

Lessons 1 through 3 focus on problem solving, where students share and analyze efficient problemsolving strategies.

You can expect to see homework that asks your child to do the following:

- Solve a variety of word problems by using the **RDW process**.
- Use an empty box or a question mark to represent the unknown.
- Use addition, subtraction, multiplication, and division to solve multi-step problems.

SAMPLE PROBLEM (From Lesson 3)

Use the RDW process to solve the following problem. Use a letter to represent the unknown.

Monica measures 91 milliliters of water into 9 tiny beakers. She measures an equal amount of water into the first 8 beakers. She pours the remaining water into the ninth beaker. It measures 19 milliliters. How many milliliters of water are in each of the first 8 beakers?





• Children frequently benefit from acting out problems they are trying to solve. If possible, have your child act out homework problems that are difficult for him to solve. For example, if the problem is about money, use play or real money to physically act out what is happening in the word problem. If the problem is about pouring water into beakers, set out some containers that would simulate the word problem, and let your child pour water into the containers according to what happens in the problem. It may be helpful to take a video of your child acting out the problem and have him watch it many times. After acting out the problem, he may find it easier to work on the drawing and writing parts of the RDW process.

TERMS

RDW process: A three-step process used in solving word problems that requires students to 1) read the problem for understanding, 2) draw a picture or model (e.g., a strip diagram), and 3) write an equation and statement of their answer.





KEY CONCEPT OVERVIEW

In Lessons 4 through 8, students learn about the **attributes** of **two-** and **three-dimensional figures**.

You can expect to see homework that asks your child to do the following:

- Given the attributes of quadrilaterals and other polygons (including trapezoids, rhombuses, pentagons, hexagons, octagons, decagons, and regular polygons), determine and draw each, and identify any parallel sides. (See Sample Problem.)
- Use a ruler and a **right-angle tool** to draw figures with given attributes.
- **Decompose** polygons by drawing lines to divide them into specified polygons.
- Classify and sort three-dimensional figures (including cubes, rectangular prisms, triangular prisms, cones, cylinders, and spheres) according to their attributes (i.e., faces, edges, vertices).

SAMPLE PROBLEM (From Lesson 4)

Sketch the polygon from the group that has 2 sets of parallel sides below. Trace 1 pair of parallel sides red. Trace the other pair of parallel sides blue. What makes parallel sides different from sides that are not parellel?



The parallel sides look like the sides of a big H. They'll never touch or cross, even if we make them longer and longer.

HOW YOU CAN HELP AT HOME

 Go for a walk around your neighborhood or to a local park or playground, and ask your child to take pictures of different shapes. Try to find shapes that are composed from other shapes. Print out the pictures, or use software to design a slide show of the photos. Have your child add captions to describe the shapes by using the vocabulary she has been learning in school.



TERMS

Attributes: Characteristics of specific shapes. For example, a rectangle has the attributes of two sets of parallel sides and four 90 degree (right) angles.

Cone: A solid shape with a circular base and a curved surface that comes to a point at the top. A cone has one vertex and no edges. (See Figure 1.)

Cube: A three-dimensional solid with six square faces of equal size. (See Figure 2.)

Cylinder: A three-dimensional solid with two congruent, circular bases and one curved surface that connects the bases. A cvlinder has no vertices or edges. (See Figure 3.)

Decagon: A polygon with 10 sides. (See Figure 4.)

Decompose: To break apart a number, figure, or array.

Edge: The line segment where two faces meet.

Face: A flat surface on a geometrical solid.

Hexagon: A polygon with six sides. (See Figure 5.)

Octagon: A polygon with eight sides. (See Figure 6.)

Pentagon: A polygon with five sides. (See Figure 7.)

Polygon: A closed shape with three or more straight sides. For example, triangles, rectangles, pentagons, hexagons, and octagons are all polygons.

Quadrilateral: Any polygon with four sides. For example, squares, rectangles, trapezoids, rhombuses, and parallelograms are all quadrilaterals.

Rectangular prism: A three-

dimensional solid with six rectangular faces. A cube is a rectangular prism. (See Figure 8.)

Regular polygon: A polygon

with all sides equal in length and all angles equal in measure. (See Figure 9.)

Rhombus: A quadrilateral with all sides equal in length. A square is a special type of rhombus that has four right angles. (See Figure 10.)

Right-angle tool: A student-made support for determining whether an angle is a square corner (i.e., a 90-degree angle). Students use the corner of an index card or a folded piece of paper as a rightangle tool.

Sphere: A three-dimensional object that is perfectly round with no faces or edges. (See Figure 11.)

Three-dimensional figure: An object with length, width, and height. For example, cubes, cones, cylinders, prisms, rectangular prisms, triangular prisms, and spheres are three-dimensional figures.

Trapezoid: A quadrilateral with exactly one pair of parallel sides. (See Figure 12.)



Figure 11

Triangular prism: A three-dimensional solid with three rectangular faces and two identical triangular bases.

Two-dimensional figure: A flat figure with length and width. For example, squares, circles, triangles, and hexagons are two-dimensional figures.

Vertex: The point where the sides or edges of a figure meet. The plural is vertices.





Figure 7

Figure 8

Figure 10

Figure 9



Figure 1

Figure 2



KEY CONCEPT OVERVIEW

Lessons 9 through 16 focus on **perimeter** and solving real-world problems involving perimeter.

You can expect to see homework that asks your child to do the following:

- Identify perimeter and distinguish it from the area of a shape.
- Trace around shapes to conceptually understand perimeter.
- Measure and label side lengths to calculate the perimeter of given shapes.
- Determine the perimeters of irregular shapes made up of several rectangles and of regular polygons that have unknown measurements.
- Find the perimeter of circular objects at home using string and a ruler.

SAMPLE PROBLEM (From Lesson 16)

The shapes below are made up of rectangles. Label the unknown side lengths. Then, write and solve an equation to find the perimeter of each shape.





• With your child, use a tape measure to practice measuring the perimeters of objects at home such as a tabletop or desktop, the floor of a small room, or a toy box. Talk about what units are best for measuring different perimeters (e.g., inches to measure a toy box, feet to measure the floor in a room).

TERMS

Perimeter: The outside boundary of a closed shape. It can be measured by finding the sum of the side lengths. For example, a square with a side length of 2 inches has a perimeter of 8 inches because 2 inches + 2 inches + 2 inches + 2 inches = 8 inches.





KEY CONCEPT OVERVIEW

In Lessons 17 through 21, students make connections between area and perimeter.

You can expect to see homework that asks your child to do the following:

- Create as many rectangles as possible with a given area or a given perimeter.
- Compare and analyze the perimeters and areas of different rectangles and draw conclusions.
- Create and analyze **dot plots** based on the number of rectangles created.

SAMPLE PROBLEM (From Lesson 21) _

Sumi uses unit square tiles to build 3 rectangles that have an area of 32 square units. Does knowing this help her find the number of rectangles she can build for a perimeter of 32 units? Why or why not?

No, there is no connection between area and perimeter. Knowing one does not help you find the other.



 Ask your child's teacher or search online for printable grid paper. Have your child use crayons or markers to construct her name on the grid paper and find the area and perimeter of each letter. (See image at right.) Then have your child find the total area and perimeter of her name. If your child desires, she can do the rest of the names in your family as well.



Total Area of my Name: 63 square units	24	34
	14	30
Total Perimeter of my Name: 102 units	+ 25	+ 38
/	<u>6</u> 3	102

MODELS

Dot Plot: A display of data on a horizontal number line.







KEY CONCEPT OVERVIEW

In Lessons 22 through 24, students solve real-world problems and complete projects by using the concepts of area and perimeter.

You can expect to see homework that asks your child to do the following:

- Solve word problems involving perimeter.
- Solve word problems involving area.
- Determine both the area and perimeter when given a drawing or a word problem.

SAMPLE PROBLEM (From Lesson 23)

The area of Mason's rectangular painting is 72 square inches. The width of the painting is 8 inches.

a. Estimate to draw Mason's painting, and label the side lengths.



b. What is the length of the painting?

 $Length = 72 \operatorname{sq} \operatorname{in} \div 8 \operatorname{in} = 9 \operatorname{in}$

The length of the painting is 9 inches.

c. What is the perimeter of Mason's painting?

Perimeter = 8 in + 8 in + 9 in + 9 in = 34 in

The perimeter of Mason's painting is 34 inches.

d. Mason's mom hangs his painting on a wall where she has already hung two of Mason's other paintings. The areas of the other paintings are 64 square inches and 81 square inches. What is the total area of all three paintings that are hanging on the wall?

Total area = 64 sq in + 81 sq in + 72 sq in = 217 sq in

The total area of all three paintings is 217 square inches.



- Read *Spaghetti and Meatballs for All! A Mathematical Story*, by Marilyn Burns, with your child. (Ask your school librarian or search online for a copy.) Talk about how area and perimeter are important to the story.
- Give your child a tape measure and ask him to find the area and perimeter of the surfaces of objects around the house, such as the top of a desk or table, a computer or TV screen, a cupboard door, a cookie sheet, a window, or a door. Make sure that each of the chosen objects has a rectangular surface. Ask your child to record his findings and talk about which objects have the largest and smallest area and perimeter measurements.





KEY CONCEPT OVERVIEW

In Lessons 25 through 28, students practice skills and concepts they have learned this year. For example, they practice more with fractions and play games involving multiplication and division. Students also create a booklet of resources they can use to practice during the summer to prepare for Grade 4.

You can expect to see homework that asks your child to do the following:

- Explore some unconventional ways to make one-half.
- Teach family members a game from class.

SAMPLE PROBLEM (From Lesson 26)

Julian shades four circles, as shown below. Write the letters of the circles that are about one-half shaded.



Circle A



Circle B



Circle C



Circle D

A, C, and D.



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• Your child can use this summer math calendar with sample activities to keep up with her math skills. (See table below.) Repeat favorite activities for the remainder of the summer vacation. There is one calendar for the first five weeks and another for the second five weeks. Your child can color each activity as she completes it to keep track of how much she practices.

	Monday	Tuesday	Wednesday	Thursday	Friday
Week 1	Do jumping jacks as you count by twos from 2 to 20 and back.	Play a game from your Summer Practice booklet.	Go on a scavenger hunt for three- dimensional solids. Find as many prisms in your house or neighborhood as you can.	Time how long it takes you to do a specific chore, like making the bed. See if you can do it faster the next day.	Complete a Sprint.
Week 2	Do squats as you count by threes from 3 to 30 and back.	Play a game from your Summer Practice booklet.	Collect data about your family's or friends' favorite type of music. Show it on a bar graph. What did you discover from your graph?	Read a recipe. What fractions does the recipe use?	Complete a Multiply by Pattern Sheet.
Week 3	Hop on one foot as you count by fours from 4 to 40 and back.	Create a multiplication and/or division math game. Then, play the game with a partner.	Measure the widths of different leaves from the same tree to the nearest quarter inch. Then, draw a dot plot of your data. Do you notice a pattern?	Read the weight in grams of different food items in your kitchen. Round the weights to the nearest 10 or 100 grams.	Complete a Sprint.
Week 4	Bounce a ball as you count by 5 minutes to 1 hour and then to the half hour and quarter hours.	Find, draw, and/or create different objects to show one-fourth.	Go on a shape scavenger hunt. Find as many quadrilaterals in your neighborhood or house as you can.	Find the sum and difference of 453 mL and 379 mL.	Complete a Multiply by Pattern Sheet.
Week 5	Do arm swings as you count by sixes from 6 to 60 and back.	Draw and label a floor plan of your house.	Measure the perimeter of the room where you sleep in inches. Then, calculate the area.	Use a stopwatch to measure how fast you can run 50 meters. Do it 3 times. What was your fastest time?	Complete a Sprint.

Summer Math Review: Weeks 1–5

