TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

In Lessons 1 through 3, students learn about the **area** and **perimeter** of rectangles. They solve word problems by using the formulas for area and perimeter.

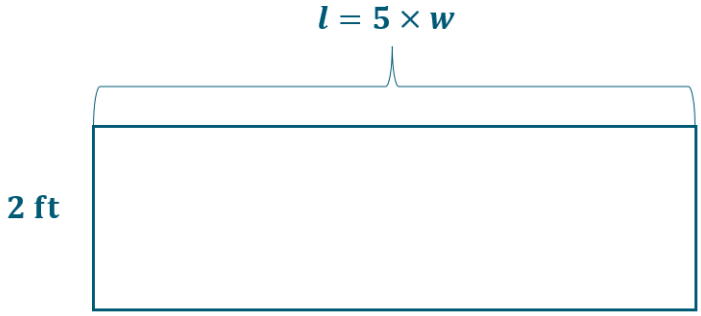
You can expect to see homework that asks your child to do the following:

- Use formulas to find the area, perimeter, and unknown side length(s) of a rectangle.
- Find the side length of a rectangle knowing that it is "___ times as long as" another side.
- Solve word problems by using the formulas for area and perimeter.

SAMPLE PROBLEM *(From Lesson 3)*

Solve the following problem. Use pictures, numbers, or words to show your work.

The length of a rectangular rug is 5 times its width. If the rug's width is 2 feet, what is its area?



$l = 5 \times 2 \text{ ft} = 10 \text{ ft}$
$A = l \times w$
$A = 10 \text{ ft} \times 2 \text{ ft}$
$A = 20 \text{ square ft}$
The area of the rug is 20 square feet.

HOW YOU CAN HELP AT HOME

- With your child, identify rectangular shapes in your home (e.g., window, door, top of table, top of dresser, cookie sheet, place mat, rug). Ask your child to use a tape measure or a ruler to measure the length and the width of each rectangle to the nearest inch. Then have your child find the area and perimeter of each rectangle. Keep in mind that he might need to use a calculator if the numbers are large.
- Find two dice or use a random number generator on a smart phone. Give one die to your child, and keep one for yourself. Have your child roll her die. Next, roll your die. Using the number that you rolled, prompt your child to find the number that is "___ times as many as" the number that she rolled. Switch roles, and repeat.

TERMS

Area: The amount of space inside a two-dimensional shape. For example, in rectangles, Area = length × width.

Perimeter: The sum of the side lengths of a closed shape. For example, a square with a side length of 2 inches has a perimeter of 8 inches (i.e., 2 inches + 2 inches + 2 inches + 2 inches = 8 inches).

TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

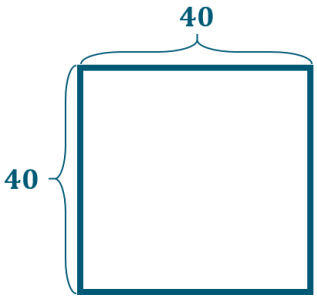
In Lessons 4 through 6, students focus on **place value** and discover patterns as they multiply a whole number by 10, 100, or 1,000 (e.g., 5 × 1,000) and multiply a whole number by multiples of 10, 100, and 1,000 (e.g., 5 × 5,000).

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

- Draw place value disks and arrows on a **place value chart** to represent multiplication by 10, 100, and 1,000 and by multiples of 10, 100, and 1,000.
- Use an **area model** (see Sample Problem below) to represent the multiplication of a two-digit multiple of 10 by a two-digit multiple of 10 (e.g., 40 × 40).

SAMPLE PROBLEM *(From Lesson 6)*

Draw an area model to represent 40 × 40.



4 tens × 4 tens = 16 hundreds

40 × 40 = 1,600

HOW YOU CAN HELP AT HOME

- Help your child to remember that "tens times tens equals hundreds." Have her make 10 groups of 10 objects (e.g., make 10 groups of 10 pennies or 10 groups of 10 mini marshmallows). Ask, "How many do you have?"
- Help your child remember the value of disks in a place value chart. Take turns drawing disks in a blank place value chart, and challenge each other to read the number in unit form while looking at the place value disks. For example, if you draw 2 disks in the hundreds column, 1 disk

HOW YOU CAN HELP AT HOME
(CONTINUED)

in the tens column, and 3 disks in the ones column, your child would say, "2 hundreds, 1 ten, 3 ones."

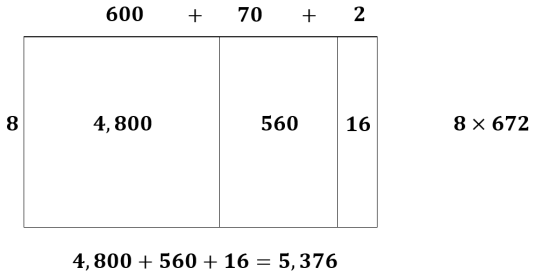
- Create a game to practice multiplication facts with your child. Each of you will need ten index cards or small pieces of paper. Number the cards so each of you has one card for each digit (0–9). Place the cards facedown in a pile. One player picks up two cards. The other player has to multiply the numbers shown on the two cards. Switch roles. See how many problems you can complete in one minute.

TERMS

Place value: The value of a given digit based on its position in a number. For example, the place value of the digit 2 in 235 is 200 (i.e., 2 hundreds).

MODELS

Area Model: A model used to help solve multiplication and division problems where the sides represent the factors and the area of the rectangle represents the product.



Place Value Chart

millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones

EUREKA MATH® TEKS EDITION

TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

Lessons 7 through 11 focus on multiplication. Students multiply a one-digit number by a number with up to four digits.

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

- Draw place value disks to represent multiplication **expressions**.
- Multiply one-digit numbers by a number with up to four digits by using the **standard algorithm**, the **partial products** method, and the area model (as shown in this order in the Sample Problem below).
- Use multiplication to solve word problems.

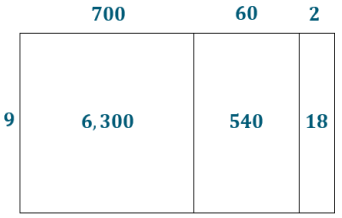
SAMPLE PROBLEM *(From Lesson 11)*

Solve the following expression by using the standard algorithm, the partial products method, and the area model.

9×762

$$\begin{array}{r} 7\ 6\ 2 \\ \times\quad\ 9 \\ \hline 6,\ 8\ 5\ 8 \end{array}$$

$$\begin{array}{r} 7\ 6\ 2 \\ \times\quad\ 9 \\ \hline 1\ 8 \\ 5\ 4\ 0 \\ +\ 6,\ 3\ 0\ 0 \\ \hline 6,\ 8\ 5\ 8 \end{array}$$



9 × (700 + 60 + 2)

(9 × 700) + (9 × 60) + (9 × 2)

6,300 + 540 + 18 = 6,858

HOW YOU CAN HELP AT HOME

- Discuss with your child the different methods for solving multiplication expressions. Ask her to explain which one she likes best and why. This will help you to understand her math thinking and help her to verbalize her thoughts.
- Write five multiplication expressions of a one-digit number times a two-, three-, or four-digit number. Before your child solves each expression, prompt him to roll a die or use a random number generator on a smart phone to determine which method to use: 1 means standard algorithm, 2 means partial products, 3 means area model, 4 means his choice, 5 means you have to solve, 6 means he can use a calculator.

TERMS

Expression: Any combination of sums, differences, products, or divisions of numbers that evaluates to a number. For example, 3×4 is an expression. *Expressions do not have an equal sign.*

Partial products: The result of decomposing a multiplication expression into smaller parts. For example, we can decompose 24×6 into the partial products of 20×6 and 4×6.

Standard algorithm: A standard step-by-step procedure to solve a particular type of problem. For example, the process of multiplying vertically with regrouping is a standard algorithm.

TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

In Lessons 12 and 13, students solve word problems. The problems have multiple steps and can be solved by using a combination of addition, subtraction, and multiplication.

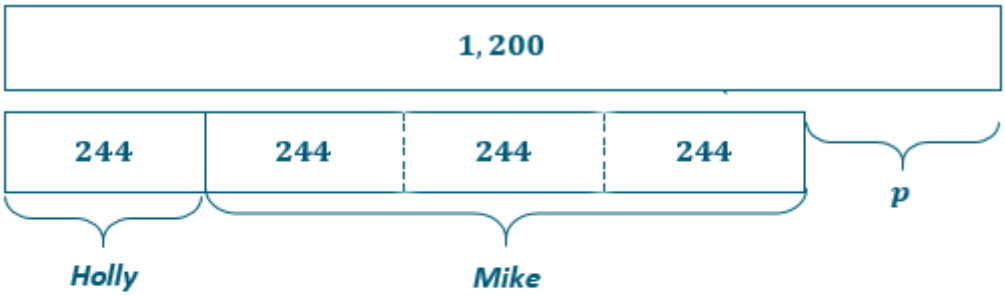
You can expect to see homework that asks your child to do the following:

- Use the **RDW process** to solve word problems.
- Create word problems that correspond to a **strip diagram**.

SAMPLE PROBLEM *(From Lesson 12)*

Use the RDW process to solve the following problem.

Holly delivered 244 newspapers. Mike delivered three times as many newspapers as Holly. Their goal was to deliver 1,200 newspapers altogether. How many more newspapers do they have to deliver to meet their goal?



$$\begin{array}{r} 244 \\ \times \quad 4 \\ \hline 976 \end{array}$$

$$\begin{array}{r} 1,200 \\ -\ 976 \\ \hline 224 \end{array}$$

Holly and Mike have to deliver 224 more newspapers to meet their goal.

TIPS FOR FAMILIES

HOW YOU CAN HELP AT HOME

- With your child, read a magazine article or a page from a book. Together, use the context of what you've read to create a word problem. Solve the problem together by using the RDW process. Have your child write the problem on a clean sheet of paper and take it and the solution with her to school. Prompt her to challenge one of her classmates to solve the problem. The original solution can be used as an answer key.
- Continue to practice basic facts for addition, subtraction, multiplication, and division. Find fact practice websites that are interactive and fun.

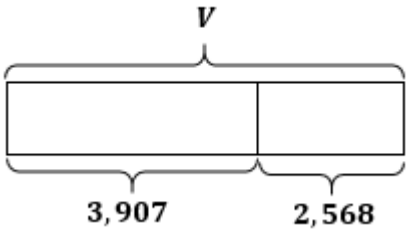
TERMS

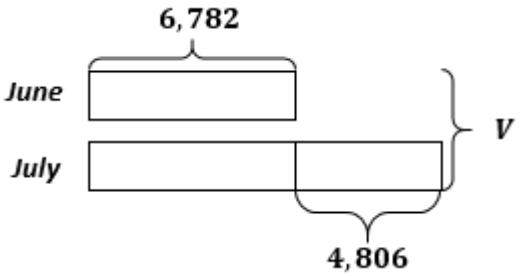
RDW process: A three-step process used in solving word problems. **RDW** stands for Read, Draw, Write:

- **R**ead the problem for understanding;
- **D**raw a model (e.g., a strip diagram) to help make sense of the problem;
- **W**rite an equation and a statement of the answer.

MODELS

Strip Diagram





TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

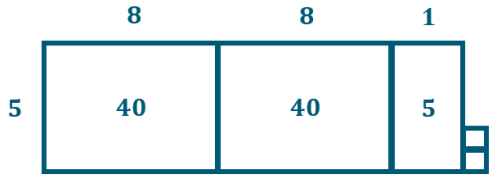
Lessons 14 through 21 focus on division. Students develop an understanding of **remainders**. They use different methods to solve division problems.

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

- Use the RDW process to solve word problems involving remainders.
- Show division by using place value disks, arrays, **area models**, and **long division**.
- Check division answers by using multiplication and addition.

SAMPLE PROBLEM *(From Lesson 21)*

Solve 87 ÷ 5 by using an area model. Use long division and the **distributive property** to record your work.



$(40 \div 5) + (40 \div 5) + (5 \div 5)$

$= 8 + 8 + 1$

$= 17$

Check: $(5 \times 17) + 2 = 87$

$$\begin{array}{r} 17\ R2 \\ 5\overline{)87} \\ -\ 5 \\ \hline 37 \\ -\ 35 \\ \hline 2 \end{array}$$

The dividend (87) is represented by the rectangle and two small squares. The divisor (5) is the length of one side. Students think about parts of 87 that they know are divisible by 5 to find the length of the missing side of the rectangle. 87 is decomposed into 40, 40, 5 and 2. Students then divide each part of 87 by 5 (seen in the equation directly beneath the area model).

HOW YOU CAN HELP AT HOME

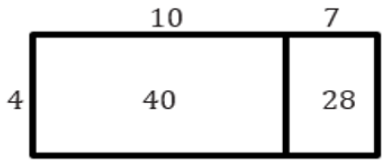
- Provide your child with many opportunities to interpret remainders. For example, give scenarios such as the following: Arielle wants to buy juice boxes for her classmates. The juice boxes come in packages of 6. If there are 19 students in Arielle's class, how many packages of juice boxes will she need to buy? (4) Will there be any juice boxes left? (Yes) How many? (5)
- Play a game of Remainder or No Remainder with your child.
    1. Say a division expression like 11 ÷ 5.
    2. Prompt your child to respond with "Remainder!" or "No remainder!"
    3. Continue with a sequence such as 9 ÷ 3 (No remainder!), 10 ÷ 3 (Remainder!), 25 ÷ 3 (Remainder!), 24 ÷ 3 (No remainder!), and 37 ÷ 5 (Remainder!). See how many problems your child can answer in one minute.

TERMS

Distributive property: A property of multiplication that can be used to create an easier problem, for example, 6 fours = 5 fours + 1 four or $6 \times 4 = (5 \times 4) + (1 \times 4)$.
Long division: A process taken to solve a division problem; also known as the standard algorithm for division.
Quotient: The resulting answer when one number is divided by another. For example, in $28 \div 4 = 7$, the number 7 is the quotient.
Remainder: The number left over when a whole number is divided by a whole number, for example, $25 \div 6 = 4$ with a remainder of 1.
Standard algorithm: A standard step-by-step procedure to solve a particular type of problem. For example, the process of long division is a standard algorithm.

MODELS

Area Model: A model used to help solve multiplication and division problems.



$68 \div 4 = 17$

TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

Lessons 22 through 29 focus on dividing three- and four-digit numbers by one-digit numbers, using different methods.

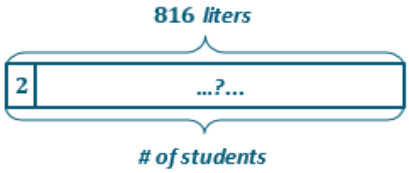
You can expect to see homework that asks your child to do the following:

- Divide by using place value disks, **long division**, and the **area model**.
- Check division work by using multiplication.
- Draw **strip diagrams** (see Sample Problem below) and solve division word problems, identifying whether the size of the groups or number of groups is unknown.
- Solve division word problems with **remainders**.

SAMPLE PROBLEM *(From Lesson 27)*

Solve the following problem. Draw a strip diagram to help you solve. Identify whether the group size or the number of groups is unknown.

A group of students equally shared 816 liters of water. If each student received 2 liters of water, how many students received water?



Number of groups unknown

$$\begin{array}{r} 4\,0\,8 \\ 2\overline{)\,8\,1\,6} \\ -\,8 \\ \hline 0\,1\,6 \\ -\,0 \\ \hline 1\,6 \\ -\,1\,6 \\ \hline 0 \end{array}$$

408 *students received water.*

HOW YOU CAN HELP AT HOME

- Discuss with your child times when you might use division in everyday life. For example, you have $20 to spend on bagels. If each bagel costs $3, how many bagels can you buy? (6) Or, you have 37 orange slices to give to 8 soccer teammates. You want to give each of them 5 orange slices. Do you have enough? (No. You would need 40.)
- Take turns flipping a coin and creating word problems. If the coin lands on heads, create a word problem in which the size of the group is unknown (e.g., Sarah divided her 124 stickers equally among 4 of her friends. How many stickers will each of them get? (31)). If the coin lands on tails, create a word problem in which the number of groups is unknown (e.g., Sarah gave away a total of 124 stickers. If she gave each of her friends 31 stickers, how many friends received stickers? (4)). Challenge each other to solve the problems.

- Ask your child to draw and label a place value chart. Create a four-digit number on the chart, using cereal or raisins for disks. Ask your child to use his "disks" to demonstrate how to divide the number by 2, 3, or 4.

TERMS

Long division: A process taken to solve a division problem, also known as the standard algorithm for division. Division problems involve three quantities - the total, the number of groups and the size of each group. A division word problem will give the total and only one of the other quantities. The third quantity is found when the problem is solved.

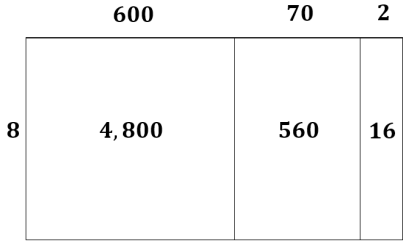
Total and number of groups given:
There are 12 loaves of bread. The loaves are shared equally into 6 bags. How many loaves in each bag?

Total and size of groups given:
There are 12 loaves of bread. 2 loaves of bread are placed in each bag. How many bags are needed?

Remainder: The number left over when a whole number is divided by another whole number. For example, $25 \div 6 = 4$ with a remainder of 1.

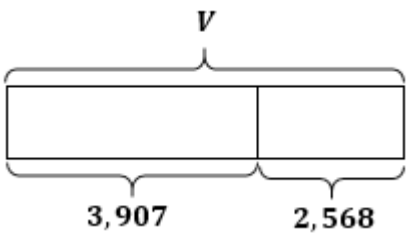
MODELS

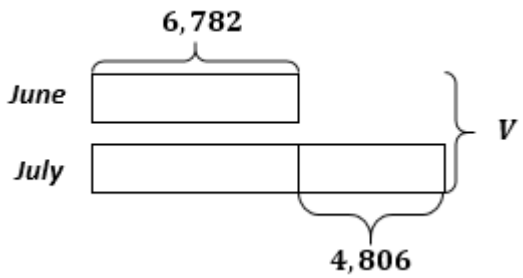
Area Model: A model used to help solve multiplication and division problems.



$$5,376 \div 8 = (4,800 \div 8) + (560 \div 8) + (16 \div 8)$$
$$= 600 + 70 + 2$$
$$= 672$$

Strip Diagram





TIPS FOR FAMILIES

KEY CONCEPT OVERVIEW

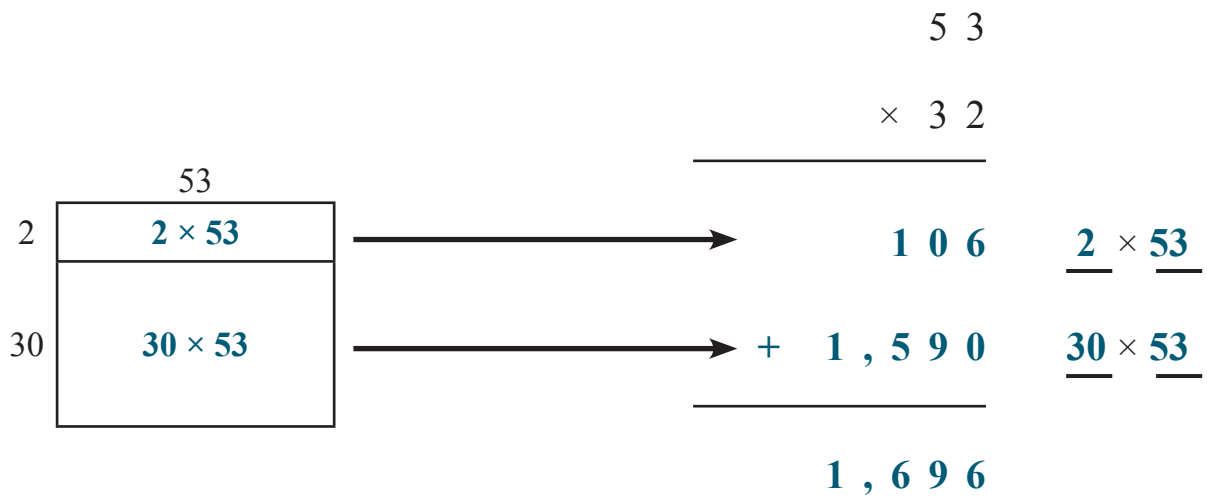
Lessons 30 through 34 focus on representing and solving multi-digit multiplication problems. Students use different methods to work with two-digit by two-digit multiplication problems.

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

- Represent and solve multiplication expressions by using **area models**, **partial products**, and the **distributive property** (as shown in the Sample Problem below).
- Demonstrate knowledge of the **associative property of multiplication**.
- Use the standard algorithm to solve two-digit by two-digit multiplication problems.

SAMPLE PROBLEM *(From Lesson 34)*

Use the distributive property to express 32 × 53 as two partial products. Solve.



HOW YOU CAN HELP AT HOME

- Together with your child, look back at the multiplication work he did at the beginning of the module. Chances are he will be surprised at how much he's learned! Ask him what success makes him the most proud. For example, perhaps he struggled at first with using the area model to model multiplication, but now he understands it.
- Prompt your child to talk about her favorite method for solving two-digit by two-digit multiplication (area model, partial products method, distributive property, or multiplication algorithm). Ask her to explain why that method is her favorite.
- Continue to practice basic facts for addition, subtraction, multiplication, and division.

TERMS

Associative property of multiplication: When multiplying three or more numbers, the product will be the same regardless of how the numbers are grouped. For example, $6 \times 3 \times 8 = (6 \times 3) \times 8 = 6 \times (3 \times 8)$ illustrates the associative property.
Distributive property: A property of multiplication that can be used to create an easier problem. For example, consider that 6 fours = 5 fours + 1 four or $6 \times 4 = (5 \times 4) + (1 \times 4)$.
Partial products: The result of decomposing a multiplication expression into smaller parts. For example, we can decompose 24×6 into the partial products of 20×6 and 4×6.

MODELS

Area Model: A model used to help solve multiplication and division problems.