

## KEY CONCEPT OVERVIEW

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Lessons 1 through 3 introduce multiplication as a faster way than addition to find the total number of objects in **equal groups**.

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

- Identify the **number of groups** and the **size of each group** in an **array** (as shown in the sample problem below).
- Write multiplication **equations** using an array.
- **Skip-count** equal groups or rows (in arrays) to find the total number of objects.

## SAMPLE PROBLEM (From Lesson 3)

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There are 3 bananas in each row. How many bananas are there in 4 rows?



a. Number of rows: 4 Size of each row: 3

b. 4 × 3 = 12

c. There are 12 bananas altogether.

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at [GreatMinds.org](http://GreatMinds.org).

**HOW YOU CAN HELP AT HOME** 

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- Have your child recognize arrays in real-world situations (e.g., a carton of eggs, a pack of water bottles, a cupcake baking pan, a checkerboard).
- Help your child distinguish between the terms *row* and *column*.
- Place various objects into arrays in your daily life, such as crackers on a plate, crayons, or toys that your child may have. Say to your child, “How many rows are there? How many objects are in each row? Let’s skip-count the rows to find the total.”

**TERMS** 

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**Equation:** A statement that two expressions are equal. For example,  $3 \times 4 = \underline{\quad}$  -or-  $3 \times 4 = 12$ .

**Number of groups:** A factor in a multiplication problem that refers to the total number of equal groups.

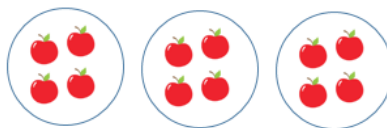
**Size of groups:** A factor in a multiplication problem that refers to the number of objects in a group.

**Skip-count:** To count by a number other than 1; for example, skip-counting by 2s means counting 0, 2, 4, 6, 8, 10, and so on.

**MODELS** 

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**Array:** An arrangement of objects into rows and columns.

**Equal Groups**

The **number of groups** is 3. The **size of the groups** is 4 apples.

## KEY CONCEPT OVERVIEW

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Lessons 4 through 6 introduce division as an unknown factor problem. For example, students learn to think of  $12 \div 4$  as  $4 \times \underline{\quad} = 12$ . This shows the relationship between multiplication and division.

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

- Divide objects into equal groups or show how many objects are in a group.
- Solve word problems with unknown factors and find the **quotient**.
- Use and/or draw arrays to illustrate division problems.

## SAMPLE PROBLEM (From Lesson 6)

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Susan washes 18 plates. She then dries and stacks the plates equally into 3 piles. How many plates are in each pile?

$$18 \div 3 = \underline{6}$$

$$3 \times \underline{6} = 18$$



***There are 6 plates in each pile.***

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at [GreatMinds.org](http://GreatMinds.org).

**HOW YOU CAN HELP AT HOME** 

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- Arrange objects around the house into arrays (small snack foods like crackers, fruit snacks, grapes, pretzels). Then write two multiplication and two division facts that the array could represent.
- Encourage your child to practice skip-counting, forward and backward, by twos, threes, fours, fives, and tens (e.g., 0, 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 27, 24, 21, 18, 15, 12, 9, 6, 3, 0).

**TERMS** 

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**Quotient:** The number resulting from the division of two numbers. For example, in  $28 \div 4 = 7$ , the number 7 is the quotient.

## KEY CONCEPT OVERVIEW

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Lessons 7 through 10 introduce two strategies for solving challenging multiplication problems: the **commutative property** and the **break apart and distribute strategy**.

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

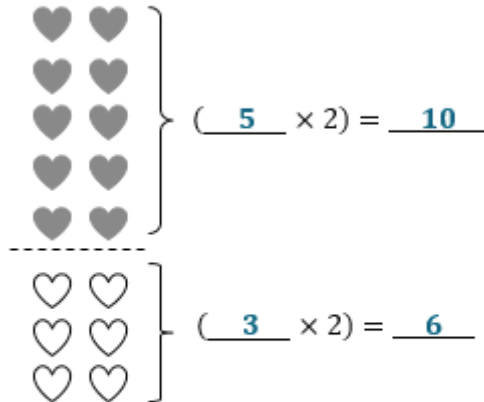
- Show understanding of the commutative property and the break apart and distribute strategy.
- Solve word problems involving these two strategies.

## SAMPLE PROBLEM (From Lesson 10)

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Use the array to help you fill in the blanks.

$$8 \times 2 = \underline{16}$$



$$(5 \times 2) + (3 \times 2) = \underline{10} + \underline{6}$$

$$\underline{8} \times 2 = \underline{16}$$

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at [GreatMinds.org](http://GreatMinds.org).

**HOW YOU CAN HELP AT HOME**

- Ask your child to arrange objects around the house into a large array, like  $8 \times 3$ . Then have him break the array into two smaller parts and write a multiplication sentence for each of the parts. For example, he could separate the  $8 \times 3$  into the more manageable parts of  $(5 \times 3) + (3 \times 3)$  in order to solve in a more efficient way.  $5 \times 3 = 15$ ,  $3 \times 3 = 9$ , and  $15 + 9 = 24$ .
- Think of a number that is a multiple of 2, 3, 4, 5, or 10. Say the number to your child. Ask him to write as many multiplication problems as he can think of with that number. For example, say “20,” and your child should be able to say  $2 \times 10$  and/or  $10 \times 2$ ,  $1 \times 20$  and/or  $20 \times 1$ , and  $4 \times 5$  and/or  $5 \times 4$ . You can also have your child think of the unknown number. For example, “4 times what number makes 20?”

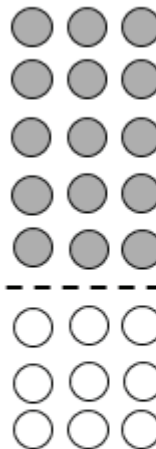
**TERMS**

**Commutative property:** This property states that factors can change their order without changing the total. For example,  $3 \times 4 = 4 \times 3$ .

**MODELS**

**Break Apart and Distribute Strategy:** This strategy states that a multiplication expression can be broken into parts that can then be added together.

$8 \times 3 = \underline{24}$



$(5 \times 3) = \underline{15}$

$(3 \times 3) = \underline{9}$

$$\begin{aligned}
 8 \times 3 &= (5 \times 3) + (3 \times 3) \\
 &= \underline{15} + \underline{9} \\
 &= \underline{24}
 \end{aligned}$$

## KEY CONCEPT OVERVIEW

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Lessons 11 through 13 focus on solving the two different types of division word problems using **tape diagrams**. In one type of problem, students have to determine the size of the group. In the other type, they need to determine the number of groups.

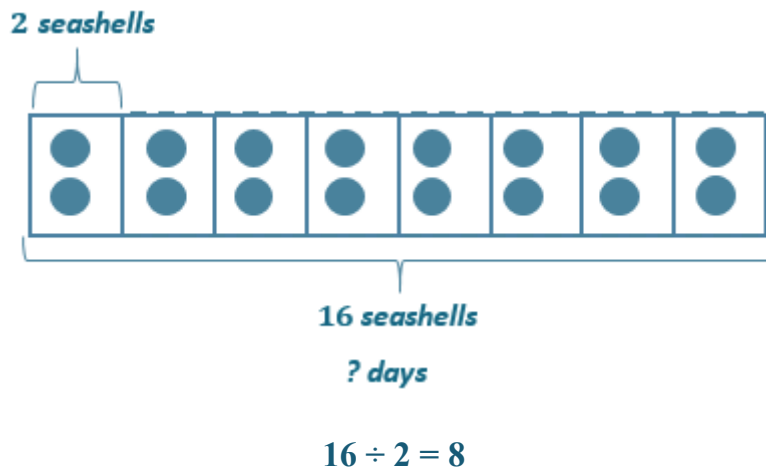
You can expect to see homework that asks your child to do the following:

- Draw arrays and organize them into tape diagrams, labeling all parts.
- Write related multiplication and division equations, such as  $4 \times 3 = 12$  and  $12 \div 4 = 3$  or  $12 \div 3 = 4$  (depending on whether the group size or the number of groups is unknown).
- Solve word problems involving the two different types of division problems.

## SAMPLE PROBLEM *(From Lesson 12)*

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Ava finds 2 seashells each day for her collection. How many days will it take Ava to find 16 seashells for her collection?



***It will take Ava 8 days to find 16 seashells.***

LEARN MORE by viewing a video about modeling with tape diagrams. Visit [eurmath.link/tape-diagrams](http://eurmath.link/tape-diagrams).

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at [GreatMinds.org](http://GreatMinds.org).

**HOW YOU CAN HELP AT HOME**

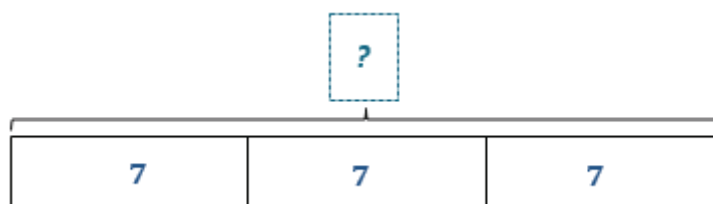
- Practice multiplication with an unknown number while on the go. Take turns answering multiplication questions with a factor of 2 or 3. For example, “2 times what number equals 12?” (6) and “3 times what number equals 24?” (8)
- Encourage your child to divide with tokens of any kind, such as pennies. Give your child, for example, 24 pennies. Then ask her to, “Divide your 24 pennies into 3 equal groups. How many pennies do you have in each group?” (8) “Now divide your 24 pennies in groups of 3. How many equal groups of pennies do you have?” (8)

In both scenarios, the answer is 8 (8 in each group when you have 3 groups and 8 groups when you have 3 in each group). This type of practice will help your child see the difference between representing the unknown group size versus representing the unknown number of groups.

Note: You can continue the sequence by replacing the 3 in the questions with 2, 4, 6, or 8.

**MODELS**

**Tape Diagram:** A model that shows part-whole relationships to assist with problem-solving.





## KEY CONCEPT OVERVIEW

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Lessons 14 through 17 focus on solving multiplication and division problems that use units of 4.

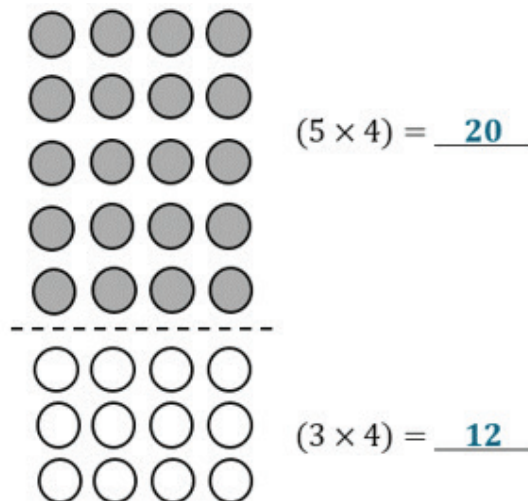
You can expect to see homework that asks your child to do the following:

- Draw arrays and organize them into tape diagrams with the known and unknown parts labeled.
- Use the break apart and distribute strategy to solve challenging multiplication problems that use units of 4 (as shown in the sample problem below).
- Solve multiplication and division word problems.

## SAMPLE PROBLEM (From Lesson 16)

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The array below shows one strategy for solving  $8 \times 4$ . Explain the strategy using your own words.



***I split apart the 8 rows of 4 into 5 rows of 4 and 3 rows of 4. I split the array there because my fives facts and my threes facts are easier than my eights facts. I know that  $5 \times 4 = 20$  and  $3 \times 4 = 12$ . I can add those products to find that  $8 \times 4 = 32$ .***

### Video Links

LEARN MORE by viewing a video about the break apart and distribute strategy using arrays and number bonds, visit [eurmath.link/arrays-numberbonds-1](http://eurmath.link/arrays-numberbonds-1) and [eurmath.link/arrays-numberbonds-2](http://eurmath.link/arrays-numberbonds-2)

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at [GreatMinds.org](http://GreatMinds.org).

**HOW YOU CAN HELP AT HOME** 

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- Continue to practice multiplication and division facts from memory with factors of 2, 3, 4, 5, and 10.
- For the facts that your child struggles with, write each fact on a paper plate (without the answer). With each plate, your child can read the problem, say the answer, and throw the plate across the room like a Frisbee. Your child can also step on the problems and say the answer, laying the plates in a path throughout your home. You can also hang the plates on a wall or staircase, and your child can high-five each plate as he says the answer.

## KEY CONCEPT OVERVIEW

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In Lessons 18 through 21, students apply multiplication and division strategies to solve multi-step word problems.

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

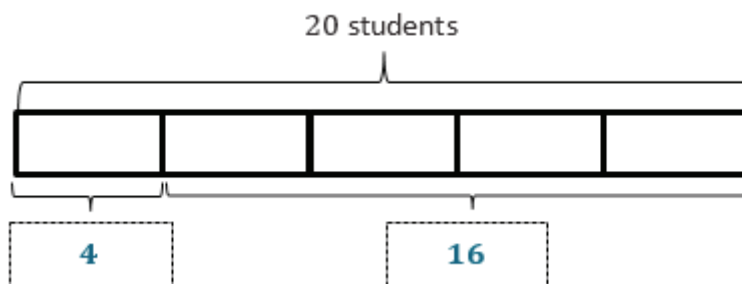
- Draw arrays, number bonds, and tape diagrams with the known and unknown parts labeled.
- Break apart arrays and number bonds into smaller multiplication and division problems, using the **break apart and distribute strategy**.
- Solve multi-step word problems using addition, subtraction, multiplication, and/or division.

## SAMPLE PROBLEM *(From Lesson 20)*

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Twenty students are eating lunch at 5 tables. Each table has the same number of students.

a. How many students are sitting at each table?



$$20 \div 5 = 4$$

***There are 4 students sitting at each table.***

b. How many students are sitting at 4 tables?

$$4 \times 4 = 16$$

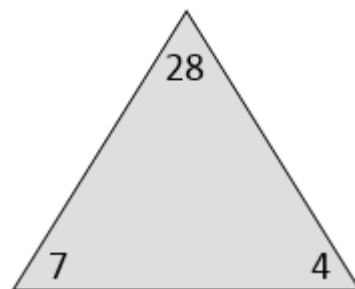
***There are 16 students sitting at 4 tables.***

Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at [GreatMinds.org](http://GreatMinds.org).

## HOW YOU CAN HELP AT HOME

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- Continue to practice multiplication and division facts from memory with factors of 2, 3, 4, 5 and 10. Have your child cut several triangles out of paper. Think of a multiplication or division fact. In each triangle, write two factors and their product (one number per corner). Cover one number with your thumb and ask your child to try to figure out what number is hidden. Ask your child to state two multiplication and two division sentences for the numbers on each triangle.



- Write multiplication and division facts that your child is struggling to remember on brightly colored sticky notes with one problem per sticky note. Hide the sticky notes in places where your child will encounter them: the bathroom mirror, inside a cupboard door, on the back of the driver's headrest in the car, etc. Make a scavenger hunt out of it where your child will get something fun for finding all the facts and correctly answering them all.

## MODELS

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**Break Apart and Distribute Strategy:** This strategy states that a multiplication expression can be broken into parts that can then be added together.

