

NAME _____

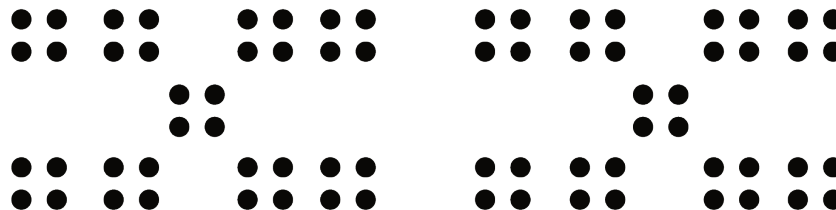
DATE _____

PERIOD _____

Unit 4, Lesson 3: Interpreting Division Situations

Let's explore situations that involve division.

3.1: Dot Image: Properties of Multiplication



3.2: Homemade Jams

m.openup.org/1/6-4-3-2



Draw a diagram, and write a multiplication equation to represent each of the following situations. Then answer the question.

- Mai had 4 jars. In each jar, she put $2\frac{1}{4}$ cups of homemade blueberry jam. Altogether, how many cups of jam are in the jars?

- Priya filled 5 jars, using a total of $7\frac{1}{2}$ cups of strawberry jam. How many cups of jam are in each jar?

- Han had some jars. He put $\frac{3}{4}$ cup of grape jam in each jar, using a total of $6\frac{3}{4}$ cups. How many jars did he fill?

NAME

DATE

PERIOD

3.3: Making Granola

1. To make 1 batch of granola, Kiran needs 26 ounces of oats. The only measuring tool he has is a 4-ounce scoop. How many scoops will it take to measure 26 ounces of oats?
 - a. Will the answer be more than 1 or less than 1?
 - b. Write a multiplication equation and a division equation that represent this situation. Use “?” to represent the unknown quantity.
 - c. Find the unknown quantity. If you get stuck, draw a diagram.

2. The recipe calls for 14 ounces of mixed nuts. To get that amount, Kiran uses 4 bags of mixed nuts.
 - a. Write a mathematical question that might be asked about this situation.
 - b. What might the equation $14 \div 4 = ?$ represent in Kiran’s situation?
 - c. Find the quotient. Show your reasoning. If you get stuck, draw a diagram.

NAME

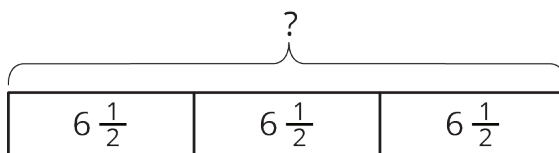
DATE

PERIOD

Lesson 3 Summary

If a situation involves equal-sized groups, it is helpful to make sense of it in terms of the number of groups, the size of each group, and the total amount. Here are three examples to help us better understand such situations.

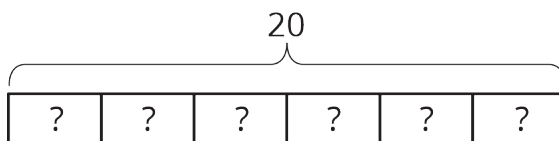
- Suppose we have 3 bottles with $6\frac{1}{2}$ ounces of water in each, and the total amount of water is not given. Here we have 3 groups, $6\frac{1}{2}$ ounces in each group, and an unknown total, as shown in this diagram:



We can express this situation as a multiplication problem. The unknown is the product, so we can simply multiply the 2 known numbers to find it.

$$3 \cdot 6\frac{1}{2} = ?$$

- Next, suppose we have 20 ounces of water to fill 6 equal-sized bottles, and the amount in each bottle is not given. Here we have 6 groups, an unknown amount in each, and a total of 20. We can represent it like this:



This situation can also be expressed using multiplication, but the unknown is a factor, rather than the product:

$$6 \cdot ? = 20$$

To find the unknown, we cannot simply multiply, but we can think of it as a division problem:

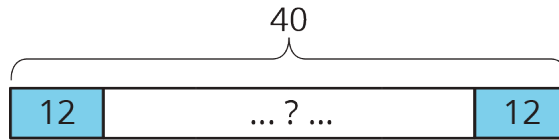
$$20 \div 6 = ?$$

NAME

DATE

PERIOD

- Now, suppose we have 40 ounces of water to pour into bottles, 12 ounces in each bottle, but the number of bottles is not given. Here we have an unknown number of groups, 12 in each group, and a total of 40.



Again, we can think of this in terms of multiplication, with a different factor being the unknown:

$$? \cdot 12 = 40$$

Likewise, we can use division to find the unknown:

$$40 \div 12 = ?$$

Whenever we have a multiplication situation, one factor tells us *how many groups* there are, and the other factor tells us *how much is in each group*.

Sometimes we want to find the total. Sometimes we want to find how many groups there are. Sometimes we want to find how much is in each group. Anytime we want to find out how many groups there are or how much is in each group, we can represent the situation using division.

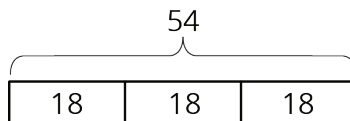
NAME _____

DATE _____

PERIOD _____

Unit 4, Lesson 3: Interpreting Division Situations

1. Write a multiplication equation and a division equation that this diagram could represent.



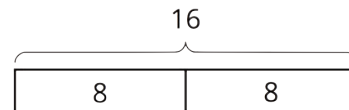
2. Mai has \$36 to spend on movie tickets. Each movie ticket costs \$4.50. How many tickets can she buy?

a. Write a multiplication equation and a division equation to represent this situation.

b. Find the answer. Draw a diagram, if needed.

c. Use the multiplication equation to check your answer.

3. Kiran said that this diagram can show the solution to $16 \div 8 = ?$ or $16 \div 2 = ?$, depending on how we think about the equations and the “?”.
Explain or show how Kiran is correct.



4. Write a sentence describing a situation that could be represented by the equation $4 \div 1\frac{1}{3} = ?$.

(from Unit 4, Lesson 2)

5. Noah said, “When you divide a number by a second number, the result will always be smaller than the first number.”

Jada said, “I think the result could be larger or smaller, depending on the numbers.”

Do you agree with Noah or Jada? Show or explain your reasoning.

NAME

DATE

PERIOD

(from Unit 4, Lesson 1)

6. Mini muffins cost \$3.00 per dozen.

- Andre says, "I have \$2.00, so I can afford 8 muffins."
- Elena says, "I want to get 16 muffins, so I'll need to pay \$4.00."

Do you agree with either, both, or neither of them? Explain your reasoning.

(from Unit 3, Lesson 7)

7. A family has a monthly budget of \$2,400. How much money is spent on each category?

- a. 44% is spent on housing.
- b. 23% is spent on food.
- c. 6% is spent on clothing.
- d. 17% is spent on transportation.
- e. The rest is put into savings.

(from Unit 3, Lesson 15)