

Teacher Notes.

Lesson 2: Interpreting Division of a Whole Number by a Fraction—Visual Models

Classwork

Example 1

Question # _____

Write it as a division expression.

Write it as a multiplication expression.

Make a rough draft of a model to represent the problem:

As you travel to each model, be sure to answer the following questions:

Original Question	Corresponding Division Expression	Corresponding Multiplication Expression	Write an Equation Showing the Equivalence of the Two Expressions.
1. How many $\frac{1}{2}$ miles are in 12 miles?	$12 \div \frac{1}{2}$	12×2	$12 \div \frac{1}{2} = 12 \times 2$
2. How many quarter hours are in 5 hours?	$5 \div \frac{1}{4}$	5×4	$5 \div \frac{1}{4} = 5 \times 4$
3. How many $\frac{1}{3}$ cups are in 9 cups?	$9 \div \frac{1}{3}$	9×3	$9 \div \frac{1}{3} = 9 \times 3$
4. How many $\frac{1}{8}$ pizzas are in 4 pizzas?	$4 \div \frac{1}{8}$	4×8	$4 \div \frac{1}{8} = 4 \times 8$
5. How many one-fifths are in 7 wholes?	$7 \div \frac{1}{5}$	7×5	$7 \div \frac{1}{5} = 7 \times 5$

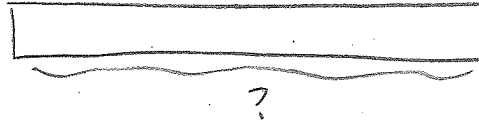
Example 2

Molly has 9 cups of flour. If this is $\frac{3}{4}$ of the number she needs to make bread, how many cups does she need?

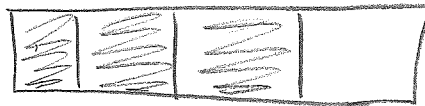
- a. Construct the tape diagram by reading it backward. Draw a tape diagram and label the unknown.

$$9 \div \frac{3}{4}$$

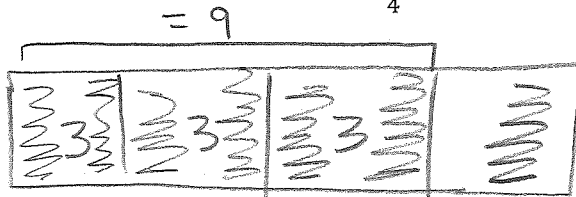
$$9 \times \frac{4}{3}$$



- b. Next, shade in $\frac{3}{4}$.



- c. Label the shaded region to show that 9 is equal to $\frac{3}{4}$ of the total.



$$3 \text{ units} = 9$$

$$9 \div 3 = 3$$

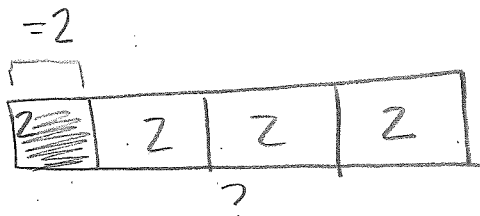
$$1 \text{ unit} = 3$$

- d. Analyze the model to determine the quotient.

Molly will need 12 cups of flour.

Exercises 1–5

1. A construction company is setting up signs on 2 miles of road. If the company places a sign every $\frac{1}{4}$ mile, how many signs will it use? $2 \div \frac{1}{4}$ 2×4



$$1 \text{ unit} = 2$$

$$2 \times 4 = 8$$

They will use 8 signs.

2. George bought 4 submarine sandwiches for a birthday party. If each person will eat $\frac{2}{3}$ of a sandwich, how many people can George feed? $4 \div \frac{2}{3}$ $4 \cdot \frac{3}{2}$



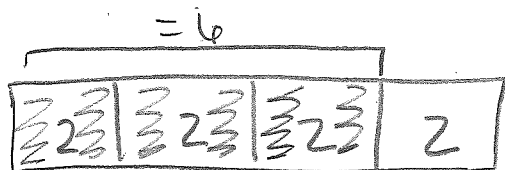
$$2 \text{ units} = 4$$

$$1 \text{ unit} = 2$$

George can feed 8 people.

3. Miranda buys 6 pounds of nuts. If she puts $\frac{3}{4}$ pound in each bag, how many bags can she make?

$$6 \div \frac{3}{4} \text{ or } 6 \times \frac{4}{3}$$



$$3 \text{ units} = 6$$

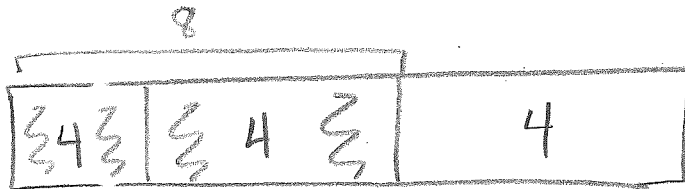
$$\frac{4}{3} = 2$$

$$1 \text{ unit} = 2$$

Miranda will make 8 bags of nuts.

4. Margo freezes 8 cups of strawberries. If this is $\frac{2}{3}$ of the total strawberries that she picked, how many cups of strawberries did Margo pick?

$$8 \div \frac{2}{3} \quad \text{or} \quad 8 \times \frac{3}{2}$$



$$2 \text{ units} = 8$$

$$8/2 = 4$$

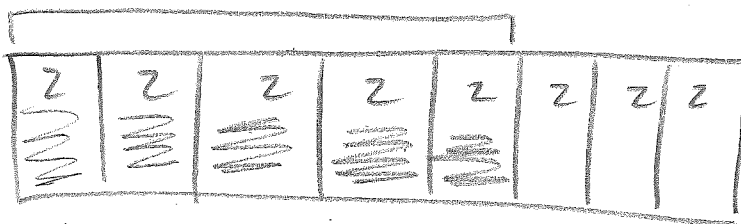
$$1 \text{ unit} = 4$$

Margo picked 12 cups of strawberries.

5. Regina is chopping up wood. She has chopped 10 logs so far. If the 10 logs represent $\frac{5}{8}$ of all the logs that need to be chopped, how many logs need to be chopped in all?

$$10 \div \frac{5}{8} \quad \text{or} \quad 10 \cdot \frac{8}{5}$$

10



$$5 \text{ units} = 10$$

$$10/5 = 2$$

$$1 \text{ unit} = 2$$

Regina will chop 16 logs in all.