Lesson 9-4

Monday, February 3, 2020 1:57 PM

MB 545

Name

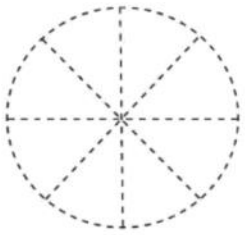
Solve & Share

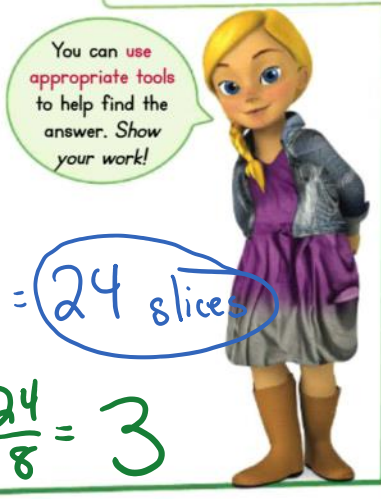
One ball of dough can be stretched into a circle to make a pizza. After the pizza is cooked, it is cut into 8 equal slices. How many slices of pizza can you make with 3 balls of dough? ***Solve this problem any way you choose.***

Lesson 9-4
Divide Whole Numbers by Unit Fractions

I can ...
divide a whole number by a unit fraction.

Content Standards 5.NF.B.7b, 5.NF.B.7c
Mathematical Practices MP.1, MP.2, MP.4, MP.5





$3 \div \frac{1}{8} = 5$

$3 \times \frac{8}{1} = \frac{3 \times 8}{1} = \frac{24}{1} =$ 24 slices

$24 \times \frac{1}{8} = \frac{24 \times 1}{8} = \frac{24}{8} = 3$

Look Back! MP.2 Reasoning Into how many slices of pizza will each ball of dough be divided? What fraction of a whole pizza does 1 slice represent?

8 slices of pizza.
$\frac{1}{8}$ is 1 slice of

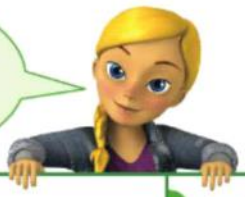
Learn Glossary

Essential Question

How Can You Divide by a Unit Fraction?

A

Joyce is making sushi rolls. She needs $\frac{1}{4}$ cup of rice for each sushi roll. How many sushi rolls can she make if she has 3 cups of rice?



$\frac{1}{4}$ is a unit fraction. A unit fraction is a fraction that describes one part of the whole. So, it has a numerator of 1.

B One Way

Use an area model to find how many $\frac{1}{4}$s are in 3.

There are four $\frac{1}{4}$s in 1 whole cup. So, there are twelve $\frac{1}{4}$s in three whole cups. So, Joyce can make 12 sushi rolls.

You can also use a number line to represent this problem.

C Another Way

Use a number line to find how many $\frac{1}{4}$s are in 3.

You can see that there are four $\frac{1}{4}$s in between each whole number.

There are four $\frac{1}{4}$s in 1 whole, eight $\frac{1}{4}$s in 2 wholes, and twelve $\frac{1}{4}$s in 3 wholes.

So, $3 \div \frac{1}{4} = 12$.

Joyce can make 12 sushi rolls.

Convince Me! MP.4 Model with Math Use the diagram below to find $4 \div \frac{1}{3}$.

$4 \div \frac{1}{3} =$ 12

$12 \times \frac{1}{3} = \frac{12 \times 1}{3} = \frac{12}{3} = 4$

Name _____

Guided Practice*

Do You Understand?

1. In the example at the top of page 546, if Joyce had 4 cups of rice, how many rolls could she make?

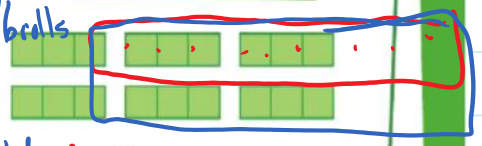
$4 \div \frac{1}{4} = 4 \times \frac{4}{1} = \frac{4 \times 4}{1} = \frac{16}{1} = 16$ rolls

2. In the example at the top of page 546, how does the number line help to show that $3 \div \frac{1}{4}$ is equal to 3×4?

The number line shows 3 wholes broken into fourths. That shows 12 equal intervals because $3 \times 4 = 12$.

Do You Know How?

In **3** and **4**, use the picture below to find each quotient.



3. How many $\frac{1}{3}$s are in 3?

$3 \div \frac{1}{3} =$ ___ 9

4. How many $\frac{1}{3}$s are in 6?

$6 \div \frac{1}{3} =$ ___ 18

Complete # 7, 9, 12, 14, 15, 19

Independent Practice

Leveled Practice In **5** and **6**, use the picture to find each quotient.

5. How many $\frac{1}{6}$s are in 1?

$1 \div \frac{1}{6} =$ ___

6. How many $\frac{1}{6}$s are in 5?

$5 \div \frac{1}{6} =$ ___

In **7–14**, draw a picture or use a number line to find each quotient.

7. $4 \div \frac{1}{2}$

$4 \times \frac{2}{1} = \frac{4 \times 2}{1} = \frac{8}{1} = 8$

8. $2 \div \frac{1}{8}$

$8 \times \frac{1}{8} = \frac{8}{8} = 4$

9. $2 \div \frac{1}{3}$

$3 \times \frac{10}{1} = \frac{30}{1} = 30$

$30 \times \frac{1}{10} = \frac{30 \times 1}{10} = \frac{30}{10} = 3$

10. $6 \div \frac{1}{4}$

$2 \times \frac{3}{1} = \frac{2 \times 3}{1} = \frac{6}{1} = 6$

11. $8 \div \frac{1}{3}$

12. $3 \div \frac{1}{10}$

13. $9 \div \frac{1}{8}$

14. $6 \div \frac{1}{5}$

$6 \times \frac{1}{5} = \frac{6 \times 1}{5} = \frac{6}{5}$

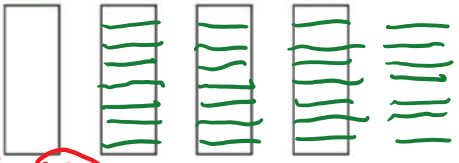
$15 \times \frac{5}{1} = \frac{15 \times 5}{1} = \frac{75}{1} = 75$

$75 \times \frac{1}{5} = \frac{75}{5} = 15$

*For another example, see Set B on page 577.

Math Practices and Problem Solving

15. **MP.4 Model with Math** Dan has 4 cartons of juice. He pours $\frac{1}{8}$ carton for each person on a camping trip. How many people can he serve? Draw a picture to help you answer the question.



$4 \div \frac{1}{8} = \frac{4}{1} \times \frac{8}{1} = \frac{4 \times 8}{1} = \frac{32}{1} = 32$ servings

16. **Higher Order Thinking** Write a word problem that can be solved by dividing 10 by $\frac{1}{3}$. Then answer the problem.

17. **Number Sense** The Nile River is the longest river in the world. It is 4,160 miles long. You want to spend three weeks traveling the entire length of the river, traveling about the same number of miles each day. Estimate the number of miles you should travel each day.

18. **MP.1 Make Sense and Persevere** Maria used one bag of flour. She baked two loaves of bread. Then she used the remaining flour to make 48 muffins. How much flour was in the bag when Maria began?

DATA

Recipe	Amount of Flour Needed
Bread	$2\frac{1}{4}$ cups per loaf
Muffins	$3\frac{1}{4}$ cups per 24 muffins
Pizza	$1\frac{1}{2}$ cups per pie

Common Core Assessment

19. Deron is making light switch plates from pieces of wood. He starts with a board that is 18 feet long. How many light switch plates can he make?

Ⓐ 9 light switch plates
Ⓑ 24 light switch plates
Ⓒ 27 light switch plates
Ⓓ 54 light switch plates

DATA

Wood Projects	
Item	Length Needed for Each
Cabinet Shelf	$\frac{3}{4}$ foot
Light Switch Plate	$\frac{1}{3}$ foot
Shingle	$\frac{2}{3}$ foot

$18 \div \frac{1}{3} = 6$

$18 \times \frac{3}{1} = \frac{18 \times 3}{1} = \frac{54}{1} = 54$

$54 \times \frac{1}{3} = \frac{54}{3} = 18$