Name: _____ Period: _____ Date: _____

Math Unit 2: Fractions and Decimals

Lesson 2.2- Dividing Fractions

SWBAT:	**Paraphrase:**

Essential Question: How can you divide by a fraction?

Vocabulary

reciprocal-

Example 1

	Original Number	*Fraction*	*Reciprocal*	*Check*
a.	$\frac{3}{5}$	$\frac{3}{5}$	$\frac{5}{3}$	$\frac{3}{5} \times \frac{5}{3} = 1$
b.	$\frac{9}{5}$	$\frac{9}{5}$	$\frac{5}{9}$	$\frac{9}{5} \times \frac{5}{9} = 1$
c.	2	$\frac{2}{1}$	$\frac{1}{2}$	$\frac{2}{1} \times \frac{1}{2} = 1$

Your Turn

Write the reciprocal of the number.

1. $\frac{3}{4}$ **2.** 5 **3.** $\frac{7}{2}$ **4.** $\frac{4}{9}$

Example 2

Find $\frac{1}{6} \div \frac{2}{3}$.

$\frac{1}{6} \div \frac{2}{3} = \frac{1}{6} \times \frac{3}{2}$ Multiply by the reciprocal of $\frac{2}{3}$, which is $\frac{3}{2}$.

$= \frac{1 \times \cancel{3}^{1}}{\cancel{6}_{2} \times 2}$ Multiply fractions. Divide out the common factor 3.

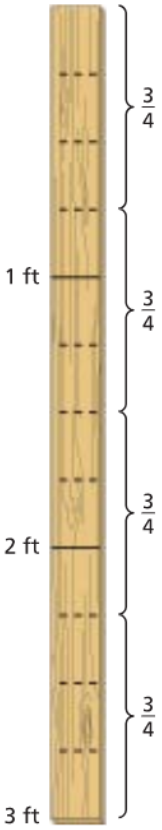
$= \frac{1}{4}$ Simplify.

Your Turn

Divide. Write the answer in simplest form.

5. $\frac{2}{7} \div \frac{1}{3}$ **6.** $\frac{1}{2} \div \frac{1}{8}$ **7.** $\frac{3}{8} \div \frac{1}{4}$ **8.** $\frac{2}{5} \div \frac{3}{10}$

Example 3



A piece of wood is 3 feet long. How many $\frac{3}{4}$-foot pieces can you cut from the piece of wood?

Method 1: Draw a diagram. Mark each foot on the diagram. Then divide each foot into $\frac{1}{4}$-foot sections.

Count the number of $\frac{3}{4}$-foot pieces of wood. There are four.

∴ So, you can cut four $\frac{3}{4}$-foot pieces from the piece of wood.

Method 2: Divide 3 by $\frac{3}{4}$ to find the number of $\frac{3}{4}$-foot pieces.

$3 \div \frac{3}{4} = 3 \times \frac{4}{3}$ Multiply by the reciprocal of $\frac{3}{4}$, which is $\frac{4}{3}$.

$= \frac{\overset{1}{\cancel{3}} \times 4}{\underset{1}{\cancel{3}}}$ Multiply. Divide out the common factor 3.

$= 4$ Simplify.

∴ So, you can cut four $\frac{3}{4}$-foot pieces from the piece of wood.

Your Turn

9. How many $\frac{1}{2}$-foot pieces can you cut from a 7-foot piece of wood?

Example 4

Find $\frac{4}{5} \div 2$.

$\frac{4}{5} \div 2 = \frac{4}{5} \div \frac{2}{1}$ Write 2 as an improper fraction.

$= \frac{4}{5} \times \frac{1}{2}$ Multiply by the reciprocal of $\frac{2}{1}$, which is $\frac{1}{2}$.

$= \frac{\overset{2}{\cancel{4}} \times 1}{5 \times \underset{1}{\cancel{2}}}$ Multiply fractions. Divide out the common factor 2.

$= \frac{2}{5}$ Simplify.

Your Turn

Divide. Write the answer in simplest form.

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

11. $\frac{2}{3} \div 10$

12. $\frac{5}{8} \div 4$

13. $\frac{6}{7} \div 4$

Example 5

Evaluate $\frac{3}{8} + \frac{5}{6} \div 5$.

$$\frac{3}{8} + \frac{5}{6} \div 5 = \frac{3}{8} + \frac{5}{6} \times \frac{1}{5}$$ Multiply by the reciprocal of 5, which is $\frac{1}{5}$.

$$= \frac{3}{8} + \frac{\overset{1}{\cancel{5}} \times 1}{6 \times \underset{1}{\cancel{5}}}$$ Multiply $\frac{5}{6}$ and $\frac{1}{5}$. Divide out the common factor 5.

$$= \frac{3}{8} + \frac{1}{6}$$ Simplify.

$$= \frac{18}{48} + \frac{8}{48}$$ Rewrite fractions using a common denominator.

$$= \frac{26}{48}, \text{ or } \frac{13}{24}$$ Simplify.

Your Turn

Evaluate the expression. Write the answer in simplest form.

14. $\frac{4}{5} + \frac{2}{5} \div 4$

15. $\frac{3}{8} \div \frac{3}{4} - \frac{1}{6}$

16. $\frac{8}{9} \div 2 \div 8$

Notes / Questions