Name_____Date_____

INVESTIGATION: DIVISION OF FRACTIONS "The Rule"

Essential Question How do you divide by a fraction?

1 ACTIVITY: Dividing by a Fraction

a. Describe the pattern of the blue numbers.

Cut in half

$8 \div 16$	$\frac{1}{2}$
$8 \div 8$	1
$8 \div 4$	2
$8 \div 2$	4
$8 \div 1$	8
$8 \div \frac{1}{2}$	16
$8 \div \frac{1}{4}$	32
$8 \div \frac{1}{8}$	64

← divisor   ← quotient

b. Describe the pattern of the red numbers. Use the pattern to complete the table.

doubled

c. When dividing by a fraction you invert the divisor and then multiply. What does the word "invert" mean? Give an example or draw a picture.

Invert means "to flip."

d. Use the pattern in the table to complete the following.

$8 \div \frac{1}{2} = 16 = 8 \times \frac{2}{1}$ Invert $\frac{1}{2}$ and multiply.

$8 \div \frac{1}{4} = 32 = 8 \times \frac{4}{1}$ *Invert $\frac{1}{4}$ and X*

$8 \div \frac{1}{8} = 64 = 8 \times \frac{8}{1}$ *Invert $\frac{1}{8}$ and X*

Name_____Date_____

DIVIDING FRACTIONS

What is a reciprocal? *Inverting (or flipping) a fraction.*

How do you find the reciprocal of a number?

1) Write the number as a fraction (proper or improper)
2) Switch the numerator and denominator

DIVIDING FRACTIONS:

Example 1:

$$\frac{14}{26} \div \frac{7}{13}$$

$$\frac{14 \div 2}{26 \div 2} = \frac{7}{13}$$

$$\text{K} \quad \text{C} \quad \text{F}$$

$$\frac{14}{26} \times \frac{13}{7}$$

$$= \frac{1}{1} = 1$$

STEPS:

1. Convert mixed numbers to improper fractions. ✓

Dividing Steps:	2. **K**eep the first fraction the same.
	3. **F**lip the second fraction (AKA find its reciprocal.)
	4. **C**hange the division sign to multiplication.

5. Follow the steps for multiplying fractions.

6. Write your quotient in simplest form.

Example 2:

$5\frac{1}{4} \div 3\frac{1}{2}$

STEPS:

1. Convert mixed numbers to improper fractions.

Dividing Steps:	2. Keep the first fraction the same.
	3. Flip the second fraction (AKA find its reciprocal.)
	4. Change the division sign to multiplication.

5. Follow the steps for multiplying fractions.

6. Write your quotient in simplest form.

Example 3: DIVIDING A WHOLE NUMBER BY A FRACTION:

$8 \div 3\frac{2}{3} = \frac{24}{11}$

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

K

$\frac{8}{1}$ × $\frac{3}{11}$ F

$\frac{8 \times 3}{1 \times 11} = \frac{24}{11}$

STEPS:

Rewrite {
1. Make the whole number a fraction.

2. Convert mixed numbers to improper fractions.

3. Keep the first fraction the same.

Dividing Steps:	4. Flip the second fraction (AKA find its reciprocal.)
	5. Change the division sign to multiplication.

6. Follow the steps for multiplying fractions.

7. Write your quotient in simplest form.

Tou try: 1. $\frac{3}{8} \div 1\frac{1}{8}$

2. $6\frac{3}{4} \div 1\frac{4}{5}$