Multiply and Divide Rational Numbers

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Number Sense and Operations

7th grade

Missouri Learning Standards (MLS)

7.NS.A.2.a

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Common Core State Standards

CCSS.MATH.CONTENT.7.EE.B.3

Objective

Apply and extend previous understandings of operations to add, subtract, multiply and divide rational numbers.

Apply and extend previous understanding of numbers to multiply and divide rational numbers.

a. **Multiply and Divide rational numbers**
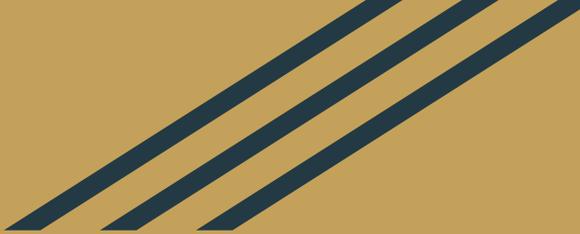
Key terms

Rational Number

A rational number is a number that can be in the form p/q where p and q are integers and q is not equal to zero.

Prior Knowledge Needed

- Students will need to know English language arts (a.k.a. reading and writing).
- Students will need to know how to multiply and divide.

Multiplying Decimals

1. Multiply the numbers just as if they were whole numbers.

● Line up the numbers on the right - **do not align the decimal points**.
● Starting on the right, multiply each digit in the top number by each digit in the bottom number, just as with whole numbers.
● Add the products.

2. Place the decimal point in the answer by starting at the right and moving a number of places equal to the sum of the decimal places in both numbers multiplied.

Multiplying Decimals

$3.77 \times 2.8 = ?$

$$
\begin{array}{r}
3.77 \quad \text{(2 decimal places)} \\
\times \quad 2.8 \quad \text{(1 decimal place)} \\
\hline
3016 \\
+754 \quad\quad \\
\hline
10.556 \quad \text{(3 decimal places)}
\end{array}
$$

Dividing Decimals

1. Move the decimal point in the divisor and dividend. ...

2. Place a decimal point in the quotient (the answer) directly above where the decimal point now appears in the dividend.

3. **Divide** as usual, being careful to line up the quotient properly so that the decimal point falls into place.

Dividing Decimals

$$0.8\overline{)9.152}$$

$$8.\overline{)91.52}$$

$$
\begin{array}{r}
11.44 \\
8.\overline{)91.52} \\
-8 \\
\hline
11 \\
-8 \\
\hline
35 \\
-32 \\
\hline
32 \\
-32 \\
\hline
0
\end{array}
$$

Multiplying Fractions

Multiplying fractions is a 3 step process.

Let's look at the example 2/5 x 3/4

Multiply the numerators

$$\frac{2}{5} \times \frac{3}{4} = \frac{6}{}$$

Multiply the denominators

$$\frac{2}{5} \times \frac{3}{4} = \frac{6}{20}$$

Reduce the fraction if necessary

$$\frac{6}{20} = \frac{3}{10}$$

Dividing Fractions

Multiplying fractions is a 3

step process.

Let's look at the example

4/5 divided by 2/3

Invert the fraction that you are dividing by

$$\frac{4}{5} \div \frac{2}{3} = \frac{4}{5} \times \frac{3}{2}$$

Multiply the numerators and denominators

$$\frac{4}{5} \times \frac{3}{2} = \frac{12}{10}$$

Simplify the fraction if necessary

$$\frac{12}{10} = 1\frac{1}{5}$$

Now it's your turn!

While Anna is collecting berries, her brother Rider went squirrel hunting. Each person needs 1 ½ squirrels for dinner. If there are 8 family members that Rider needs to feed, how many squirrels will he need to hunt for?

When Anna got home with her 2 ¼ lbs of berries, she noticed 1/4 of all the berries she picked were rotted. How many lbs. of berries were rotten?

Now it's your turn!

Anna wanted to make dresses for her and her friends. If it takes 5/6 yards of fabric to make a dress, then how many yards will it take to make 8 dresses?

Rider hit a rock in his canoe. Is canoe is leaking at a rate of 1/2 gallons every hour. How many gallons of water will be in the canoe after 4 hours and 30 minutes.

PBL lesson: Students will go home and cook something for dinner. I want them to only make half of the recipe. They will have to divide all the ingredients by .5. Keep track of all your calculations and we will share tomorrow.