Standard 6.NS.1

Multiply and Divide Rational Numbers

Identification Review

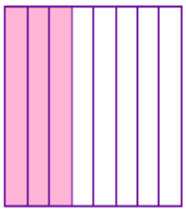
There are three types of fractions:

- _____ Example: $\frac{4}{5}$
- _____ Example: $2\frac{1}{3}$
- _____ Example: $\frac{13}{12}$

The easiest way to multiply or divide fraction is to use improper fractions and proper (common) fractions ONLY!

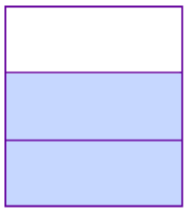
Multiplying Fractions

Shade one square, partitioned vertically, to represent 3/8 (shown below in pink):



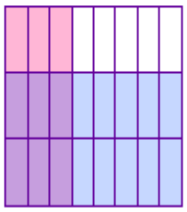
$\frac{3}{8}$

Shade another square, partitioned horizontally, to represent 2/3 (shown below in blue):



$\frac{2}{3}$

Superimpose the two squares. The product is the area that is double-shaded (shown below in purple):



$\frac{3}{8} \cdot \frac{2}{3} = \frac{3 \cdot 2}{8 \cdot 3}$

Example 1: Multiply the following.

1. $\frac{4}{5} \times \frac{4}{5} =$
2. $\frac{4}{2} \cdot \frac{4}{5} =$
3. $\frac{1}{3} \times \frac{4}{7} =$
4. $\frac{2}{3} \times \frac{4}{15} =$
5. $1\frac{2}{5} \cdot \frac{4}{5} =$
6. $2\frac{2}{3} \cdot 4\frac{1}{6} =$

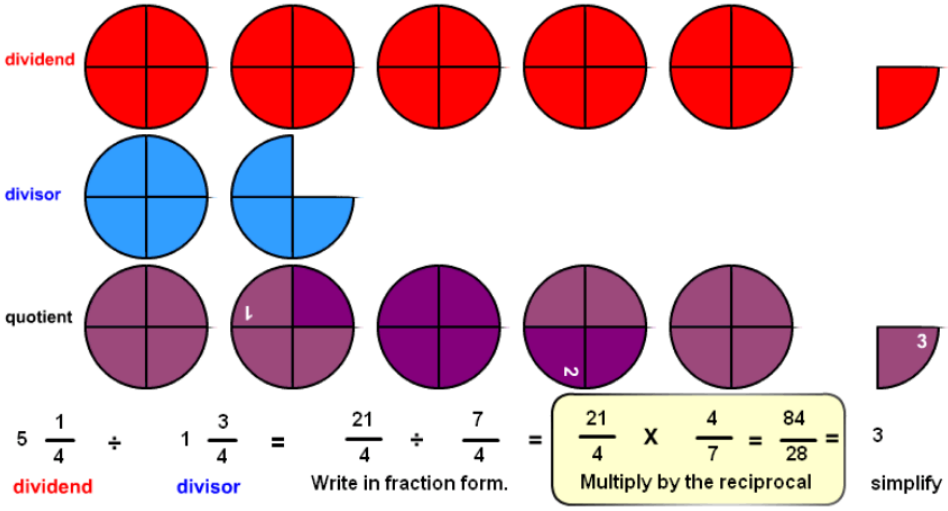
Word Problems

1. On Friday, Brandy sold 5 pitchers of lemonade from her lemonade stand. On Saturday, she sold 2/5 as much lemonade as on Friday. How many pitchers of lemonade did Brandy sell on Saturday?

2. Sean collected 1/6 of a bin of glass bottles to recycle. Cooper collected 2 times as many bins as Sean. How many bins of bottles did Cooper collect?

3. The cattle at the Johnson Farm are fed 6 bales of hay each day. The horses are fed 1/2 as much hay as the cattle. How many bales of hay are the horses fed each day?

Dividing Fractions



Example 2: Divide the following.

7. $\frac{2}{5} \div \frac{4}{5} =$

8. $\frac{1}{2} \div \frac{1}{5} =$

9. $\frac{1}{3} \div \frac{2}{7} =$

10. $\frac{3}{4} \div \frac{1}{6} =$

11. $\frac{1}{5} \div \frac{4}{5} =$

12. $\frac{1}{2} \div \frac{6}{5} =$

13. $\frac{1}{2} \div \frac{2}{7} =$

14. $\frac{9}{4} \div \frac{1}{6} =$

Word Problems:

1. A cookie factory uses 3/8 of a barrel of oatmeal in each batch of cookies. The factory used 3/4 of a barrel of oatmeal yesterday. How many batches of cookies did the factory make?

2. A cookie factory uses 1/4 of a bag of flour in each batch of cookies. The factory used 3/4 of a bag of flour yesterday. How many batches of cookies did the factory make?

3. Kenny made 1/5 of a pound of trail mix. If he puts 1/10 of a pound into each bag, how many bags can Kenny fill?