Name: _____ Date: _____

MORE WORK DIVIDING FRACTIONS
N-GEN MATH® 6

In the previous lesson we learned how to divide fractions by using a multiplication sentence and by dividing fractions with common denominators. Let's review that second technique.

***Exercise* #1:** Find each of the following quotients. If they are whole numbers, express them that way. If they are fractions, write in simplest terms.

(a) $\frac{4}{7} \div \frac{10}{7}$ (b) $\frac{12}{5} \div \frac{3}{5}$ (c) $\frac{8}{3} \div \frac{16}{3}$ (d) $\frac{3}{11} \div \frac{7}{11}$

Now, this technique is harder if the two fractions do not have a common denominator. But, just as with adding fractions, we can always change the two fractions so that they do.

***Exercise* #2:** For each quotient, convert the fractions involved so that they have common denominators and then divide.

(a) $\frac{2}{5} \div \frac{3}{4}$ (b) $\frac{5}{3} \div \frac{9}{7}$ (c) $\frac{11}{2} \div \frac{3}{5}$

***Exercise* #3:** Look carefully at the answers in *Exercise* #2. Can you see a way to find each of these answers using multiplication instead? Rewrite each as a multiplication problem.

(a) $\frac{2}{5} \div \frac{3}{4} = \_\_\_\_ \times \_\_\_\_$ (b) $\frac{5}{3} \div \frac{9}{7} = \_\_\_\_ \times \_\_\_\_$ (c) $\frac{11}{2} \div \frac{3}{5} = \_\_\_\_ \times \_\_\_\_$

This pattern remarkably holds and leads to the **standard method** of dividing fractions.

STANDARD METHOD OF DIVIDING FRACTIONS

$$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c}$$

The standard method is sometimes given the name **keep-change-flip** because you **keep** the first fraction the same, **change** division to multiplication, and then "**flip**" the other fraction (called the **reciprocal** of the original).

***Exercise* #4:** Find each of the following quotients by first rewriting as a multiplication problem. Express your answers in simplest form. You do not need to convert them to mixed numbers.

(a) $\frac{3}{7} \div \frac{4}{5}$ (b) $\frac{4}{9} \div \frac{2}{5}$ (c) $\frac{5}{12} \div \frac{15}{4}$ (d) $\frac{4}{9} \div \frac{3}{8}$

(e) $\frac{8}{3} \div \frac{2}{7}$ (f) $\frac{10}{3} \div \frac{5}{12}$ (g) $\frac{2}{9} \div \frac{14}{27}$ (h) $\frac{36}{7} \div \frac{12}{5}$

Dealing with division of mixed numbers adds an additional step to our procedure.

***Exercise* #5:** Find each of the following quotients by first converting each mixed number to an improper fraction. After doing the division, express your final answers fractions in simplest form. Convert any improper fractions back to mixed numbers.

(a) $3\frac{1}{9} \div 2\frac{1}{3}$ (b) $5\frac{5}{6} \div 3\frac{1}{3}$ (c) $8\frac{1}{4} \div 1\frac{5}{6}$

***Exercise* #6:** Maria is cutting two feet of ribbon trim into pieces that are three and three-quarters of an inch each. She is trying to determine how many pieces she will have.

(a) Determine how many whole number pieces of ribbon Maria can cut.

(b) Determine how many inches of ribbon are left over after she creates the pieces in (a).

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MORE WORK DIVIDING FRACTIONS
N-GEN MATH® 6 HOMEWORK

FLUENCY

1. Find each of the following quotients. Express your final answers in simplest form. You do not need to convert them to mixed numbers.

(a) $\frac{6}{7} \div \frac{5}{14}$ (b) $\frac{11}{4} \div \frac{3}{8}$ (c) $\frac{10}{7} \div \frac{15}{4}$

(d) $\frac{16}{3} \div \frac{8}{15}$ (e) $\frac{4}{21} \div \frac{12}{7}$ (f) $\frac{10}{9} \div \frac{5}{12}$

2. Find each of the following quotients. Express your answers in simplest form. Convert any improper fractions into mixed numbers.

(a) $5\frac{1}{2} \div 1\frac{1}{2}$ (b) $3\frac{3}{5} \div 2\frac{7}{10}$ (c) $6\frac{3}{4} \div 7\frac{1}{2}$

3. When $9\frac{1}{3}$ is divided by $1\frac{1}{9}$ the quotient is closest to what whole number? Justify your answer.

USING YOUR MATH

4. A bucket that is three and three-quarters of a gallon is being filled with a container that holds five-eighths of a gallon. How many full containers would be needed to fill the bucket?

5. Meghan needs to make a recipe that calls for $5\frac{1}{2}$ cups of flour. Unfortunately, she only has a $\frac{3}{4}$ cup measuring cup. How many of these will she need to use?

6. Minh is cutting a board that is 10 feet long into sections that are $1\frac{3}{4}$ feet each.

   (a) What is the greatest whole number of boards she can cut of this length?

   (b) If she cuts that many boards, how much of the 10-foot-long board will be left?

7. A rectangle has an area of $18\frac{1}{5}$ square feet. If its width is $3\frac{1}{4}$ feet, then find its length. Express it in mixed number form.