

## MULTIPLYING FRACTIONS

### N-GEN MATH<sup>®</sup> 6

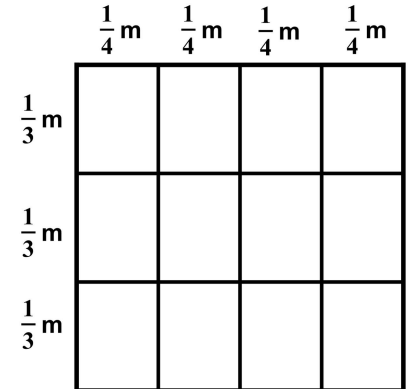


You learned how to multiply two fractions in previous classes. In the first exercise we will look at a geometric reason for why the technique works.

**Exercise #1:** The following diagram shows a square that measures one meter by one meter, so it has a **total area of one square meter**. One side is broken into lengths of one-third meter and one side is broken into lengths of one-quarter meter.

(a) If the overall area is one square meter, what is the area of each of the small rectangles shown in the picture? Explain.

(b) Shade in a rectangle whose width is  $\frac{2}{3}$  of a meter and whose length is  $\frac{3}{4}$  of a meter. What is its area? (Don't simplify.)



(c) Since the area of a rectangle is always equal to its length times its width, we can now say that:

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

(d) In general, recall that if  $\frac{a}{b}$  and  $\frac{c}{d}$  are two fractions then:

$$\frac{a}{b} \times \frac{c}{d} = \underline{\hspace{2cm}}$$

Multiplying fractions is relatively easy because we do **not** need the fractions to have **common denominators**. Get some practice in the next exercise.

**Exercise #2:** Multiply each fraction and place in simplest form. You do not need to express your answers as mixed numbers.

(a)  $\frac{7}{2} \times \frac{4}{5}$

(b)  $\frac{7}{6} \times \frac{5}{8}$

(c)  $\frac{5}{3} \times \frac{6}{10}$

(d)  $\frac{2}{9} \times \frac{6}{5}$



You are often asked to multiply two fractions and then express the answers in **simplest form**. It is often easiest to first **cross cancel** before you multiply. The next exercise will review this idea.

**Exercise #3:** Consider the product  $\frac{4}{9} \times \frac{6}{8}$ .

- (a) Find the product by first multiplying and then simplifying.
- (b) Find the product by first **cross cancelling** common factors and then by multiplying.

Cross cancelling can make finding the product of two fractions in **simplest form** much easier.

**Exercise #4:** Find each of the following products in simplest form. You do not need to express them as mixed numbers. Each will give you the opportunity to cross-cancel.

(a)  $\frac{5}{2} \times \frac{4}{3}$

(b)  $\frac{7}{6} \times \frac{3}{10}$

(c)  $\frac{5}{21} \times \frac{14}{15}$

(d)  $\frac{9}{8} \times \frac{32}{27}$

**Exercise #5:** Find the product of  $\frac{5}{9}$  with  $\frac{21}{2}$ . Round your answer to the nearest whole number.

**Exercise #6:** Consider the product  $3\frac{1}{3} \times 6\frac{2}{5}$ .

- (a) Express both mixed numbers as improper fractions.
- (b) Find the product of the two numbers. Write your answer in simplest form and as a mixed number.

$$3\frac{1}{3} =$$

$$6\frac{2}{5} =$$



Name: \_\_\_\_\_

Date: \_\_\_\_\_

**MULTIPLYING FRACTIONS**  
**N-GEN MATH<sup>®</sup> 6 HOMEWORK**

**FLUENCY**

1. Find each product below in simplest form. You may leave your answers as improper fractions.

(a)  $\frac{1}{4} \times \frac{1}{3}$

(b)  $\frac{1}{2} \times \frac{1}{10}$

(c)  $\frac{1}{8} \times \frac{1}{5}$

(d)  $\frac{2}{5} \times \frac{2}{5}$

(e)  $\frac{2}{3} \times \frac{7}{2}$

(f)  $\frac{8}{5} \times \frac{5}{3}$

(g)  $\frac{4}{7} \times \frac{1}{2}$

(h)  $\frac{10}{3} \times \frac{6}{5}$

(i)  $\frac{6}{35} \times \frac{7}{4}$

(j)  $\frac{10}{3} \times \frac{5}{6}$

(k)  $\frac{8}{7} \times \frac{3}{20}$

(l)  $\frac{9}{4} \times \frac{2}{27}$

2. The product of  $\frac{10}{21}$  and  $\frac{14}{5}$  is equivalent to which of the following?

(1)  $1\frac{1}{3}$

(3)  $3\frac{2}{7}$

(2)  $2\frac{4}{5}$

(4)  $4\frac{1}{5}$

3. Find the following products in simplest form. You do not need to write as a mixed number.

(a)  $2\frac{2}{3} \times 1\frac{1}{5}$

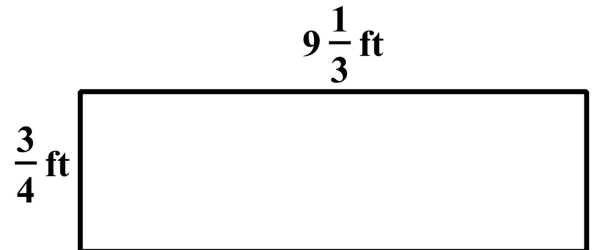
(b)  $\frac{4}{7} \times 2\frac{5}{8}$

(c)  $3\frac{1}{3} \times 2\frac{2}{5}$



## USING YOUR MATH

4. Dave is making a rectangular garden bed. After assembling it, he finds that the bed has a width of three-fourths of a foot and a length of nine and one-third feet, as shown. What is the area of the garden in square feet? Express your answer in simplest form.



5. Zeke found that there was three-fifths of a pizza left when he got home from school. Zeke eats half of what is left. After Zeke is done, is there more or less than half of a pizza left uneaten? Explain your answer.

## REVIEWING YOUR MATH

6. Find the greatest common factor for each of the following pairs of numbers. Use factor trees if necessary.

(a) 40 and 88

(b) 60 and 96

7. Jenna adds three-fourths of a cup of flour to a recipe and then decides to add another half cup of flour. What is total amount of flour Jenna adds? Express your answer as a mixed number in simplest form.

