# Lesson 10 | Multiplying Fractions by a Fraction Equal to 1

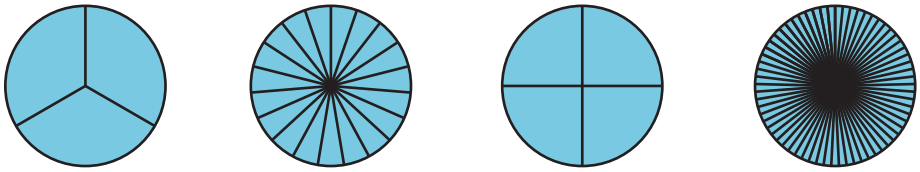
Monitoring Progress: Quiz 2

## Multiplying Fractions by a Fraction Equal to 1

### How do we make an equivalent fraction by multiplying by 1?

Any fraction with the same numerator and denominator is equal to one. The fractions below are all equal to 1.

$\frac{3}{3} = 1$ $\frac{19}{19} = 1$ $\frac{4}{4} = 1$ $\frac{65}{65} = 1$



Let's see how we change the fraction $\frac{3}{5}$ into tenths. The key idea is to multiply by a fraction equal to 1.

**Steps for Making Equivalent Fractions**

**STEP 1**
We start with the denominator. We need to find the number that we multiply by 5 to get 10. We know that $5 \cdot 2 = 10$.

$\frac{3}{5} \cdot \frac{\quad}{\quad} = \frac{\quad}{10}$

**STEP 2**
Now we make the fraction in the middle equal to 1. If the denominator is 2, then the numerator must also be 2. Now we have a fraction equal to 1.

$\frac{3}{5} \cdot \frac{2}{2} = \frac{\quad}{10}$

**STEP 3**
We make the new fraction by multiplying the numerators and denominators.

$\frac{3}{5} \cdot \frac{2}{2} = \frac{6}{10}$


To find an equivalent fraction, we multiply by a fraction equal to 1.

We get the same answer when we use fraction bars. Let's use this method.

Fifths

Tenths

$$\frac{3}{5} = \frac{6}{10}$$

Fraction bars are difficult to use for larger numbers because it is hard to see the fair shares. When we multiply by a fraction equal to 1, we can find an equivalent fraction more easily.

**Example 1**

**Make equivalent fractions using fractions equal to 1.**

$\frac{7}{10} \cdot \frac{3}{3} = \frac{21}{30}$ $\quad \frac{1}{4} \cdot \frac{3}{3} = \frac{3}{12}$ $\quad \frac{7}{22} \cdot \frac{4}{4} = \frac{28}{88}$ $\quad \frac{3}{8} \cdot \frac{2}{2} = \frac{6}{16}$

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**Apply Skills**
Turn to ***Interactive Text***, page 28.

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Quiz 2

**Reinforce Understanding**
Use the ***mBook Study Guide*** to review lesson concepts.

# Homework

## Activity 1

**Fill in the missing number to show that fractions with the same numerator and denominator are equal to 1.**

1. $\frac{3}{?} = 1$
2. $\frac{4}{4} = ?$
3. $\frac{?}{5} = 1$
4. $\frac{10}{?} = 1$
5. $\frac{100}{100} = ?$
6. $\frac{?}{20} = 1$

## Activity 2

**Write the fraction equal to 1 that you need to multiply by in each problem. Then tell the equivalent fraction.**

**Model** $\frac{3}{5} \cdot \frac{?}{?} = \frac{?}{10}$

Answer: and

1. $\frac{2}{3} \cdot \frac{?}{?} = \frac{?}{6}$
2. $\frac{1}{4} \cdot \frac{?}{?} = \frac{?}{12}$
3. $\frac{4}{9} \cdot \frac{?}{?} = \frac{?}{18}$
4. $\frac{1}{6} \cdot \frac{?}{?} = \frac{?}{24}$
5. $\frac{1}{2} \cdot \frac{?}{?} = \frac{?}{4}$
6. $\frac{3}{4} \cdot \frac{?}{?} = \frac{?}{8}$
7. $\frac{3}{5} \cdot \frac{?}{?} = \frac{?}{15}$
8. $\frac{2}{4} \cdot \frac{?}{?} = \frac{?}{16}$

## Activity 3 • Distributed Practice

**Solve.**

1. $3{,}001 - 2{,}147$
2. $5{,}889 + 979$
3. $37 \times 42$
4. $500 \times 4$
5. $8\overline{)349}$