

Multiplying and Dividing Fractions

Compared with adding and subtracting fractions, multiplying and dividing fractions is quite simple. Just follow the steps below to see how it is done.

PROCEDURE 1: *To multiply fractions*, multiply the numerators and the denominators together and reduce the fraction (if necessary).

SAMPLE PROBLEM A: $\frac{5}{9} \times \frac{7}{10} = ?$

Step 1: **Multiply the numerators and denominators.**

$$\frac{5}{9} \times \frac{7}{10} = \frac{5 \times 7}{9 \times 10} = \frac{35}{90}$$

Step 2: **Reduce.**

$$\frac{35}{90} = \frac{35 \div 5}{90 \div 5} = \frac{7}{18}$$

Answer:

$$\frac{5}{9} \times \frac{7}{10} = \frac{7}{18}$$

PROCEDURE 2: *To divide fractions*, switch the numerator and denominator of the divisor (the number you divide by) to make that fraction's *reciprocal*. Then multiply the fraction and the reciprocal, and reduce if necessary.

SAMPLE PROBLEM B: $\frac{5}{8} \div \frac{3}{2} = ?$

Step 1: **Rewrite the divisor as its reciprocal.**

$$\frac{3}{2} \rightarrow \frac{2}{3}$$

Step 2: **Multiply the dividend by the reciprocal.**

$$\frac{5}{8} \times \frac{2}{3} = \frac{5 \times 2}{8 \times 3} = \frac{10}{24}$$

Step 3: **Reduce.**

$$\frac{10}{24} = \frac{10 \div 2}{24 \div 2} = \frac{5}{12}$$

Practice Your Skills!

1. Multiply and divide to complete the equations. Give your answers in lowest terms.

a. $\frac{2}{5} \times \frac{5}{6} =$ _____

b. $\frac{1}{2} \div \frac{3}{8} =$ _____

c. $\frac{4}{5} \times \frac{7}{12} =$ _____

d. $1\frac{1}{2} \div \frac{3}{4} =$ _____

2. You have $23\frac{1}{4}$ L of saline solution. Every student in the class needs $1\frac{1}{2}$ L for an experiment. How many students can do the experiment?

3. Because of differences in gravity, your weight on the moon would be $\frac{1}{6}$ what it is on Earth. If you weigh 72 N, what would be your weight on the moon?
