

Unit F 4, 5, and 6
Helpful Hints

Fractions can be reduced by dividing the numerators and denominators by Greatest Common Factor until it can no longer be reduced. Example: $35 / 45$, GCF of 35 and 45 is 5, so dividing both by 5 the fraction is $7 / 9$.

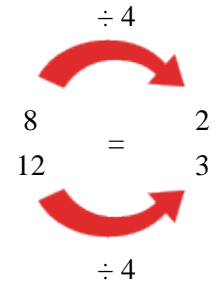
Divide both the top and bottom of the fraction by the Greatest Common Factor, (you have to work it out first!).

Example: Simplify the fraction $8/12$:

1. The largest number that goes evenly into both 8 and 12 is 4, so *the Greatest Common Factor is 4*.

2. Divide both top and bottom by 4:

3. The answer is $2/3$



Multiplying Fractions

Step 1. Multiply the top numbers:

$$\frac{1}{3} \times \frac{9}{16} = 1 \times 9 = 9$$

Step 2. Multiply the bottom numbers:

$$\frac{1}{3} \times \frac{9}{16} = 3 \times 16 = 48$$

Step 3. Simplify the fraction:

$$\frac{1}{3} \times \frac{9}{16} = \frac{9}{48} = \frac{3}{16}$$

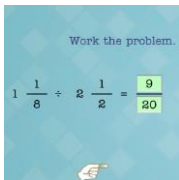
(This time we simplified by dividing both top and bottom by 3)

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Dividing Fractions:

Once you know a simple trick, dividing is as easy as multiplying! • Turn the second fraction upside down
• Change the divide to multiply • Then multiply!

$\frac{6}{7} \div \frac{3}{7} = \frac{6}{7} \times \frac{7}{3} = \frac{42}{21}$ or 2 If you are given a whole number, you can make it a fraction by putting a 1 under it like this. $3 = \frac{3}{1}$



In a problem like this, you need to make it an improper fraction and then turn the second number upside down and then multiply it.

If any of your fractions is negative, this method still applies; just make sure you keep track of the sign as you go through the steps. Keep in mind that if a fraction is negative, the negative sign belongs only to the numerator.

$$-\frac{6}{7} \div 2 \Rightarrow \frac{-6}{7} \div \frac{2}{1} \Rightarrow \frac{-6}{7} \times \frac{1}{2} \Rightarrow \frac{-\cancel{6}}{7} \times \frac{1}{\cancel{2}} \Rightarrow \frac{-3 \times 1}{7 \times 1} \Rightarrow \frac{-3}{7} \Rightarrow -\frac{3}{7}$$

If you cross-cancel before you multiply, you probably won't need to reduce to lowest terms because it's already on its lowest term as you can see. In our example, before we multiply $\frac{2}{3} \times \frac{1}{4}$, we might notice that the first numerator (2) and the second denominator (4) have a common factor of 2, which we can cancel in advance. This changes the problem to $\frac{1}{3} \times \frac{1}{2}$, giving us $\frac{1}{6}$ immediately and saving us the work of reducing the fraction at the end.

$$\frac{\cancel{2}}{3} \times \frac{1}{\cancel{4}} = \frac{1 \times 1}{3 \times 2} = \frac{1}{6}$$