Simplifying Fractions with Large Numbers

Fractions with large numbers are hard to simplify because it is hard to find a common factor of the numerator and denominator. Below are some hints to help you simplify fractions with large numbers. You will have to simplify the fractions on this page in several steps. Use the hints to start, then simplify on your own until you reach the simplest form.

$$\frac{150 \div 10}{210 \div 10} =$$

$$\frac{1600}{2000} =$$

Hint 1   Divide by 10.

If the numerator and denominator both end in 0, then 10 is a common factor. Divide by 10 as often as you can, then see if the fraction is in simplest form.

$$\frac{128 \div 2}{144 \div 2} =$$

$$\frac{160}{192} =$$

Hint 2   Divide by 2.

If the numerator and denominator are both even (end in 0, 2, 4, 6, or 8), then 2 is a common factor. Keep dividing by 2 until they are no longer both even, then see if the fraction is in simplest form.

$$\frac{90 \div 5}{105 \div 5} =$$

$$\frac{125}{625} =$$

Hint 3   Divide by 5.

If the numerator and denominator end in 0 or 5, then 5 is a common factor. Divide by 5 as often as you can, then see if the fraction is in simplest form.

$$\frac{420}{980} =$$

$$\frac{850}{1500} =$$

$$\frac{5600}{8800} =$$

$$\frac{900}{1350} =$$

Use all three hints on these.

Do the numerator and denominator both end in 0? If yes, divide by ___.

Are the numerator and denominator both even? If yes, divide by ___.

Do the numerator and denominator end in 0 or 5? If yes, divide by ___.

Pat and Sandy were asked to multiply:

$$\frac{4}{7} \times \frac{3}{8} =$$

Both students expressed their answers in simplest form, but each did the problem a different way.

Pat $\quad \frac{\overset{1}{\cancel{\overset{2}{4}}}}{7} \times \frac{3}{\underset{\underset{2}{4}}{\cancel{8}}} = \frac{3}{14}$ $\quad$ Pat divided a numerator and denominator twice by 2.

Sandy $\quad \frac{\overset{1}{\cancel{4}}}{7} \times \frac{3}{\underset{2}{\cancel{8}}} = \frac{3}{14}$ $\quad$ Sandy divided once by 4. 4 is the greatest common factor of 4 and 8.

Both answers are correct. Sandy's way is quicker.

Multiply and express your answer in simplest form. Try to divide using the greatest common factor. If you don't pick the greatest common factor, you will have to divide more than once.

$$\frac{11}{30} \times \frac{15}{17} = \qquad \frac{3}{8} \times \frac{4}{11} = \qquad \frac{6}{7} \times \frac{5}{12} =$$

$$\frac{12}{17} \times \frac{1}{12} = \qquad \frac{1}{12} \times \frac{8}{9} = \qquad \frac{9}{13} \times \frac{5}{18} =$$

$$\frac{4}{9} \times \frac{9}{13} = \qquad \frac{2}{27} \times \frac{9}{11} = \qquad \frac{12}{13} \times \frac{5}{24} =$$