

Simplifying Fractions

Simplifying a fraction is writing a number in its most basic form. Sometimes fractions involve very large numbers in both the numerator (top number) and in the denominator (bottom number). As a general rule, it is easier to work with simpler fractions. So, always simplify.

There are three basic rules for simplifying fractions:

1. Any number written over 1 is that number.
2. A fraction can be simplified if the top and bottom numbers can both be divided by the same number, without leaving a remainder.
3. If the top number is larger than the bottom number, and neither number can be divided by the same number, divide the top number by the bottom number.

Example 1

Now, let's work through the example below. The questions below will guide you through the process.

Simplify: $\frac{7}{1}$

$$\frac{1}{8}$$

$$7$$

The correct answer is: 7

Example 2

Simplify $\frac{6}{3}$

Can both the top and bottom numbers can be divided by 2, 3, 5, 7, 9, 11, 13, or 17? In firefighter math, checking 2, 3, and 5 is usually all that is required.

No Yes

The correct answer is: Yes

Both the numerator and denominator can be divided by 3.

Next we need to divide both the numerator and denominator by 3. Enter your results in the appropriate boxes.

6 ÷ 3 =

3 ÷ 3

The new fraction is $\frac{2}{1}$
and if we apply the first rule above equals 2.

Example 3

Simplify $\frac{21}{16}$

Using Rule 3, divide the numerator by the denominator

$$21 \div 16 =$$

The correct answer of the long division is 1 with a remainder of 5. This can be expressed in a fraction by making 5 the numerator over the original denominator like this: $1\frac{5}{16}$

Can $1\frac{5}{16}$

be simplified?

Yes
No

The correct answer is: No

$$1\frac{5}{16}$$

cannot be simplified further.

Practice

1. Simplify $\frac{14}{16}$

$$\frac{5}{4}$$

$$\frac{8}{7}$$

$$\frac{2}{8}$$

$$\frac{7}{8}$$

Select the correct answer.

2. Simplify $\frac{5}{2}$

$$\frac{5}{4}$$

$$2\frac{1}{2}$$

$$\frac{1}{2}$$

$$1\frac{5}{2}$$

Select the correct answer.