Convert Improper Fractions to Mixed Numbers

Improper fractions aren't really that scandalous, they are just fractions with numerators, or top numbers, that are larger than the denominators, or bottom numbers, such as $\frac{3}{2}$, $\frac{64}{32}$, and $\frac{184}{5}$. Improper fractions are called improper because their value can be written in another way, which is easier to understand.

An improper fraction can be expressed as a mixed number—a whole number combined with a fraction, such as $1\frac{1}{2}$. Think of it this way. If you had to wait in line for half an hour to get into a concert, then at the concession stand for half an hour and then outside of the washroom for yet another half an hour, you wouldn't complain about being in line for three halves of an hour. You would say that you waited an hour and a half.

To convert an improper fraction to a mixed number, you need to divide the numerator of the improper fraction by the denominator. The answer becomes the whole number and the remainder becomes the new numerator. For example, in the improper fraction $\frac{7}{3}$, the number 3 divides into the number 7 two times and leaves a remainder of 1. The resulting mixed number would therefore be $2\frac{1}{3}$.

Practice

Write the following improper fractions as mixed numbers. You can check your answers on page 251.

1) $\frac{5}{4}$
2) $\frac{7}{2}$
3) $\frac{30}{5}$
4) $\frac{11}{3}$
5) $\frac{5}{2}$
6) $\frac{9}{3}$

Practice

Write the following mixed numbers as improper fractions. You can check your answers on page 251.

a) $2\frac{1}{2}$
b) $10\frac{1}{3}$
c) $4\frac{2}{5}$
d) $1\frac{3}{7}$
e) $2\frac{5}{9}$
f) $10\frac{7}{10}$

Write an Improper Fraction as a Mixed Number

$\frac{10}{7}$	$10 \div 7 = 1$ with 3 left over.	$\frac{10}{7} = 1\frac{3}{7}$ $10 \div 7 = 1$ with 3 left over.
$\frac{22}{5}$	$22 \div 5 = 4$ with 2 left over.	$\frac{22}{5} = 4\frac{2}{5}$ $22 \div 5 = 4$ with 2 left over.
$\frac{31}{4}$	$31 \div 4 = 7$ with 3 left over.	$\frac{31}{4} = 7\frac{3}{4}$ $31 \div 4 = 7$ with 3 left over.

1 To write an improper fraction as a mixed number, divide the numerator of the fraction by the denominator of the fraction. For example, in the fraction $\frac{10}{7}$, divide 10 by 7.

Note: The numerator is the top part of a fraction. The denominator is the bottom part of a fraction.

2 To write the whole number part of the mixed number, write the number of times the denominator evenly divides into the numerator of the fraction.

3 To write the fraction part of the mixed number, write the leftover value, known as the remainder, over the fraction's original denominator.

- For example, in the fraction $\frac{10}{7}$, 7 divides into 10 once, with 3 left over, so $\frac{10}{7}$ equals $1\frac{3}{7}$.

Write a Mixed Number as an Improper Fraction

$3\frac{1}{2} = \frac{3}{1} + \frac{1}{2}$	$3\frac{1}{2} = \frac{3}{1} + \frac{1}{2} = \frac{6}{2} + \frac{1}{2} = \frac{7}{2}$
$4\frac{3}{5} = \frac{4}{1} + \frac{3}{5}$	$4\frac{3}{5} = \frac{4}{1} + \frac{3}{5} = \frac{20}{5} + \frac{3}{5} = \frac{23}{5}$
$5\frac{1}{7} = \frac{5}{1} + \frac{1}{7}$	$5\frac{1}{7} = \frac{5}{1} + \frac{1}{7} = \frac{35}{7} + \frac{1}{7} = \frac{36}{7}$

1 To write a mixed number as an improper fraction, add the whole number to the fraction. For example, for the mixed number $3\frac{1}{2}$, add $3 + \frac{1}{2}$.

2 Write the whole number as a fraction with the denominator of 1. For example, you can write 3 as $\frac{3}{1}$.

Note: All whole numbers have an invisible denominator of 1.

3 Write the fractions with the least common denominator so the fractions have the same number in the denominator.

Note: To write fractions with the least common denominator, see page 50.

4 Add only the numerators of the fractions, leaving the common denominator the same.