



## CONVERTING MIXED NUMBERS TO IMPROPER FRACTIONS

If you have one chicken pie and one-half a steak pie, you would say that you have "one and a half" pies. "One and a half" is the standard English way of expressing this number, and it is written as " $1\frac{1}{2}$ ".

This form of a fraction, " $1\frac{1}{2}$ ", is called a "mixed number", because it combines the whole-number "1" with the fraction " $\frac{1}{2}$ ".

In mathematics, you will usually prefer that your fractions not be mixed numbers. Instead, you would rather use "improper" fractions (fractions where the numerator is bigger than the denominator.)

The standard way to convert a mixed number to an improper fraction is to multiply the bottom number by the whole number, add the numerator, and then put this on top of the original denominator as a new fraction.

For example, to convert  $1\frac{1}{2}$  to an improper fraction, you do the following:

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

- Denominator [2] X whole number [1] = 2
- 2 + numerator [1] = 3
- 3 is now the new numerator, and we keep the original denominator of 2 ;  $\frac{3}{2}$
- therefore  $1\frac{1}{2} = \frac{3}{2}$

I multiplied the denominator [2] by the whole number [1], and then added in the numerator [1], getting [3]. Then I put this 3 as the new numerator on top of the original denominator [2].

# Numeric★

Here are more examples

Convert  $2\frac{3}{8}$  to an improper fraction

To do the conversion,

- multiply the denominator [8] by the whole number [2] to get 16.
- Then add the numerator [3] to 16 to get the new numerator [19].
- The denominator will remain the same [8];  $\frac{19}{8}$ .
- Therefore  $2\frac{3}{8} = \frac{19}{8}$

Convert  $6\frac{2}{5}$  to an improper fraction

To do the conversion,

- multiply the denominator [5] by the whole number [6] to get 30.
- Then add the numerator [2] to 30 to get the new numerator [32].
- The denominator will remain the same; [5];  $\frac{32}{5}$ .
- Therefore  $6\frac{2}{5} = \frac{32}{5}$



## CONVERTING IMPROPER FRACTIONS TO MIXED NUMBERS

To go from an improper fraction to a mixed number, you must remember "fractions are division", and you are going to apply division to find a whole-number quotient, plus a remainder. In other words, you divide the top number (numerator) by the bottom number (denominator). The quotient will be your whole number part of the mixed number. Whatever your remainder is, will be the numerator of the fraction part. Again, we keep the original denominator

For example:

Convert  $\frac{45}{4}$  to a mixed number.

$$45 \div 4 = 11 \text{ remainder } 1$$

- The quotient, is 11, so this will be the whole-number portion of the mixed number.
- Since the remainder is 1 and I'm dividing by 4, the fractional part will be  $\frac{1}{4}$ .
- Therefore  $\frac{45}{4} = 11\frac{1}{4}$

Convert  $\frac{32}{5}$  to a mixed number.

$$32 \div 5 = 6 \text{ remainder } 2$$

- The quotient, is 6, so this will be the whole-number portion of the mixed number.
- Since the remainder is 2 and I'm dividing by 5, the fractional part will be  $\frac{2}{5}$ .
- Therefore  $\frac{32}{5} = 6\frac{2}{5}$

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**Exercise: Convert the following mixed numbers to improper fractions.**

1. $2\frac{1}{2}$	2. $5\frac{4}{7}$
3. $4\frac{2}{3}$	4. $9\frac{4}{9}$
5. $3\frac{3}{4}$	6. $6\frac{8}{11}$
7. $8\frac{2}{5}$	8. $12\frac{5}{6}$
9. $7\frac{5}{8}$	10. $17\frac{8}{13}$

**Exercise: Convert the following improper fractions to mixed numbers.**

1.  $\frac{8}{3}$

2.  $\frac{11}{4}$

3.  $\frac{27}{5}$

4.  $\frac{51}{9}$

5.  $\frac{87}{12}$

6.  $\frac{47}{10}$

7.  $\frac{69}{7}$

8.  $\frac{82}{13}$

9.  $\frac{101}{8}$