

Decimals

Decimals are a type of fraction. Usually a fraction is written in the form $\frac{\text{numerator}}{\text{denominator}}$. Decimals are fractions in which the denominator is a power of 10, that is 10, 100, 1000 and so on, but instead of writing them in the usual form only the numerator is written down and a decimal point is used to indicate the size of the denominator.

Decimal fractions:

Look at the following fractions. In every case the denominator is a power of 10:

$$\frac{7}{10}, \quad \frac{5}{100}, \quad \frac{3}{1000}$$

In decimal form we would write

$$\frac{7}{10} = 0.7, \quad \frac{5}{100} = 0.05, \quad \frac{3}{1000} = 0.003$$

The first position to the right of the decimal point indicates tenths. The second position indicates hundredths, the third indicates thousandths and so on.

A mixed number like $6\frac{3}{10}$ will consist of the whole number part on the left of the decimal point and the fractional part on the right, that is $6\frac{3}{10} = 6.3$.

Multiplying or dividing by powers of 10:

To multiply 36.57 by 10 digits are moved one place to the left,

$$36.57 \times 10 = 365.7$$

To multiply by 100 digits are moved two places to the left. So

$$78.375 \times 100 = 7837.5$$

Similarly

$$0.0095 \times 1000 = 9.5$$

To divide a number by 10 the digits are moved one place to the right. To divide by 100 the digits are moved two places to the right. For example

$$36.7 \div 10 = 3.67, \quad 5.8 \div 10 = 0.58$$

$$0.0475 \div 100 = 0.000475$$

Converting a fraction to a decimal:

To convert a fraction into a decimal remember that $\frac{a}{b}$ means $a \div b$. Often a calculator can be used to perform the division.