

Decimals

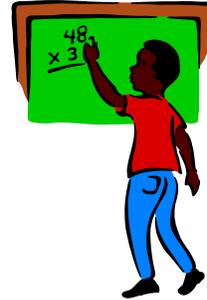
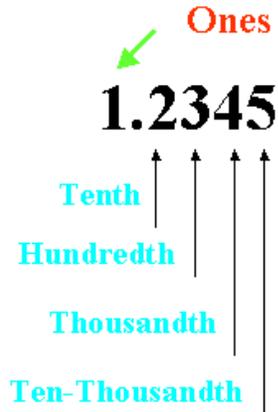
Decimals (numbers to the right of the decimal point):

express parts of a whole

represent fractions between whole (counting) numbers

use a “place-value” system

each consecutive place to the right is smaller by a factor of 10



In science, numbers between zero and one typically have a zero in the “ones” place

Examples: 0.45 0.67 0.99

Zeros to the right of the decimal do not change the numerical value and can be dropped

Example: $0.50000 = 0.500 = 0.5$

EXCEPTION (measurements):

Zeros may be necessary to convey the place of the “doubtful digit” (see rounding)

Zeros denoting significant figures should be kept

Comparing Decimal Numbers

If the numerals to the left side of the decimal point are not equal:

The greater whole number is the larger number

$$5.3456 > 4.9999$$
$$1001.001 > 23.678$$

If the numerals to the left side of the decimal point are equal:

Then “pad” numbers to the same number of digits and then compare

For comparing 1.013 and 1.2 → compare 1.013 to 1.200

Since $200 > 13$ → $1.2 > 1.013$

Adding & Subtracting Decimals

Line up the decimal points and then add or subtract as if whole numbers:

Padding with zeros might make visualization easier

For $0.006 + 31.045 + 7$

$$\begin{array}{r} 0.006 \\ 31.045 \\ \underline{7.000} \\ 38.051 \end{array}$$

For $5.1 - 2.0041$

$$\begin{array}{r} 5.1000 \\ \underline{2.0041} \\ 3.0959 \end{array}$$



Multiplying Decimals

Ignore the decimals and multiply as whole numbers

The answer decimal digits → sum of the number of decimal digits for both factors

For 3.235 (3 decimal digits) \times 0.22 (2 decimal digits) = 29.82670 (5 decimal digits)

Rounding of measurements (significant figures discussed in rounding)

Dividing Decimals

Convert Divisor to a whole number ... then move decimal point the same in dividend

Divide as normal

For 12.6 (Dividend) / 0.75 (Divisor)

Multiply both Divisor & Dividend by 100

$$1260 / 75 = 16.8$$

