Rounding Numbers

- **Rounding numbers**

138 = 140 to the nearest ten (Say : " *138 equals (or is) 140 to the nearest ten*")
1326 = 1300 to the nearest hundred .
8.62 = 8.6 to the nearest tenth .
276.32 = 276 to nearest unit .
62.1451 = 62.145 to the nearest thousandth .

- **Correcting to a specified number of decimal places**

0.00256023164, rounded off to 5 decimal places (d.p.) is 0.00256 . You write down the 5 numbers after the decimal point.
1.38 = 1.4 correct to 1 decimal place (1 d.p.) (Say : "*1.38 equals 1.4 correct to one decimal place*")
0.6345 = 0.63 (2 d.p.)
The rule for giving a number correct to a specified number of *decimal places* is :

Look at the figure in the next decimal place.
If the figure is less than 5, round down.
If the figure is 5 or more than 5, round up.

- **Significant figures**

A person's height could be given as 1.73 meters or as 173 cm or as 1730 mm (although unlikely) as 0.00173 km.
Each of these measurements has the same degree of accuracy, i.e. each is given to the nearest centimetre. In each number, the figure 1 has a different place of value although the figure 1 is the first figure in each number. It is called the *first significant figure.* Similaly 7 is the second significant figure and 3 the third significant figure.

Reading any number from left to right, regardless of the decimal point,
the first significant figure is the first non-zero figure,
the second significant figure is the next figure (which can be zero or otherwise),
and so on further significant figures.

For quantities such as length it is sensible to give numbers correct to a specified number of significant figures rather than a given number of decimal places. The rule for giving a number correct to a specified number of significant figures is the same as for correcting to a number of decimal places, i.e. look at the next significant figure ; if it is 5 or more then round up, if it is less than 5 round down.
For example :
1.059 = 1.06 correct to 3 significant figures (3 s.f.) (Say : "*1.059 equals 1.06 correct to three significant figures*")
0.333 = 0.33 (2 s.f.)
1698 = 1700 (3 s.f.)
1.999 = 2.00 (2 s.f.)
Notice also that zeros are placed after the point when necessary to give the required number of significant figures.