

Significant figures or “Sig Figs”

Reasons to use Sig Figs:

- To decrease the amount of numbers used
- To indicate the accuracy of measurements
- To indicate the precision of the measuring tool/device used

RULES for determining which numbers in a measurement are significant:

- All digits (integers) except zero are **ALWAYS** considered to be significant in a measurement
i.e 433 has 3 sig figs .1746 has 4 sig figs
- ZEROS** are significant if they:
 - Exist **BETWEEN** two integers
i.e. 502 has 3 sig figs .123405 has 6 sig figs
 - FOLLOW** a number containing a decimal
i.e. 20. Has 2 sig figs .7000 has 4 sig figs
- ZEROS are NOT** significant if they:
 - Precede a number
i.e 0.00001 has 1 sig fig .012 has 2 sig figs
 - Follow a number **WITHOUT** a decimal
i.e 90,0000 has 1 sig fig 1000 has 1 sig fig

Significant Figures help keep track of imprecision

The number of significant figures used in a measurement depends on the accuracy of the person measuring and how precise the measurement tool can measure. For example, can you measure to a millimeter using a ruler (i.e. can measure each 0.1 mark) or can you only measure the number of centimeters or meters? Is the tool you are using precise enough to measure and get numbers like 5 liters or can it get you 5.5 liters or even 5.56 liters? Is the person measuring accurate enough to get these measurements? **The number of significant figures in a measurement is determined by writing down all the digits that are actually measured by the person and the device and adding one estimated digit.** For example, if your device can measure to 0.1 (tenths), your measurement of a pencil could be 18.2 cm using the ruler but you would add the one estimated number to your measurement to make it 18.24cm for a total of 4 Sig Figs.