

1.1.3: Significant Figures

Consider this example:

Zubair wants to buy a car which cost about \$68 955.
He tells his friend about it, but he cannot remember all the digits.
He says that it is about \$70 000.



In Mathematics, what he is doing is **rounding off** the original figure to a certain number of significant figures.

Significant figures (Sig.Fig in short) refers to the important digits (or figures) of a number.

It is used to reflect the degree of accuracy.
A number is more accurate if it is rounded off to a higher number of significant figures.

Basically, counting significant figures means counting how many digits there are in a number based on the following rules.

1

All **NON-ZERO** digits are counted, e.g. 142 563 -----> 6 Sig.Fig

2

ZERO

In **FRONT** is not counted, e.g. 0.04 -----> 1 Sig.Fig

At the **BACK** is counted, e.g. 0.0400 -----> 3 Sig.Fig

In the **MIDDLE** is counted, e.g. 0.04001 -----> 4 Sig.Fig

3

WHOLE NUMBER

For **WHOLE NUMBERS** digits omitted must be replaced by the same number of zeros

i.e 8745 rounded off 2 sig.fig = 8700 (NOT 87)
↓
2 sig.fig

i.e 8745.28 rounded off 3 sig.fig = 8750
(NOT 8750.00)

For decimals, the 'omitted' digits do not have to be replaced by zeros or otherwise the zeros will be counted.

Activity 1: Match the question with its answer

Example 8

Round off 7630.50 to,

(a) 1 significant figure

7 600

(b) 2 significant figures

8 000

(c) 4 significant figures

7 631

Activity 1: Choose the right answer

Example 9

Write each of the following numbers correct to 3 significant figures.

(a) 20.453

(b) 0.004368

(c) 303 971