



Significant figures

Significant figures are the digits considered to be significant in reporting a measurement, irrespective of the location of the decimal place.

To calculate the number of significant figures in a measurement we use these rules:

1. Starting from the left, the first significant figure is the first non-zero digit.



2. Final zeros in a whole number may or may not be significant. It will depend on the context of the question.



45 000 (to the nearest thousand)
– these zeros are not significant as only the thousands are measured

45 000 (to the nearest 10) –
the zero in the units column is not significant as the number is measured to the tens.

3. All non-zero digits are significant.
4. Zeros at the end of a decimal are significant.



5. To count the number of significant figures, we locate the **first** and **last** significant figure and count all the digits from the first to the last one.

Examples:



This number has 4 significant figures



This number has 3 significant figures



This number has 4 significant figures

When we round numbers correct to a certain number of significant figures, we use the same rules as we do for rounding whole numbers and decimals.

The rules for rounding correct to a number of significant figures are:

1. Locate the digit at the place where the number is to be rounded (the last significant digit).
2. Check the next digit after it.
 - a. **If the next digit is less than 5 (ie 0, 1, 2, 3 or 4) we will round down.**
This means that the last significant digit stays the same and the rest of the digits are left off, with any whole numbers being replaced by zeros.
 - b. **If the next digit is 5 or more (ie 5, 6, 7, 8 or 9) we will round up.**
This means that the last significant digit is increased by 1 and the rest of the digits are left off, with any whole numbers being replaced by zeros.