

Significant Figure Rules Summary (see Appendix B for examples and details)

- 1) All non-zero numbers (1,2,3,4,5,6,7,8,9) are significant.
- 2) Zeros: See Appendix B for more examples and explanation; it helps to convert number to their scientific notation to analyse zeros.
 - Zeroes between non-zero numbers are significant.
 - Zeroes that follow the decimal point at the end of a number are significant.
 - Zeros used to locate the decimal point are not significant (e.g. both 3 centimetres and 0.03 meters have only 1 sig. fig.).
 - Zeroes that are part of a number and are located before a “written” decimal point are significant (i.e. the number of significant figures in 200. is 3 while the number in 200 it is only 1. As the decimal is not “written” in the later example, the zeros in 200 are only place holders and are not significant.)
- 3) Certain values, such as those that arise from the definition of a term (i.e. many constants) are exact numbers and are considered to have an infinite number of significant figures following the decimal point (i.e. by definition there are exactly 1000 ml in a litre).
- 4) The result of an addition and/or subtraction operation is reported to the same number of decimal places as that in the term with the least number of decimal places (so the number of decimal places in the calculation terms limit the significant figures in your final result).
- 5) The result of a multiplication and/or division operation is rounded off to the same number of significant figures as possessed by the least precise value in the calculation (here you count the number of significant digits in each value in the calculation and this limits the number of significant figures in your final result.)
- 6) Often the answer to a calculation contains more digits than are significant. The following rules are used to round-off final answers to their correct number of digits.
 - If the digit following the last number to be retained is less than 5, all the unwanted digits are discarded and the last number is left unchanged.
 - If the digit following the last number to be retained is greater than 5, the last digit is increased by 1 and the unwanted numbers are discarded.
 - If the digit following the last number to be retained is a 5 then you can either round up or down*.
*How your round only matters when you are rounding multiple results as your rounding process can have cumulative bias when dealing with more than one value. To avoid this, a common rule to use when the number following the last digit to be retained is a 5, is to look at the first digit that won't be retained: if it is an odd number, increase the last digit to be retained by 1; if it is an even number, do nothing except discard the numbers that aren't retained. Zero is considered to be an even number.