Identifying Significant Figures

Rule	Example
1. All non-zero digits are considered significant.	a. 137 nm has three significant figures. b. 895,321 mg has six significant figures.
2. Zeros appearing anywhere between two non-zero digits are significant.	a. 40.7 L has three significant figures. b. 87009 km has five significant figures.
3. Leading zeros are not significant.	a. 0.009587 m has four significant figures. b. 0.0009 kg has one significant figure.
4. Trailing zeros in a number containing a decimal point are significant.	a. 85.00 g has four significant figures. b. 9.070000000 mL has ten significant figures.
5. Trailing zeros in a number not containing a decimal point are not significant.	a. 2000 m has one significant figure. b. 2000**.** m has four significant figures.
6. Exact numbers have an infinite number of significant figures.	a. 10 cars, 15 babies, 216 textbooks all have an infinite number of significant figures.

Calculating Using Significant Figures

Operation	Rule	Example
Multiplication and Division	The answer can have no more significant figures than there are in the measurement with the smallest number of significant figures.	12.257 X 1.162 → *4 sig figs* 14.2426340 → ***14.24***
Addition and Subtraction	The answer can have no more digits to the right of the decimal point than there are in the measurement with the smallest number of digits to the right of the decimal point.	3.95 2.879 + 231.6 220.429 → ***220.4***

Scientific Notation – How to handle really big or really small numbers

Measurement	Notation	Significant Figures
Really Big	5,300,000.0 g = 5.3×10^6 g	Digits listed before of the "x 10^X" are significant. $\underline{1} \times 10^{-3}$ L = 1 sig fig $\underline{5.3} \times 10^6$ g = 2 sig figs $\underline{9.74} \times 10^{-8}$ m = 3 sig figs
Really Small	0.0000974 m = 9.74×10^{-5} m	