

# Significant Figures

## Rules

1) Any nonzero number is significant

Ex)  $19.36\text{g}$  (4 s.f.)

2) Sandwiched zeroes (b/w 2 numbers) are significant

Ex)  $\underline{20004.6\text{mL}}$  (6 s.f.)

$1010101\text{s}$  (7 s.f.)

3) Zeroes before numbers are NEVER significant, they're placeholders.

Ex)  $\underline{0.045602\text{g}}$  (5 s.f.)

$0.000401\text{mL}$  (3 s.f.)

4) Zeroes after numbers are significant ONLY if a decimal point appears (explicitly) in the number

Ex)  $\underline{110.00\text{kg}}$  (5 s.f.)

$\underline{110\text{kg}}$  (2 s.f.)

$\underline{0.040600\text{kg}}$  (5 s.f.)

# Significant Figures in Calculations

## Multiplying/Dividing

- Your answer needs to have the same amount of sig. figures as the number that has the LEAST amount of sig. figures.

$$\begin{array}{r} \text{Ex) } 346.00 \text{ g} \quad 5 \text{ sf} \\ \times 2.50 \quad 3 \text{ sf} \\ \hline 865 \text{ g} \end{array}$$

$$\begin{array}{r} 197 \text{ g} \quad 4 \text{ sf} \\ \hline 42.60100 \text{ mL} \quad 7 \text{ sf} \end{array} =$$

$$\begin{array}{r} 46.2461957 \text{ g/mL} \\ \hline 46.27 \text{ g/mL} \end{array}$$

$$\begin{array}{r} \text{Ex) } 32.1 \text{ m} \\ \times 0.0045963 \text{ m} \\ \hline 0.14784123 \text{ m}^2 \end{array}$$

$$0.148 \text{ m}^2$$

# Adding/Subtracting

• Look at the significant figures after the decimal point. Your answer needs the same amount of sig. figures after the decimal as the number with the least amount of sig. figures after the decimal.

$$\begin{array}{r} \text{ex) } 13.\underline{1} \text{ mL } 1\text{sf} \\ - 6.\underline{954} \text{ mL } 3\text{sf} \\ \hline 6.\underline{146} \text{ mL} \\ \hline 6.1 \text{ mL} \end{array}$$

$$\begin{array}{r} \text{ex) } 199.\underline{89} \text{ g } 2\text{sf} \\ + 21 \text{ g } 0\text{sf} \\ \hline 220.\underline{89} \text{ g} \\ \hline 221 \text{ g} \end{array}$$

$$\begin{array}{r} \text{ex) } 0.0054610 \text{ s } 5\text{sf} \\ - 0.0149 \text{ s } 3\text{sf} \\ \hline -0.009439 \\ \hline -0.00944 \end{array}$$

$$\begin{array}{r} -9.439 \times 10^{-3} \\ \hline -9.44 \times 10^{-3} \end{array}$$