

SigFig Quiz

1. Write the number of significant figures and the position of uncertainty for each of the following numbers.

Value	Number of Significant Figures	Position of Uncertainty
3.01	3	hundredths
0.0301	3	thousandths
3.010	4	thousandths
3010	3	tens
3010.	4	ones

2. Do the following calculations and report your results using significant figures.

(a) $(1.2 \times 10^5) + (1.234 \times 10^5)$

$$\begin{aligned} (1.2 \times 10^5) + (1.234 \times 10^5) &= (1.2 + 1.234) \times 10^5 \\ &= 2.434 \times 10^5 \text{ (calculator answer)} \\ &= 2.4 \times 10^5 \text{ (sig fig answer)} \end{aligned}$$

(b) $(1.2 \times 10^3) + (1.234 \times 10^6)$

$$\begin{aligned} (1.2 \times 10^3) + (1.234 \times 10^6) &= (0.0012 \times 10^6) + (1.234 \times 10^6) \\ &= 1.2352 \times 10^6 \text{ (calculator answer)} \\ &= 1.235 \times 10^6 \text{ (sig fig answer)} \end{aligned}$$

(c) $(2.3 \times 10^{-4}) \times (3.45 \times 10^6)$

$$\begin{aligned} (2.3 \times 10^{-4}) \times (3.45 \times 10^6) &= (2.3 \times 3.45) \times (10^{-4} \times 10^6) \\ &= 7.935 \times 10^2 \text{ (calculator answer)} \\ &= 7.9 \times 10^2 \text{ (sig fig answer)} \end{aligned}$$

(d) $\frac{(1.2 \times 10^2) + (11.5 \times 10^3)}{2.338 \times 10^2}$

$$\frac{(1.2 \times 10^2) + (11.5 \times 10^3)}{2.338 \times 10^2} = \frac{(0.12 \times 10^3) + (11.5 \times 10^3)}{2.338 \times 10^2} = \frac{(0.12 \times 10^3) + (11.5 \times 10^3)}{2.338 \times 10^2}$$

The numerator has position of uncertainty in the tens place, so when we add $0.12+11.5$, we get 11.62 , which we would round to 11.6 . This has three significant figures. We wont round yet, but we will remember that the numerator now has 3 significant figures.

$$\begin{aligned} &= \frac{11.62 \times 10^3 \text{ (with 3 sig figs)}}{2.338 \times 10^2} \\ &= .69289991 \times 10^1 \text{ (calculator answer)} \\ &= .693 \times 10^1 \\ &= 6.93 \end{aligned}$$