Practise:

1. How many significant figures are indicated by each of the following?

a) 1247 — 4

b) 1000 — 1

c) 0.034 — 2

d) 1201.07 — 6

e) 62.0 — 3

f) 0.0025 — 2

g) 0.00250 — 3

h) $\sin 43.2^{0}$ — 3

i) 3.2×10^{-4} — 2

j) $\tan^{-1} 0.24$ — 2

k) 6.02×10^{23} — 3

l) 1.042 — 4

2. Determine the following to the correct number of significant figures

a) $(3.74 - 1.3) \times 2.12 \times 17.65$

$= (2.4) \times (2.12) \times (17.65)$

$= 89.8032 \longrightarrow 90.$

b) $(2.9 + 3.2 + 7.1) \div 0.134$

$= (13.2) \div 0.134$

$= 98.507 \longrightarrow 98.5$

3. Calculate the area of a square with a side of 3.2 m. (A = lw)

3.2 

$A = (3.2)(3.2)$ ← 2 sig fig

$= 10.24$

$= 10.\ m^2$

4. Add the following lengths of 2.35 cm and 14.2 cm and 7.620 cm.

$2.35 + 14.2 + 7.620$

$= 24.170$

$= 24.2$ cm (one decimal)

5. Calculate the volume of a rectangular block 1.52 cm by 24.6 cm by 8.3 cm. (V = lwh)

$(1.52)(24.6)(8.3)$

$= 310.3536$

$= 310\ cm^3$ or $3.1 \times 10^2\ cm^3$ (2 sig. fig)

6. A metal ingot has a mass of 2.0 g and a volume of 0.04 cm^3. Calculate the density of the metal ingot. (D = m/v)

$D = \frac{2.0\ g}{0.04\ cm^3}$ ← (1 sig fig)

$= 50\ g/cm^3$ or $5 \times 10^1\ g/cm^3$

7. Round off the following numbers to three significant figures:

a) 7.1249 — $= 7.12$

b) 2561 — $= 2560$ or $= 2.56 \times 10^3$

c) 2001 — $= 2000$ or $= 2.00 \times 10^3$

d) 21256 — $= 21200$ or $= 2.12 \times 10^4$

e) 6.5647 — $= 6.56$

f) 0.0034679 — $= 0.00347$ or $= 3.47 \times 10^{-3}$