Practice Worksheet 2.3 – Calculations with Significant Figures

Solve the following problems, show complete solutions when formulae or equations apply. Round your answer to the correct number of significant figures, watch for correct units!

a. $\dfrac{63.45}{7.2}$

b. $\dfrac{(17.3-9.2)}{1.25}$

c. $\dfrac{(77.67\times 45.786)}{9.87231}$

d. $\dfrac{6.78+2.3+19.3+35.6+14.5+9.87}{9}$

e. $\dfrac{(6.0+56.6)}{14.4} - \dfrac{(12.34\times 4.09)}{(16.9\times 3.12)}$

f. A rock is found to have a volume of 18.65 cm^3 and a mass of 56.2 g. Find the density of the rock.

g. A triangle is measured to have a base of 4.5 cm and a height of 6.05 cm. What is the area of the triangle?

h. A circle has a diameter of 12.3 cm. What is the area of the circle?

Important notes:

- When performing calculations that have multiple steps, carry all decimals and round off once at the end of the calculation. DO NOT ROUND each calculation.

- It is good practice to rearrange equations and make substitutions so that one overall calculation can be performed on the calculator rather than a series of steps. For example: to determine the density of a 112.5 g block with the following dimensions; length 11.2 cm, width 2.34 cm and height 5.21 cm.

Do this . .

$D=\dfrac{m}{V}$

$D = \dfrac{m}{l\times w\times h} = \dfrac{112.5}{(11.2\times 2.34\times 5.21)}$

$D = 0.824\ g\ cm^{-3}$

Try to avoid this . .

$V = l\times w\times h = 11.2\times 2.34\times 5.21$

$V = 136.54368$

$D = \dfrac{m}{V} = \dfrac{112.5}{(136.54368)}$

$D = 0.824\ g\ cm^{-3}$

- Many textbooks and worksheets do not consider significant figures when writing sample problems that use easy numbers like 1500 m. In these types of problems, we will consider the trailing zeros (the ones at the end) to be significant. It would be more correct though to use scientific notation or more appropriate units. For example: to properly write 1500 m to show that the last zeros are significant (total 4 S.F.)

ANSWER: 1.500×10^3 m OR 1.500 km