SPH3U

ANSWERS

Physics Skills Diagnostic

Name:_____

Rearranging Formulas:

1. Rearrange each formula to solve for the indicated quantity.

a) $E = VIT$; Solve for V

$V = \frac{E}{IT}$

b) $p = \frac{F}{A}$; Solve for A

$\frac{Ap}{p} = \frac{F}{p}$

$A = F/p$

c) $v = 303 + 0.6T$; Solve for T

$\frac{V - 303}{0.6} = \frac{0.6T}{0.6}$

$\frac{V - 303}{0.6} = T$

2. Given the equation: $D = \frac{M}{V}$, find V if D= 2.4 g/cm3 and M = 12.0 g. Include units in your answer!

$D = 2.4\ g/cm^3$

$m = 12.0\ g$

$V = ?$

$D = \frac{M}{V}$

$DV = M$

$V = \frac{M}{D}$

$V = \frac{12.0\ g}{2.4\ g/cm^3} = 5.0\ cm^3$

∴ the volume is $5.0\ cm^3$

3. Given the equation: $A = \pi r^2$, find r if A= 25.0 cm^2 . Include units in your answer!

$A = 25.0\ cm^2$

$r = ?$

$A = \pi r^2$

$\sqrt{\frac{A}{\pi}} = \sqrt{r^2}$

$r = \sqrt{\frac{A}{\pi}} = \sqrt{\frac{(25.0\ cm^2)}{(3.14)}}$

$= 2.82\ cm$

∴ the radius r is 2.82 cm

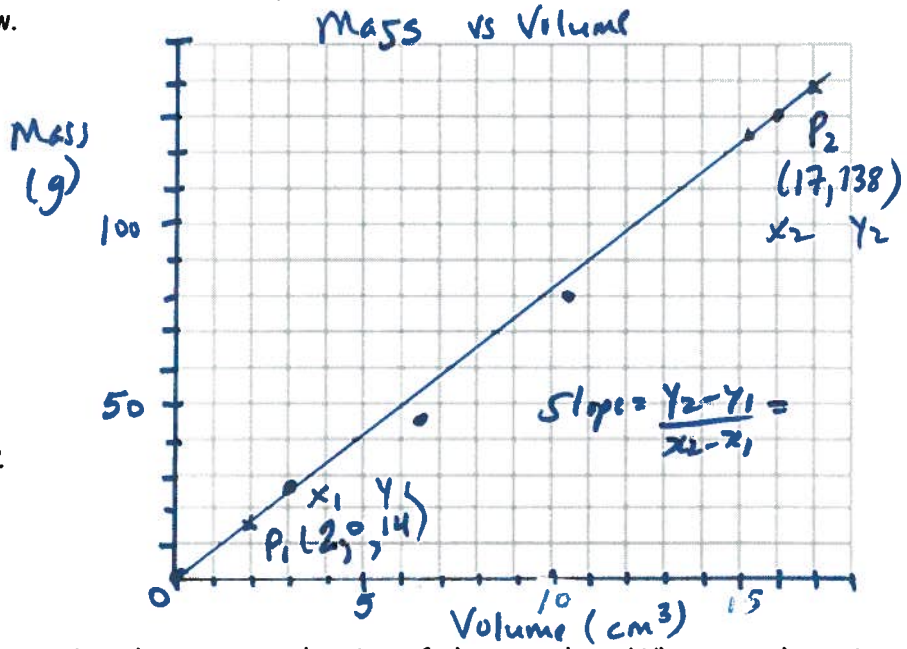
Graphing and Calculating Slope

4. A student measures mass and volume of several different samples of an unknown metal. The student's measurements are shown in the table below.

Volume (cm^3)	Mass (g)
0.0	0.0
3.0	28.0
6.5	45.0
10.5	80.0
15.2	125.0
16.0	130.0

a) Plot a graph of mass versus volume.
(*Volume goes on the x or horizontal axis. Mass goes on the y or vertical axis.)*

b) Draw a best fit line through your data.



c) Find the slope of the best fit line to determine the average density of the samples. What are the units of density?

$Slope = \frac{y_2 - y_1}{x_2 - x_1} = \frac{138 - 14}{17 - 2} = \frac{124}{15} = 8.3\ g/cm^3$.