

I. (a) Write the number using correct scientific notation. (b) Underline and indicate the correct number of significant figures (digits).

	(a) Written in scientific notation	(b) Number of significant figures
a. 0.0000781 m		
b. 93,450,000 g		
c. 314.0 mi/h		
d. 5 m/s		
e. 27.005 cm		
f. 0.0043 kg		
g. 0.32 N		
h. 4,000.0 C		
i. 670		

II. Take the following numbers out of scientific notation.

a. $3.02 \times 10^4$	
b. $5.2 \times 10^{-2}$	
c. $1.999 \times 10^{-1}$	
d. $4.320 \times 10^5$	
e. $2.0 \times 10^0$	

III. Perform the following operations, and make sure the final answer contains the correct number of significant figures.

a. $(0.000010 \text{ m})(0.00055 \text{ m})(0.002 \text{ m}) =$	
b. $(240 \text{ cm})(30 \text{ cm})(5000 \text{ cm}) =$	
c. $\frac{8,000,000 \text{ m}}{400 \text{ s}} =$	
d. $\frac{72,000,000 \text{ mi}}{0.00024 \text{ h}} =$	
e. $\frac{3.5 \times 10^{-3} \text{ J}}{5 \times 10^{-5} \text{ C}} =$	
f. $135.12 \text{ kg} + 0.267 \text{ kg} + 5.2 \text{ kg} =$	
g. $198.057 \text{ kg} - 0.12 \text{ kg} =$	

**IV. Convert the following measurements.**

a. 1.5 m to cm	
b. 75 cm to m	
c. 125.6 g to kg	
d. 19.2 kg to g	
e. 40 km to m	
f. 1620 m to km	
g. 7.6 cm to mm	
h. 64.3 mm to cm	
i. $3.78 \times 10^{-6}$ m to nm	
j. 508 nm to m	

**V. Convert the following measurements to the indicated units. Use/show the dimensional analysis method**

a. 300 Calories to joules

b. 200 slugs to kilograms

c. 10 km to miles

d.  $3 \times 10^8$  m/s to mi/h

e. 93,000,000 miles to meters

f. 55 mi/h to m/s

VI. (a) Rearrange the following equations so that y is isolated on the left side of the equal sign.

$$x = \frac{y}{z}$$

$$x = \frac{z}{y}$$

$$x = y \cdot z$$

$$x = \frac{y - z}{t}$$

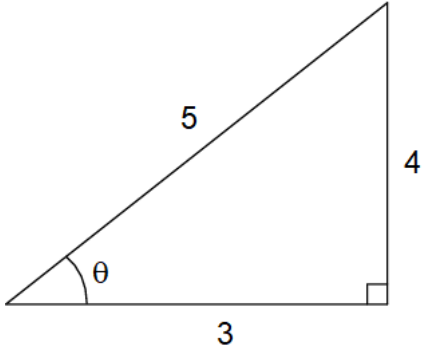
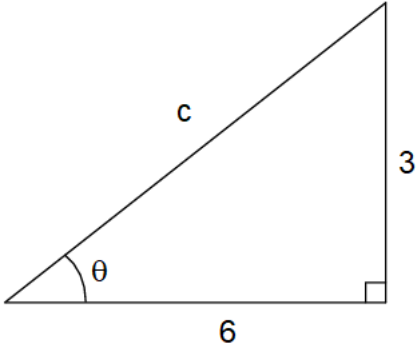
$$x = \frac{1}{2} \cdot y \cdot z^2$$

$$x = \frac{1}{2} \cdot z \cdot y^2$$

$$z^2 = x + 2 \cdot b \cdot y$$

$$x = \frac{2\sqrt{y}}{z}$$

VI. (b) Determine each value using right-triangle trigonometry. *Be sure your calculator is in degree mode.*

	
Cosine $\theta$	Tangent $\theta$
Sine $\theta$	Side c
Tangent $\theta$	$\theta$

VII. Construct three proper scientific graphs

- Data #1 on graph paper. Draw a best fit line of the data.
- Data #1 and #2 on same graph in Quick Graph. Apply linear curve fit for each.
- Data #3 in Quick graph. Apply correct curve fit.

DATA #1			DATA #2		DATA #3	
time (min)	distance (ft)		time (min)	distance (ft)	speed (m/s)	Kinetic energy (J)
1	4		4	9	1.1	1.21
2	9		8	14	2.2	4.84
3	15		12	27	3.3	10.89
4	21		16	30	4.4	19.36
5	25		20	45	5.5	30.25
6	32		24	53	6.6	43.56
7	35		28	56	7.7	59.29
8	39		32	62	8.8	77.44
9	48		36	72	9.9	98.01
10	50		40	80	11.0	121.00