Name _____Date_____Pd_____

UNIT I Worksheet 1: GRAPHING PRACTICE

For each data set below, determine the mathematical expression. To do this, first graph the original data. Assume the 1st column in each set of values to be the **independent** variable and the 2nd column the **dependent** variable. Then taking clues from the shape of the first graph, modify the data so that the modified data will plot as a straight line. Using the slope and y-intercept of the straight-line graph, write an appropriate mathematical expression for the relationship between the variables. Be sure to include units!

Data set 1

V ($m^{3)}$	**P (pa)**
.1	40
.5	8
1	4
2	2
4	1
5	.8
8	.5
10	.4

Data set 2

t (s)	**x (m)**
.1	.03
.2	.12
.5	.75
1	3
2	12
3	27
4	48
5	75

Final Equation #1

Final Equation #2

Data set 3

A (months)	**W (lbs)**
1	7
2	9.4
3	10.5
4	12.0
5	13.0
6	14.3
7	15.2
8	16.7

Data set 4

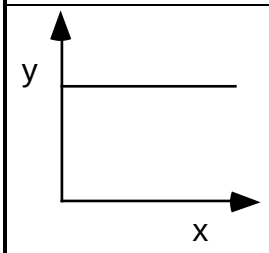
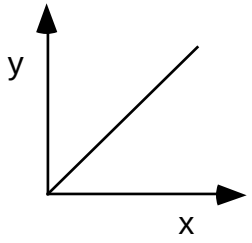
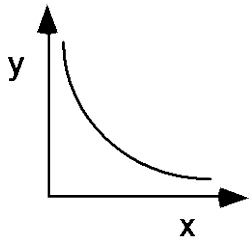
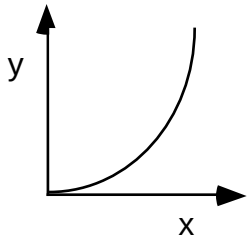
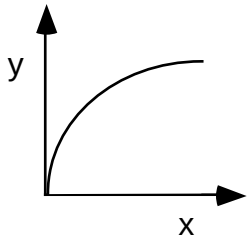
t (s)	**v (m/s)**
.3	10
1.2	20
2.7	30
4.8	40
7.5	50
10.8	60
14.7	70
19.2	80

Final Equation #3

Final Equation #4

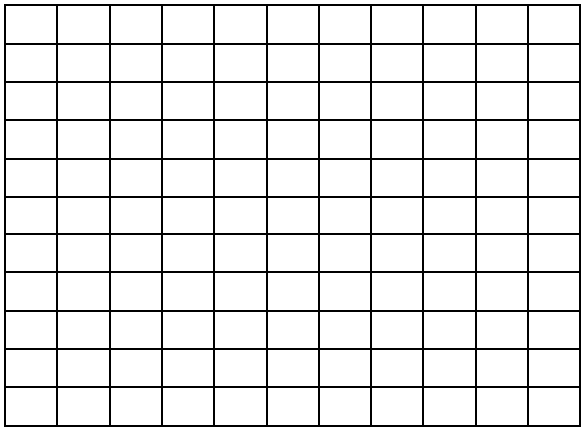
Graphical Methods-Summary

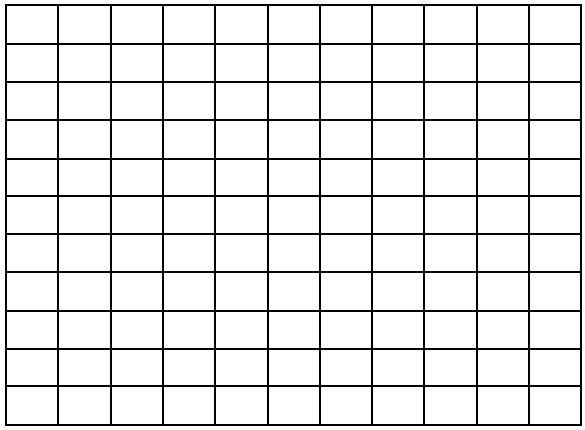
A graph is one of the most effective representations of the relationship between two variables. The independent variable (one controlled by the experimenter) is usually placed on the x-axis. The dependent variable (one that responds to changes in the independent variable) is usually placed on the y-axis. It is important for you to be able interpret a graphical relationship and express it in a written statement and by means of an algebraic expression.

Graph shape	Written relationship	Modification required to linearize graph	Algebraic representation
	As x increases, y remains the same. There is no relationship between the variables.	None	$y = b$, or y is constant
	As x increases, y increases proportionally. Y is directly proportional to x.	None	$y = mx + b$
	As x increases, y decreases. Y is inversely proportional to x.	Graph y vs $\frac{1}{x}$, or y vs x^{-1}	$y = m\left(\frac{1}{x}\right) + b$
	Y is proportional to the square of x.	Graph y vs x^2	$y = mx^2 + b$
	The square of y is proportional to x.	Graph y^2 vs x	$y^2 = mx + b$

When you state the relationship, tell how y depends on x (e.g., as x increases, y …).

1.



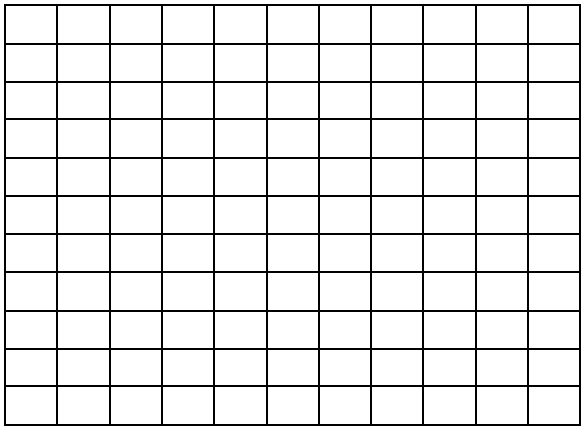


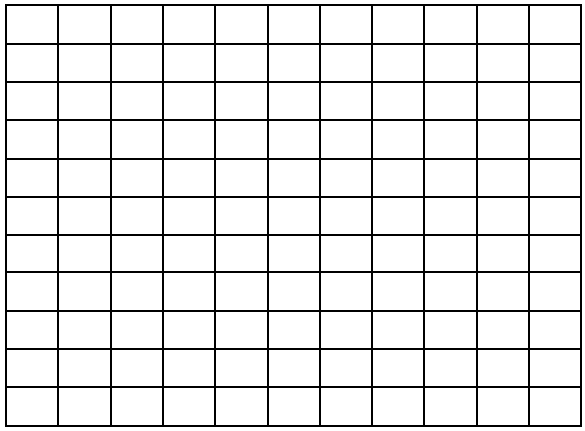
Slope with units: _____

Y- int with units: _____

Equation with units: _____

2.



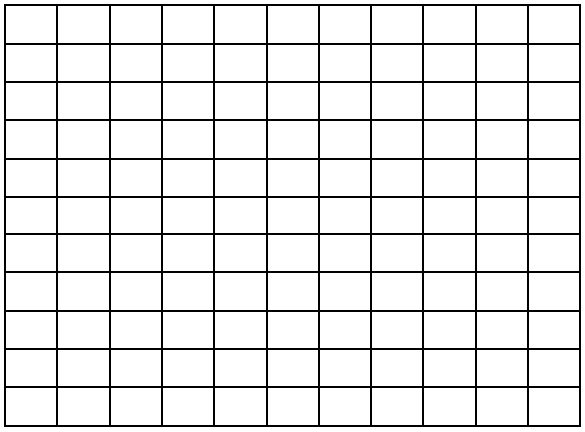


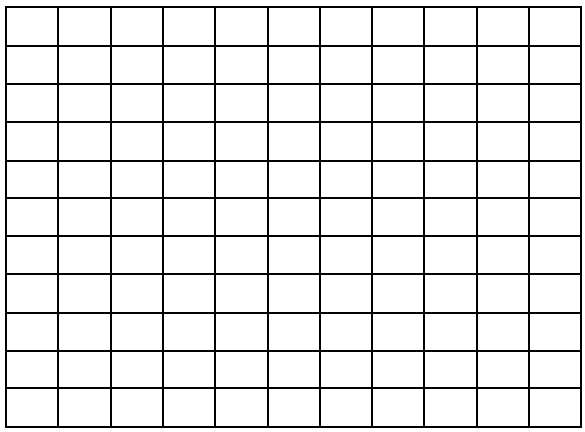
Slope with units: _____

Y- int with units: _____

Equation with units: _____

3.



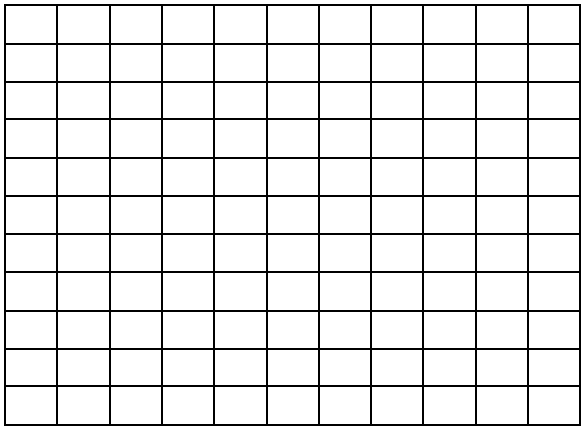


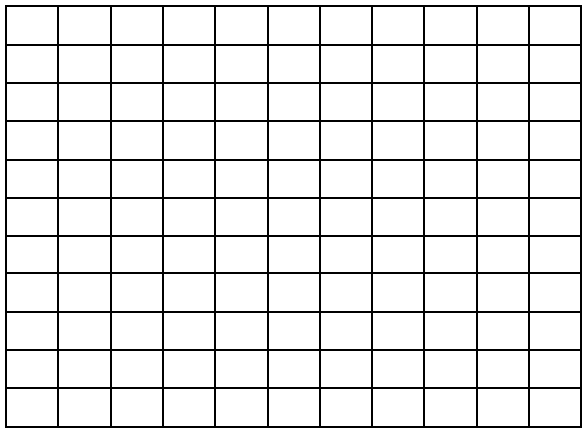
Slope with units: _____

Y- int with units: _____

Equation with units: _____

4.





Slope with units: _____

Y- int with units: _____

Equation with units: _____