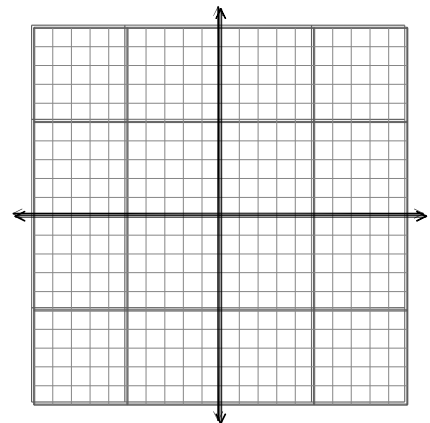


To receive full credit **show your work** and it must be **neat** with answers **simplified** and **boxed-in**.

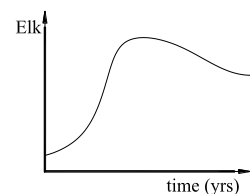
Use algebra to solve these equations.

- 1) Solve for x:  $3 - 4(2x - 5) = 12x - 77$       2) Solve for a:  $A = \frac{a+b}{2} h$
- 3) Solve for y:  $12 - 3(2x + 5y) = 7x - 5y$       4) Solve for x:  $3x^2 - 2x = 96$
- 5) (a) Graph:  $6x - 4y = -36$   
 (b) Give the y-intercept of (a).  $y =$   
 (c) Give the slope of (a).  $m =$   
 (d) Graph:  $y = 1.2x - 8$   
 (e) Give the lines' intersection(      ,      )  
 (f) Graph  $y = 0.2x^2 - 2x - 3$   
 (g) Give the minimum coordinates of (f). (      ,      )  
 (h) There are 2 roots for (f). Give their coordinates.

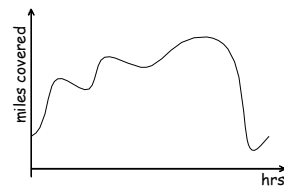


- 6) Use algebra to find the equation of the line which passes through:  
 (a) (96, -40) & (-39, 5)      (b) (1.2, -9.5) & (-2.8, 3.3)

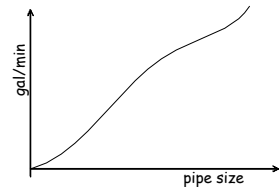
- 7) Consider this Elk Population graph. Give a narrative interpretation of:  
 (b) slope > 0      (c) slope < 0      (d) slope = 0



- 8) Consider this Distance vs. Time graph. Give a narrative interpretation of:  
 (b) slope > 0      (c) slope < 0      (d) slope = 0



- 9) Consider this Flow vs. Pipe Size graph. Give a narrative interpretation of:  
 (b) slope > 0      (c) slope < 0      (d) slope = 0



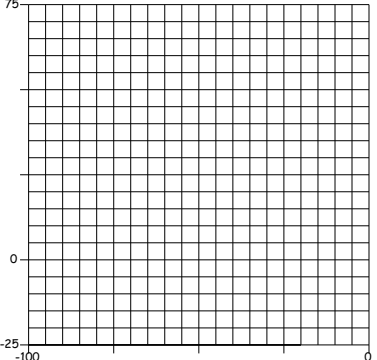
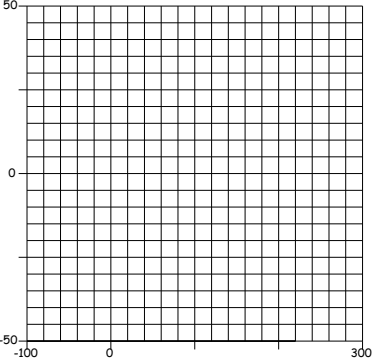
10) Given Medicine Dosage vs. Body Weight, which is the independent variable?

11) Given Fire Intensity vs. Humidity, which is the independent variable?

12) Assume the mosquito population is a function of time. Would this population be best modeled by a linear function or a quadratic function? Justify your answer.

13) Use your calculator to find the equation (in the form  $y = ax^2 + bx + c$ ) that passes through the points (-5, -14.5), (0, 8), (7, -2.5)

14) Graph the following equations in the proscribed region:

<p>(a) <math>3x + 4y = -100</math></p> 	<p>(b) <math>y = (7x + 400)(300 - x)/4800</math></p> 	<p>Give the following for Graph (b)</p> <p>(c) Give (x, y) of the maximum</p> <p>(d) Give the roots</p> <p>(e) Give the y-intercept</p>
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15) a) Give the "best fit" linear equation for this data in slope-intercept form.

b) Using the equation, what is the y-value when x is 100?

c) Using the equation, what x-value will yield  $y = 0$ ?

$x$	$y$
0	20
10	28
20	32
30	42
40	46
50	53

16) The following data represents mercury concentration found in a lake's sediment.

Sediment Depth (cm)	5	10	15	20	25	30	35
Concentration (ppb)	140	109	85	66	52	40	31

a) Which is the independent variable?

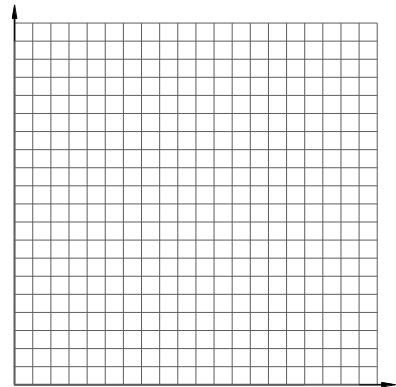
b) Label your axes. Graph this data.

c) Circle the best regression choice. linear    quadratic (Why?)

d) Give your regression equation:  $y =$

e) What is the predicted worst pollution concentration and at what depth is it expected to be found?

f) Below what depth is contamination expected to be less than 10 ppb?



17) Here is some data giving average virus levels in the blood of people exposed to a nasty cold virus. 'Day' refers to days since noticing the symptoms and 'virus' refers to virus level on a scale of 100.

a) Explain why a Quadratic Model would be a good model for the evolution of a cold.

b) At what time and with what virus level is the cold at its worst?

c) The symptoms first appeared with a virus level of 10. Assuming the symptoms go away below a virus level of 10, at what time will the symptoms go away?

d) At what time will the cold be completely gone?

e) When did you actually catch the cold?

Day	Virus
0	10
1	20
2	38
3	55
4	72
5	81