(A) Lesson Context

BIG PICTURE of this UNIT:	• What is meant by the term FUNCTIONS and how do we work with them? • mastery with working with basics & applications of linear functions • mastery with working with basics & applications of linear systems • understanding basics of function concepts and apply them to lines & linear systems		
CONTEXT of this LESSON:	Where we've been In Lesson 5, you graphed data sets as scatter plots & wrote linear functions for the trend line of those data set	Where we are Writing equations of lines in multiple forms & continuing to put linear functions into context.	Where we are heading Mastery of working with multiple representations of f(x) = mx + b

(B) Lesson Objectives:

a. Continue working with equations of linear relations written in the form of $y = mx + b$
b. Continue working with equations of linear relations written in the form of $y - y_1 = m(x - x_1)$
c. Introduce how we can work with equations of linear relations written in the form of $Ax + By = C$
d. Continue working with equations of linear relations in real world applications

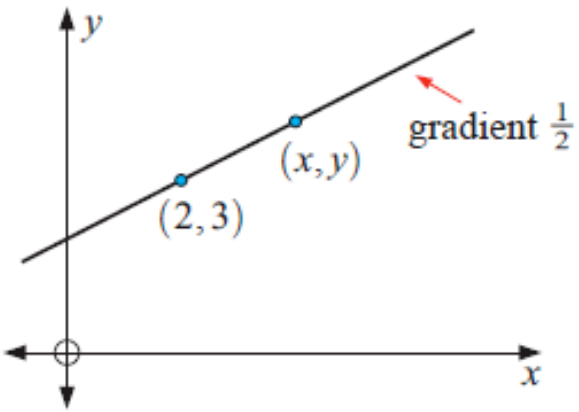
(C) Review Exercise: FAST FIVE

a. Determine the equation of the line in the diagram. Write the equation in:

   i. Slope-intercept form

   ii. Standard/general form

   iii. Slope-point form



b. Is the point (6,5) on the line? Show your reasoning.

c. Verify on technology – use your TI-84 and then use DESMOS

(D) Review Exercise: FASTER FIVE (hahahahaha)

a. Determine the equation of the line in the diagram. Write the equation in:

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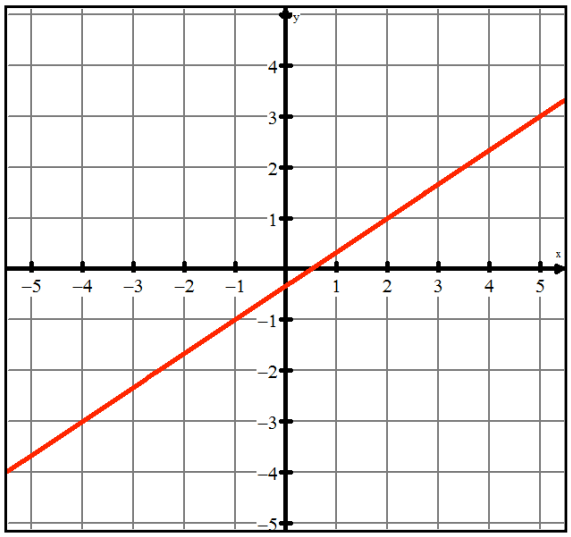


b. If the y value in this relation was -7, what is the x co-ordinate? Show your reasoning/work.

(E) Review Exercise #3:

(a) (GREEN LEVEL) Determine the equation of the line that passes through A(5,-2) and B(-1,-6). Write the equation in all three forms.

(b) (BLUE LEVEL) Determine the equation of the line that passes through the point A(5,-2) and B(a,b). Write the equation in all three forms.

(F) Applying the Basic Skills: - Ex 1. ➔ House Values

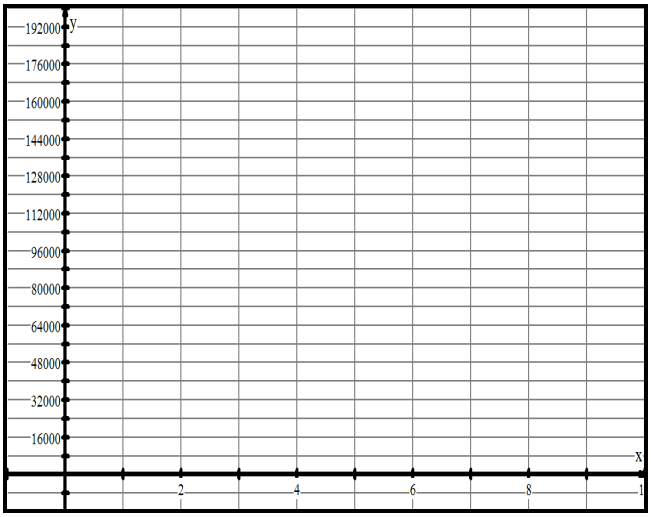
Verbal Description:

Mr Santowski has a summer cottage for which he paid $120,000. Each year, the value of the house increases by $8,000.

Data Table:

x						
y						

Graph:



Equation:

Slope:

Meaning of Slope:

Y-intercept:

Meaning of y-intercept :

Questions:

(a) When will my cottage be worth $200,000?

(b) What will be the value of my cottage in 4 years time?

(c) When will the value of my cottage be double its original value?

(d) At what rate is the value of the house changing from year to year?

(e) Write the equation in standard form.

(f) What is the x-intercept and what does it mean?

(g) Write the equation in point-intercept form

(G)Applying the Basic Skills: Ex 2: ➔ Commission

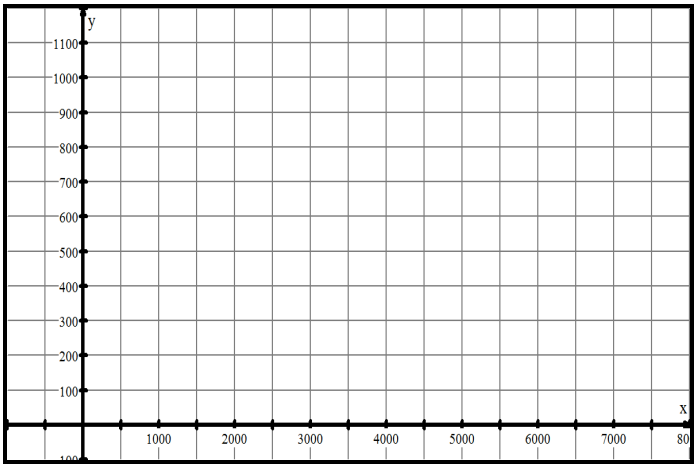
Verbal Description:

John works at a clothing store and his weekly salary is $300 and he earns 5% commission on his weekly sales.

Data Table:

sales	0	1000	2000	3000	4000	5000
earnings						

Graph:



Equation:

Slope:

Meaning of Slope:

Y-intercept:

Meaning of y-intercept :

Questions:

(a) When will John's earnings be $700?

(b) What will be John's earnings if he sells $6,525 worth of clothing?

(c) John gets a raise in pay and now earns a base salary of $500, but his commission remains at 5% of total sales. Write a new equation and graph it on the grid. What is similar about the 2 graphs? What is different about the 2 graphs.

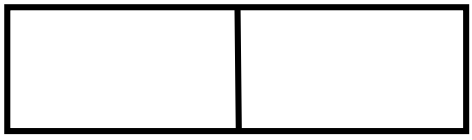
(d) John now gets a raise in pay. He stills earns a base salary of $300, but his commission is now 7.5% Write a new equation and graph it on the grid. What is similar about the 2 graphs? What is different about the 2 graphs.

(e) John now gets promoted to Store Manager and earns a weekly salary of $1100. and graph it on the grid. What does this graph look like?

(H) Applying the Basic Skills ➔ Geometry Problems ➔ Perimeter of a rectangle

Verbal Description:

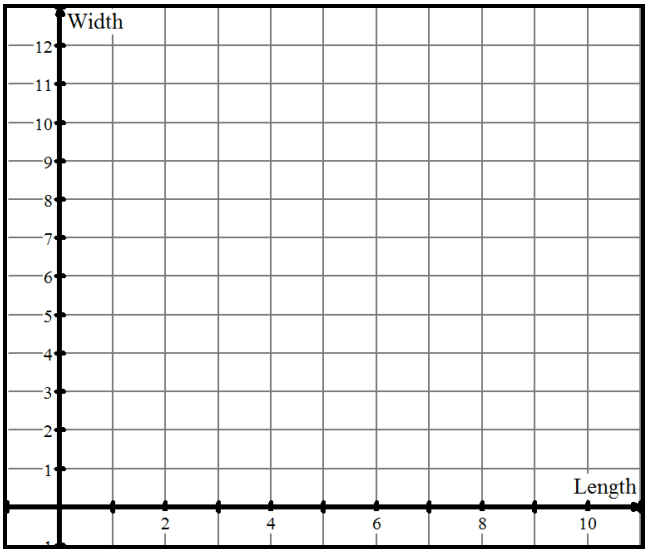
Mr Santowski is constructing 2 adjacent, rectangular pens to contain puppies, as illustrated below. I have 24 meters of fencing material available.



Data Table: List some possible values for the length and width of the pens.

length					
Width					

Graph:



Equation:

X-intercept:

Meaning of x-intercept:

Y-intercept:

Meaning of y-intercept :

Questions:

a. Write the equation in standard form.

b. Write the equation in slope-intercept form.

c. What does the slope mean in this question?

d. Which form do you find easiest for this problem? Why?

e. State the domain and range of this function and explain your thinking.

(I) Piecewise Relations: Exploratory Example:

a. A long distance calling plan charges $1.29 for any call up to 20 minutes in length and 7 cents for each additional minute (or each part of a minute)

   i. What is the independent variable (input)? What would the domain be?

   ii. What is the dependent variable (output)? What would the range be?

   iii. Would you expect this relation to be a function? Why/why not?

   iv. Determine the cost of a 52 minute phone call.

   v. How long would a call be if you had to pay $2.41.

   vi. To help draw a graph, complete the following table of values. Then graph this relation.

Time (min)	0	5	10	15	20	25	30	35	40
Cost ($)									

Now, how would you write an equation for this relation?