Lesson Title: Forms of Linear Functions Date:

(A) Lesson Objectives:

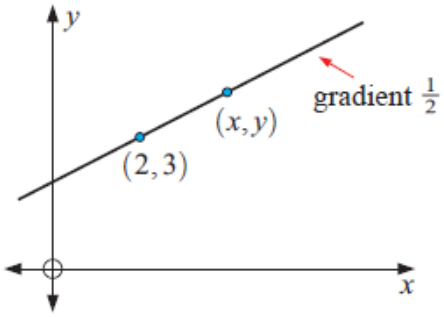
a. Review Linear Equations written in the form of $y = mx + b$ (slope intercept form)
b. Review Linear Equations written in the form of $y - y_1 = m(x - x_1)$ (slope-point form)
c. Review Linear Equations written in the form of $Ax + By = C$
d. Work with Parallel and Perpendicular Lines

(B) Exploration #1:

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. Use the point (6,5) to test ALL 3 EQUATIONS

c. Analyze the linear function by determining its slope and intercepts.

(C) Exploration #2:

a. Determine the equation of the line that is perpendicular to the line $y = -\frac{4}{3}x + 1$ and passes through A(5,-2). Write the equation in all three forms.

b. Graph the line

(D) Exploration #2:

a. Determine the equation of the line that is parallel to the line $3x - 2y - 9 = 0$ and passes through the point A(5,-2). Write the equation in all three forms.

b. Graph the line

Lesson Title: Forms of Linear Functions Date:

(E) Explorations: - House Values

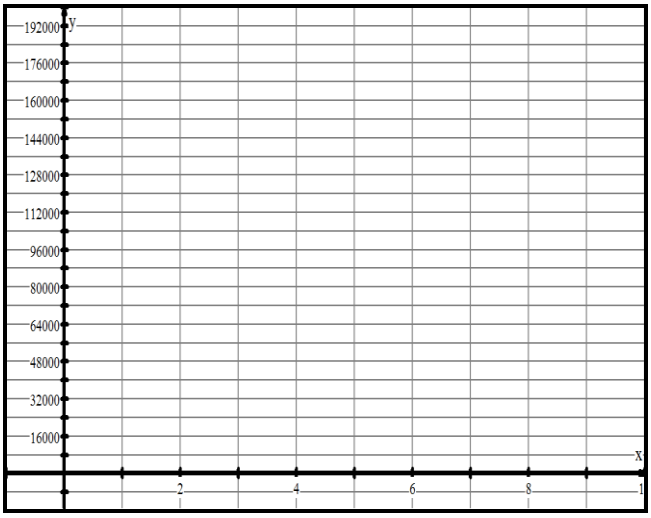
Verbal Description:

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

Lesson Title: Forms of Linear Functions Date:

(E) Explorations - Income & earnings

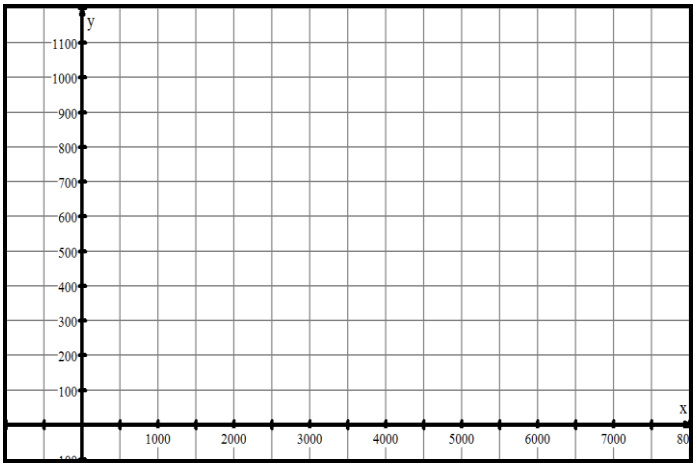
Verbal Description:

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.

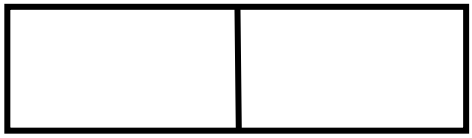
(e) John now gets promoted to Store Manager and earns a weekly salary of $1100. and graph it on the grid. What does this graph look like?

Lesson Title: Forms of Linear Functions Date:

(E) Explorations – Equations in Standard Form ➔ Geometry Problems ➔ Perimeter of a rectangle

Verbal Description:

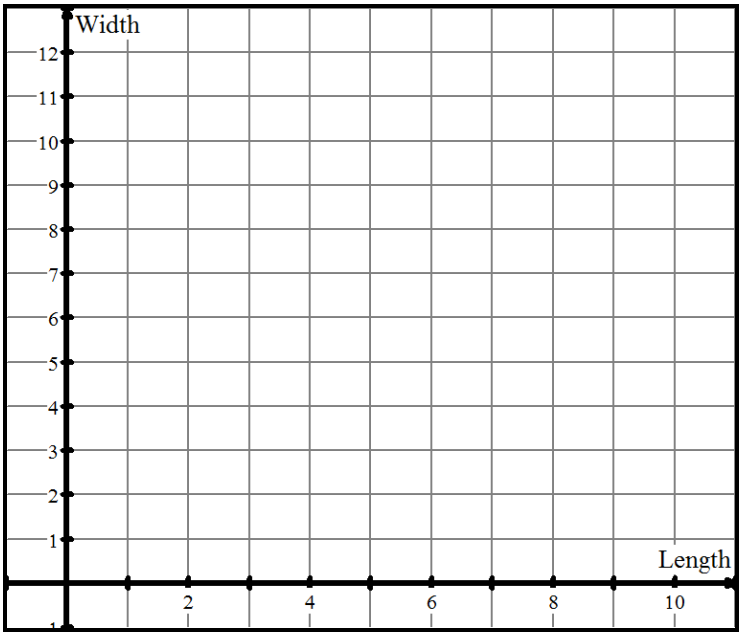
Mr Santowski is constructing 2 adjacent, rectangular pens to contain puppies, as illustrated below. I have 24 meters of fencing material available.



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.

Lesson Title: Forms of Linear Functions Date:

(E) Explorations – Equations in Standard Form ➔ Salary and Earnings

Verbal Description:

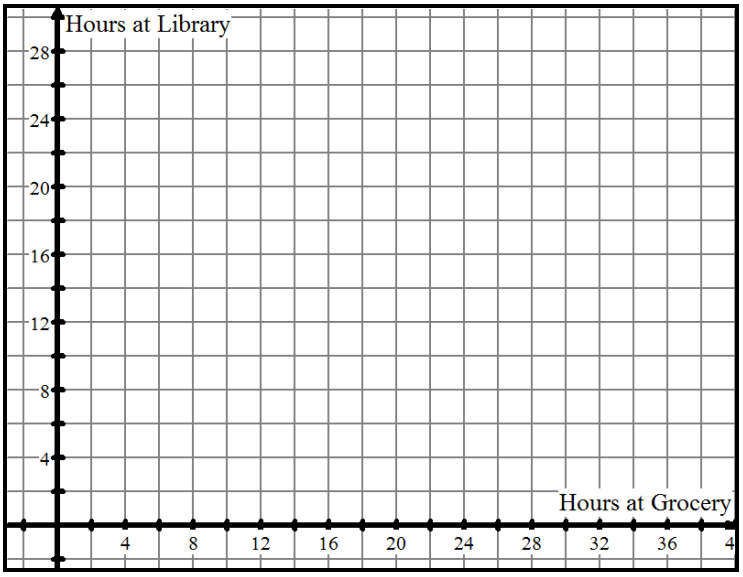
Sally has 2 part time jobs. At the grocery store, Sally earns $8/hr and at the library, she earns $10/hr. Before going on vacation, she would like to earn and save $280. Determine various combinations of hours worked that she needs to work to achieve this goal.

Let L represent the hours worked at the library
Let G represent the hours worked at the grocery

Data Table: List some possible combinations of hours worked at both location.

Hours at Grocery					
Hours at Library					

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 is the slope and what does it mean in this question?

d. What is the domain and range of this function? Why?