

(A) Lesson Objectives:

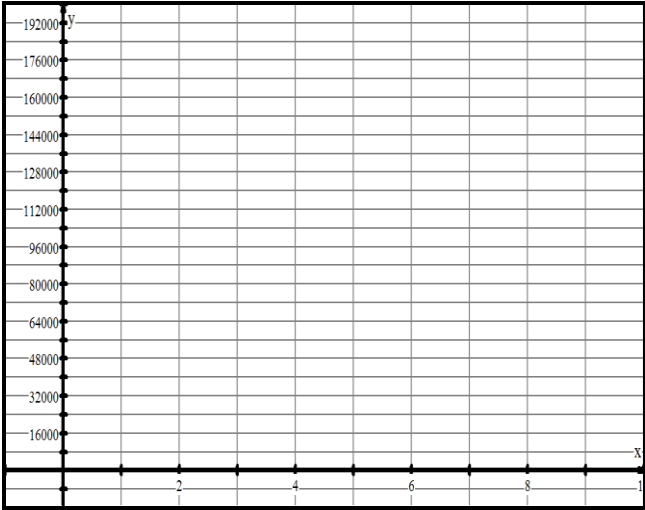
- a. Review Linear Equation in the form of $y = mx + b$
- b. Review Linear Equations in the form of $Ax + By = C$
- c. Apply Linear Equations to Real World Applications
- d. Introduce Parallel and Perpendicular Lines

(B) Fast Five:

- a. For the equation $y = 2x - 3$:
 - i. EXPLAIN how to graph the equation
 - ii. Complete a data table
 - iii. Determine the slope and the y-intercept

(C) Explorations:

- a. House Values

<p>Verbal Description:</p> <p>Mr Santowski has a summer cottage for which he paid \$120,000. Each year, the value of the house increases by \$8,000.</p>	<p>Data Table:</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td style="width: 10%;">x</td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> <td style="width: 10%;"></td> </tr> <tr> <td>y</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>	x							y						
x															
y															
<p>Graph:</p> 	<p>Equation:</p> <p>Slope:</p> <p>Meaning of Slope:</p> <p>Y-intercept:</p> <p>Meaning of y-intercept :</p>														
<p>Questions:</p> <ul style="list-style-type: none"> (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? 															

(C) Explorations:

b. Income & earnings

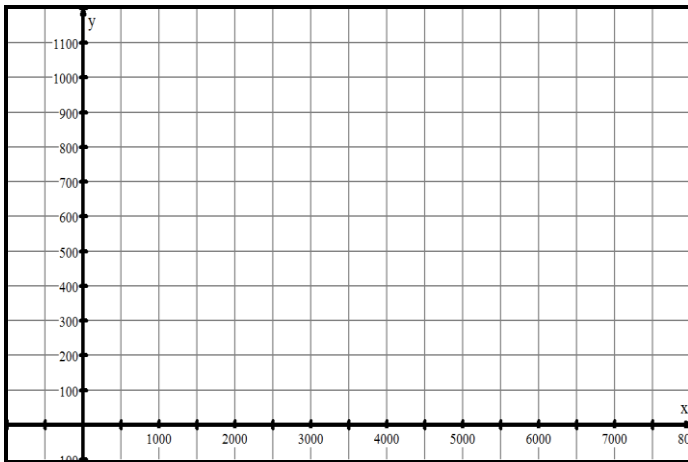
Verbal Description:

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?

(C) Explorations:

c. Environmental Issues

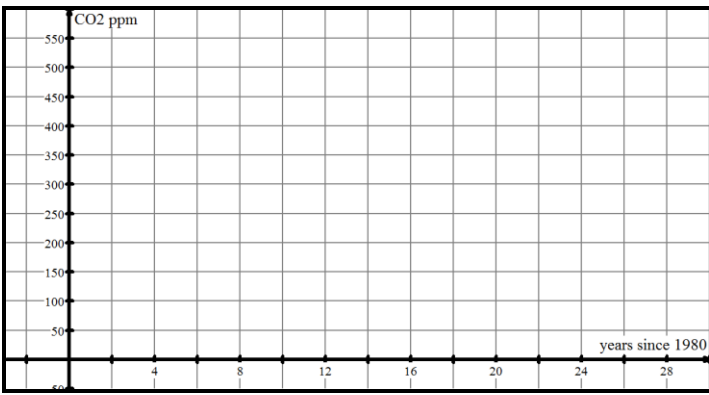
Verbal Description:

The amount of CO₂ in the air in Manila has been steadily rising since 1980. In 1985, the amount of CO₂ in the air was 50 ppm while today, 25 years later, the CO₂ levels are 400 ppm

Data Table:

Years since 1980		
CO ₂ levels in ppm		

Graph:



Equation:

Slope:

Meaning of Slope:

Y-intercept:

Meaning of y-intercept :

Questions:

- (a) When will the CO₂ levels be at 600 ppm?
- (b) What was the amount of CO₂ in the air in June of 1998?
- (c) When will the amount of CO₂ in the air be double 2000 value?
- (d) At what rate is the amount of CO₂ in the air changing from year to year?

- (C) Explorations:
 d. Health Issues

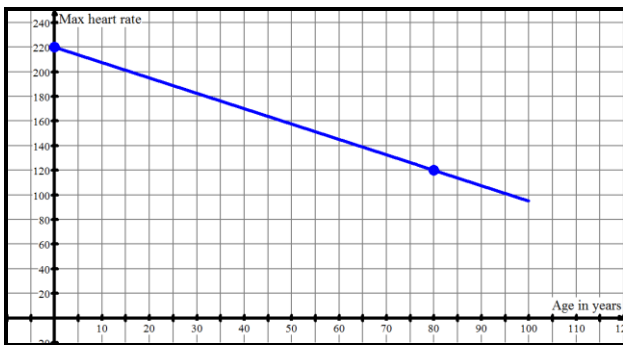
Verbal Description:

The graph below shows the relationship between a person's maximum heart rate and their age.

Data Table:

age	0	80
Max heart rate	220	120

Graph:



Equation:

Slope:

Meaning of Slope:

Y-intercept:

Meaning of y-intercept :

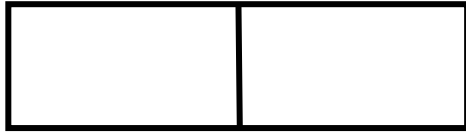
Questions:

- (a) For what age will maximum heart rate be 170 beats per minute?
- (b) What is the maximum heart rate for a 50 year old athlete?
- (c) At what rate is the max heart rate decreasing from year to year?

- (C) Explorations – Equations in Standard Form:
 e. Geometry Problems → Perimeter of a rectangle

Verbal Description:

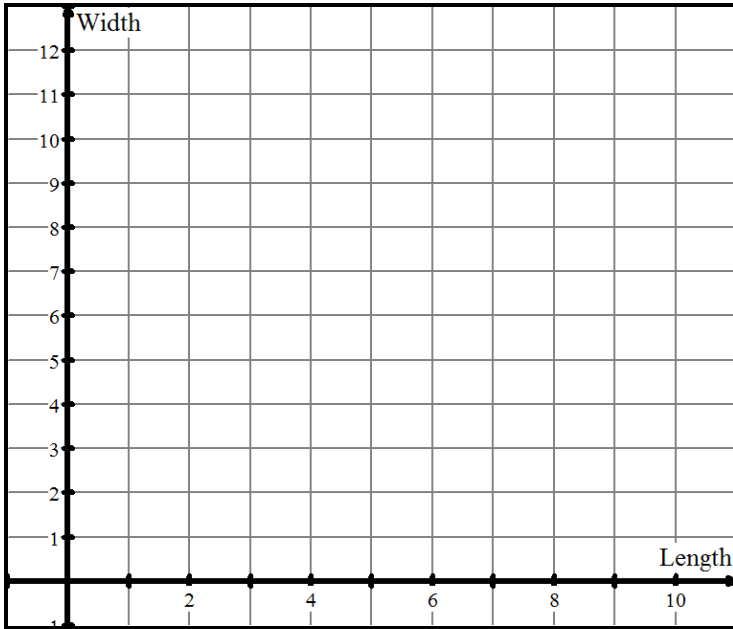
Mr Santowski is constructing 2 adjacent, rectangular pens to contain puppies. I have 24 meters of fencing material available.



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:

- Write the equation in standard form.
- Write the equation in slope-intercept form.
- Which form do you find easiest for this problem? Why?

(C) Explorations – Equations in Standard Form:
 f. Salary and Earnings

Verbal Description:

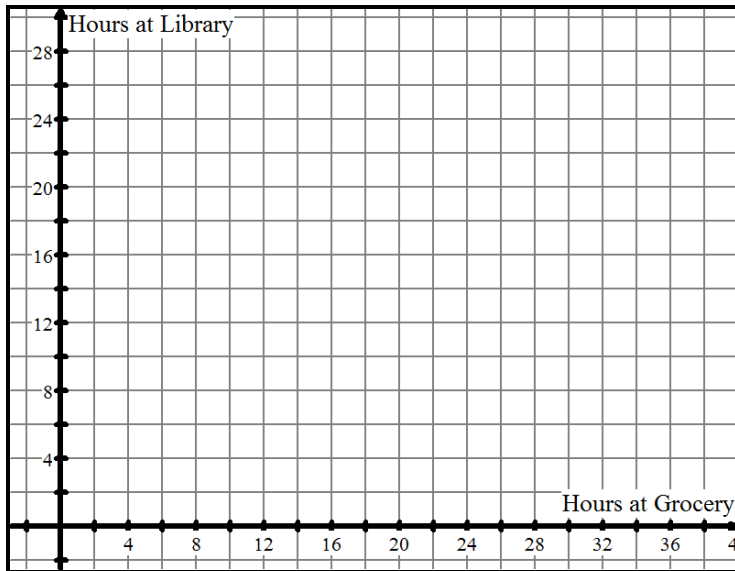
Sally has 2 part time jobs. At the grocery store, Sally earns \$8/hr and at the library, she earns \$10/hr. Before going on vacation, she would like to earn and save \$280. Determine various combinations of hours worked that she needs to work to achieve this goal.

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:

- Write the equation in standard form.
- Write the equation in slope-intercept form.
- Which form do you find easiest for this problem? Why?