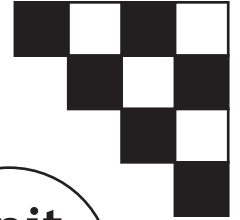



Mathematics 10C

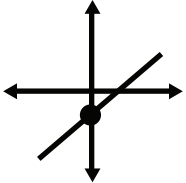


Student Workbook

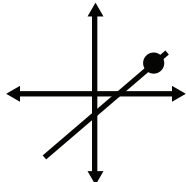
Unit 5

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$


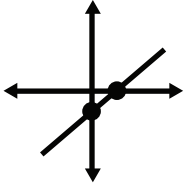
Lesson 1: Slope of a Line
Approximate Completion Time: 2 Days

$$y = mx + b$$


Lesson 2: Slope-Intercept Form
Approximate Completion Time: 2 Days

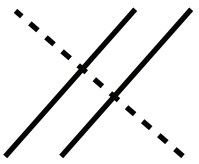
$$y - y_1 = m(x - x_1)$$


Lesson 3: Slope-Point Form
Approximate Completion Time: 2 Days

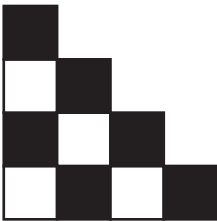
$$Ax + By + C = 0$$


Lesson 4: General Form
Approximate Completion Time: 2 Days

$$m_{\parallel} = m_{\text{original}}$$

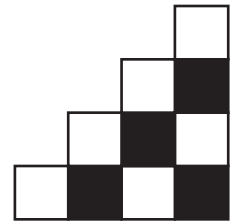
$$m_{\perp} = -\frac{1}{m_{\text{original}}}$$


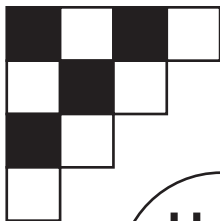
Lesson 5: Parallel and Perpendicular Lines
Approximate Completion Time: 2 Days



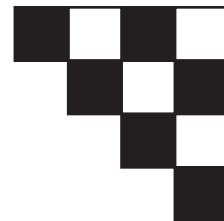
UNIT FIVE

Linear Functions





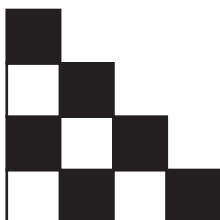
Mathematics 10C



Unit 5

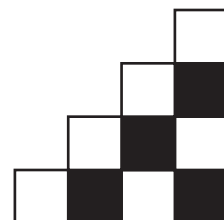
Student Workbook

Complete this workbook by watching the videos on www.math10.ca.
Work neatly and use proper mathematical form in your notes.



UNIT FIVE

Linear Functions



$$m = \frac{y_2 - y_1}{x_2 - x_1}$$



Linear Functions

LESSON ONE - *Slope of a Line*

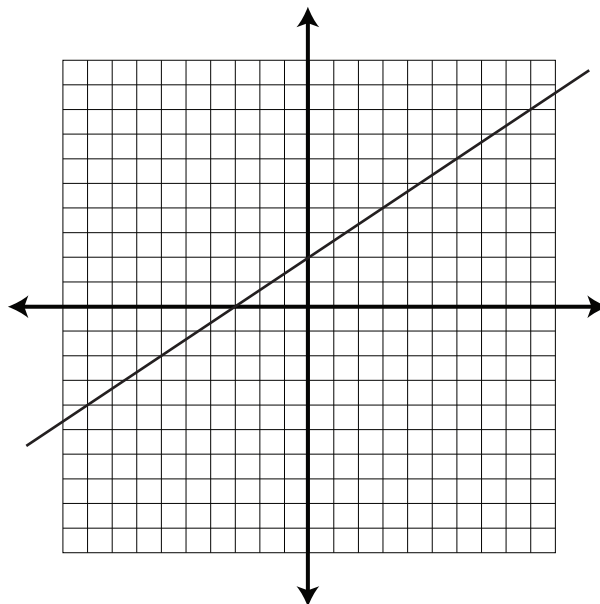
Lesson Notes

Introduction

Find the slope of each line.

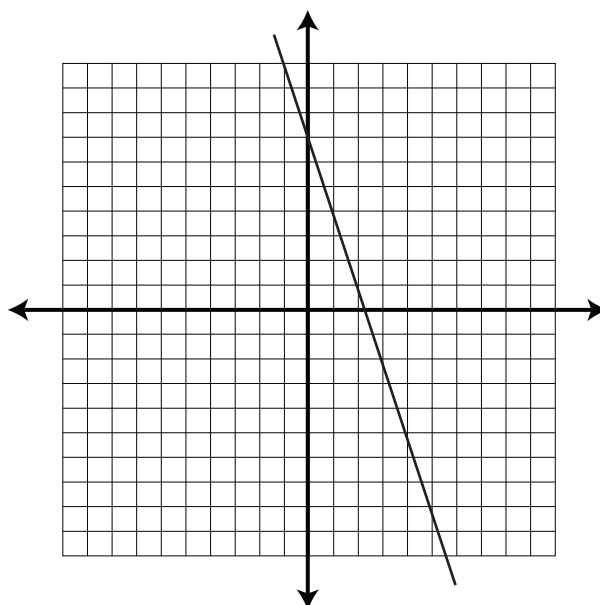
a) using slope = $\frac{\text{rise}}{\text{run}}$

using slope = $\frac{y_2 - y_1}{x_2 - x_1}$



b) using slope = $\frac{\text{rise}}{\text{run}}$

using slope = $\frac{y_2 - y_1}{x_2 - x_1}$

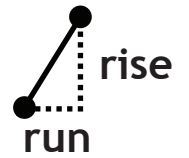


Linear Functions

LESSON ONE - *Slope of a Line*

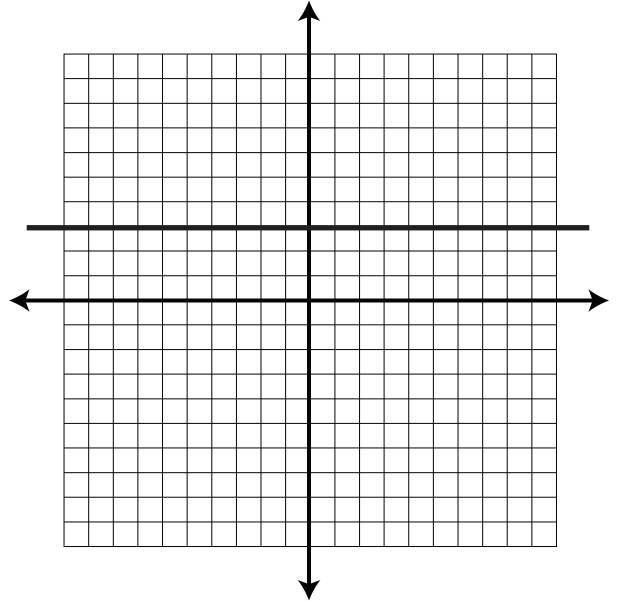
Lesson Notes

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$



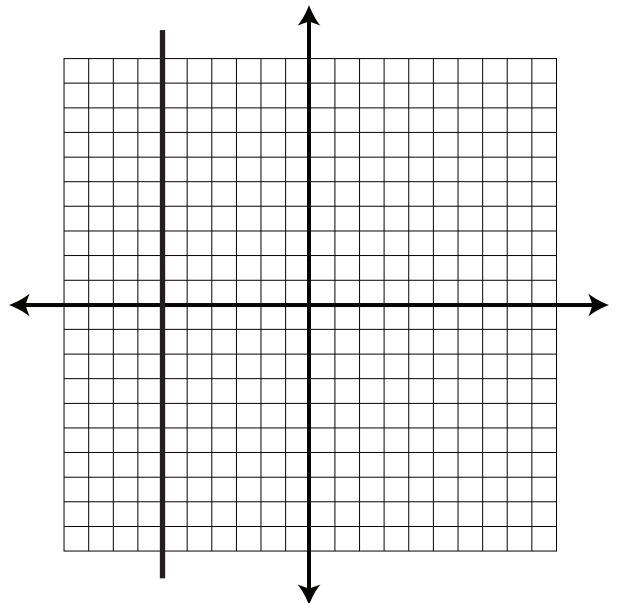
c) using slope = $\frac{\text{rise}}{\text{run}}$

using slope = $\frac{y_2 - y_1}{x_2 - x_1}$



d) using slope = $\frac{\text{rise}}{\text{run}}$

using slope = $\frac{y_2 - y_1}{x_2 - x_1}$



Linear Functions

LESSON ONE - *Slope of a Line*

Lesson Notes

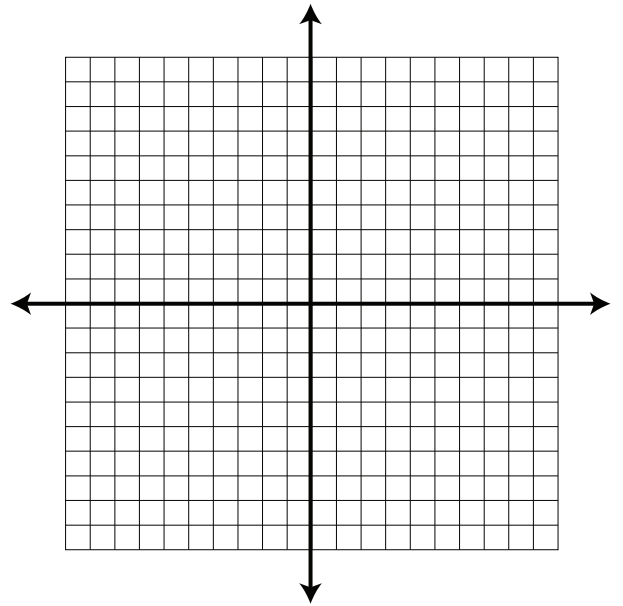
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$



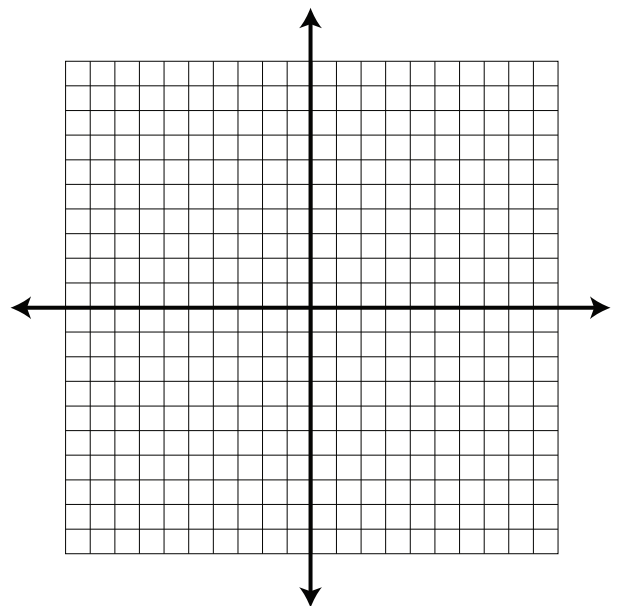
Example 1

For each pair of points, graph the line and calculate the slope.

a) A line passes through $(-3, 7)$ and $(9, -1)$.



b) A line passes through $(0, -3)$ and $(0, 3)$.



Linear Functions

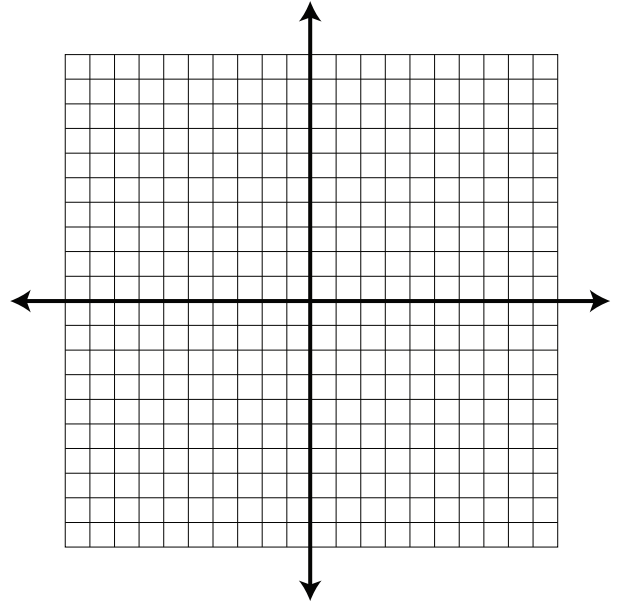
LESSON ONE - *Slope of a Line*

Lesson Notes

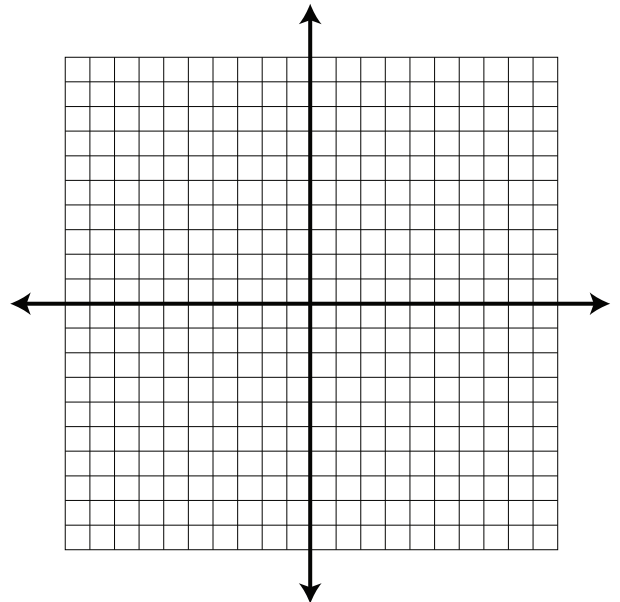
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$



c) A line passes through $(-10, -10)$ and $(10, -10)$.



d) A line passes through $(-3, -5)$ and $(6, 7)$.



$$m = \frac{y_2 - y_1}{x_2 - x_1}$$



Linear Functions

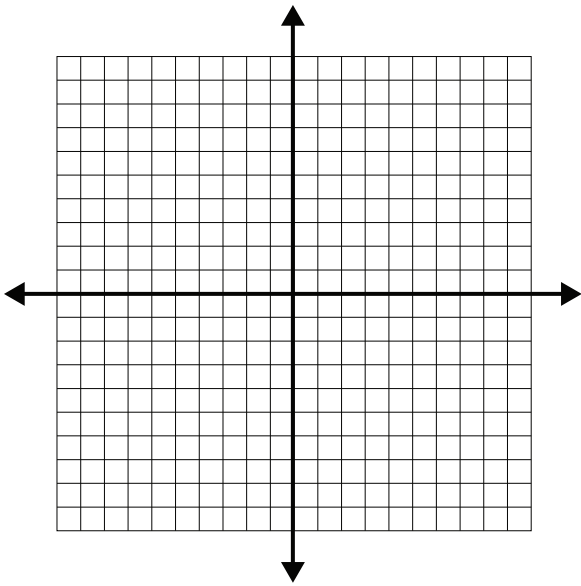
LESSON ONE - *Slope of a Line*

Lesson Notes

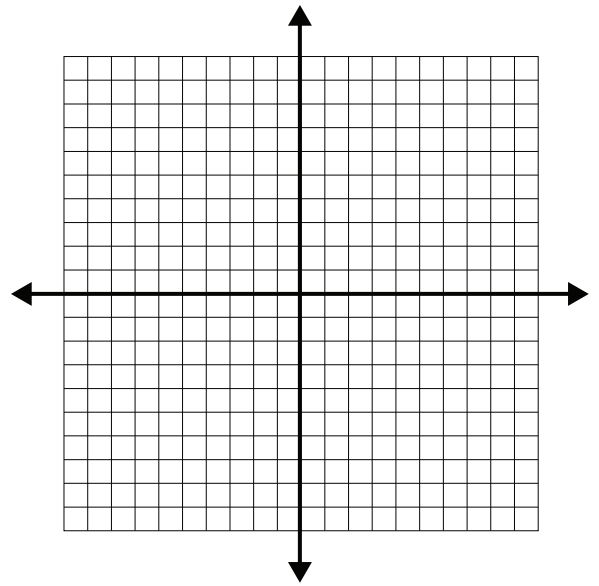
Example 2

Draw each of the following lines, given the slope and a point on the line.

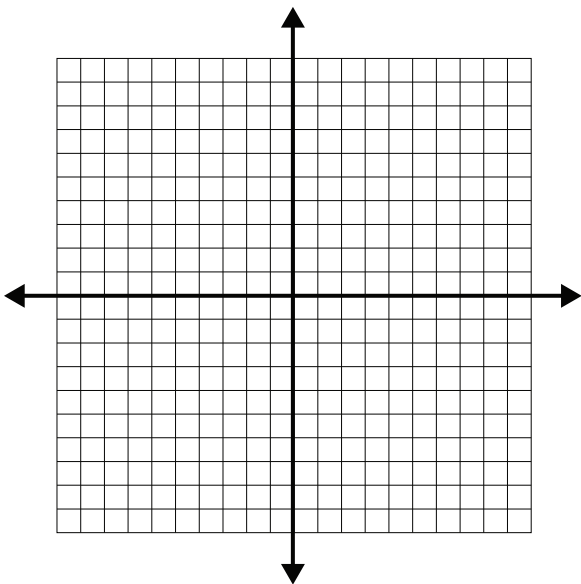
a) Slope = $\frac{1}{3}$, Point = (-4, -5)



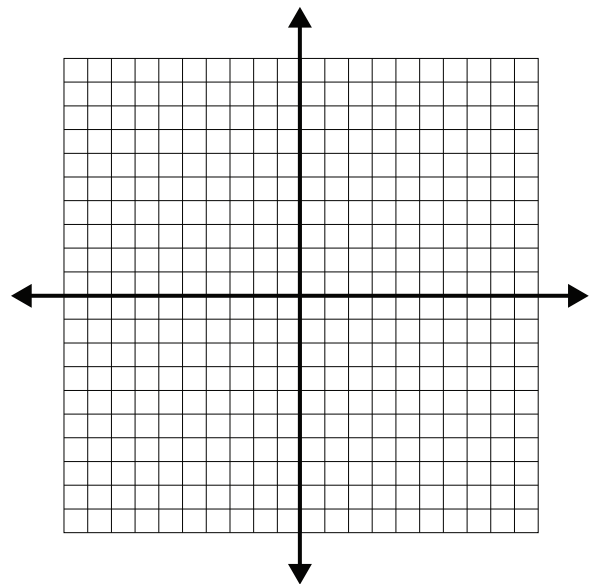
b) Slope = -2, Point = (-3, 7)



c) Slope = undefined, Point = (6, -2)



d) Slope = 0, Point = (-8, 9)



Linear Functions

LESSON ONE - *Slope of a Line*

Lesson Notes

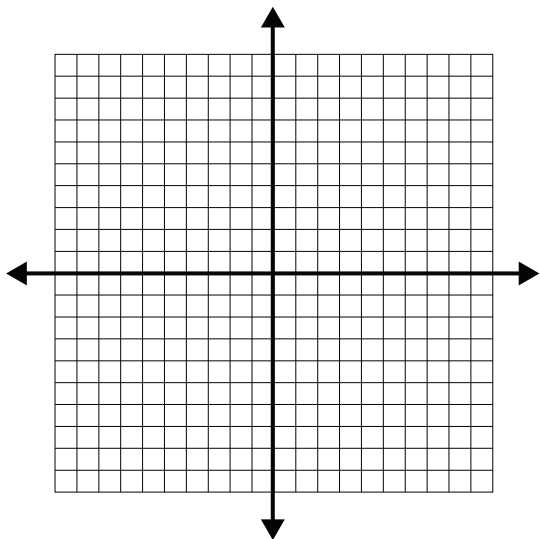
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$



Example 3

a) A line has points located at $(-3, 5)$ and $(4, a)$. What is the value of a if the slope is -2 ?
Solve this question both graphically and algebraically.

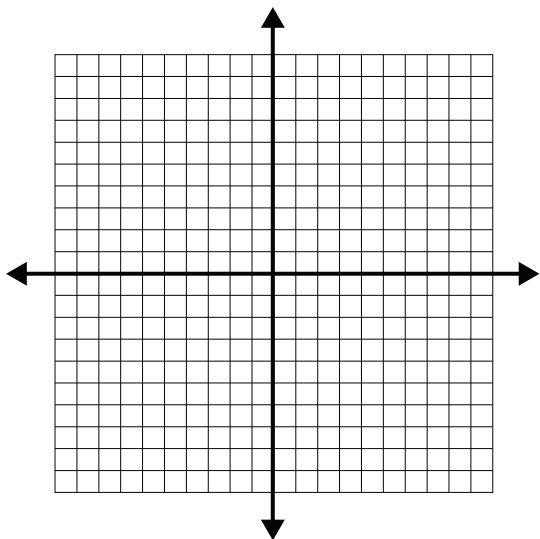
Graphical Solution



Algebraic Solution

b) A line has points located at $(a, 3)$ and $(2, 9)$. What is the value of a if the slope is $\frac{3}{5}$?
Solve this question both graphically and algebraically.

Graphical Solution



Algebraic Solution

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$



Linear Functions

LESSON ONE - *Slope of a Line*

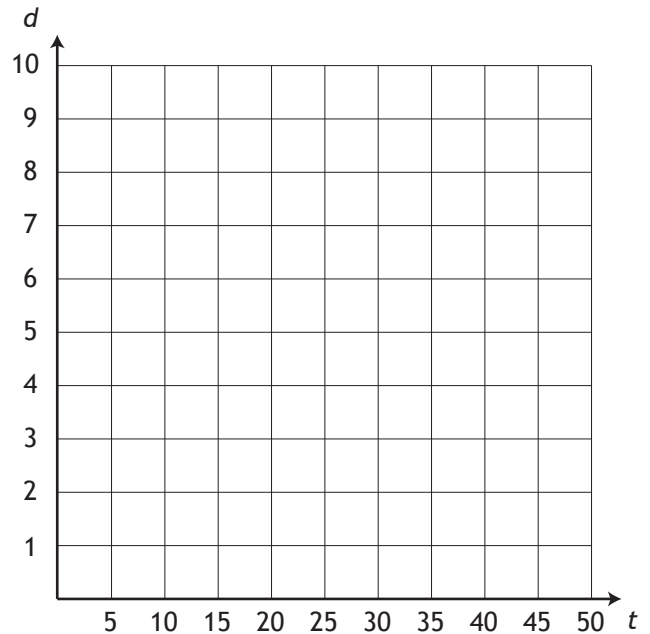
Lesson Notes

Example 4

The equation relating distance and time is $d = st$, where s is the speed. In a physics experiment, a motorized toy car drives across the floor and its position is measured every five seconds.

a) Graph the data

elapsed time (seconds)	position (metres)
0	0
5	0.9
10	1.8
15	2.7
20	3.6
25	4.5
30	5.4
35	6.3
40	7.2
45	8.1
50	9.0



b) Determine the speed of the car.

c) State the dependent and independent variables, then write an equation that relates the variables.

Linear Functions

LESSON ONE - *Slope of a Line*

Lesson Notes

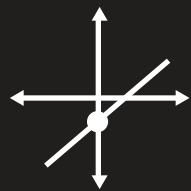
$$m = \frac{y_2 - y_1}{x_2 - x_1}$$



d) How far would the car go if it drove for 8 minutes?

e) How many hours would it take for the car to travel 1 km?

$$y = mx + b$$



Linear Functions

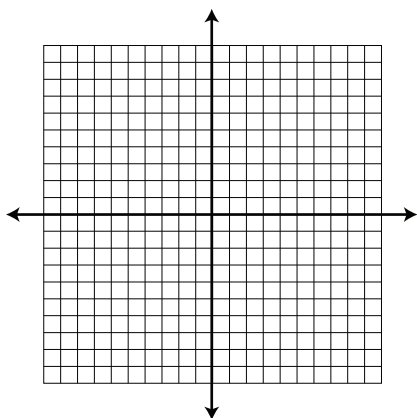
LESSON TWO - *Slope-Intercept Form*

Lesson Notes

Introduction

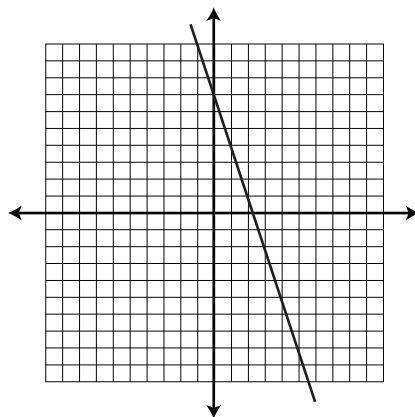
Equation \rightarrow Graph

a) Draw the graph of $y = -3x + 7$



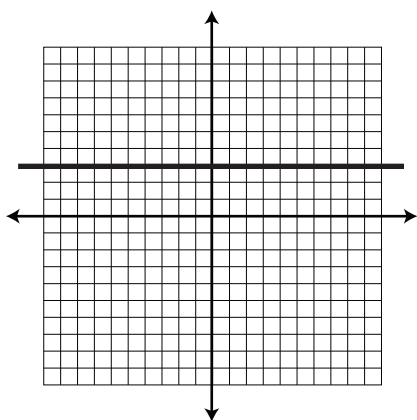
Graph \rightarrow Equation

b) Determine the slope-intercept equation of the line shown.



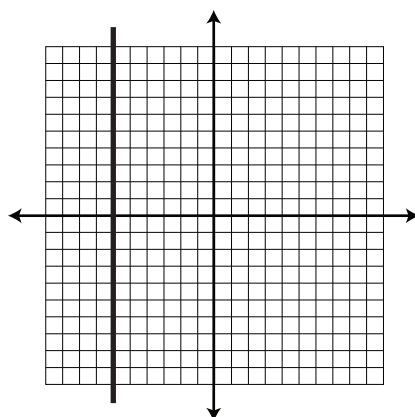
Horizontal Line

c) Find the equation of the horizontal line shown.



Vertical Line

d) Find the equation of the vertical line shown.

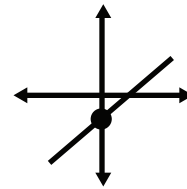


Linear Functions

LESSON TWO - *Slope-Intercept Form*

Lesson Notes

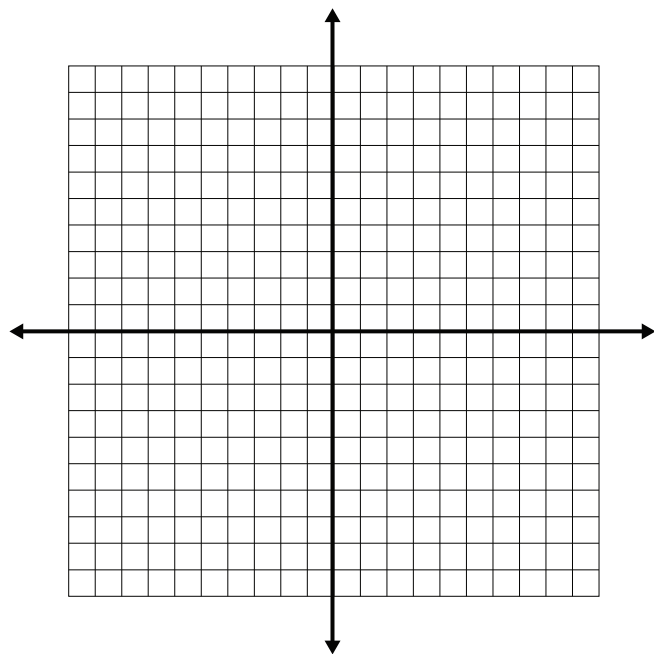
$$y = mx + b$$



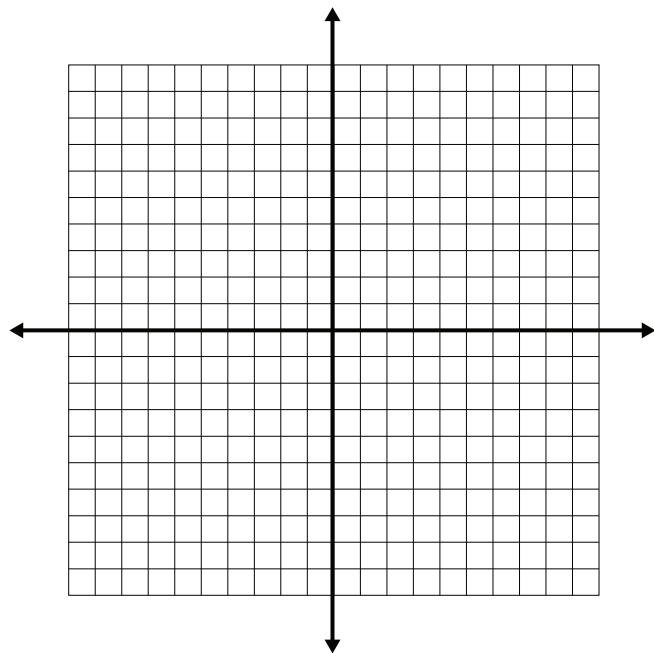
Example 1

Given the following slope-intercept equations, graph the line.

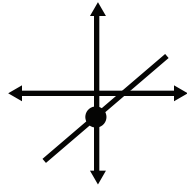
a) $y = 3x - 2$



b) $y = -\frac{4}{3}x + 1$



$$y = mx + b$$



Linear Functions

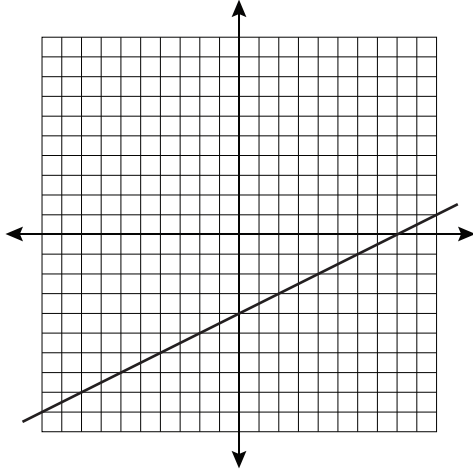
LESSON TWO - *Slope-Intercept Form*

Lesson Notes

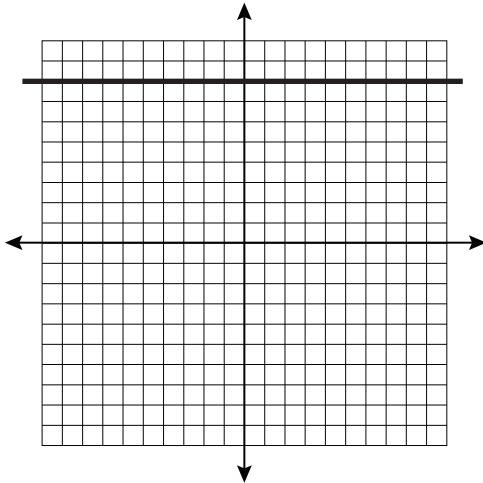
Example 2

Write the equation of each graph.

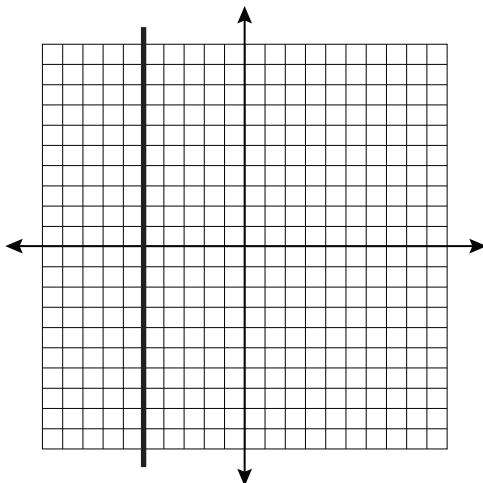
a)



b)



c)

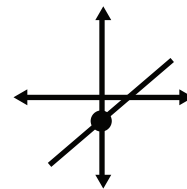


Linear Functions

LESSON TWO - *Slope-Intercept Form*

Lesson Notes

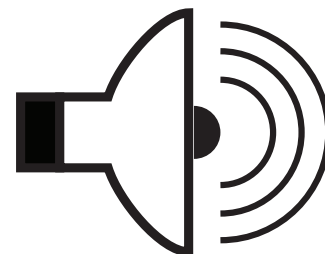
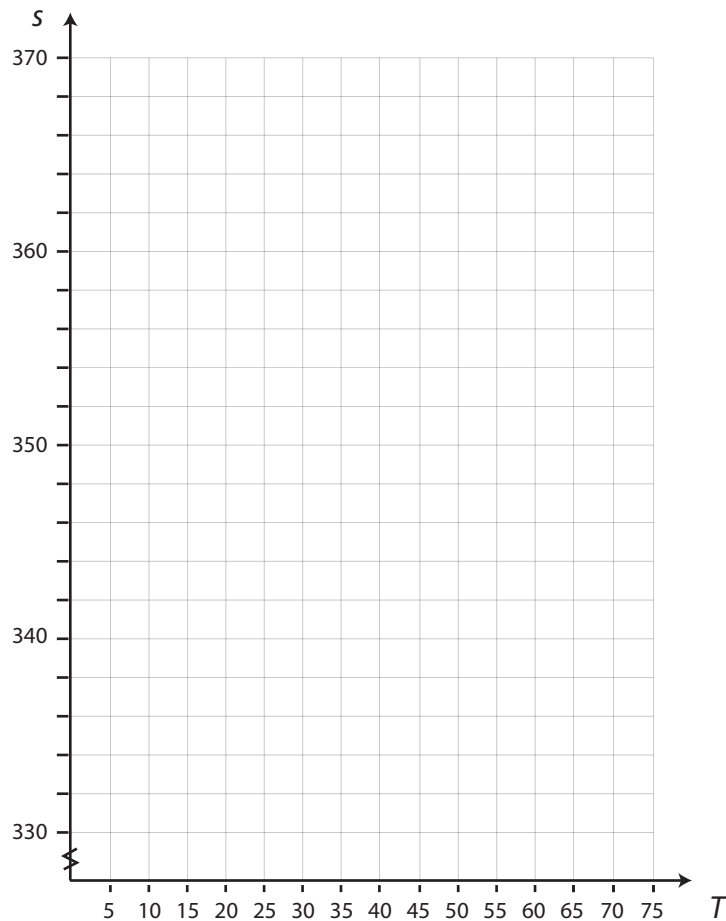
$$y = mx + b$$



Example 3

The speed of sound at $0\text{ }^{\circ}\text{C}$ is 331 m/s .
At $15\text{ }^{\circ}\text{C}$, the speed increases to 340 m/s .

a) Draw a graph representing this data.

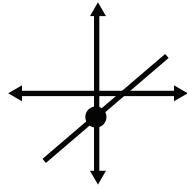


c) What is the speed of sound at $35\text{ }^{\circ}\text{C}$?

b) Write an equation for the speed of sound as a function of temperature.

d) At what temperature is the speed of sound 364 m/s ?

$$y = mx + b$$



Linear Functions

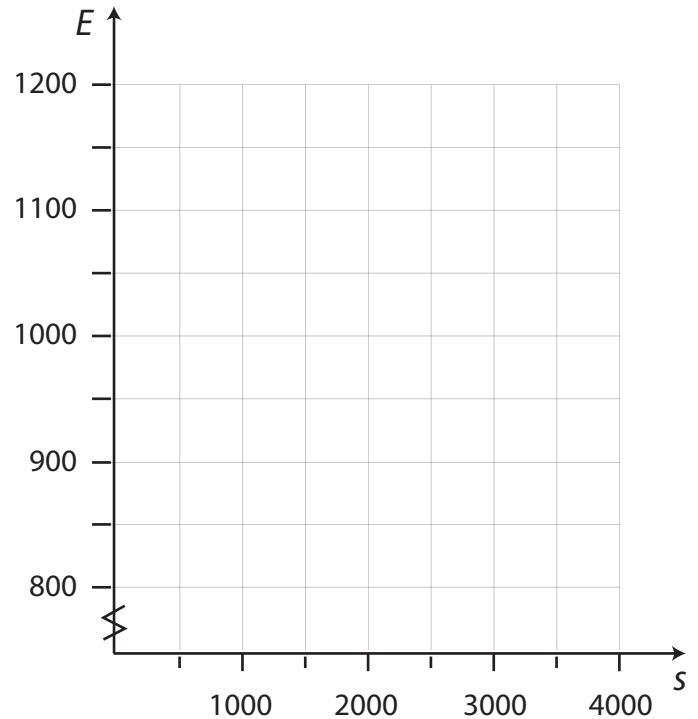
LESSON TWO - *Slope-Intercept Form*

Lesson Notes

Example 4

John is a salesman earning \$800 per week plus a 9% commission.

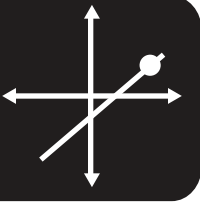
a) Write an equation for John's earnings as a function of sales. Graph the function.



b) If John sells \$2500 worth of product in a week, what does he earn?

c) How much did John sell if he earned \$1016 in a week?

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$$y - y_1 = m(x - x_1)$$


Linear Functions

LESSON THREE - *Slope-Point Form*

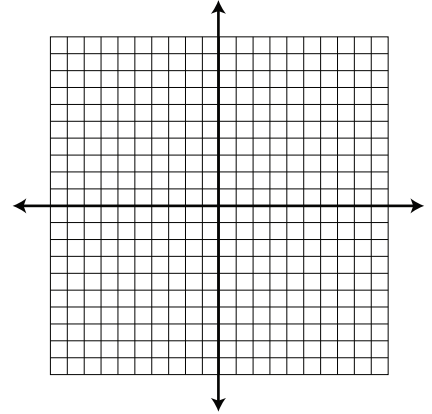
Lesson Notes

Introduction

The equation of a line in slope-point form is $y - 3 = -\frac{1}{2}(x + 5)$

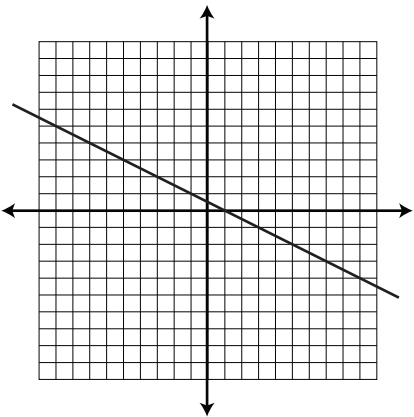
Equation → Graph

a) Draw the graph of $y - 3 = -\frac{1}{2}(x + 5)$



Graph → Equation

b) Determine the slope-point equation of the line shown.



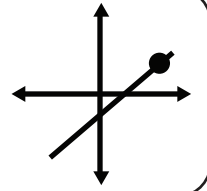
c) How can you tell if slope-intercept form or slope-point form should be used to find the equation of a line?

Linear Functions

LESSON THREE - *Slope-Point Form*

Lesson Notes

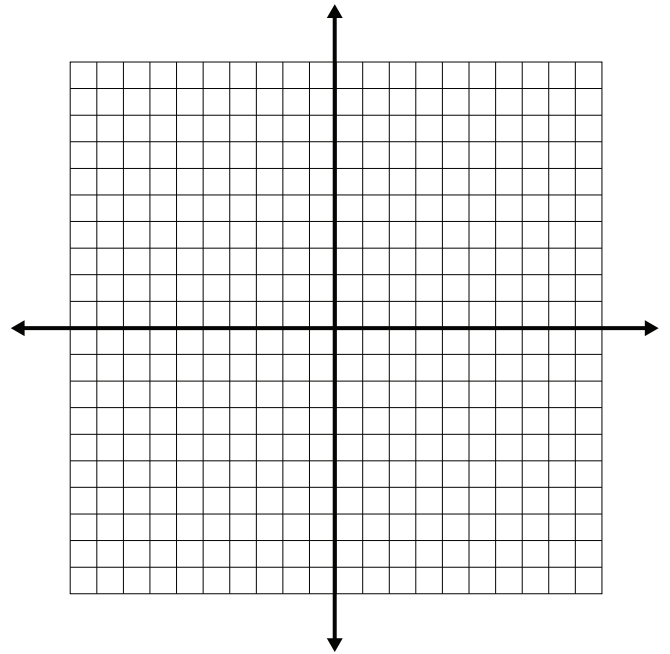
$$y - y_1 = m(x - x_1)$$



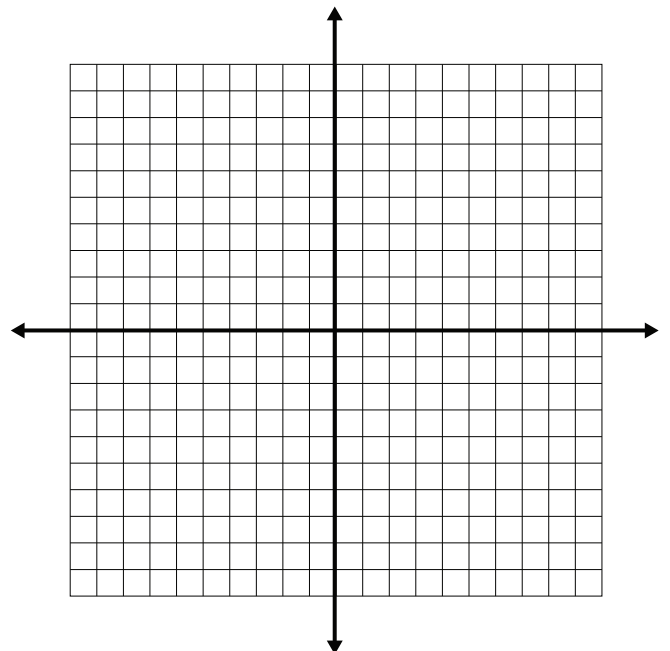
Example 1

Graph each of the following lines

a) $y + 4 = -\frac{1}{2}(x - 1)$



b) $y = \frac{4}{3}(x + 5)$

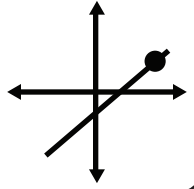


Linear Functions

LESSON THREE - *Slope-Point Form*

Lesson Notes

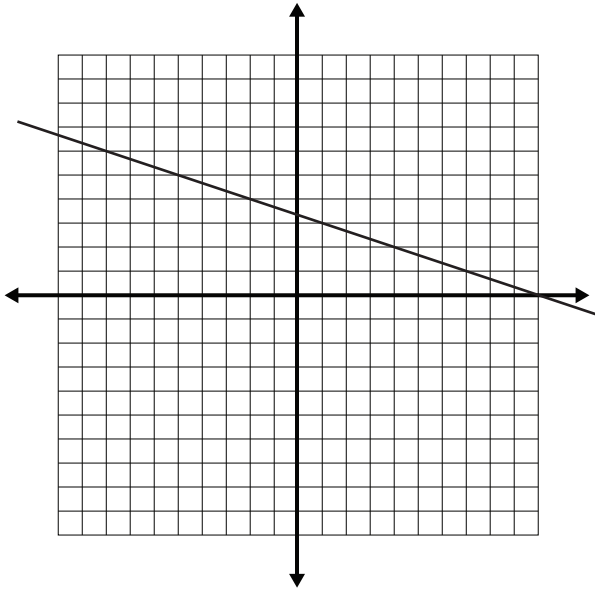
$$y - y_1 = m(x - x_1)$$



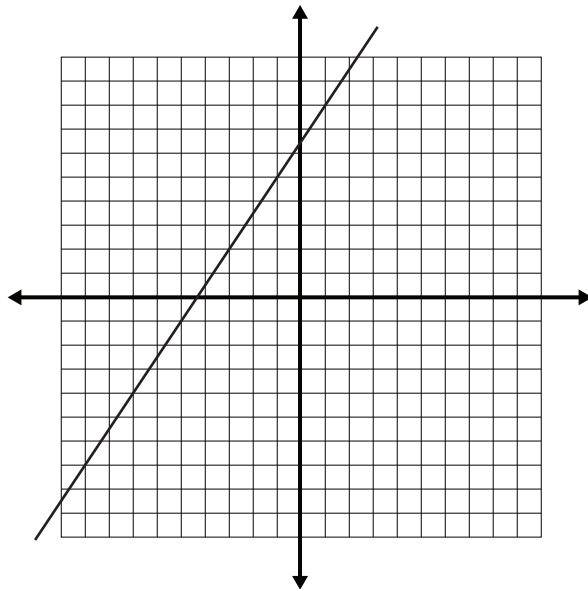
Example 2

Find the slope-point equation for each of the following lines.

a)



b)

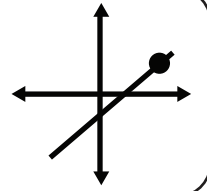


Linear Functions

LESSON THREE - *Slope-Point Form*

Lesson Notes

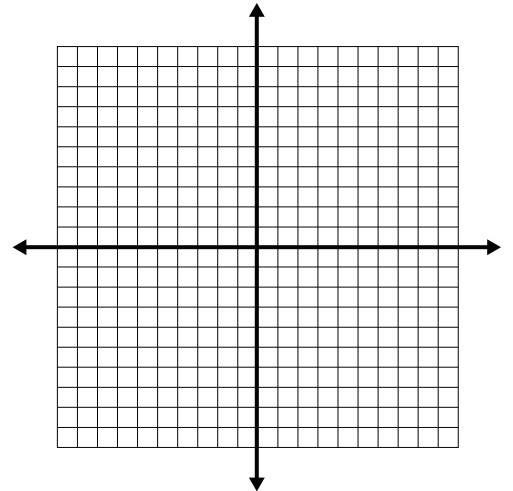
$$y - y_1 = m(x - x_1)$$



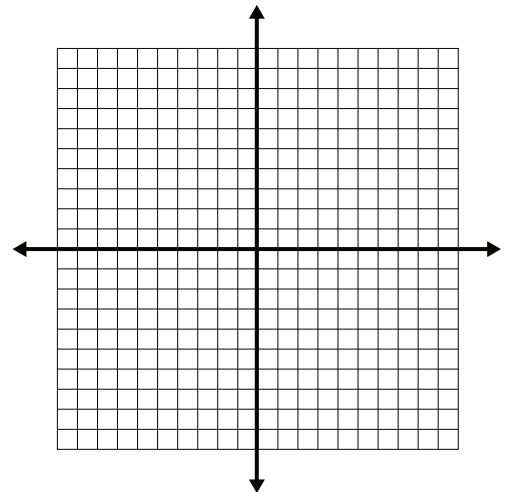
Example 3

Draw each line and determine its equation.

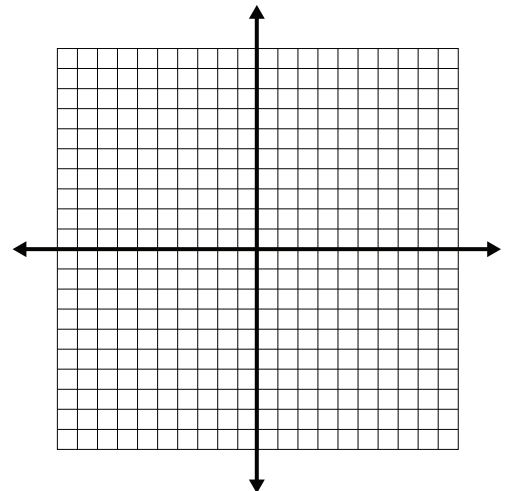
a) A line passes through the points $(-3, -1)$ and $(2, -6)$.



b) A line passes through the points $(-4, 7)$ and $(5, -3)$.



c) A line passes through the points $(-9, -7)$ and $(-9, -4)$.

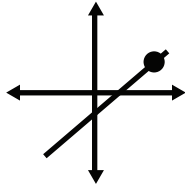


Linear Functions

LESSON THREE - *Slope-Point Form*

Lesson Notes

$$y - y_1 = m(x - x_1)$$



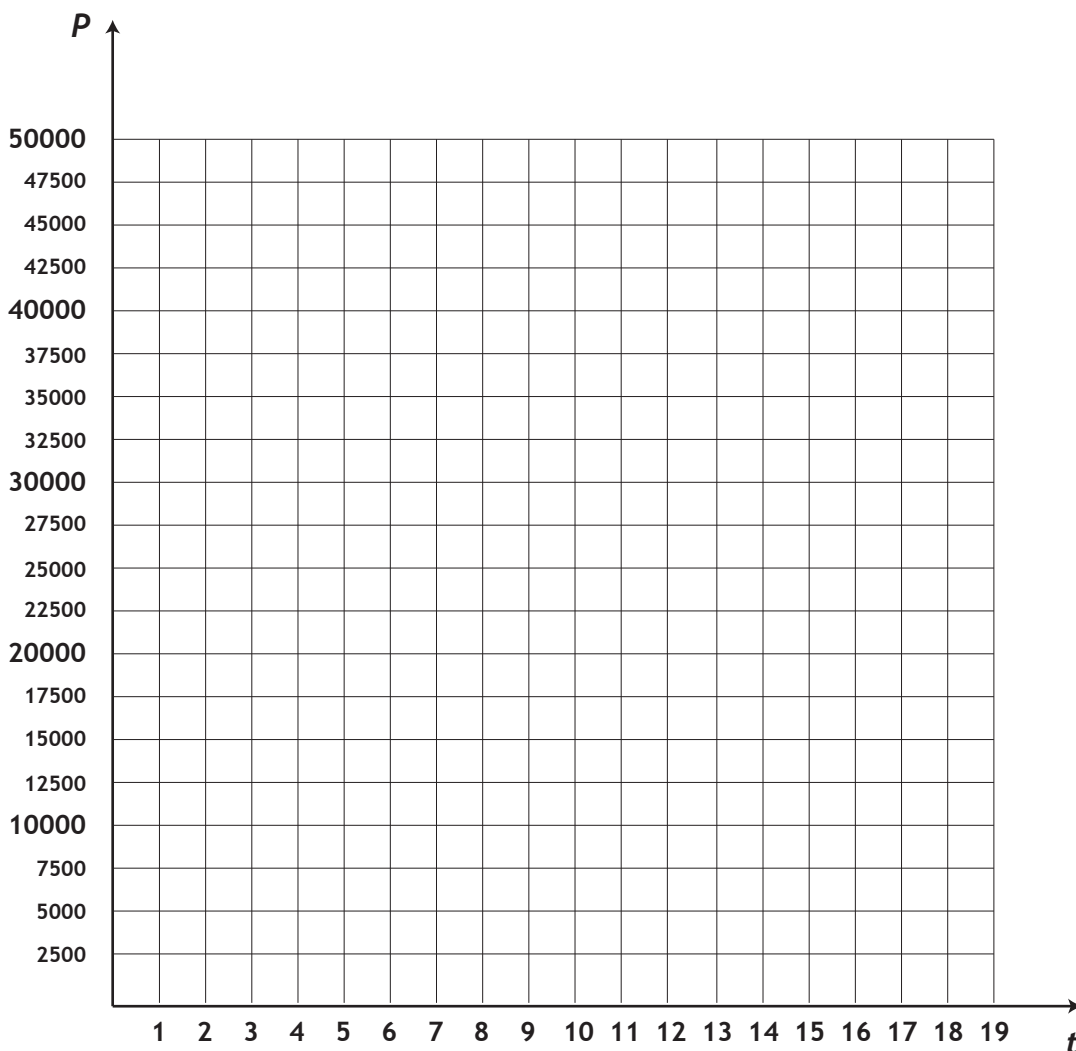
Example 4

The following table shows population data for two small cities.

Year	Population of City A	Population of City B
2012	34000	29170
2020	38960	27410



a) Represent this data on a graph where t represents the number of years since 2010 and P is the population.

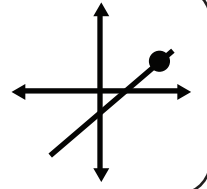


Linear Functions

LESSON THREE - *Slope-Point Form*

Lesson Notes

$$y - y_1 = m(x - x_1)$$



b) Determine the slope of each line. What does the slope tell you about the growth of each city?

c) For each city, write an equation for population as a function of time.

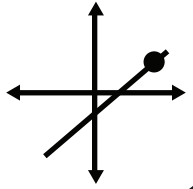
d) Predict the population of each city in 2029.

Linear Functions

LESSON THREE - *Slope-Point Form*

Lesson Notes

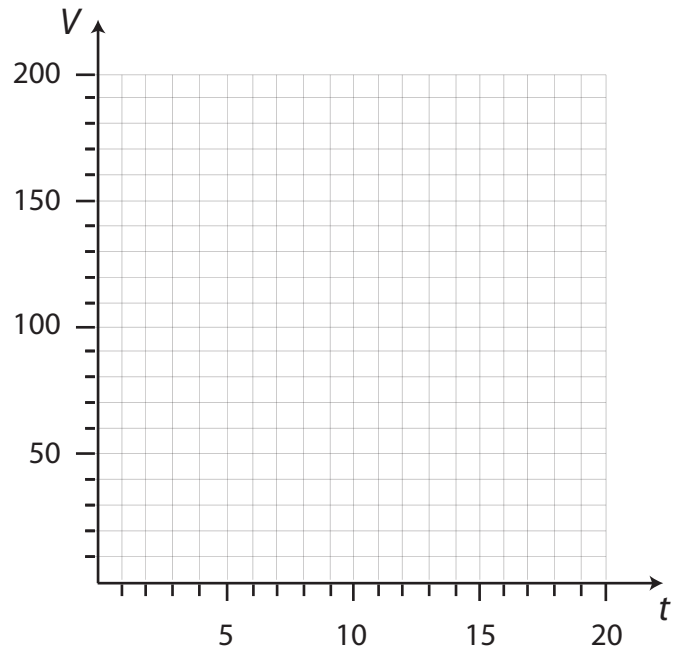
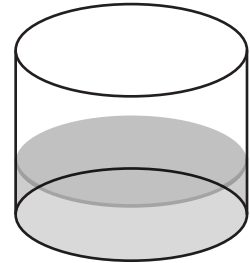
$$y - y_1 = m(x - x_1)$$



Example 5

A cylindrical tank contains an unknown amount of water. If water is added to the tank at a rate of 5 L/min for 12 minutes, the volume of the water will be 89 L.

a) Write an equation for the volume of the tank as a function of time. Draw the graph.



b) What is the volume of water in the tank after 17 minutes?

c) The maximum volume of the tank is 134 L. How long can the tank be filled before it overflows?

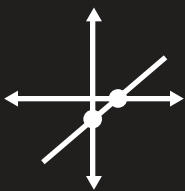
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Linear Functions

LESSON FOUR - *General Form*

Lesson Notes

$$Ax + By + C = 0$$

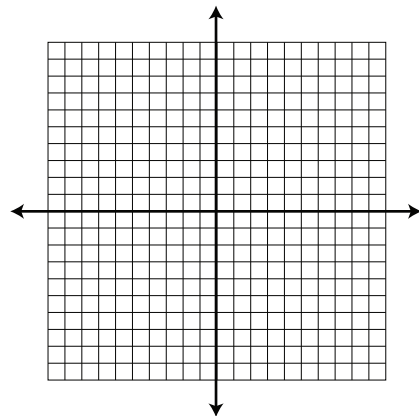


Introduction

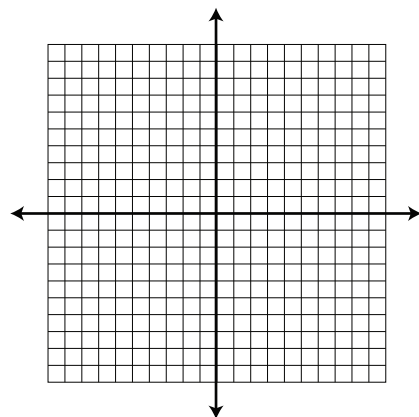
The equation of a line is $3x + y + 3 = 0$.

Equation \rightarrow Graph

a) Write $3x + y + 3 = 0$ in slope-intercept form and draw the graph.

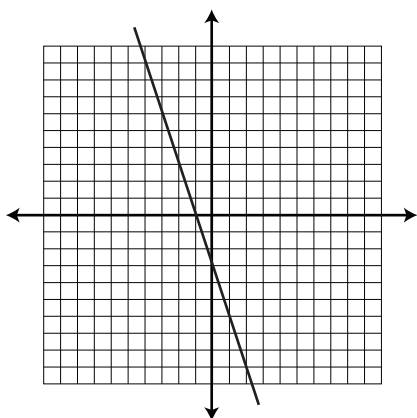


b) Find the intercepts of $3x + y + 3 = 0$ and draw the graph.



Graph \rightarrow Equation

c) Determine the general form equation of the line shown.

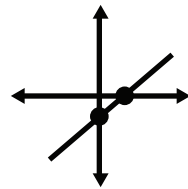


Linear Functions

LESSON FOUR - *General Form*

Lesson Notes

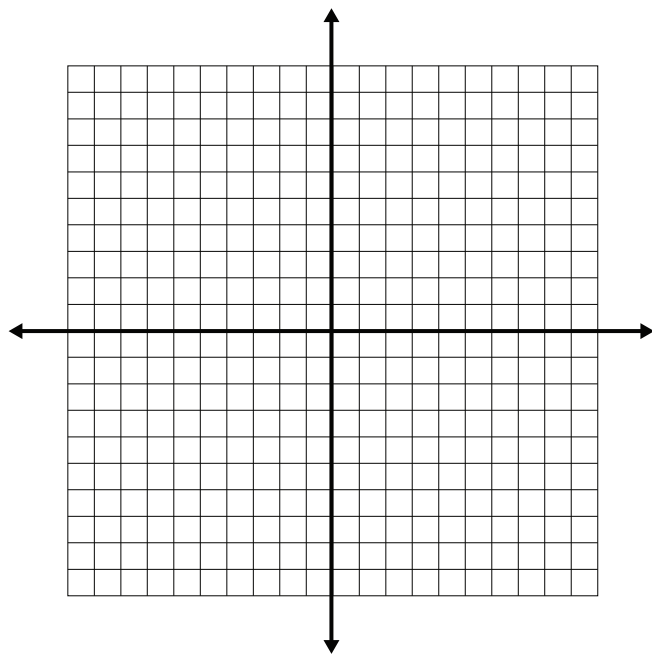
$$Ax + By + C = 0$$



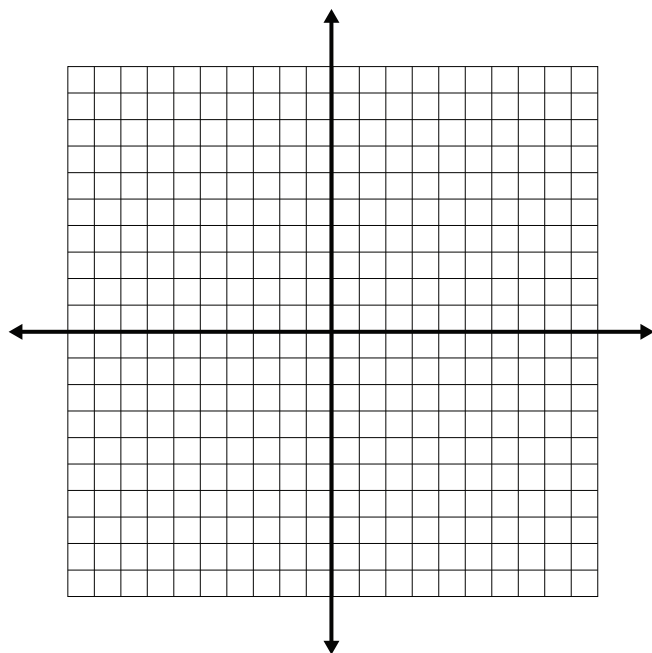
Example 1

Write each equation in slope-intercept form and graph the line.

a) $2x - y + 3 = 0$



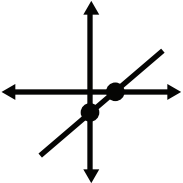
b) $\frac{3}{4}x - \frac{3}{2}y - 6 = 0$



Linear Functions

LESSON FOUR - *General Form*

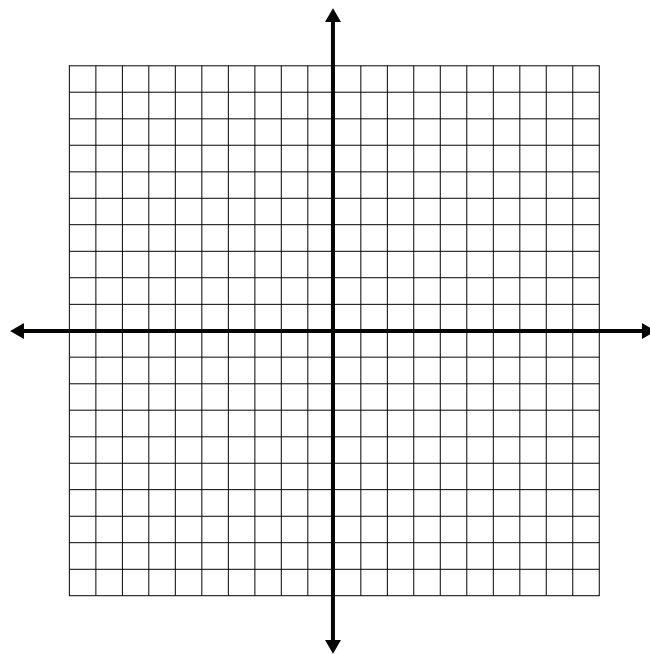
Lesson Notes

$Ax + By + C = 0$ 

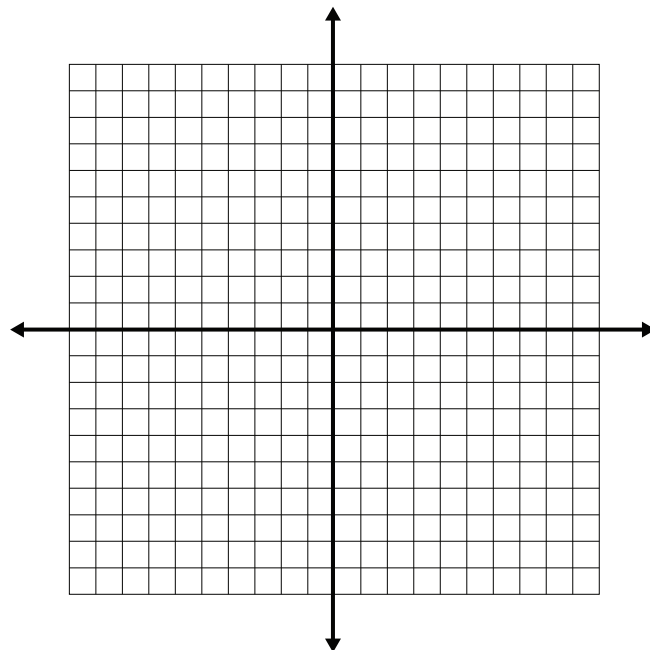
Example 2

Graph each equation using x & y intercepts.

a) $7x - 8y - 56 = 0$



b) $\frac{1}{5}x - \frac{1}{2}y - 1 = 0$

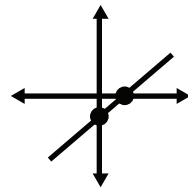


Linear Functions

LESSON FOUR - *General Form*

Lesson Notes

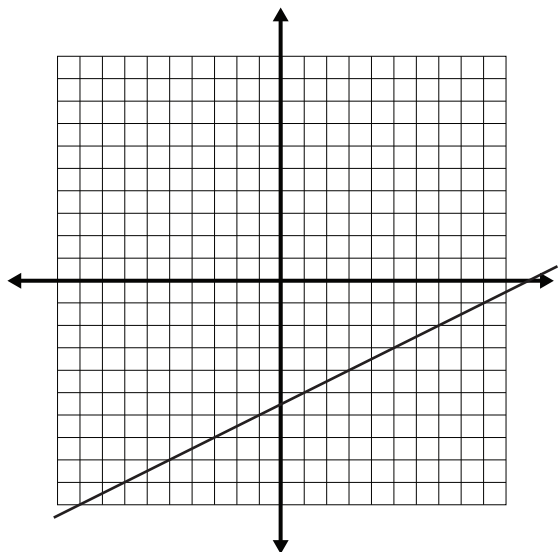
$$Ax + By + C = 0$$



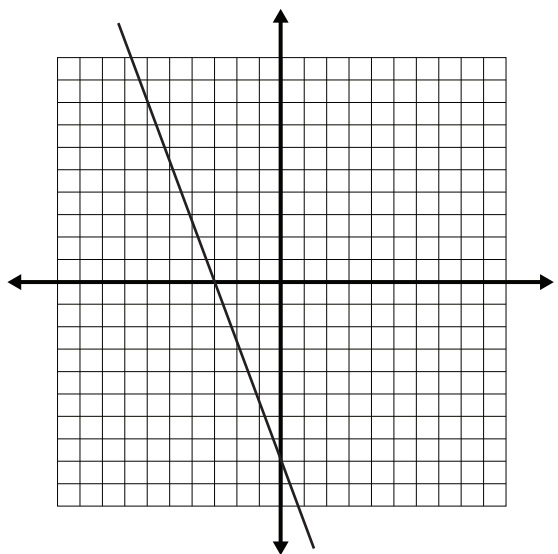
Example 3

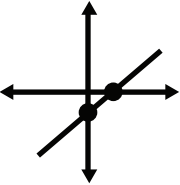
Determine the general form equation of each line shown below.

a)



b)



$Ax + By + C = 0$ 

Linear Functions

LESSON FOUR - *General Form*

Lesson Notes

Example 4

Two positive real numbers, a and b , have a sum of 5.

a) Use a table to generate data for a and b .

a	b	sum

b) Write an equation that relates the variables. State the dependent and independent variables.

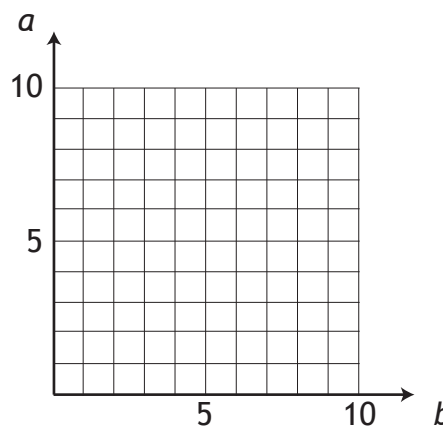
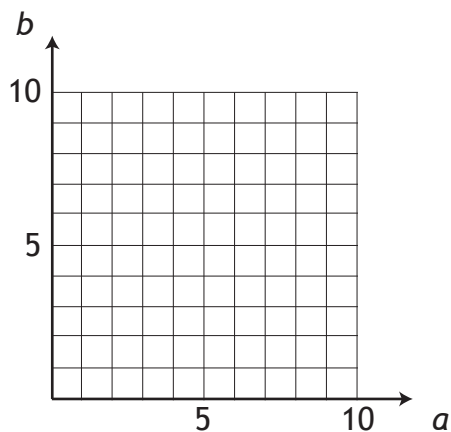
c) Graph the relation in two ways:

i) b V.S. a

Equation

ii) a V.S. b

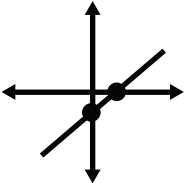
Equation



Linear Functions

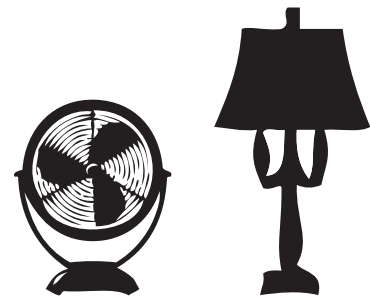
LESSON FOUR - *General Form*

Lesson Notes

$$Ax + By + C = 0$$


Example 5

A small appliance store is having a sale on fans and lamps. A fan costs \$10, and a lamp costs \$20. At the end of the day, the revenue from these items is \$120.



a) Find the intercepts of this relation.

fans (\$10)	lamps (\$20)	revenue

b) Write an equation that relates the variables. State the dependent and independent variables.

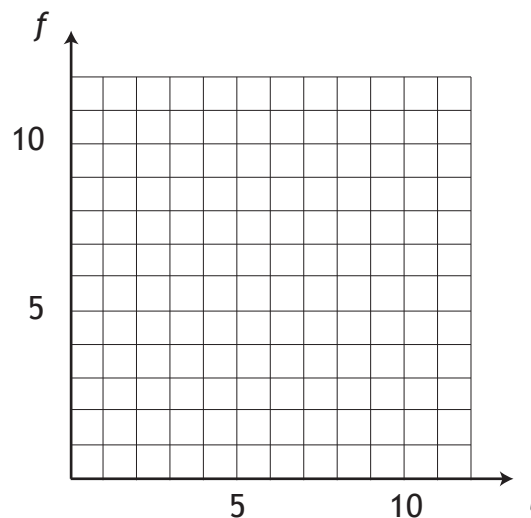
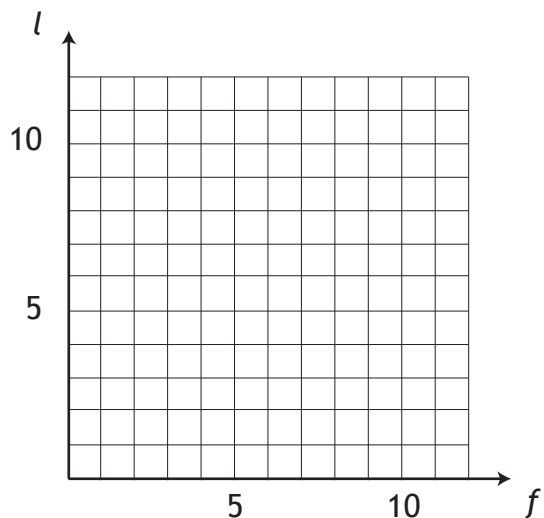
c) Graph the relation in two ways:

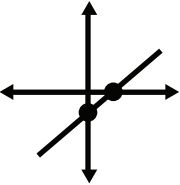
i) *lamps* v.s. *fans*

Equation

ii) *fans* v.s. *lamps*

Equation



$Ax + By + C = 0$ 

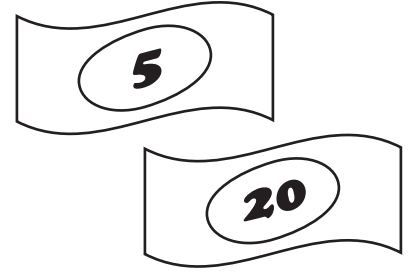
Linear Functions

LESSON FOUR - *General Form*

Lesson Notes

Example 6

A stack of bills contains only \$5 and \$20 denominations. The total value is \$140.



a) Find the intercepts of this relation.

fives (\$5)	twenties (\$20)	total amount

b) Write an equation that relates the variables. State the dependent and independent variables.

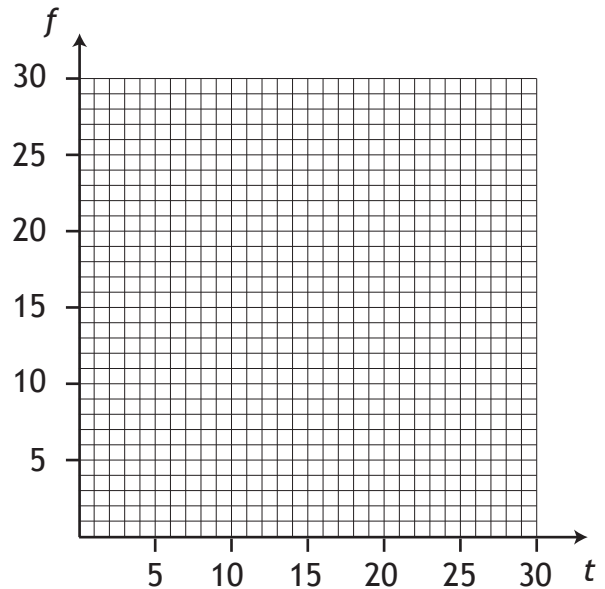
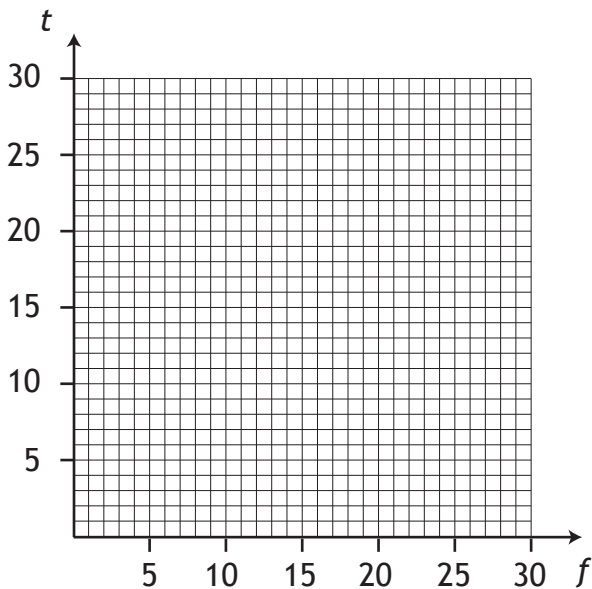
c) Graph the relation in two ways:

i) *twenties* V.S. *fives*

Equation

ii) *fives* V.S. *twenties*

Equation

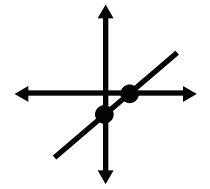


Linear Functions

LESSON FOUR - *General Form*

Lesson Notes

$$Ax + By + C = 0$$



d) Using the equation, determine if it's possible to have twelve \$5 bills and four \$20 bills.

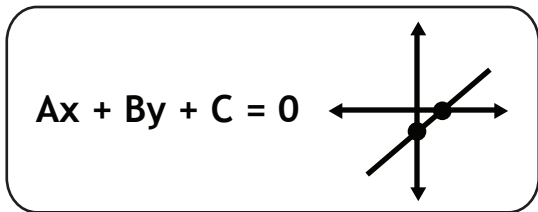
e) Using the equation, determine if it's possible to have eighteen \$5 bills and six \$20 bills.

f) Use the equation to find the number of \$5 bills if there are five \$20 bills.

Linear Functions

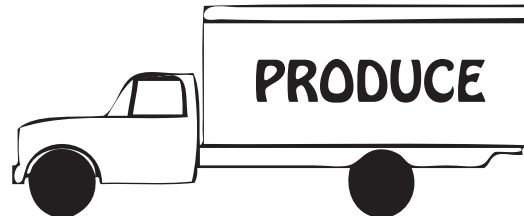
LESSON FOUR - *General Form*

Lesson Notes



Example 7

A truck is transporting beets and potatoes. The density of beets is 720 kg/m^3 , and the density of potatoes is 760 kg/m^3 . The total mass of the beets and potatoes is 12000 kg .



The density formula is $d = \frac{m}{V}$, where d is the density, m is the mass, and V is the volume.

a) If the volume of the beets is b , and the volume of the potatoes is p , write an equation that relates the variables.

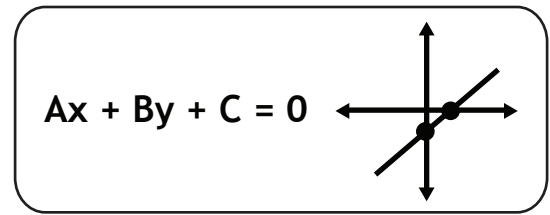
b) Find the intercepts of this relation.

volume of beets	volume of potatoes

Linear Functions

LESSON FOUR - *General Form*

Lesson Notes



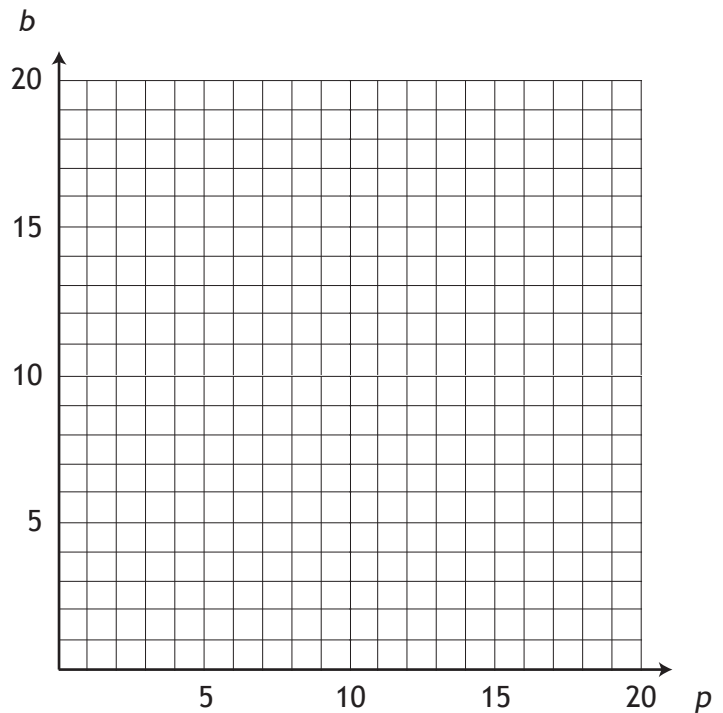
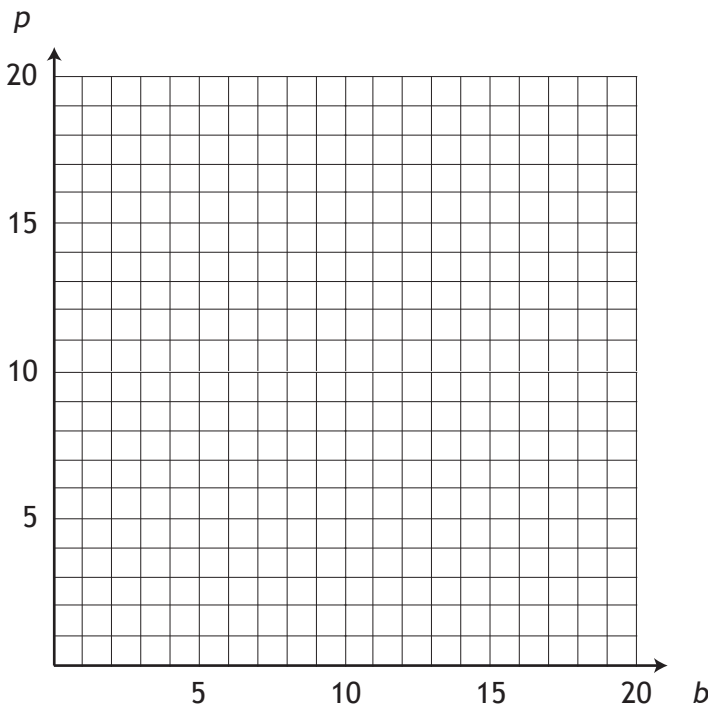
c) Graph the relation in two ways:

i) volume of potatoes
V.S. volume of beets

Equation

ii) volume of beets V.S.
volume of potatoes.

Equation

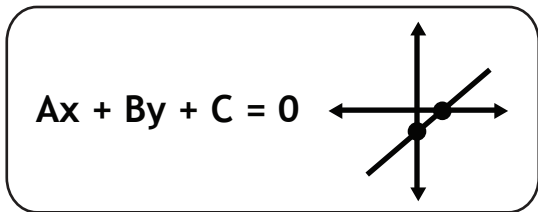


d) If the volume of the potatoes is 7.3 m^3 , what is the volume of the beets?

Linear Functions

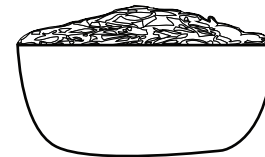
LESSON FOUR - *General Form*

Lesson Notes



Example 8

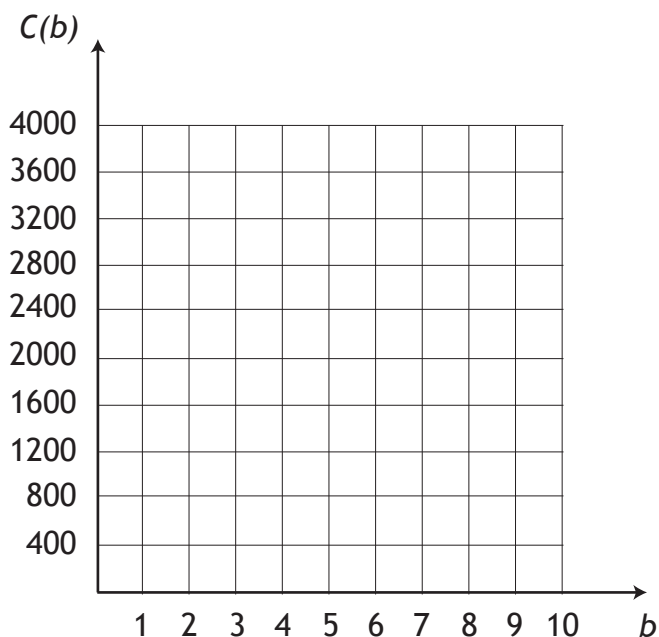
There are 400 Calories in one bowl of dry cereal.



a) Write an equation that relates the amount of Calories to the number of bowls. State the dependent and independent variables.


b) Why is this relation a function? Write the relation using function notation.

c) Graph the relation. Why can it only be graphed as C vs b ?



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$m_{\parallel} = m_{\text{original}}$
 $m_{\perp} = -\frac{1}{m_{\text{original}}}$



Linear Functions

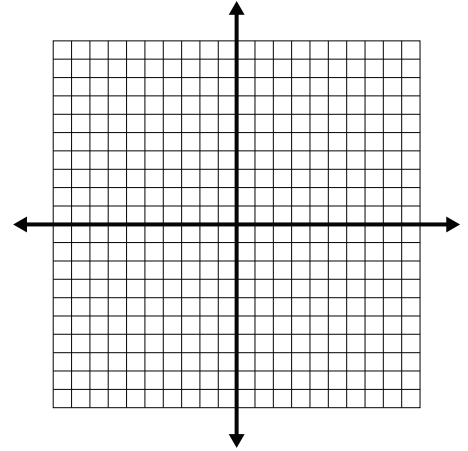
LESSON FIVE - *Parallel and Perpendicular Lines*

Lesson Notes

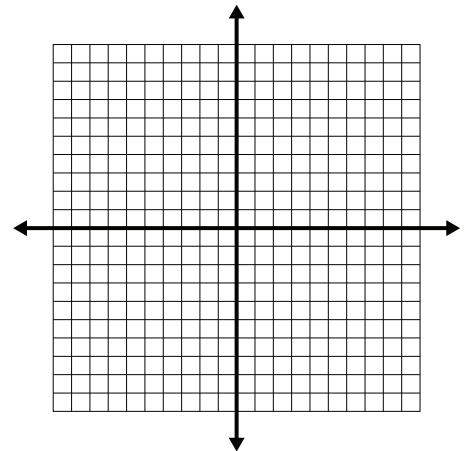
Introduction

Graph each pair of lines and calculate the slope of each line. State if the pair of lines is parallel, perpendicular, or neither.

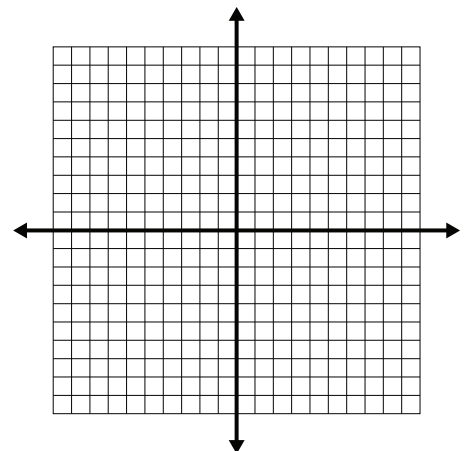
- a)
 Points on Line 1: (-9, -9) & (-4, -1)
 Points on Line 2: (1, 1) & (6, 9)



- b)
 Points on Line 1: (-5, 6) & (1, -1)
 Points on Line 2: (-4, 0) & (3, 6)



- c)
 Points on Line 1: (-5, -5) & (4, 10)
 Points on Line 2: (4, -5) & (8, 0)



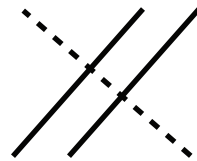
Linear Functions

LESSON FIVE - *Parallel and Perpendicular Lines*

Lesson Notes

$$m_{\parallel} = m_{\text{original}}$$

$$m_{\perp} = -\frac{1}{m_{\text{original}}}$$



Example 1

For each pair of slopes, find the value of a .

- i) if the slopes are parallel to each other
- ii) if the slopes are perpendicular to each other

a) $\frac{5}{4}, \frac{a}{8}$

parallel

perpendicular

b) $-\frac{2}{a}, 3$

parallel

perpendicular

c) undefined, a

parallel

perpendicular

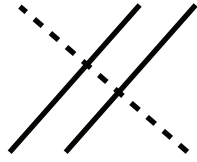
Linear Functions

LESSON FIVE - *Parallel and Perpendicular Lines*

Lesson Notes

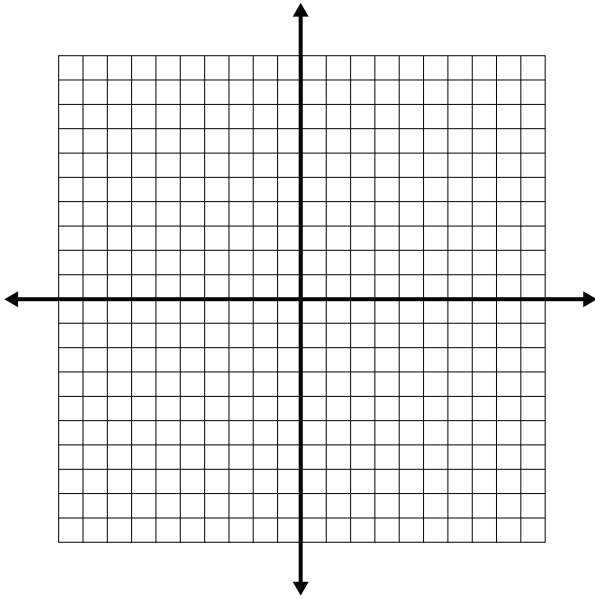
$$m_{\parallel} = m_{\text{original}}$$

$$m_{\perp} = -\frac{1}{m_{\text{original}}}$$

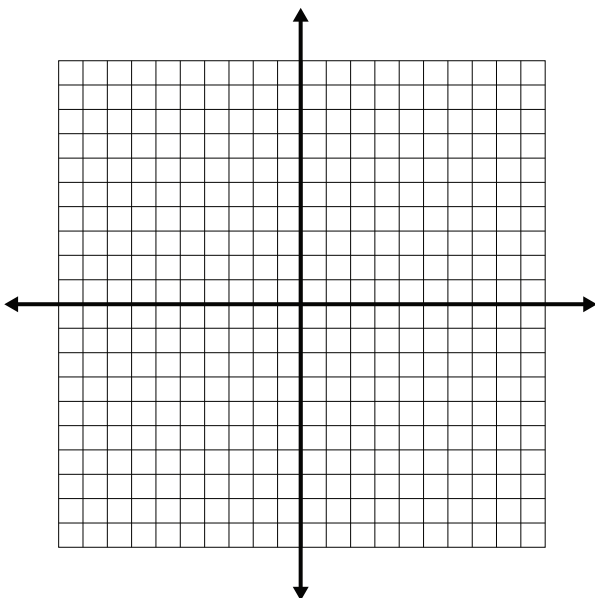


Example 2

a) A line with points at $(-9, 5)$ and $(-4, 8)$ is parallel to a line with points at $(-4, -5)$ and $(a, 1)$. Determine the value of a using a graphical approach first, then use an algebraic approach.



b) A line with points at $(-7, 3)$ and $(1, -3)$ is perpendicular to a line with points at $(-1, -3)$ and $(a, 5)$. Determine the value of a using a graphical approach first, then use an algebraic approach.



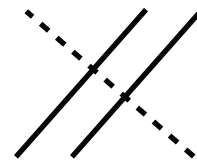
Linear Functions

LESSON FIVE - *Parallel and Perpendicular Lines*

Lesson Notes

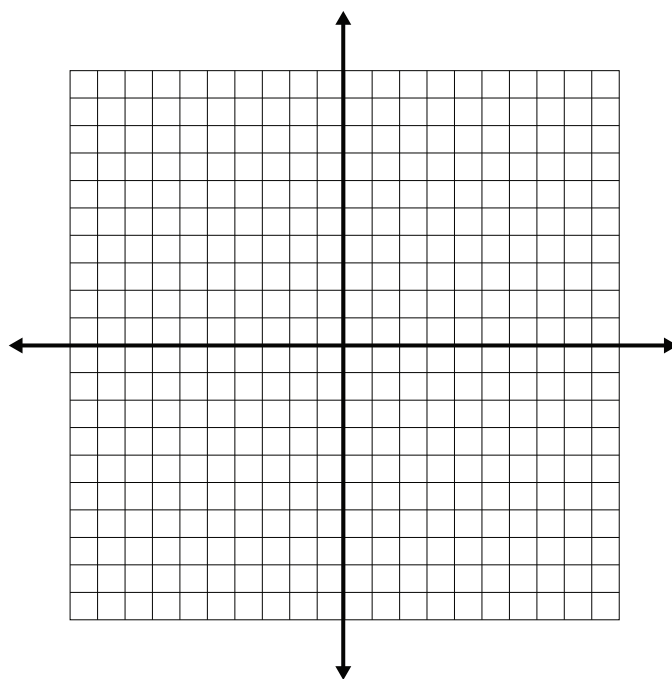
$$m_{\parallel} = m_{\text{original}}$$

$$m_{\perp} = -\frac{1}{m_{\text{original}}}$$

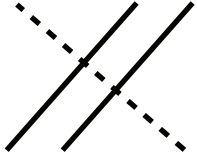


Example 3

a) Given the equation $6x - 2y + 10 = 0$, find the slope-intercept equation of a parallel line passing through $(-2, -7)$. Graph the original line and the parallel line on the same coordinate grid.



$m_{\parallel} = m_{\text{original}}$
 $m_{\perp} = -\frac{1}{m_{\text{original}}}$

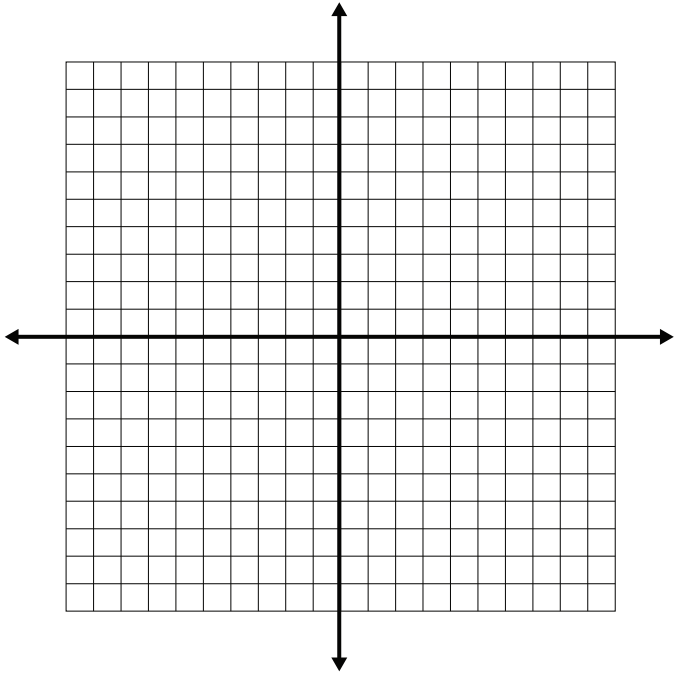


Linear Functions

LESSON FIVE - *Parallel and Perpendicular Lines*

Lesson Notes

b) Given the equation $x + 6y - 18 = 0$, find the slope-intercept equation of a perpendicular line passing through $(4, -1)$. Graph the original line and the perpendicular line on the same coordinate grid.



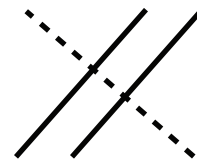
Linear Functions

LESSON FIVE - *Parallel and Perpendicular Lines*

Lesson Notes

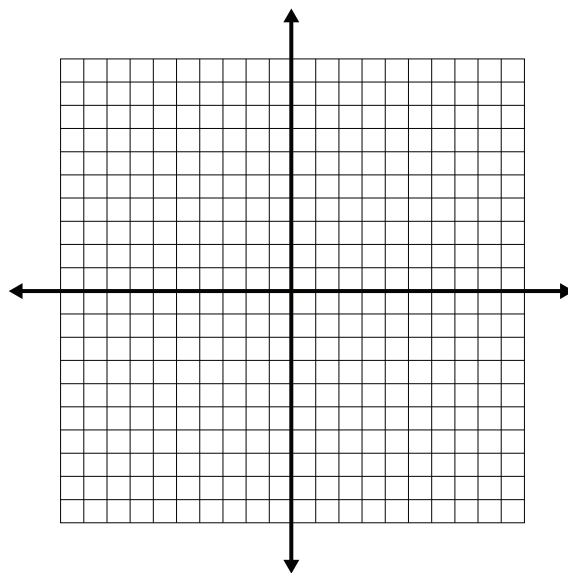
$$m_{\parallel} = m_{\text{original}}$$

$$m_{\perp} = -\frac{1}{m_{\text{original}}}$$

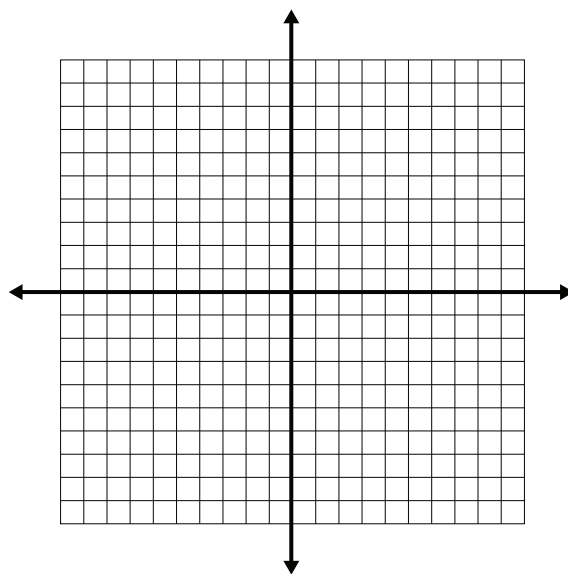


Example 4

a) Given the equation $x - 2 = 0$, find the equation of a parallel line passing through the point $(-8, -5)$. Graph the original line and the parallel line on the same coordinate grid.



b) Given the equation $y + 4 = 0$, find the equation of a perpendicular line passing through the point $(-8, 9)$. Graph the original line and the perpendicular line on the same coordinate grid.



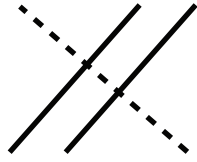
Linear Functions

LESSON FIVE - *Parallel and Perpendicular Lines*

Lesson Notes

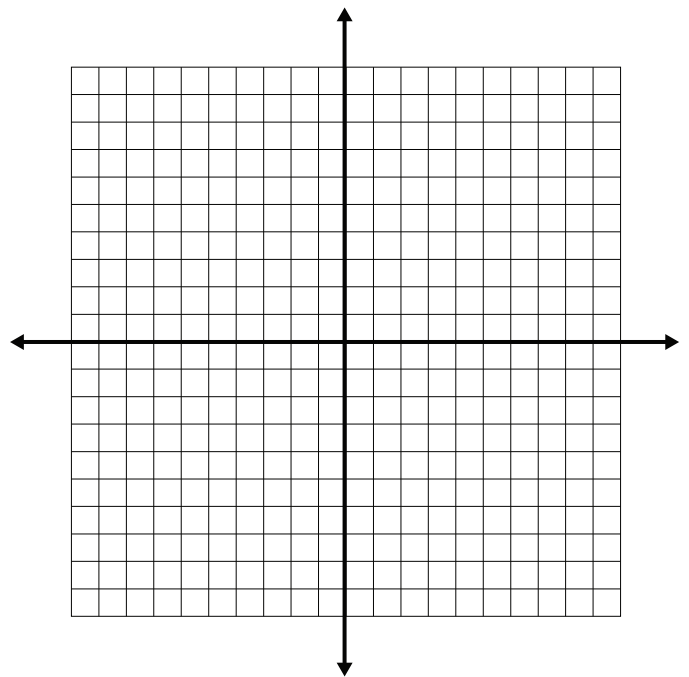
$$m_{\parallel} = m_{\text{original}}$$

$$m_{\perp} = -\frac{1}{m_{\text{original}}}$$



Example 5

Two perpendicular lines intersect on the x-axis. The equation of one of the lines is $x - 2y - 2 = 0$. Find the equation of the other line. Graph the original line and the perpendicular line on the same coordinate grid.



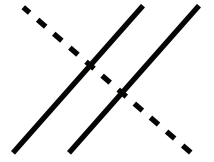
Linear Functions

LESSON FIVE - *Parallel and Perpendicular Lines*

Lesson Notes

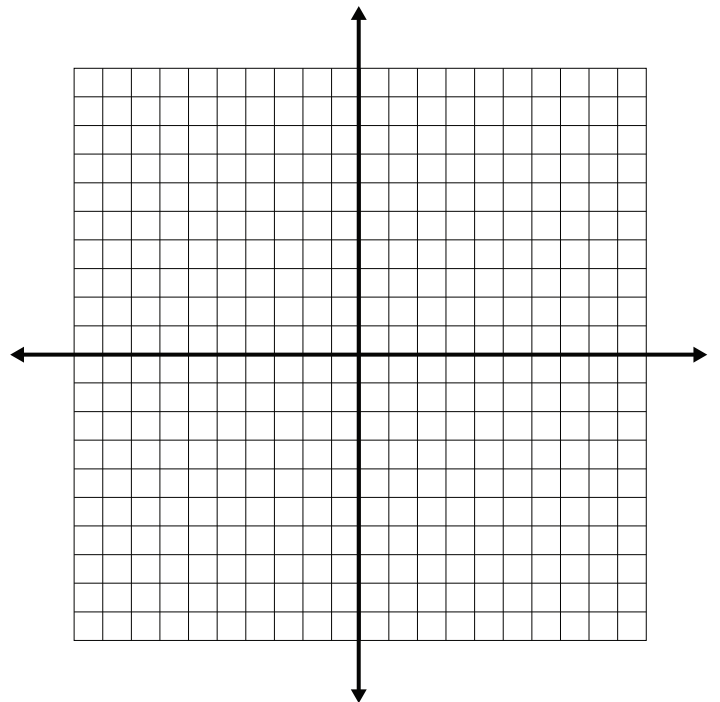
$$m_{\parallel} = m_{\text{original}}$$

$$m_{\perp} = -\frac{1}{m_{\text{original}}}$$



Example 6

Given the equation $2x - y + 5 = 0$, find the slope-intercept equation of a perpendicular line with the same x-intercept as $3x - 4y - 24 = 0$. Graph the original line and the perpendicular line on the same coordinate grid.



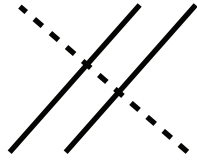
Linear Functions

LESSON FIVE - *Parallel and Perpendicular Lines*

Lesson Notes

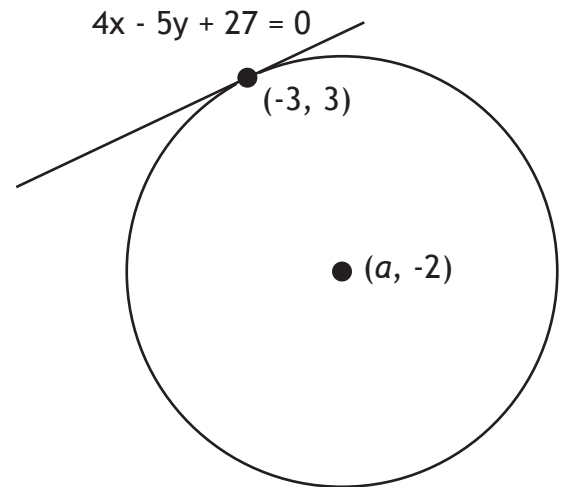
$$m_{\parallel} = m_{\text{original}}$$

$$m_{\perp} = -\frac{1}{m_{\text{original}}}$$



Example 7

The line $4x - 5y + 27 = 0$ comes into contact with a circle at the point $(-3, 3)$. The centre of the circle is at the point $(a, -2)$. Find the value of a .



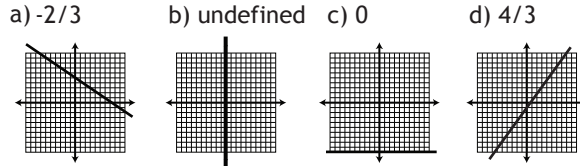
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Linear Functions Lesson One: Slope of a Line

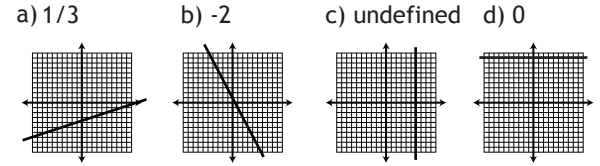
Introduction:

- a) $2/3$
- b) -3
- c) 0
- d) undefined

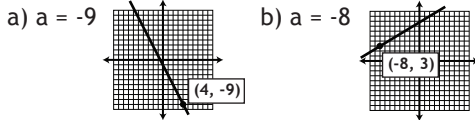
Example 1:



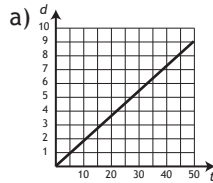
Example 2:



Example 3:



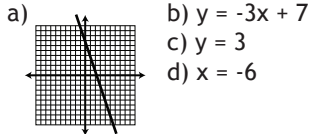
Example 4:



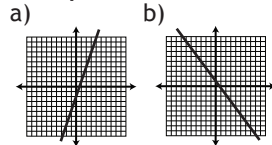
- b) speed = 0.18 m/s
- c) distance is the dependent variable, and time is the independent variable. Equation: $d = 0.18t$
- d) 86.4 m
- e) 1.5 hours

Linear Functions Lesson Two: Slope-Intercept Form

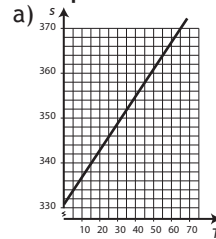
Introduction:



Example 1:

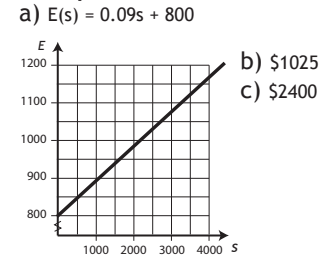


Example 3:



- b) $s(T) = 0.6t + 331$
- c) 352 m/s
- d) 55°C

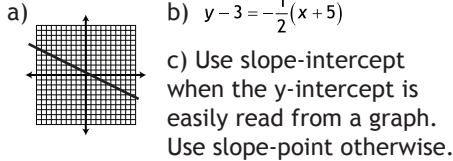
Example 4:



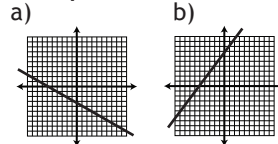
Example 2: a) $y = -1/2x - 4$ b) $y = 8$ c) $x = -5$

Linear Functions Lesson Three: Slope-Point Form

Introduction:

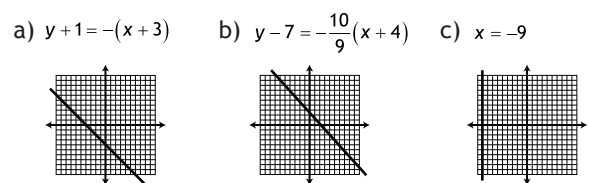


Example 1:

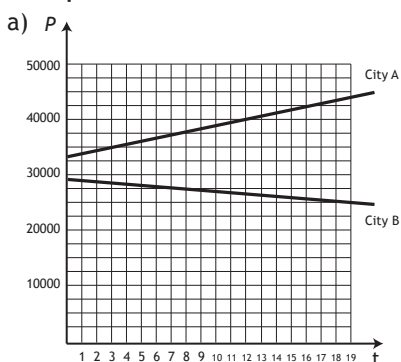


Example 2: a) $y - 4 = -\frac{1}{3}(x + 2)$ b) $y - 2 = \frac{3}{2}(x + 3)$

Example 3:

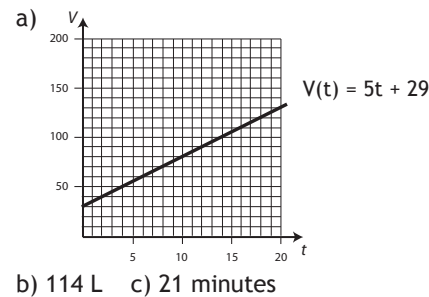


Example 4:



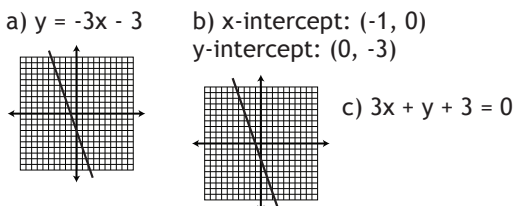
- b) City A: 620 people/year
City B: -220 people/year
- c) City A: $P_A(t) = 620t + 32760$
City B: $P_B(t) = -220t + 29610$
- d) City A: 44540 people
City B: 25430 people

Example 5:

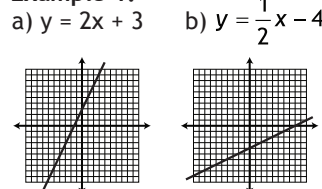


Linear Functions Lesson Four: General Form

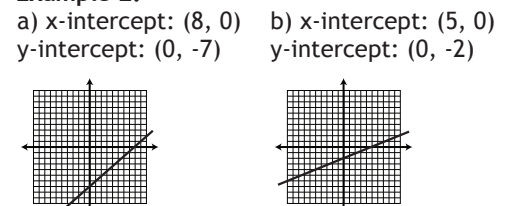
Introduction:



Example 1:



Example 2:



Example 3:

- a) $x - 2y - 11 = 0$
- b) $8x + 3y + 24 = 0$

General Form Continues...

Answer Key

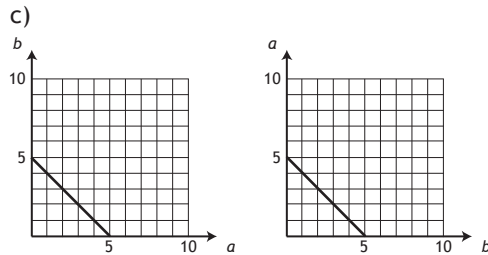
... Continuing General Form.

Example 4:

a)

a	b	sum
0	5	5
1	4	5
2	3	5
3	2	5
4	1	5
5	0	5

b) $b = -a + 5$ OR $a = -b + 5$
There is no independent or dependent variable.

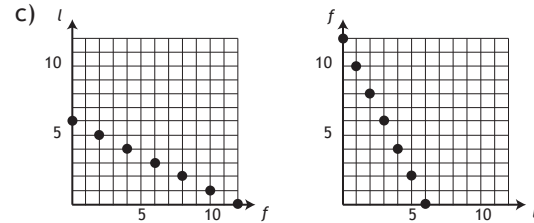


Example 5:

a)

fans (\$10)	lamps (\$20)	revenue
0	6	120
12	0	120

b) $l = -\frac{1}{2}f + 6$ OR $f = -2l + 12$
There is no independent or dependent variable.

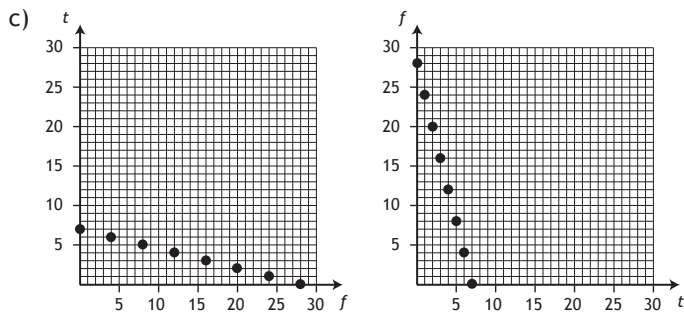


Example 6:

a)

fives (\$5)	twenties (\$20)	total amount
0	7	\$140
28	0	\$140

b) $t = -\frac{1}{4}f + 7$ OR $f = -4t + 28$
There is no independent or dependent variable.



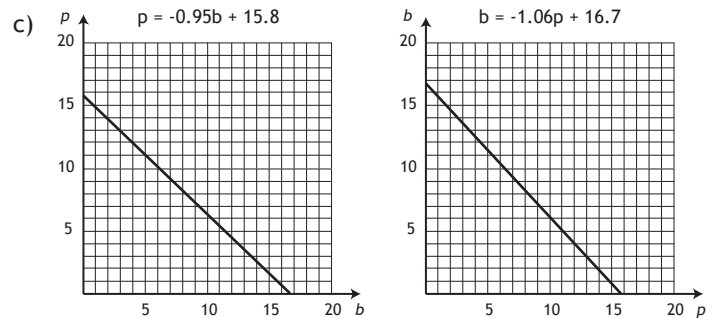
d) yes e) no f) 8 fives

Example 7:

a) $720b + 760p = 12000$

b)

volume of beets	volume of potatoes
0	15.8
16.7	0



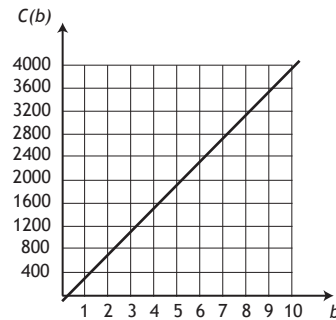
d) 8.96 m^3

Example 8:

a) $C = 400b$. The dependent variable is Calories, and the independent variable is the number of bowls.

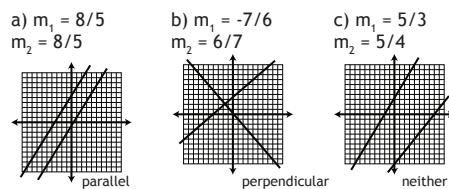
b) $C(b) = 400b$. This relation is a function because we have a dependent and independent variable, and the graph passes the vertical line test.

c) The relation must be graphed as C vs b since Calories is the dependent variable (*must go on y-axis*), and the number of bowls is the independent variable (*must go on x-axis*).



Linear Functions Lesson Five: Parallel and Perpendicular Lines

Introduction:



Example 1:

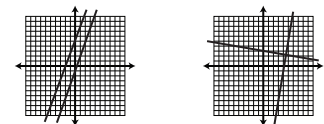
- a) i) $a = 10$, ii) $a = -32/5$
b) i) $a = -2/3$, ii) $a = 6$
c) i) undefined, ii) 0

Example 2:

- a) $a = 6$
b) $a = 5$

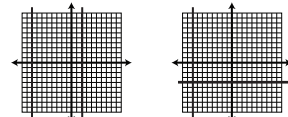
Example 3:

- a) original line: $y = 3x + 5$
parallel line: $y = 3x - 1$
- b) original line: $y = -1/6x + 3$
parallel line: $y = 6x - 25$



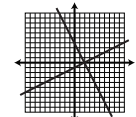
Example 4:

- a) original line: $x = 2$
parallel line: $x = -8$
- b) original line: $y = -4$
perpendicular line: $x = -8$



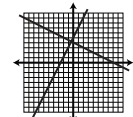
Example 5:

- original line: $y = 1/2x - 1$
perpendicular line: $x = -2x + 4$



Example 6:

- original line: $y = 2x + 5$
perpendicular line: $x = -1/2x + 4$



Example 7:

$a = 1$