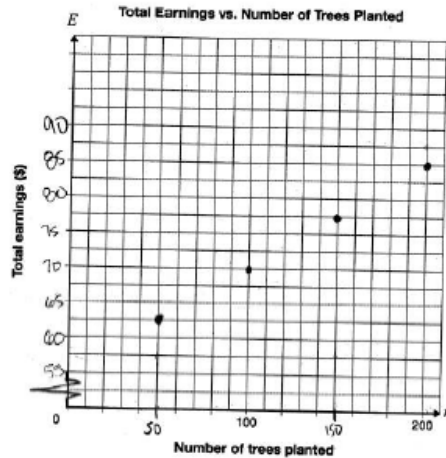


Planting More Trees

Rachel plants trees in Northern Ontario. She is paid \$55 a day plus 15¢ for each tree she plants.

On the grid provided, draw the graph of the relationship between Rachel's total earnings for a single day, E , in dollars, and the number of trees she plants that day, n .

Include a scale on the vertical axis.



$$E = 0.15(50) + \$55$$

$$E = \$7.50 + \$55$$

$$E = 62.50$$

Write an equation to represent the relationship between Rachel's earnings for a single day, E , and the number of trees she plants, n .

$$E = \$0.15n + \$55$$

$$E = 0.15(150) + \$55$$

$$E = \$22.50 + \$55$$

$$E = 77.50$$

$$E = 0.15(200) + \$55$$

$$E = 30 + 55$$

$$E = 85$$

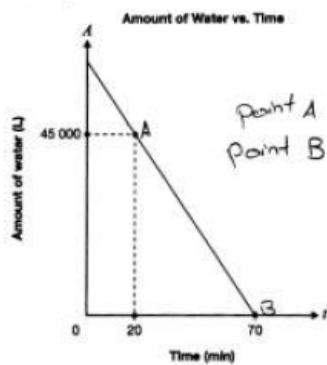
$$E = 0.15(100) + \$55$$

$$E = \$15 + \$55$$

$$E = 70$$

Water in a Pool

The graph below represents the relationship between the amount of water, A , in a pool as it drains and time, t .



Point A (20, 45000)
Point B (70, 0)

Determine the initial amount of water in the pool and the rate of change of this relation.

Show your work.

$$m = \frac{\Delta y}{\Delta x}$$

$$= \frac{45000 - 0}{20 - 70}$$

$$= \frac{45000}{-50}$$

$$= -900$$

Sub in point B

$$y = mx + b$$

$$0 = -900(70) + b$$

$$0 = -63000 + b$$

$$63000 = b$$

∴ The initial amount of water in the pool is 63000L.

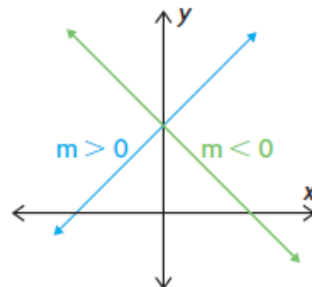
Chapter 5 and 6 Exam Review

Section 5.1

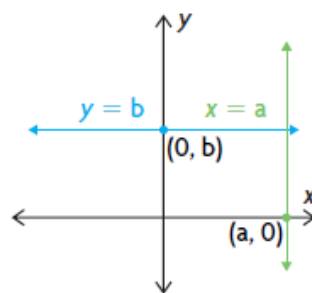
The value of the slope determines the steepness and direction of the line. The greater the **magnitude** of the m-value, the steeper the line. The value of the y-intercept is a distance from the origin, where the graph crosses the y-axis.

A line rising to the right has a positive slope.

A line falling to the right has a negative slope.

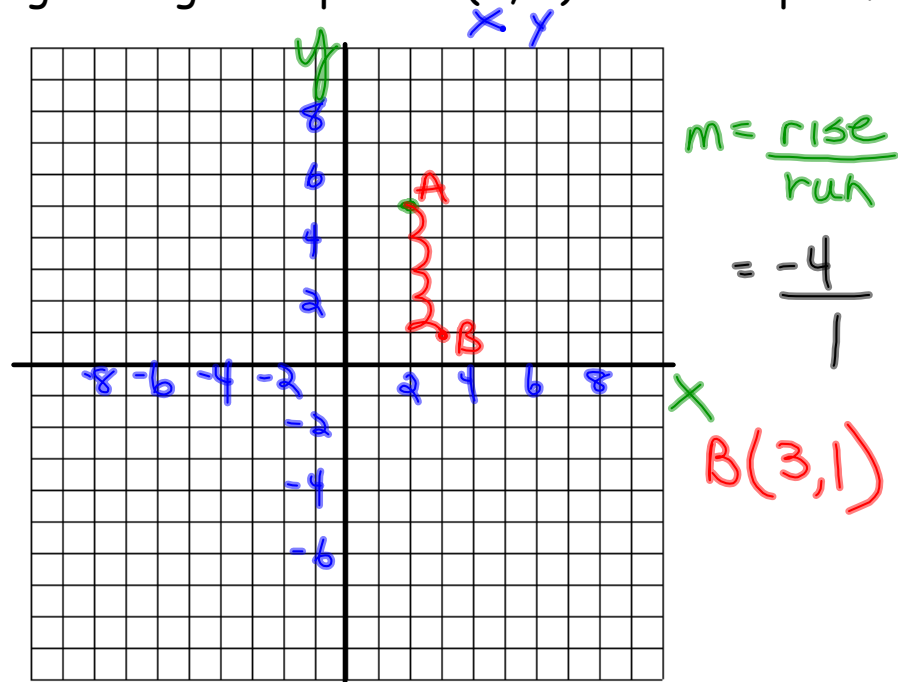


A horizontal line has a slope of 0 and its equation has the form $y = b$, where b is the value of the y-intercept. A vertical line has an undefined slope and its equation has the form $x = a$, where a is the value of the x-intercept.



Example One

Write the coordinates of one other point that would be on the line passing through the point A(2, 5) with a slope of -4.



Example Two

If the equation $y = m x + 3$ represents a line that passes through the point $(-3, 7)$, determine the slope value, m .

1. Plug coordinate in for $x \rightarrow y$ and isolate for "m".

$$7 = m(-3) + 3$$


$$7 = -3m + 3$$


$$7 - 3 = -3m$$

$$\frac{4}{-3} = \frac{-3m}{-3}$$

$$\frac{4}{-3} = \frac{4}{3} = \frac{-4}{3}$$

$$m = \frac{-4}{3}$$

The slopes of parallel lines are equal. 

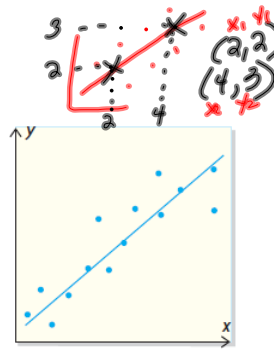
The slopes of perpendicular lines are negative reciprocals. 

Two numbers are negative reciprocals if they have opposite signs and their denominators and numerators are exchanged.

For example, $\frac{-2}{3}$ and $\frac{3}{2}$ are negative reciprocals.

So are 3 and $\frac{-1}{3}$.

If the pattern of points on a scatter plot looks like it follows a straight line, a line of best fit can be used to represent the relationship between the variables. When you draw a line of best fit, the points on the scatter plot should be "balanced" on each side of the line. You can use the coordinates of two points on the line of best fit to determine its slope and its equation.



$$y = mx + b$$

Solve for Slope

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

$$= \frac{3 - 2}{4 - 2}$$

$$= \frac{1}{2}$$

Solve for "b"

$$y = mx + b$$

$$y = \frac{1}{2}x + b$$

$$2 = \frac{1}{2}(2) + b$$

$$2 = 1 + b$$

$$b = 1$$

$$y = \frac{1}{2}x + 1$$

Review Section 6.5 note.

Key Points

1. Straight, horizontal lines mean no movement.
2. Steep lines mean fast speeds.
3. Flat lines mean slow speeds.
4. A positive slope means movement away from the CBR.
5. A negative slope means movement towards the CBR.



Example Three

The graph shows Jorge's distance from home as he walks to school. Describe his walk.

A-B

Jorge walks away from home quickly.

B-C

Jorge walks away from home slower.

C-D

Jorge stops for 2 minutes.

D-E

Jorge walks away from home as fast as section B-C.

