Algebra 1

5. Writing Linear Equations

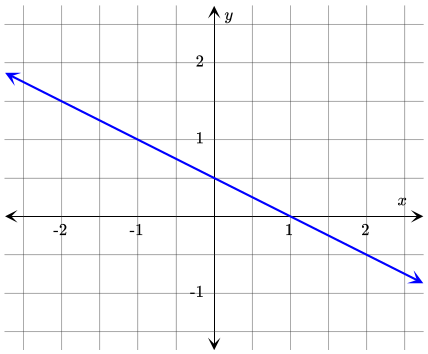
5.1 Writing Linear Equations in Slope-Intercept Form

Exercises

Find all solutions to exercises via https://mathleaks.com/study/writing_linear_equations_in_slope-intercept_form or scan the QR code

1.1 A line passes through the points $(2, -3)$ and $(4, 7)$. Determine the line's equation in slope-intercept form.

1.2 Find the equation of the line in slope-intercept form.

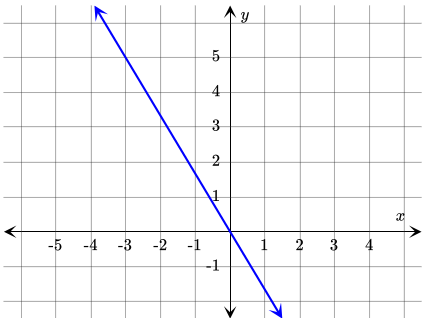


1.3 Write the equation of the line passing through the given points.

A $(0, 2)$ and $(2, -3)$

B $(-4, -3)$ and $(1, -2)$

1.4 Our friend Ron-Jon claims that the line shown in the graph has the slope $m = \frac{3}{5}$.



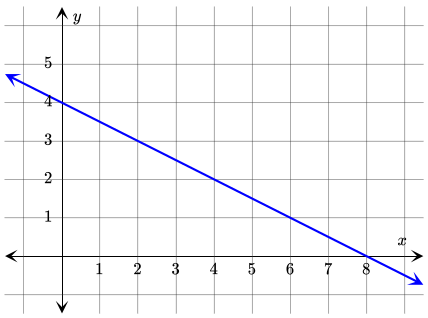
Is Ron-Jon correct? If not, explain why and determine the correct slope of the line.

1.5 Write the equation the line in slope-intercept form that has the slope 3 and passes through the point

A $(1, -1)$.

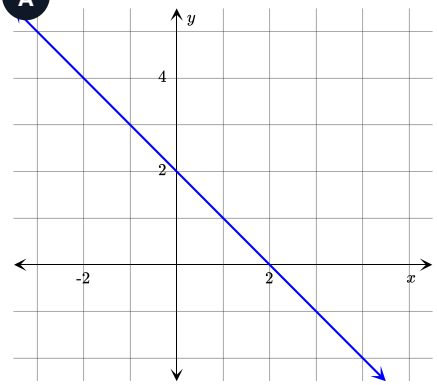
B $(3, 4)$

1.6 Write the equation of the line in slope-intercept form.

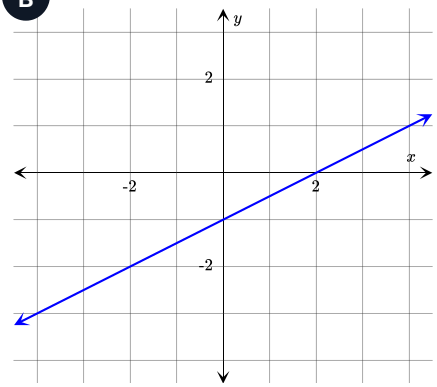


1.7 Find the equation of the line in the graph.

A



B



1.8 Hailey wants to take dance classes at Dance For Fun Academy. They take an administrative fee for $\$25$ and then $\$15$ for each class.

A Write a rule that describes the cost y for x dance classes.

B Would Hailey afford 5 classes if her budget is $\$100$?

1.9 Lena-Jon is counting the days left until Christmas. She starts when it's 30 days left. Her brother Ron-Jon tells her that she can use the equation

$$y = x - 30$$

to calculate the days left until Christmas. Lena-Jon does not really trust her brother. What is wrong in Ron-Jon's equation and how can you correct it?

1.10 It is summer and Chinquita is saving money to buy a new fan. The fan costs $\$80$ and Chinquita has $\$40$ in savings.

A Write an equation for Chinquita's savings if she saves $\$4$ each week.

B Graph the equation.

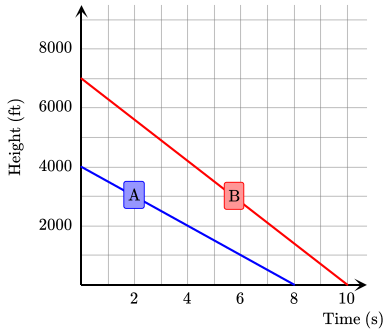
C After 6 weeks, will Chinquita afford the fan?

1.11 Ron-Jon and Lena-Jon are trying to write the equation of the line that passes through $(2, 1)$ and $(5, \text{-}5)$. When they are both done they realize they reached different answers.

Ron-Jon: $y = 2x - 3$
Lena-Jon: $y = \text{-}2x + 5$

Who is correct?

2.1 In the graph, the height of two airplanes are represented.



A Write the equation of each line in slope-intercept form.

B Interpret what the slope and intercepts of the lines mean.

C Determine the domain and range of the two equations.

2.2 A linear function can be written in the form $y = mx + b$. Determine the m and b-value of the following functions.

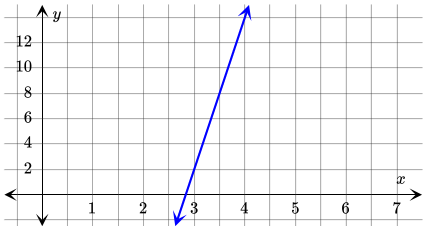
A $y = \text{-}x$

B $y = \frac{2x}{3} + 9$

C $y = 4x^2 + 7$

D $y = 3 - \frac{1}{7}x$

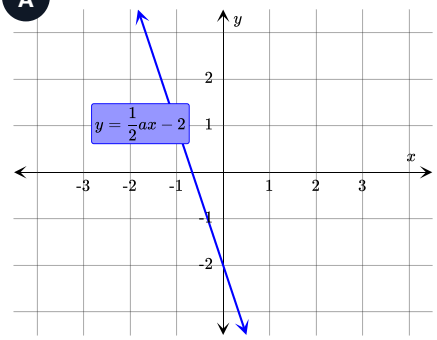
2.3 Find the equation of the line in the coordinate plane.



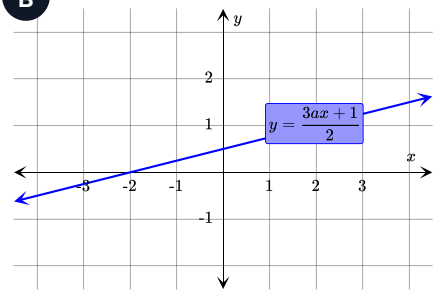
2.4 The line $y = 3x + b$ passes through the points $(\text{-}3, 6)$ and $(2a, a)$. Find the coordinates of the point $(2a, a)$.

2.5 Find the value of a to complete the equation of the line.

A



B



Answers

5.1 Writing Linear Equations in Slope-Intercept Form

1.1 $y = 5x - 13$

1.2 $y = \text{-}0.5x + 0.5$

1.3 A $y = \text{-}2.5x + 2$

B $y = \text{-}\frac{1}{5}x - \frac{11}{5}$

1.4 Slope formula used incorrectly. Correct slope: $m = \text{-}\frac{5}{3}$

1.5 A $y = 3x - 4$

B $y = 3x - 5$

1.6 $y = \text{-}\frac{1}{2}x + 4$

1.7 A $y = \text{-}x + 2$

B $y = \frac{1}{2}x - 1$

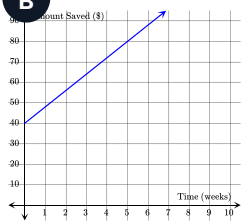
1.8 A $y = 15x + 25$

B Yes

1.9 Ron Jon mixed up the slope and the y-intercept. Correct equation: $y = \text{-}x + 30$

1.10 A $y = 8x + 40$

B



C Yes

1.11 Lena-Jon is correct.

2.1 A Airplane A: $y = \text{-}500x + 4000$ Airplane B: $y = \text{-}700x + 7000$

B The slope represents the decreasing height and the y-intercept is the airplanes height at start.

C Airplane A: D: $x \geq 0$ and R: $0 \leq y \leq 4000$. Airplane B: D: $x \geq 0$ and R: $0 \leq y \leq 7000$.

2.2

A $m = \text{-}1, b = 0$

B $m = \frac{2}{3}, b = 9$

C This is a quadratic function and can not be written in slope-intercept form.

D $m = \text{-}\frac{1}{7}, b = 3$

2.3 $y = 12x - 34$

2.4 $(\text{-}6, \text{-}3)$

2.5

A $a = \text{-}6$

B $a = \frac{1}{6}$