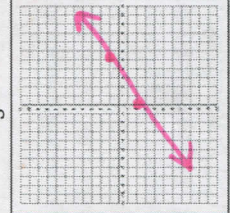


OBJECTIVE 1: Slope-Intercept Form

- $y = mx + b$
- m is slope and how you move
- b is the y -intercept $(0, b)$ and where you begin on the y -axis when graphing

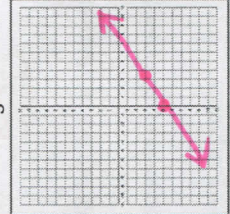
TASK 1: Use slope-intercept form to graph the equation provided.

a) $y = \frac{3}{5}x - 2$



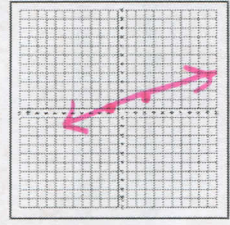
$m = \frac{3}{5}$
 $b = -2$

b) $y = \frac{2}{3}x - 5$



$m = \frac{2}{3}$
 $b = -5$

c) $4x + y = 1$



$m = -4$
 $b = 1$
 $y = -4x + 1$

OBJECTIVE 2: Using the Slope-Intercept Form to Write an Equation

Task 2: Find an equation of the line with whatever information is provided.

a) y -intercept $(0, -3)$ & slope $= \frac{1}{4}$

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

b) y -intercept $(0, 7)$ & slope $= \frac{1}{2}$

$y = \frac{1}{2}x + 7$

c) y -intercept $(0, 0)$ & slope $= -\frac{2}{3}$

$y = -\frac{2}{3}x$

OBJECTIVE 3: Writing an Equation Given Slope & a Point

Point-Slope Form

- $y - y_1 = m(x - x_1)$
- m is still your slope
- the point you were given is labeled and plugged into (x_1, y_1)

Task 3: Find an equation of the line with the provided information. Then write it in all three forms: point-slope $(y - y_1 = m(x - x_1))$, slope-intercept $(y = mx + b)$, and standard $(Ax + By = C)$.

a) slope of -2 , point $(-1, 5)$

PS $y - 5 = -2(x + 1)$
 $y = -2x - 2 + 5$
SI $y = -2x + 3$

b) slope of 4 , point $(2, 3)$

$y - 3 = 4(x - 2)$
 $y = 4x - 8 + 3$
 $y = 4x - 5$

c) slope of 0 , point $(-2, 4)$

$y = c$
 $y = 4$

OBJECTIVE 4: Writing an Equation Given Two Points

- First, find slope with the slope formula, change in y divided by change in x
- Second, use the slope and one of your points and plug into point-slope form.
- Finally, convert point-slope to slope-intercept and standard, if necessary.

Task 4: Find an equation of the line through the given points. Write the equation in standard form and point-slope form.

a) (2, 5) & (-3, 4)

$$m = \frac{5-4}{2+3} = \frac{1}{5} \quad y-5 = \frac{1}{5}(x-2)$$
$$y = \frac{1}{5}x - \frac{2}{5} + \frac{25}{5} \Rightarrow \frac{1}{5}x - \frac{2}{5} + \frac{25}{5} = -23$$
$$y = \frac{1}{5}x - \frac{2}{5} + \frac{25}{5}$$

b) (0, -1) & (-4, -1)

$$m = \frac{-1+1}{-4-0} = \frac{0}{-4} = 0 \quad y=c$$
$$y = -1$$

c) (-1, 6) & (3, 1)

$$m = \frac{6-1}{-1-3} = \frac{5}{-4}$$
$$y-1 = -\frac{5}{4}(x-3)$$
$$4y-4 = -5(x-3)$$
$$4y = -5x+15+4$$

$$5x+4y=19$$

OBJECTIVE 5: Finding equations of parallel & perpendicular lines

- Parallel has the same slope
- Perpendicular has negative reciprocal slopes (flip and change the sign)

Task 5: Find the parallel & perpendicular slopes to the line provided.

a) Parallel to $y = 5$ through (-2, -3)

$$y = -3$$

c) Parallel to $y = -2$ through (4, 3)

$$y = 3$$

b) Perpendicular to $y = 5$ through (-2, -3)

$$x = -2$$

d) Perpendicular to $y = -2$ through (4, 3)

$$x = 4$$

OBJECTIVE 6: Using Point-Slope Form to Solve Problems

Task 6: Predicting the Sales of t-shirts

A web-based t-shirt company has learned that by pricing a clearance-sale t-shirt at \$6, sales will reach 2000 t-shirts per day. Raising the price to \$8 will cause the sales to fall to 1500 t-shirts per day.

a) Assume that the relationship between sales price and number of t-shirts sold is linear and write an equation describing this relationship. Write the equation in slope-intercept form.

$$m = \frac{2000-1500}{6-8} = \frac{500}{-2} = -250$$

$$y-2000 = -250(x-6)$$

$$y-2000 = -250x + 1500$$

$$y = -250x + 3500$$

b) Predict, using your equation from (a), the daily sales of t-shirts, if the price is \$7.50.

$$y = -250(7.50) + 3500$$
$$y = 1625$$

At \$7.50, we sell 1625 shirts

\$ → # of t-shirts y = # of shirts sold

Still need help with: