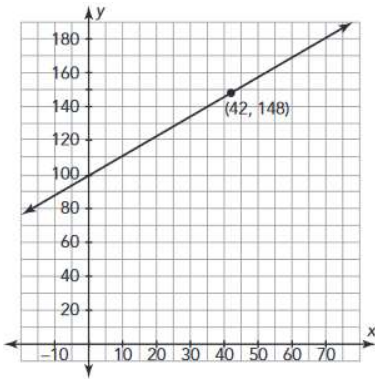


PRACTICE

1) Examine the linear graph. Find the y-intercept, slope, and write the equation in slope-intercept form ( $y=mx+b$ ).

y-intercept - (0, 100)



Slope -  $\frac{8}{7}$

$x_1, y_1$  (0, 100)     $x_2, y_2$  (42, 148)

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{148 - 100}{42 - 0}$$

$$= \frac{48}{42} = \frac{8}{7}$$

Equation ( $y=mx+b$ )

$y = \frac{8}{7}x + 100$

2) The table below represents a linear relation. Find the y-intercept, slope, and write the equation in slope-intercept form ( $y=mx+b$ ).

y-intercept - 4

Slope - 7

x	y
$x_1$ 20	$y_1$ 144
$x_2$ 24	$y_2$ 172
28	200
32	228
36	256

$$m = \frac{172 - 144}{24 - 20} = \frac{28}{4} = 7$$

$$y = 7x + b$$

$$172 = 7(24) + b$$

$$172 = 168 + b$$

$$4 = b$$

Equation ( $y=mx+b$ ):  $y = 7x + 4$

Write the slope-intercept form of the equation of the line through the given point with the given slope.

3) through (1, 2), slope = 7

$$y = 7x + b$$

$$2 = 7(1) + b$$

$$2 = 7 + b$$

$$-5 = b$$

Ans:  $y = 7x - 5$

4) through (3, -1), slope = -1

$$y = -1x + b$$

$$-1 = -1(3) + b$$

$$-1 = -3 + b$$

$$2 = b$$

Ans:  $y = -x + 2$

5) through (-2, 5), slope = -4

$$y = -4x + b$$

$$5 = -4(-2) + b$$

$$5 = 8 + b$$

$$-3 = b$$

Ans:  $y = -4x - 3$

6) through (3, 5), slope =  $\frac{5}{3}$

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

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

$$5 = \frac{15}{3} + b$$

$$5 = 5 + b$$

$$0 = b$$

Ans:  $y = \frac{5}{3}x$

Write the slope-intercept form of the equation of the line through the given two points. (hint: find the slope first)

7) through  $(0, 3)$  and  $(-4, -1)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-1 - 3}{-4 - 0} = \frac{-4}{-4} = 1$$

$$y = 1x + b$$

$$3 = 1(0) + b$$

$$3 = b$$

Ans:  $y = x + 3$

8) through  $(0, 2)$  and  $(1, -3)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-3 - 2}{1 - 0} = \frac{-5}{1} = -5$$

$$y = -5x + b$$

$$2 = -5(0) + b$$

$$2 = b$$

Ans:  $y = -5x + 2$

9) through  $(-4, 0)$  and  $(1, 5)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - 0}{1 - (-4)} = \frac{5}{1+4} = \frac{5}{5} = 1$$

$$y = 1x + b$$

$$0 = 1(-4) + b$$

$$0 = -4 + b$$

$$4 = b$$

Ans:  $y = x + 4$

10) through  $(0, -1)$  and  $(-2, -1)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-1 - (-1)}{-2 - 0} = \frac{-1+1}{-2} = 0$$

$$y = 0x + b$$

$$-1 = 0(0) + b$$

$$-1 = b$$

$$y = 0x - 1$$

Ans:  $y = -1$

11) through  $(5, 3)$  and  $(4, 5)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{5 - 3}{4 - 5} = \frac{2}{-1} = -2$$

$$y = -2x + b$$

$$3 = -2(5) + b$$

$$3 = -10 + b$$

$$13 = b$$

Ans:  $y = -2x + 13$

12) through  $(-3, 5)$  and  $(-3, 4)$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - 5}{-3 - (-3)} = \frac{-1}{-3+3} = \frac{-1}{0}$$

$m = \text{undefined} \rightarrow \text{vertical line}$

$$x = -3$$

Ans:  $x = -3$