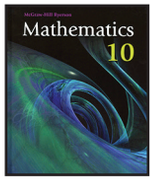
## Enhance Your Understanding

# Lesson 7.1: Slope-Intercept Form of a Linear Equation




Refer to page 349 in *Mathematics 10* for more practice.

Page 349, #1a, 1c, 1e, 2, 3c, 3d, 5a, 5c, 5e, 6b, 6f, 7, 8, 9a, 10d, and 13

Question 1, page 349

a. The slope is –5 and the $y$-intercept is 4.

c. The slope is 1 and the $y$-intercept is –7.

e. This equation can be written as $y = 0x - 3$, so the slope is 0 and the $y$-intercept is –3.

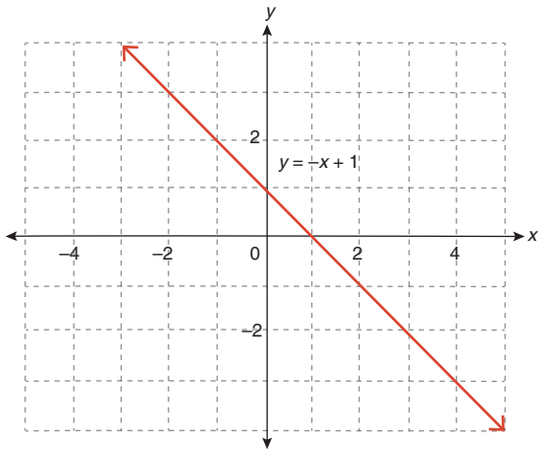
Question 2, page 349

a. The slope is –3 and the $y$-intercept is 2.

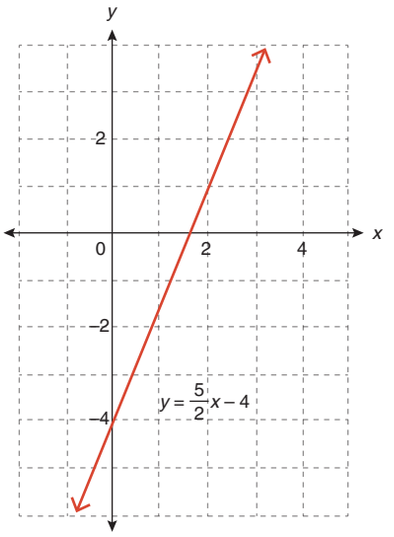
b. To sketch the graph of this line, start by plotting the $y$-intercept, (0, 2), on the graph. From this point, move 3 units down and 1 unit right and mark the point (1, –1). Connect the points using a straight edge.

Question 3, page 349

c.



d.




Question 5, page 350

a. $2x + y = 6$

$2x - 2x + y = 6 - 2x$

$y = -2x + 6$

The slope is –2 and the $y$-intercept is 6.

c. $5x + 6y = 8$

$5x - 5x + 6y = 8 - 5x$

$6y = 8 - 5x$

$\frac{6y}{6} = \frac{8 - 5x}{6}$

$y = \frac{8}{6} - \frac{5x}{6}$

$y = \frac{4}{3} - \frac{5x}{6}$

$y = -\frac{5}{6}x + \frac{4}{3}$

The slope is $-\frac{5}{6}$ and the $y$-intercept is $\frac{4}{3}$.

e. $7x - y + 9 = 0$

$7x - \cancel{y} + \cancel{y} + 9 = 0 + y$

$7x + 9 = y$

The slope is 7 and the $y$-intercept is 9.

Question 6, page 350

b. $m = \frac{5}{6}, b = -4$

$y = mx + b$

$y = \frac{5}{6}x - 4$

f. $m = 0, b = \frac{1}{3}$

$y = mx + b$

$y = 0x + \frac{1}{3}$

$y = \frac{1}{3}$

Question 7, page 350

a. Since the slopes of equations A and C are positive, these lines slope up from left to right.

b. Since the slopes of equations B and D are negative, these lines slope down from left to right.

c. Equation C has the greatest $y$-intercept, followed by B, then D, then A.

d. Since the $y$-intercept for equation D is (0, 0), Line D is the only one that passes through the origin.

Question 8, page 351

a. $m = 4, b = 4$

$y = mx + b$

$y = 4x + 4$

b. $m = -\frac{1}{2}, b = -1$

$y = mx + b$

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

c. $m = -2, b = 6$

$y = mx + b$

$y = -2x + 6$

d. $m = \frac{2}{3}, b = 4$

$y = mx + b$

$y = \frac{2}{3}x + 4$

e. $m = 0, b = -2.5$

$y = mx + b$

$y = 0x - 2.5$

$y = -2.5$

f. $m = \frac{2}{5}, b = 4$

$y = mx + b$

$y = \frac{2}{5}x + 4$

Question 9, page 351

a. To find the value of $b$, substitute the coordinates of the point (4, 9) into the equation $y = 3x + b$.

$9 = 3(4) + b$

$9 = 12 + b$

$9 - 12 = \cancel{12} - \cancel{12} + b$

$-3 = b$

Question 10, page 351

d. To find the value of $m$, substitute the coordinates of the point (–6, –1) into the equation $y = mx - 2$.

$$\begin{aligned} -1 &= m(-6) - 2 \\ -1 &= -6m - 2 \\ -1 + 2 &= -6m - \cancel{2} + \cancel{2} \\ 1 &= -6m \\ \frac{1}{-6} &= \frac{\cancel{-6}m}{\cancel{-6}} \\ -\frac{1}{6} &= m \end{aligned}$$

Question 13, page 353

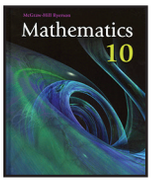
a. $C = 300 + 6.25n$

b. $T = 3.60 + 1.48x$

c. $D = 1\,024 + 54t$

d. $L = 2\,500 - 120t$

## Lesson 7.2: General Form of a Linear Equation




Refer to page 365 in *Mathematics 10* for more practice.

Page 365, #1, 2a, 2d, 3c, 3g, 4, 5, 6, 8, 11, and 14

Question 1, page 365

When Jasmine multiplied both sides of the equation by 2, she missed multiplying the constant 4 by 2.

$$\begin{aligned} y &= -\frac{3}{2}x + 4 \\ (2)y &= \cancel{2}\left(-\frac{3}{\cancel{2}}x\right) + 2(4) \\ 2y &= -3x + 8 \\ 3x + 2y - 8 &= 0 \end{aligned}$$

Question 2, page 365

a.
$$y = 7x - 5$$
$$y - y = 7x - 5 - y$$
$$0 = 7x - y - 5$$

d.
$$y = -\frac{3}{5}x - 2$$
$$y + \frac{3}{5}x + 2 = -\frac{3}{5}x - 2 + \frac{3}{5}x + 2$$
$$\frac{3}{5}x + y + 2 = 0$$
$$5\left(\frac{3}{5}x + y + 2\right) = 5(0)$$
$$3x + 5y + 10 = 0$$

Question 3, page 365

c. The $x$-intercept occurs where $y = 0$, so substitute 0 for $y$ and solve for $x$.

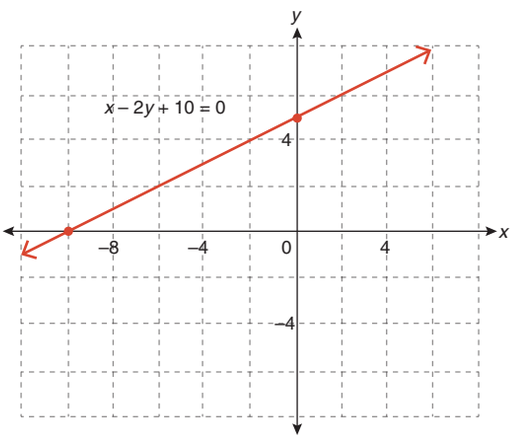
$$x - 2y + 10 = 0$$
$$x - 2(0) + 10 = 0$$
$$x + 10 = 0$$
$$x + 10 - 10 = 0 - 10$$
$$x = -10$$

The $x$-intercept occurs at (–10, 0).

The $y$-intercept occurs where $x = 0$, so substitute 0 for $x$ and solve for $y$.

$$x - 2y + 10 = 0$$
$$0 - 2y + 10 = 0$$
$$-2y + 10 = 0$$
$$-2y + 10 - 10 = 0 - 10$$
$$-2y = -10$$
$$\frac{-2y}{-2} = \frac{-10}{-2}$$
$$y = 5$$

The $y$-intercept occurs at (0, 5).

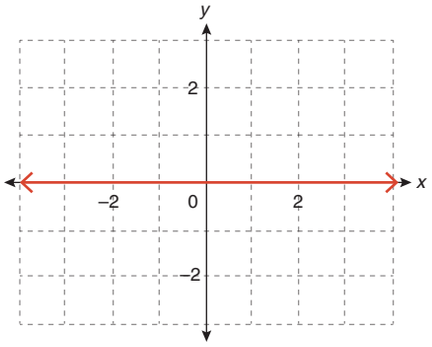


g. The $x$-intercept occurs where $y = 0$, so substitute 0 for $y$.

$0 = 0$

There are an infinite number of $x$-intercepts.

The $y$-intercept occurs where $x = 0$. This occurs at (0,0) since $y$ is always zero.




Question 4, page 365

a. Domain: $\{x \mid x \in \mathrm{R}\}$

Range: $\{y \mid y = 2\}$

There is no $x$-intercept and the $y$-intercept occurs at $(0, 2)$.

The slope is 0.

$y - 2 = 0$

b. Domain: $\{x \mid x = -3\}$

Range: $\{y \mid y \in \mathrm{R}\}$

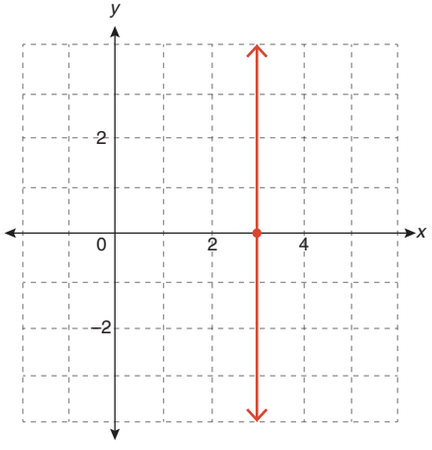
The $x$-intercept occurs at $(-3, 0)$ and there is no $y$-intercept.

The slope is undefined.

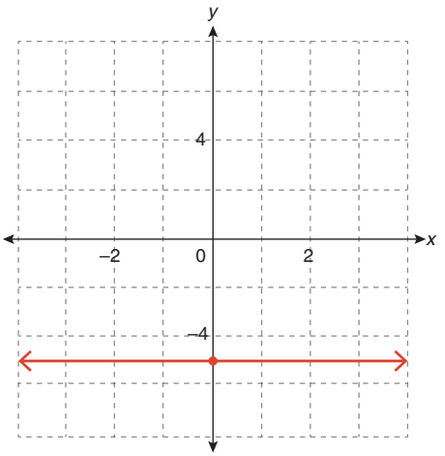
$x + 3 = 0$

Question 5, page 366

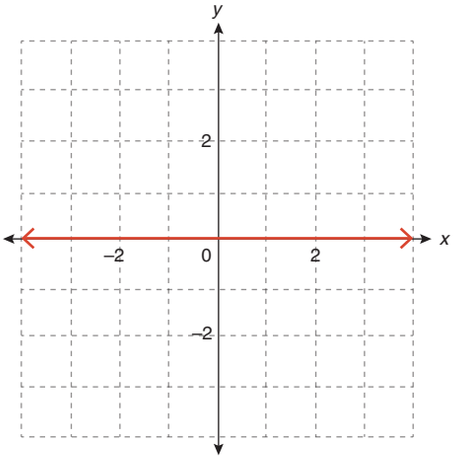
a. $x - 3 = 0$



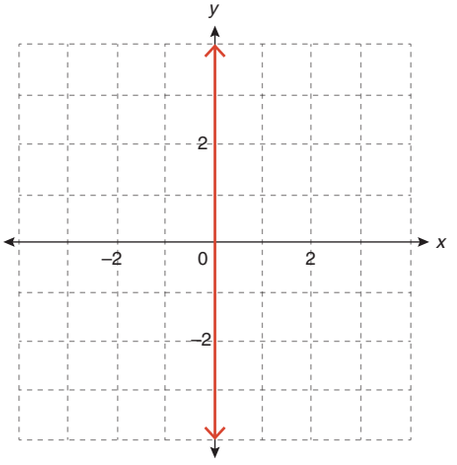
b. $y + 5 = 0$




c. $y = 0$




d. $x = 0$



Question 6, page 366

a. $3x + 4y = 12$

$3x - 3x + 4y = 12 - 3x$

$4y = -3x + 12$

$\frac{4y}{4} = \frac{-3x + 12}{4}$

$y = -\frac{3}{4}x + \frac{12}{4}$

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

Line 2 is the only line with a slope of $-\frac{3}{4}$ and a $y$-intercept of 3.

b. $x = 4$

Line 4 is the only vertical line with an $x$-intercept of 4.

c. $3x - 4y = 12$

$3x - 3x - 4y = 12 - 3x$

$-4y = -3x + 12$

$\frac{-4y}{-4} = \frac{-3x + 12}{-4}$

$y = \frac{3}{4}x + \frac{12}{-4}$

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

Line 8 is the only line with a slope of $\frac{3}{4}$ and a $y$-intercept of –3.

d. $y - 3 = 0$

$y - 3 + 3 = 0 + 3$

$y = 3$

Line 5 is the only horizontal line with a $y$-intercept of 3.

e.
$$3x - 4y + 12 = 0$$
$$3x - 4y + 12 - 3x - 12 = 0 - 3x - 12$$
$$-4y = -3x - 12$$
$$\frac{-4y}{-4} = \frac{-3x - 12}{-4}$$
$$y = \frac{-3x}{-4} - \frac{12}{-4}$$
$$y = \frac{3}{4}x + 3$$

Line 3 is the only line with a slope of $\frac{3}{4}$ and a $y$-intercept of 3.

f. $y = -3$

Line 6 is the only horizontal line with a $y$-intercept of –3.

g.
$$3x + 4y + 12 = 0$$
$$3x + 4y + 12 - 3x - 12 = 0 - 3x - 12$$
$$4y = -3x - 12$$
$$\frac{4y}{4} = \frac{-3x - 12}{4}$$
$$y = \frac{-3x}{4} - \frac{12}{4}$$
$$y = -\frac{3}{4}x - 3$$

Line 7 is the only line with a slope of $-\frac{3}{4}$ and a $y$-intercept of –3.

h. $x + 4 = 0$
$$x = -4$$

Line 1 is the only vertical line with an $x$-intercept of –4.

Question 8, page 366

If a line does not have a $y$-intercept, then it is a vertical line. This vertical line passes through the point (3,6).

$$x = 3$$
$$x - 3 = 3 - 3$$
$$x - 3 = 0$$

Question 11, page 367

a. $8x + 11y = 440$, where $x$ represents the number of minutes Luc swims the backstroke and $y$ represents the number of minutes he swims the butterfly.

b. The $x$-intercept occurs where $y = 0$, so substitute 0 for $y$ and solve for $x$.

$$\begin{aligned} 8x + 11y &= 440 \\ 8x + 11(0) &= 440 \\ 8x &= 440 \\ \frac{8x}{8} &= \frac{440}{8} \\ x &= 55 \end{aligned}$$

The $y$-intercept occurs where $x = 0$, so substitute 0 for $x$ and solve for $y$.

$$\begin{aligned} 8x + 11y &= 440 \\ 8(0) + 11y &= 440 \\ 11y &= 440 \\ \frac{11y}{11} &= \frac{440}{11} \\ y &= 40 \end{aligned}$$

The $x$-intercept of 55 represents the number of minutes Luc must swim the backstroke to burn 440 calories (without swimming the butterfly). The $y$-intercept of 40 represents the number of minutes Luc must swim the butterfly to burn 440 calories (without swimming the backstroke).

c.
$$\begin{aligned} 8x + 11y &= 440 \\ 8x + 11(16) &= 440 \\ 8x + 176 &= 440 \\ 8x + 176 - 176 &= 440 - 176 \\ 8x &= 264 \\ \frac{8x}{8} &= \frac{264}{8} \\ x &= 33 \end{aligned}$$

Luc must swim the backstroke for 33 minutes.

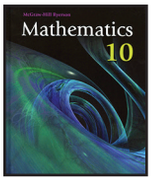
Question 14, page 368

a.
$$Ax + 5y - 6 = 0$$
$$A(-3) + 5(2) - 6 = 0$$
$$-3A + 10 - 6 = 0$$
$$-3A + 4 = 0$$
$$-3A + \cancel{4} - \cancel{4} = 0 - 4$$
$$-3A = -4$$
$$\frac{\cancel{-3}A}{\cancel{-3}} = \frac{-4}{-3}$$
$$A = \frac{4}{3}$$

b.
$$2x + By + 7 = 0$$
$$2(4) + B(5) + 7 = 0$$
$$8 + 5B + 7 = 0$$
$$5B + 15 = 0$$
$$5B + \cancel{15} - \cancel{15} = 0 - 15$$
$$5B = -15$$
$$\frac{\cancel{5}B}{\cancel{5}} = \frac{-15}{5}$$
$$B = -3$$

c.
$$4x - 3y + C = 0$$
$$4(-2) - 3(-6) + C = 0$$
$$-8 + 18 + C = 0$$
$$10 + C = 0$$
$$C + \cancel{10} - \cancel{10} = 0 - 10$$
$$C = -10$$

# Lesson 7.3: Slope Point Form of a Linear Equation




Refer to page 377 in *Mathematics 10* for more practice.

Page 377, #1f, 2a, 2b, 3a, 4, 6a, 7, 10, 13, and 14

Question 1, page 377

f. slope-intercept form

$$y+9=-\frac{2}{3}(x-6)$$
$$y+9=-\frac{2}{3}x+\frac{12}{3}$$
$$y+9=-\frac{2}{3}x+4$$
$$y+\cancel{9}-\cancel{9}=-\frac{2}{3}x+4-9$$
$$y=-\frac{2}{3}x-5$$

general form

$$y=-\frac{2}{3}x-5$$
$$y+\frac{2}{3}x+5=-\cancel{\frac{2}{3}}x-\cancel{5}+\cancel{\frac{2}{3}}x+\cancel{5}$$
$$y+\frac{2}{3}x+5=0$$
$$3\left(\frac{2}{3}x+y+5\right)=3(0)$$
$$2x+3y+15=0$$

Question 2, page 377

a. $y-y_1=m(x-x_1)$
$y-2=2(x-3)$

b. $y-y_1=m(x-x_1)$
$y-(-3)=-\frac{3}{2}(x-1)$
$y+3=-\frac{3}{2}(x-1)$

Question 3, page 377

a. $y-y_1=m(x-x_1)$
$y-(-2)=6(x-5)$
$y+2=6(x-5)$
$y+2=6x-30$
$y+\cancel{2}-\cancel{2}=6x-30-2$
$y=6x-32$
$0=6x-y-32$

Question 4, page 377

a. The slope is $\frac{2}{3}$ and (6, 1) is a point on the line.

b. Plot the point (6,1). From the point (6,1), go up 2 units (rise) and go 3 units to the right (run) to find a second point. Draw the line passing through the two points.

Question 6, page 378

a. $$m = \frac{y_2 - y_1}{x_2 - x_1}$$
$$= \frac{-7 - 1}{3 - 5}$$
$$= \frac{-8}{-2}$$
$$= 4$$

Use the point (5, 1) to write the equation.

$$y - y_1 = m(x - x_1)$$
$$y - 1 = 4(x - 5)$$
$$y - 1 = 4x - 20$$
$$y - 1 + 1 = 4x - 20 + 1$$
$$y = 4x - 19$$
$$0 = 4x - y - 19$$

Question 7, page 378

a. Compare the graphs of the equations using slope-point form, or rewrite the equations in slope-intercept form and compare the equations.

b. Convert all equations to slope-intercept form and compare.

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

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

② $y - 10 = 3(x - 4)$
$y - 10 = 3x - 12$
$y - 10 + 10 = 3x - 12 + 10$
$y = 3x - 2$

④ $y - 11 = 3(x - 2)$
$y - 11 = 3x - 6$
$y - 11 + 11 = 3x - 6 + 11$
$y = 3x + 5$

Equations ① and ④ represent the same line, and equations ② and ③ represent the same line.

Question 10, page 379

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

$= \frac{7 - 1}{3 - 0}$

$= \frac{6}{3}$

$= 2$

$y = mx + b$

$1 = 2(0) + b$

$1 = b$

The equation of the line is $y = 2x + 1$.

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

$= \frac{7 - 1}{3 - 0}$

$= \frac{6}{3}$

$= 2$

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

$y - 1 = 2(x - 0)$

$y - 1 = 2x$

The equation of the line is $y - 1 = 2x$.

c. The equations represent the same graph.

Question 13, page 379

a. $V - V_1 = m(t - t_1)$

$V - 29 = 1.2(t - 24)$

The equation $V - 29 = 1.2(t - 24)$ gives the volume of oil in the tank at time $t$.

b.
$$\begin{aligned} V - 29 &= 1.2(t - 24) \\ 155 - 29 &= 1.2(t - 24) \\ 126 + 28.8 &= 1.2t - \cancel{28.8} + \cancel{28.8} \\ 154.8 &= 1.2t \\ \frac{154.8}{1.2} &= \frac{\cancel{1.2}t}{\cancel{1.2}} \\ 129 &= t \end{aligned}$$

It will take 129 hours to fill the tank.

c.
$$\begin{aligned} V - 29 &= 1.2(t - 24) \\ V - 29 &= 1.2(0 - 24) \\ V - 29 &= 0 - 28.8 \\ V - 29 + 28.8 &= 0 - \cancel{28.8} + \cancel{28.8} \\ V - 0.2 &= 0 \\ V &= 0.2 \end{aligned}$$

No. The tank contained $0.2\ \text{m}^3$ of oil prior to filling.

Question 14, page 380

a.
$$\begin{aligned} m &= \frac{V_2 - V_1}{t_2 - t_1} \\ &= \frac{341 - 335}{16 - 6} \\ &= \frac{6}{10} \\ &= \frac{3}{5} \end{aligned}$$

The slope of the line is $\frac{3}{5}$.

b. The slope represents a rate of change of $0.6\ \text{m/s}$ per $^\circ\text{C}$.

c.
$$\begin{aligned} V - V_1 &= m(t - t_1) \\ V - 335 &= \frac{3}{5}(t - 6) \end{aligned}$$

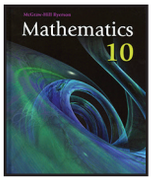
d.
$$V - 335 = \frac{3}{5}(35 - 6)$$
$$V - 335 = 21 - 3.6$$
$$V - \cancel{335} + \cancel{335} = 17.4 + 335$$
$$V = 352.4$$

The velocity of sound at an air temperature of $35^{\circ}\text{C}$ is 352.4 m/s.

e.
$$348 - 335 = \frac{3}{5}(t - 6)$$
$$13 = \frac{3}{5}t - 3.6$$
$$13 + 3.6 = \frac{3}{5}t - \cancel{3.6} + \cancel{3.6}$$
$$16.6 = \frac{3}{5}t$$
$$5(16.6) = \cancel{5}\left(\frac{3}{\cancel{5}}t\right)$$
$$83 = 3t$$
$$\frac{83}{3} = \frac{\cancel{3}t}{\cancel{3}}$$
$$27.666\ldots = t$$

For the velocity of sound to be 348 m/s, the air temperature must be about $28^{\circ}\text{C}$.

# Lesson 7.4: Parallel and Perpendicular Lines




Refer to page 390 in *Mathematics 10* for more practice.

Page 390, #1a, 1c, 1e, 1g, 2a, 2c, 3, 4a, 5a, 5c, 5e, 6a, 7a, 9, 11, and 17

Question 1, page 390

a. The slope of a parallel line is 5. The slope of a perpendicular line is $-\frac{1}{5}$.

c. The slope of a parallel line is $-\frac{1}{3}$. The slope of a perpendicular line is 3.

e. The slope of a parallel line is 0.5. The slope of a perpendicular line is –2.

g. The slope of a parallel line is 0. The slope of a perpendicular line is undefined.

Question 2, page 391

a. The slope of the line $y = \frac{3}{7}x + 4$ is $\frac{3}{7}$. The slope of a parallel line is $\frac{3}{7}$ and the slope of a perpendicular line is $-\frac{7}{3}$.

c. $3x + y - 5 = 0$

$3x + y - 5 - 3x + 5 = 0 - 3x + 5$

$y = -3x + 5$

The slope of the line $3x + y - 5 = 0$ is –3. The slope of a parallel line is –3 and the slope of a perpendicular line is $\frac{1}{3}$.

Question 3, page 391

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

$= \frac{1 - 9}{-2 - (-6)}$

$= \frac{-8}{4}$

$= -2$

The slope of a parallel line would be –2.

b. The slope of a perpendicular line is the negative reciprocal of –2, which is $\frac{1}{2}$.

Question 4, page 391

a. To be parallel, the lines must have equal slopes.

$$\frac{n}{10} = \frac{2}{1}$$
$$\frac{n}{\cancel{10}}(\cancel{10}) = \frac{2}{1}(10)$$
$$n = 20$$

To be perpendicular, the slopes must have a product of –1.

$$\left(\frac{n}{10}\right)\left(\frac{2}{1}\right) = -1$$
$$\frac{2n}{10} = -1$$
$$\frac{2n}{\cancel{10}}(\cancel{10}) = -1(10)$$
$$2n = -10$$
$$\frac{\cancel{2}n}{\cancel{2}} = \frac{-10}{2}$$
$$n = -5$$

Question 5, page 391

a. Neither; the slopes are neither equal, nor negative reciprocals.

c. Parallel; the slopes are equal.

$y_1 = -x + 8$
$y_2 = -x + 2$

e. Neither; the slopes are neither equal, nor negative reciprocals.

$$5x + 2y - 10 = 0$$
$$2y = -5x + 10$$
$$y = -\frac{5}{2}x + 5$$

$$2x + 5y + 10 = 0$$
$$5y = -2x - 10$$
$$y = -\frac{2}{5}x - 2$$

Question 6, page 391

a. The slope of the original line is 2, so the parallel line must also have a slope of 2.

$$y = mx + b$$
$$y = 2x + b$$
$$-6 = 2(1) + b$$
$$-6 = 2 + b$$
$$-6 - 2 = \cancel{2} - \cancel{2} + b$$
$$-8 = b$$

$$y = 2x - 8$$

Question 7, page 392

a. The slope of the original line is 3. The negative reciprocal of 3 is $-\frac{1}{3}$, so the slope of the new line is $-\frac{1}{3}$.

$$y = mx + b$$
$$5 = -\frac{1}{3}(9) + b$$
$$5 = -3 + b$$
$$5 + 3 = \cancel{-3} + b + \cancel{3}$$
$$8 = b$$

$$y = -\frac{1}{3}x + 8$$

Question 9, page 392

Compare the slopes of sides $AB$ and $DC$ as well as sides $AD$ and $BC$. If these pairs of slopes are equal, then the shape is a parallelogram.

Find the slope of segment $AB$:

$$\begin{aligned} m &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{3-5}{3-(-4)} \\ &= \frac{-2}{7} \end{aligned}$$

Find the slope of segment $DC$:

$$\begin{aligned} m &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{-3-(-1)}{5-(-2)} \\ &= \frac{-2}{7} \end{aligned}$$

Find the slope of segment $AD$:

$$\begin{aligned} m &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{5-(-1)}{-4-(-2)} \\ &= \frac{6}{-2} \\ &= -3 \end{aligned}$$

Find the slope of segment $BC$:

$$\begin{aligned} m &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{3-(-3)}{3-5} \\ &= \frac{6}{-2} \\ &= -3 \end{aligned}$$

Since the two pairs of slopes are equal, the opposite sides are parallel and the quadrilateral is a parallelogram.

Question 11, page 392

a. $m_2 = \dfrac{y_2 - y_1}{x_2 - x_1}$

$m_2 = \dfrac{5-3}{1-4}$

$= -\dfrac{2}{3}$

The slope of Line 2 is $-\dfrac{2}{3}$. This means Line 1 must also have a slope of $-\dfrac{2}{3}$ to be parallel to Line 2.

$$m_1 = \frac{y_2 - y_1}{x_2 - x_1}$$
$$\frac{2}{-3} = \frac{4-(-2)}{n-1}$$
$$\frac{2}{-3} = \frac{6}{n-1}$$
$$(n-1)\frac{2}{-3} = \frac{6}{\cancel{n-1}}\cancel{(n-1)}$$
$$\frac{(n-1)2}{-3} = 6$$
$$\cancel{(-3)}\frac{(n-1)2}{\cancel{-3}} = 6(-3)$$
$$2n - 2 = -18$$
$$2n - \cancel{2} + \cancel{2} = -18 + 2$$
$$2n = -16$$
$$\frac{\cancel{2}n}{\cancel{2}} = \frac{-16}{2}$$
$$n = -8$$

b. The slope of Line 2 is $-\frac{2}{3}$. The slope of Line 1 must be the negative reciprocal of $-\frac{2}{3}$ for the lines to be perpendicular. So, the slope of Line 1 must be $\frac{3}{2}$.

$$\begin{aligned}
m_2 &= \frac{y_2 - y_1}{x_2 - x_1} \\
\frac{3}{2} &= \frac{4-(-2)}{n-1} \\
\frac{3}{2} &= \frac{6}{n-1} \\
(n-1)\frac{3}{2} &= \frac{6}{\cancel{n-1}}\cancel{(n-1)} \\
\frac{(n-1)3}{2} &= 6 \\
\cancel{(2)}\frac{(n-1)3}{\cancel{2}} &= 6(2) \\
3n-3 &= 12 \\
3n-\cancel{3}+\cancel{3} &= 12+3 \\
3n &= 15 \\
\frac{\cancel{3}n}{\cancel{3}} &= \frac{15}{3} \\
n &= 5
\end{aligned}$$

Question 17, page 394

$$\begin{aligned}
H &= 0.7(220 - A) \\
H &= 154 - 0.7A \\
H &= -0.7A + 154
\end{aligned}$$

$$\begin{aligned}
H &= 0.8(220 - A) \\
H &= 176 - 0.8A \\
H &= -0.8A + 176
\end{aligned}$$

The slopes of $H = 0.7(220 - A)$ and $H = 0.8(220 - A)$ are $-0.7$ and $-0.8$, respectively. Since the slopes are not equal, these equations do not represent parallel lines.