

Module 5 Lesson 4

Try This 1- 2 Possible Solutions

TT 1.

a. The student's completed chart should look like the following.

Linear Relation	Rearrangement	Slope	y-intercept
A. $y + 3 = \frac{1}{4}(x - 4)$	$y + 3 = \frac{1}{4}x - 1$ $y + 3 - 3 = \frac{1}{4}x - 1 - 3$ $y = \frac{1}{4}x - 4$	$\frac{1}{4}$	0, -4
B. $y - 3 = -\frac{1}{4}(x + 4)$	$y - 3 = -\frac{1}{4}x - 1$ $y - 3 + 3 = -\frac{1}{4}x - 1 + 3$ $y = -\frac{1}{4}x + 2$	$-\frac{1}{4}$	0, 2
C. $x - 4y - 4 = 0$	$x - 4y - 4 - x + 4 = 0 - x + 4$ $-4y = -x + 4$ $\frac{-4y}{-4} = \frac{-x}{-4} + \frac{4}{-4}$ $y = \frac{1}{4}x - 1$	$\frac{1}{4}$	0, -1
D. $y = -\frac{1}{4}x + 2$	The relation is already in slope-intercept form.	$-\frac{1}{4}$	0, 2
E. $x - 4y - 16 = 0$	$x - 4y - 16 - x + 16 = 0 - x + 16$ $-4y = -x + 16$ $\frac{-4y}{-4} = \frac{-x}{-4} + \frac{16}{-4}$ $y = \frac{1}{4}x - 4$	$\frac{1}{4}$	0, -4
F. $y = \frac{1}{4}x - 1$	The relation is already in slope-intercept form.	$\frac{1}{4}$	0, -1

b. A matches E; B matches D; and C matches F.

TT 2.a. *Foundations and Pre-calculus Mathematics 10* (Pearson), questions 4.a), 4.f), 9, and 12 on pages 372 and 373

4. a) slope: -4 ; point: $(1, 5)$

f) slope: $-\frac{8}{5}$; point: $(-16, 21)$

9. a) i) $y - 4 = -\frac{4}{3}x - (-2)$

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

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

iii) $y - (-2) = \frac{1}{3}x - (-4)$

$$y + 2 = \frac{1}{3}(x + 4)$$

iv) $y - (-2) = -\frac{5}{2}(x - 1)$

$$y + 2 = -\frac{5}{2}(x - 1)$$

b) i) $y - 4 = -\frac{4}{3}(x + 2)$

$$y - 4 = -\frac{4}{3}x - \frac{8}{3}$$

$$y - 4 + 4 = -\frac{4}{3}x - \frac{8}{3} + 4$$

$$y = -\frac{4}{3}x - \frac{8}{3} + \frac{12}{3}$$

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

The y-intercept is $\left(0, \frac{4}{3}\right)$, and the x-intercept is $(1, 0)$.

$$0 = -\frac{4}{3}x + \frac{4}{3}$$

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

$$x = 1$$

$$\begin{aligned}
 \text{ii)} \quad y - 3 &= \frac{2}{5}(x - 3) \\
 y - 3 &= \frac{2}{5}x - \frac{6}{5} \\
 y - 3 + 3 &= \frac{2}{5}x - \frac{6}{5} + 3 \\
 y &= \frac{2}{5}x - \frac{6}{5} + \frac{15}{5} \\
 y &= \frac{2}{5}x + \frac{9}{5}
 \end{aligned}$$

The y-intercept is $\left(0, \frac{9}{5}\right)$, and the x-intercept is $\left(-\frac{9}{2}, 0\right)$.

$$\begin{aligned}
 0 &= \frac{2}{5}x + \frac{9}{5} \\
 -\frac{9}{5} &= \frac{2}{5}x \\
 -9 &= 2x \\
 x &= -\frac{9}{2}
 \end{aligned}$$

$$\begin{aligned}
 \text{iii)} \quad y + 2 &= \frac{1}{3}(x + 4) \\
 y + 2 &= \frac{1}{3}x + \frac{4}{3} \\
 y + 2 - 2 &= \frac{1}{3}x + \frac{4}{3} - 2 \\
 y &= \frac{1}{3}x + \frac{4}{3} - \frac{6}{3} \\
 y &= \frac{1}{3}x - \frac{2}{3}
 \end{aligned}$$

The y-intercept is $\left(0, -\frac{2}{3}\right)$, and the x-intercept is $(2, 0)$

$$\begin{aligned}
 0 &= \frac{1}{3}x - \frac{2}{3} \\
 \frac{2}{3} &= \frac{1}{3}x \\
 2 &= x
 \end{aligned}$$

$$\begin{aligned}
 \text{iv)} \quad y + 2 &= -\frac{5}{2}(x - 1) \\
 y + 2 &= -\frac{5}{2}x + \frac{5}{2} \\
 y + 2 - 2 &= -\frac{5}{2}x + \frac{5}{2} - 2 \\
 y &= -\frac{5}{2}x + \frac{5}{2} - \frac{4}{2} \\
 y &= -\frac{5}{2}x + \frac{1}{2}
 \end{aligned}$$

The y-intercept is $\left(0, \frac{1}{2}\right)$, and the x-intercept is $\left(\frac{1}{5}, 0\right)$.

$$\begin{aligned}
 0 &= -\frac{5}{2}x + \frac{1}{2} \\
 \frac{5}{2}x &= \frac{1}{2} \\
 \frac{2}{5}\left(\frac{5}{2}x\right) &= \frac{2}{5}\left(\frac{1}{2}\right) \\
 x &= \frac{1}{5}
 \end{aligned}$$

12. a) Graph C. The slope is 2 and the y-intercept is -5 .

b) Graph A. The slope is 1 and the y-intercept is 1.

c) Graph B. The slope is 2 and the y-intercept is 5.

d) Graph D. The Slope is -1 and the y-intercept is -5 .

TT 2.b. *Foundations and Pre-calculus Mathematics 10* (Pearson), questions 4, 6, 12, 18, and 24 on pages 384 and 385

4. a) standard form

b) general form

c) slope-intercept form

d) slope-point form

6. a) $4x + 3y = 36$

$$4x + 3y - 36 = 36 - 36$$

$$4x + 3y - 36 = 0$$

b) $2x - y = 7$

$$2x - y - 7 = 7 - 7$$

$$2x - y - 7 = 0$$

c) $y = -2x + 6$

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

$$2x + y - 6 = 0$$

d) $y = 5x - 1$

$$y - y = 5x - 1 - y$$

$$0 = 5x - y - 1$$

$$5x - y - 1 = 0$$

12. a) $4x + 3y - 24 = 0$

$$3y = -4x + 24$$

$$\frac{3y}{3} = \frac{-4x}{3} + \frac{24}{3}$$

$$y = -\frac{4}{3}x + 8$$

b) $3x - 8y + 12 = 0$

$$-8y = -3x - 12$$

$$\frac{-8y}{-8} = \frac{-3x}{-8} + \frac{-12}{-8}$$

$$y = \frac{3}{8}x + \frac{3}{2}$$

c) $2x - 5y - 15 = 0$

$$-5y = -2x + 15$$

$$\frac{-5y}{-5} = \frac{-2x}{-5} + \frac{15}{-5}$$

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

d) $7x + 3y + 10 = 0$

$$3y = -7x - 10$$

$$\frac{3y}{3} = \frac{-7x}{3} - \frac{10}{3}$$

$$y = -\frac{7}{3}x - \frac{10}{3}$$

18. a) $y = \frac{1}{3}x - 4$
 $3(y) = 3\left(\frac{1}{3}x - 4\right)$
 $3y = x - 12$
 $3y - 3y = x - 12 - 3y$
 $0 = x - 3y - 12$
 $x - 3y - 12 = 0$

b)
 $y - 2 = \frac{1}{3}(x + 5)$
 $y - 2 = \frac{1}{3}x + \frac{5}{3}$
 $3(y - 2) = 3\left(\frac{1}{3}x + \frac{5}{3}\right)$
 $3y - 6 = x + 5$
 $3y - 6 - 3y + 6 = x + 5 - 3y + 6$
 $0 = x - 3y + 11$
 $x - 3y + 11 = 0$

c)
 $y + 3 = -\frac{1}{4}x - 1$
 $y + 3 = -\frac{1}{4}x + \frac{1}{4}$
 $4(y + 3) = 4\left(-\frac{1}{4}x + \frac{1}{4}\right)$
 $4y + 12 = -x + 1$
 $4y + 12 + x - 1 = -x + 1 + x - 1$
 $x + 4y + 11 = 0$

d)
 $y = -\frac{3}{2}x + \frac{4}{3}$
 $6y = 6\left(-\frac{3}{2}x + \frac{4}{3}\right)$
 $6y = -9x + 8$
 $6y + 9x - 8 = -9x + 8 + 9x - 8$
 $9x + 6y - 8 = 0$

24. Equations b), e), and g) are equivalent, and equations d), f), and h) are equivalent. The student can find out by solving the equation for y.

a) $y = 3x + 6$

b) $2x - 3y - 3 = 0$

$$-3y = -2x + 3$$

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

$$y = \frac{2}{3}x - 1$$

c) $y - 2 = \frac{2}{3}(x - 2)$

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

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

$$y = \frac{2}{3}x - \frac{4}{3} + \frac{6}{3}$$

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

d) $3x - y - 6 = 0$

$$3x - 6 = y$$

$$y = 3x - 6$$

e) $y = \frac{2}{3}x - 1$

f) $y - 3 = 3(x - 3)$

$$y - 3 = 3x - 9$$

$$y - 3 + 3 = 3x - 9 + 3$$

$$y = 3x - 6$$

g) $y - 1 = \frac{2}{3}(x - 3)$

$$y - 1 = \frac{2}{3}x - 2$$

$$y - 1 + 1 = \frac{2}{3}x - 2 + 1$$

$$y = \frac{2}{3}x - 1$$

h) $y + 3 = 3(x - 1)$

$$y + 3 = 3x - 3$$

$$y + 3 - 3 = 3x - 3 - 3$$

$$y = 3x - 6$$