Math 10

Lesson 4–7 Answers

Lesson Questions

Question 1

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

b)
$$y + 2 = \frac{3}{2}(x - 4)$$
$$2(y + 2) = 3(x - 4)$$
$$2y + 4 = 3x - 12$$
$$0 = 3x - 12 - 2y - 4$$
$$0 = 3x - 2y - 16$$
$$3x - 2y - 16 = 0$$

Question 2

a) To determine the *x*-intercept set $y = 0$:

$$x + 3y + 9 = 0$$
$$x + 3(0) + 9 = 0$$
$$x + 9 = 0$$
$$x = -9$$

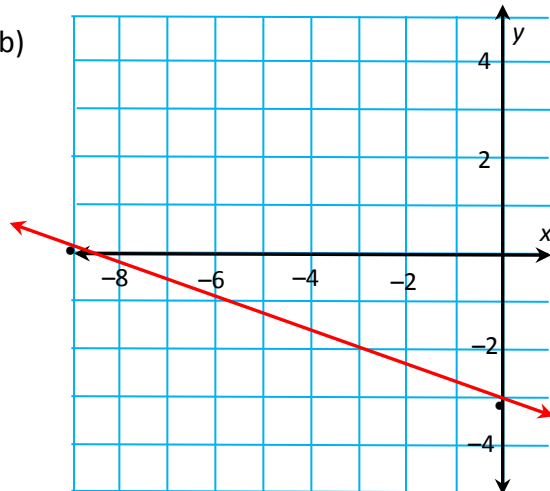To determine the *y*-intercept set $x = 0$:

$$x + 3y + 9 = 0$$
$$0 + 3y + 9 = 0$$
$$3y + 9 = 0$$
$$3y = -9$$
$$y = -3$$

b)

Question 3

Rearrange the equation into slope-intercept form:
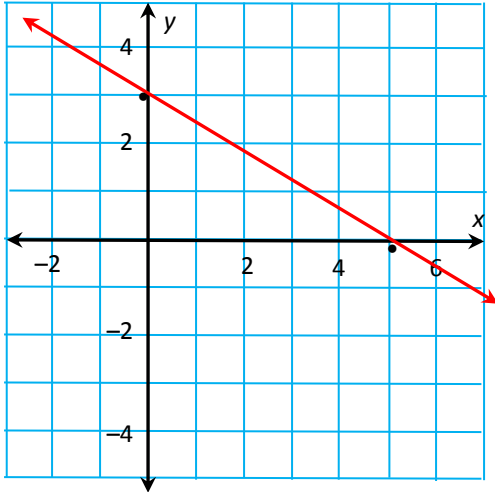
$$5x - 2y + 12 = 0$$
$$-2y = -5x - 12$$
$$2y = 5x + 12$$
$$y = \frac{5}{2}x + 6$$

Question 4

a) examples: (2, 27), (4, 24), (6, 21)

b)

c) 3x + 2y − 60 = 0

d)

    i)   Can each of 2 pieces be 18 cm long and each of 3 pieces be 3 cm long?

$$3x + 2y - 60 = 0$$

$$3(3) + 2(18) - 60 = 0$$ **no**

$$9 + 36 - 60 = 0$$

$$15 \neq 0$$

    ii)   Can each of 2 pieces be 3 cm long and each of 3 pieces be 18 cm long?

$$3x + 2y - 60 = 0$$

$$3(18) + 2(3) - 60 = 0$$ **yes**

$$54 + 6 - 60 = 0$$

$$0 = 0$$

Assignment

1. Find the x and y intercepts, plot these points, draw a line through the points.

2. In slope-intercept form one can see the y intercept and plot that point. from that point one can do the rise over run and find a second point. The line can be drawn through the two plotted points.

3. a) Standard form
   b) General form
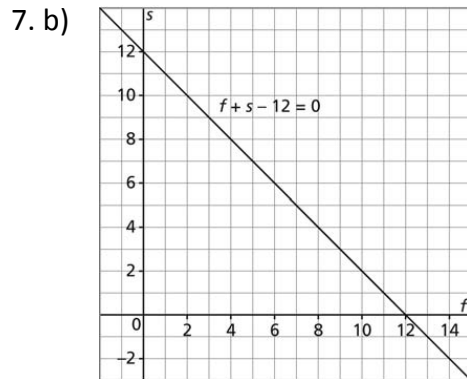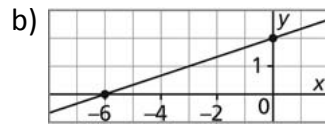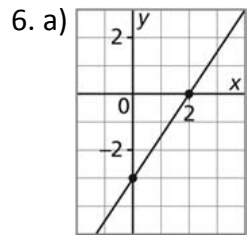   c) Slope-intercept form
   d) Slope-point form

4. a) *x*-intercept: 3; *y*-intercept: −8
   b) *x*-intercept: 8; *y*-intercept: −7
   c) *x*-intercept: 22; *y*-intercept: −8
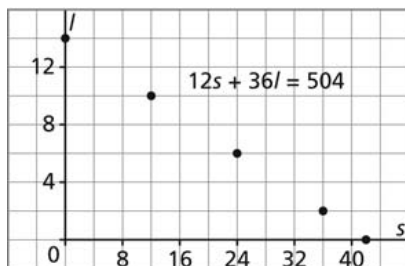   d) *x*-intercept: 13.5; *y*-intercept: −3

5. a) $4x + 3y - 36 = 0$
   b) $2x - y - 7 = 0$
   c) $2x + y - 6 = 0$
   d) $5x - y - 1 = 0$

6. a)   b)

7. b)

   c) $f + s - 12 = 0$
   d)   Pairs of integers may vary. For example: 0 and 12; 5 and 7; 3 and 9; 13 and –1; 14 and –2; 15 and –3
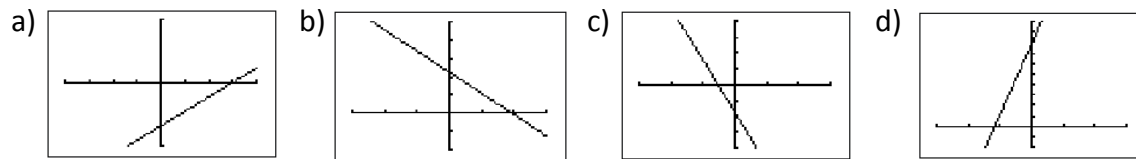
8. a), b) Letters for the variables may differ.
   Let s represent a small pan, and l represent a large pan.
   $12s + 36l = 504$

9. a) –4
   b) 3
   c) 5
   d) –5

10. a) 9 pieces of 8-ft. pipe
    b) 12 pieces of 6-ft. pipe
    c) No; 9.75 pieces of 8-ft. pipe would be needed
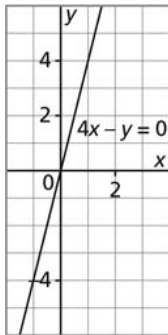   d) No; $10\frac{2}{3}$ pieces of 6-ft. pipe would be needed

11. Screens may vary.

a)

b)

c)

d)

12. a) $x - 3y - 12 = 0$
   b) $x - 3y + 11 = 0$
   c) $x + 4y + 11 = 0$
   d) $9x + 6y - 8 = 0$

13. a) The line goes through the origin (0,0) therefore there is only one point.
   b)

14. Equations in parts b, e, and g are equivalent. Equations in parts d, f, and h are equivalent.

15. a) $3x + 4y - 12 = 0$; linear function
   b) Not a linear function
    c) Not a linear function
   d) $x - 3y + 8 = 0$; linear function

16. a) $B \neq 0: -\dfrac{A}{B}$

   b) $B \neq 0: -\dfrac{C}{B}$