Math 10

Lesson 4–6 Answers

Lesson Questions

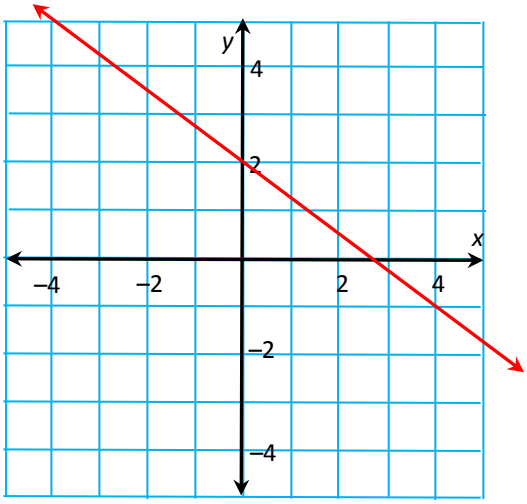
Question 1

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

b) $y = -\frac{7}{3}x + 5$

Question 2

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



Question 3

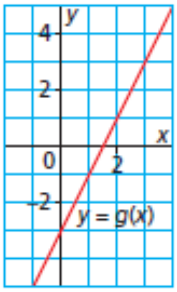
$m = \frac{y_2 - y_1}{x_2 - x_1}$

$m = \frac{5-(-5)}{4-(-1)}$

$m = \frac{10}{5}$

$m = 2$

$g(x) = 2x - 3$



Question 4

$-2x + 5y = 15$

$5y = 2x + 15$?

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

The slope and *y*-intercept of the line are $\frac{2}{5}$ and 3 respectively.

Question 5

a) $3x - 2y - 600 = 0$

$3x - 2y = 600$

$-2y = -3x + 600$

$y = \frac{-3}{-2}x + \frac{600}{-2}$

$y = \frac{3}{2}x - 300$

b) $m = \frac{3}{2}$ The slope represents the price per ball thrown.

c) $b = -300$ The y-intercept represent the initial cost of the dunk tank.

d) The break-even point occurs when the profits equal zero ($y = 0$)

$y = \frac{3}{2}x - 300$

$0 = \frac{3}{2}x - 300$

$300 = \frac{3}{2}x$

$\frac{2(300)}{3} = x$

$200 = x$

The break-over point occurs when 200 balls have been purchased.

Question 6

To join the local gym, Karim pays a start-up fee of \$99, plus a monthly fee of \$29.

a) $C = 29n + 99$

b) $C = 29n + 99$

$C = 29(23) + 99$

$C = 766$

c) $C = 29n + 99$

$505 = 29n + 99$

$505 - 99 = 29n$

$406 = 29n$

$\frac{406}{29} = n$

$14 = n$

d) $C = 29n + 99$

$600 = 29n + 99$

$600 - 99 = 29n$

$501 = 29n$

$\frac{501}{29} = n$

$17.276 = n$

Since the calculated n value is not a whole number, the total cost could not be exactly \$600.

Assignment

1. a) Slope: 4; y-intercept: –7

b) Slope: 1; y-intercept: 12

c) Slope: $-\frac{4}{9}$; y-intercept: 7

d) Slope: 11; y-intercept: $-\frac{3}{8}$

e) Slope: $\frac{1}{5}$; y-intercept: 0

f) Slope: 0; y-intercept: 3

2. a) $y = 7x + 16$

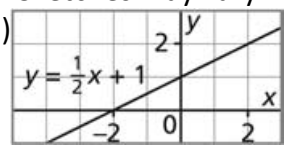
b) $y = -\frac{3}{8}x + 5$

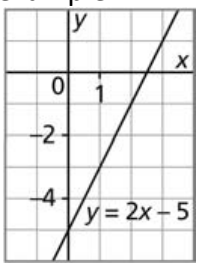
c) $y = \frac{7}{16}x - 3$

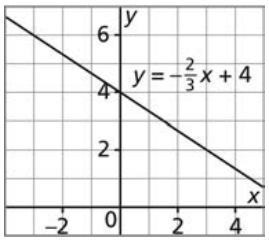
d) $y = -\frac{6}{5}x - 8$

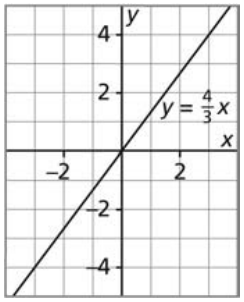
e) $y = -\frac{5}{12}x$

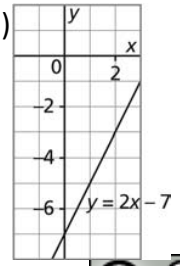
3. Sketches may vary. For example:

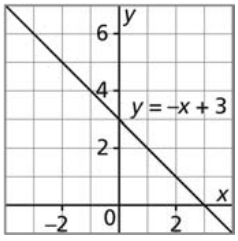
a) 

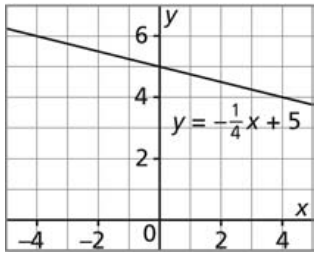
b) 

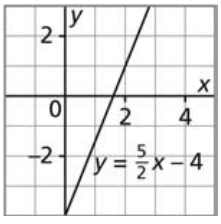
c) 

d) 

4. a) 

b) 

c) 

d) 

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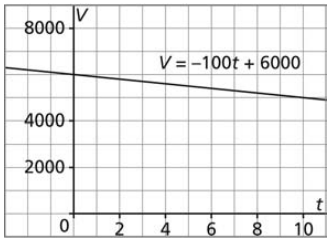
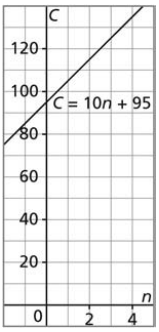
e) 

f) 

5. a) The student may have confused the values of the slope and the *y*-intercept.
   b) $y = 4x - 3$

6. a) i) Slope: $-\frac{1}{2}$; *y*-intercept: 2
   ii) $y = -\frac{1}{2}x + 2$
   iii) $y = -3$
   b) i) Slope: 4; *y*-intercept: –6
   ii) $y = 4x - 6$
   iii) $y = 34$
   c) i) Slope: $\frac{3}{4}$; *y*-intercept: 1
   ii) $y = \frac{3}{4}x + 1$
   iii) $y = 8.5$
   d) i) Slope: $-\frac{1}{3}$; *y*-intercept: –2
   ii) $y = -\frac{1}{3}x - 2$
   iii) $y = -\frac{16}{3}$

7. a) Slope: –80; the plane is descending at a speed of 80 m/min.
   h-intercept: 900; when the plane begins its descent, it is 900 m above the lake.
   b) $h = -80t + 900$
   c) 460 m
   d) i) The graph would be a line joining (0, 700) and (8, 0).
   ii) $h = -87.5t + 700$

8. a) $C = 0.80n + 20$
   b) $107.20
   c) 125 songs

9. a) $y = 4x + 1$

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

c) $y = -\frac{5}{3}x - 7$

10. a) Graph B b) Graph C c) Graph D d) Graph A

11. a) Graph C: slope 2 and *y*-intercept –5
b) Graph A: slope 1 and *y*-intercept 1
c) Graph B: slope 2 and *y*-intercept 5
d) Graph D: slope –1 and *y*-intercept –5

12. First, rearrange the equations into slope-intercept form:

$y = -5x - 7$ $\quad$ $y = 5x + 15$

$y = \frac{1}{5}x + 9$ $\quad$ $y = -\frac{1}{5}x + 15$

$y = \frac{1}{5}x + 21$ $\quad$ $y = -5x + 13$

$y = 5x + 24$ $\quad$ $y = -\frac{1}{5}x$

Parallel lines:

$y = -5x - 7$ and $y = -5x + 13$

$y = 5x + 15$ and $y = 5x + 24$

$y = \frac{1}{5}x + 9$ and $y = \frac{1}{5}x + 21$

$y = -\frac{1}{5}x + 15$ and $y = -\frac{1}{5}x$

Perpendicular lines:

$y = -5x - 7$ and $y = \frac{1}{5}x + 9$

$y = -5x - 7$ and $y = \frac{1}{5}x + 21$

$y = -5x + 13$ and $y = \frac{1}{5}x + 9$

$y = -5x + 13$ and $y = \frac{1}{5}x + 21$

$y = 5x + 15$ and $y = -\frac{1}{5}x + 15$

$y = 5x + 15$ and $y = -\frac{1}{5}x$

$y = 5x + 24$ and $y = -\frac{1}{5}x + 15$

$y = 5x + 24$ and $y = -\frac{1}{5}x$

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

14. $c = -\frac{38}{3}$

15. $m = -\frac{47}{24}$

16. a) $y + 2 = 2(x - 1);\ \ y = 2x - 4$ b) $y + 2 = -\frac{1}{2}(x - 1);\ y = -\frac{1}{2}x - \frac{3}{2}$

17. a) $y - 6 = -\frac{5}{2}(x - 2);\ y = -\frac{5}{2}x + 11$ b) $y - 6 = \frac{2}{5}(x - 2);\ y = \frac{2}{5}x + \frac{26}{5}$