

# Math 10

## Lesson 3–7 Answers

### Lesson Questions

#### Question 1

a)  $(0, 10), 10; (45, 0), 45$

b) domain:  $0 \leq t \leq 45$ ; range:  $0 \leq h \leq 10$

#### Question 2

The y-intercept occurs when  $x = 0$

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

$$f(0) = \frac{1}{2} \cdot 0 - 3$$

$$f(0) = -3$$

The x-intercept occurs when  $f(x) = 0$

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

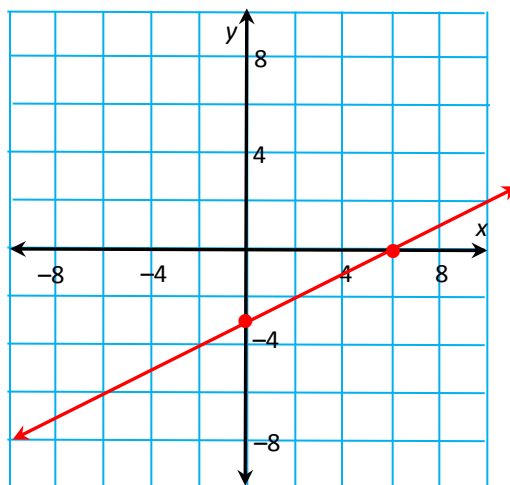
$$0 = \frac{1}{2}x - 3$$

$$0 + 3 = \frac{1}{2}x - 3 + 3$$

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

$$2 \cdot 3 = 2 \cdot \frac{1}{2}x$$

$$\boxed{x = 6}$$



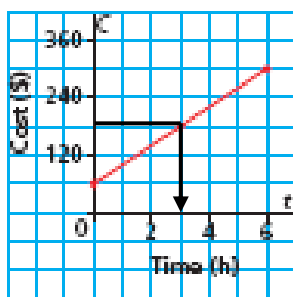
A line can be drawn from only two points.

#### Question 3

The graph in part a has a negative rate of change.

#### Question 4

Cost of an Electrician's House Call



The electrician worked for 3 h.

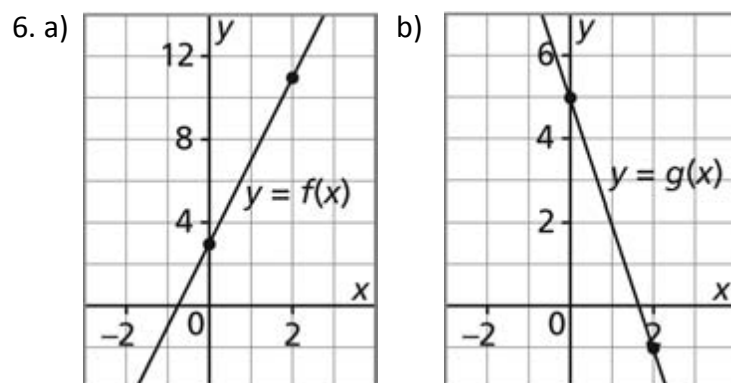
## Assignment

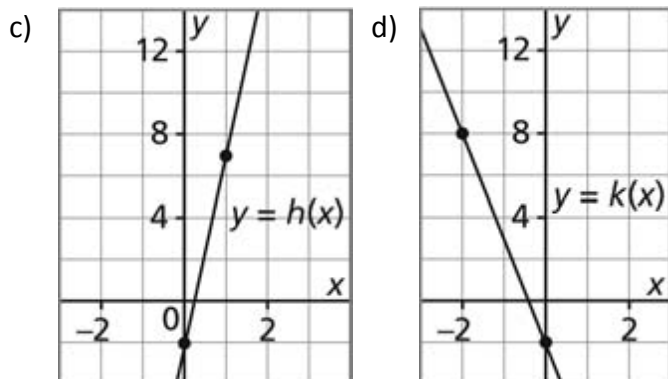
1. The intercepts tell us what the value of the function is at a zero point and what the starting value of the function is.
2. Sloping up to the right → positive  
sloping down to the right → negative
3. The rate of change is calculated using a ratio between the change in  $x$  divided by the change in  $y$

$$\text{rate of change} = \frac{\Delta x}{\Delta y}$$

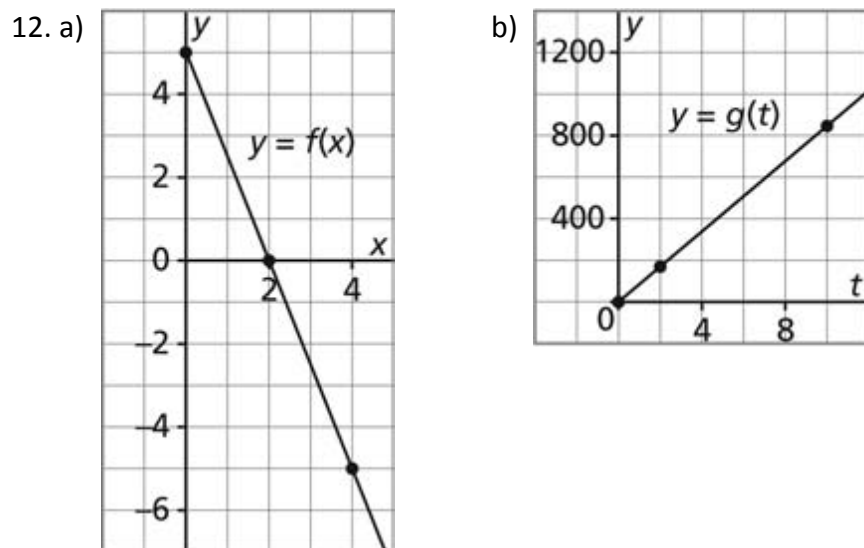
If the two points are close together, the numbers  $\Delta x$  and  $\Delta y$  will be small and if the points are further apart  $\Delta x$  and  $\Delta y$  will be larger, but when they are divided they will yield the same rate of change value.

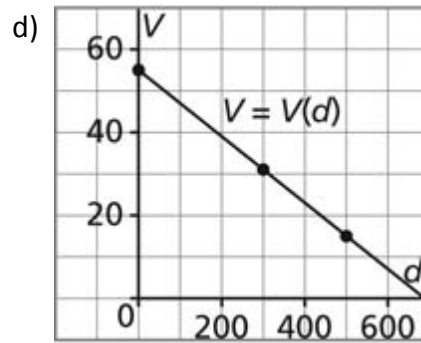
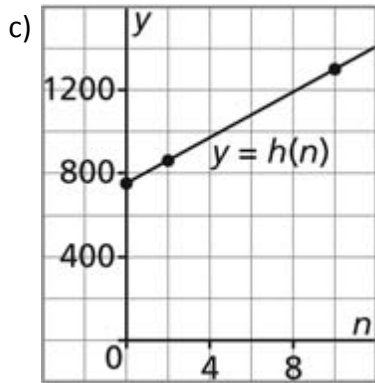
4.
  - a) i) Vertical intercept: 0; horizontal intercept: 0; (0, 0); (0, 0)  
ii) 40 km/h  
iii) Domain:  $0 \leq t \leq 3$ ; range:  $0 \leq d \leq 120$
  - b) i) Vertical intercept: 100; horizontal intercept: 4; (0, 100); (4, 0)  
ii) -25 km/h  
iii) Domain:  $0 \leq t \leq 4$ ; range:  $0 \leq d \leq 100$
5.
  - a) i) 400; (0, 400)  
ii) 100 ft./min  
iii) Domain:  $0 \leq t \leq 8$ ; range:  $400 \leq A \leq 1200$
  - b) i) 1000; (0, 1000)  
ii) -50 ft./min  
iii) Domain:  $0 \leq t \leq 8$ ; range:  $600 \leq A \leq 1000$



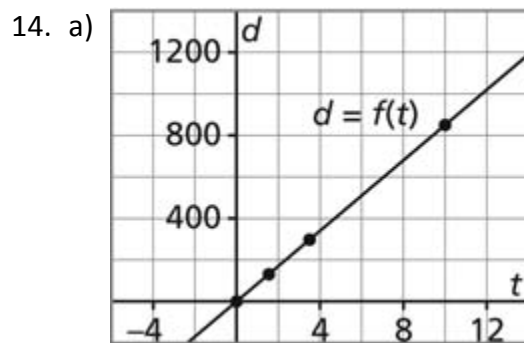


7. a)  $9 \text{ m}^2/\text{L}$ ; every litre of paint covers an area of  $9 \text{ m}^2$ .  
b)  $54 \text{ m}^2$   
c) 5 L
8. a) ii  
b) iii
9. a) Vertical intercept: 0; horizontal intercept: 0; (0, 0); the cost of running the backhoe for 0 h is \$0.  
b)  $\$80/\text{h}$ ; each hour that the backhoe is run increases the cost by \$80.  
c) Domain:  $0 \leq t \leq 10$ ; range:  $0 \leq C \leq 800$   
d) \$560  
e) 4.5 h
10. Estimates may vary. Smart car: approximately 0.06 L/km; SUV: approximately 0.128 L/km; the Smart car uses less fuel per kilometre.
11. a) It takes longer to fill the empty tank.  
b)  $25 \text{ m}^3$  of fuel





13. a) Answers may vary. For example: There are no intercepts on the graph because the relation does not apply to people less than 10 years of age and older than 90 years of age.  
 b) Approximately  $-0.8$  (beats/min)/year; for every additional year of age, the recommended maximum heart rate decreases by approximately 1 beat/min.  
 c) Approximately 77 years of age  
 d) Approximately 126 beats/min



- b)  $f(5) = 425$   
 c)  $t = 2.5$   
 d) Contexts may vary. For example: A car's distance from home as it travels away at an average speed of 85 km/h. In this context, only the 1st quadrant of the graph is relevant.
- 15.
- a) The vertical intercept represents the person's distance from Duke Point when starting the journey at Parksville. The horizontal intercept represents the person's distance from Parksville after completing the journey at Duke Point. The distance between the two locations doesn't change, so the intercepts have the same value.  
 b)  $-1$ ; for every 1 km the car moves away from Parksville, it moves 1 km closer to Duke Point.  
 c) Interchanging the dependent and independent variables would interchange the labels on the axes, but the line on the graph would stay the same.