

## Chapter 5 Review

Principles of Mathematics 9, pages 288–289

1. Semir works during the weekends at a restaurant. He earns \$10.50/h. His pay varies directly with the time, in hours.
  - a) Choose appropriate letters for variables. Make a table of values showing Semir's pay for 0 h, 1 h, 2 h, 3 h, and 4 h.
  - b) Graph the relationship.
  - c) Write an equation in the form  $y = kx$ .

2. Matthew cycles 50 km to a friend's home. The distance,  $d$ , in kilometres, varies directly with the time,  $t$ , in hours.
  - a) Find an equation relating  $d$  and  $t$  if  $d = 24$  when  $t = 1.5$ . What does the constant of variation represent?
  - b) Use the equation to determine how long it will take Matthew to reach his destination.

3. The volume of juice varies directly with the volume of water used to prepare it. Tommy used 2 L of water to make 2.5 L of juice.
  - a) Explain why this relation is a direct variation.
  - b) Graph this relation.

4. Identify each relation as a direct variation, a partial variation, or neither. Justify your answer.
  - a)  $y = 5x + 2$
  - b)  $C = \pi d$
  - c)  $y = x^2 - 1$

5. Identify each relation as a direct variation, a partial variation, or neither. Justify your answer.

- a)  $y = -2x - 3$
- b)  $F = 2.5a$
- c)  $y = -x^2 + 2$

6. a) Copy and complete the table of values given that  $y$  varies partially with  $x$ .

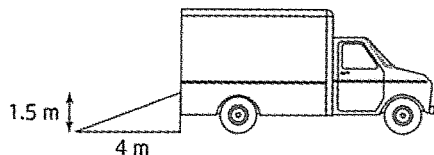
$x$	$y$
0	5
1	9
2	
3	17
4	
	37

- b) Identify the initial value of  $y$  and the constant of variation from the table.
- c) Write an equation relating  $y$  and  $x$  in the form  $y = mx + b$ .
- d) Graph the relation. Describe the graph.

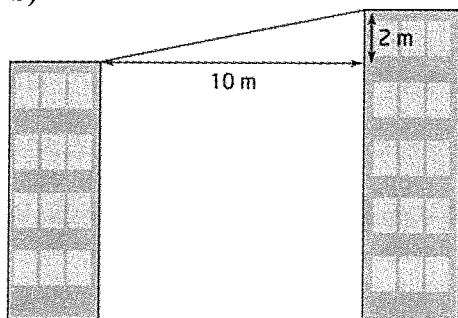
7. A company is having business cards printed. The cost to design the business card is \$25. There is an additional charge of \$0.02 per business card printed.
  - a) Identify the fixed cost and the variable cost for this partial variation.
  - b) Write an equation representing this relationship.
  - c) Use your equation to determine the total cost of 500 business cards.

8. Determine the slope of each object.

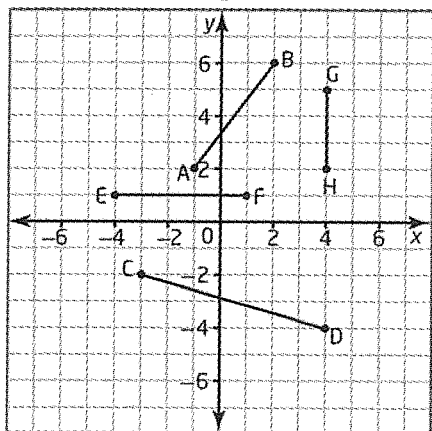
a)



b)



9. Calculate the slope of each line segment.



- a) AB
- b) CD
- c) EF
- d) GH

10. A plant is growing at a constant rate. The plant was 4 cm tall after 1 month. The plant was 32 cm tall after 9 months. If you graphed the growth of the plant with respect to time, what would the slope of the graph be? Express it as a rate of change.

11. For safety reasons, an extension ladder should have a slope of between 6.3 and 9.5 when it is placed against a wall. Determine if each of the following ladders has been placed within the safe range.

- a) A ladder reaches 4 m up the wall. The foot of the ladder is 0.5 m from the wall.
- b) A ladder reaches 3 m up the wall. The foot of the ladder is 0.6 m from the wall.

12. Use first differences to determine whether each relation is linear or non-linear.

a)

x	y
0	5
1	11
2	17
3	23
4	29

b)

x	y
0	14
1	8
2	3
3	-1
4	-4

13. a) Confirm that this relation is linear.

x	y
0	-4
1	1
2	6
3	11
4	16

- b) Calculate the slope.
- c) Write an equation for the relation.
- d) Graph the relation.