

Relations and Functions

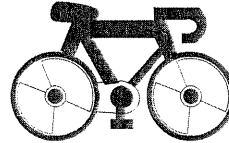
LESSON ONE - Graphing Relations

Lesson Notes

Introduction

Caitlin rides her bike to school every day. The table of values below shows her distance from home as time passes.

a) Write a sentence that describes this relation.



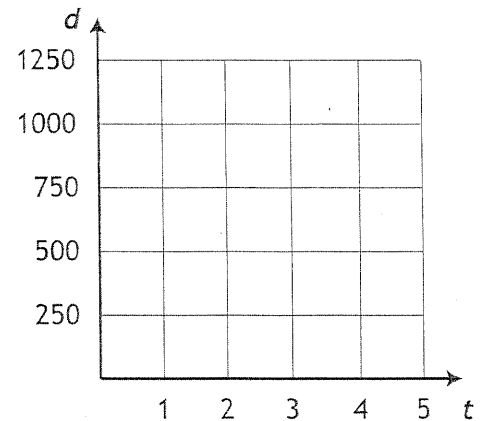
time (minutes)	distance (metres)
0	0
1	250
2	500
3	750
4	1000
5	1250

b) Represent this relation with ordered pairs.

c) Represent this relation with an arrow diagram.

d) Write an equation for this scenario.

e) Graph the relation.

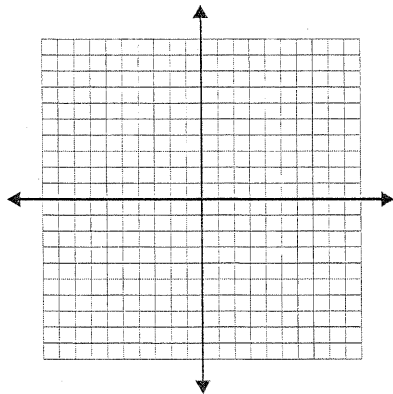


Example 1

For each relation, complete the table of values and draw the graph.

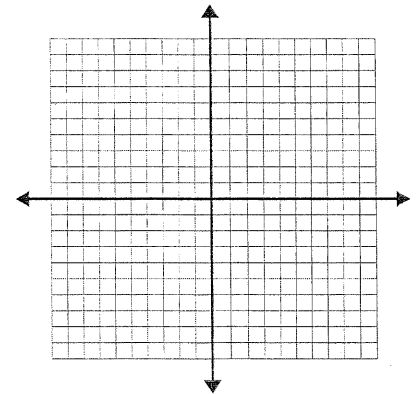
a) $y = -2x + 3$

x	y
-2	
-1	
0	
1	
2	



b) $y = x$

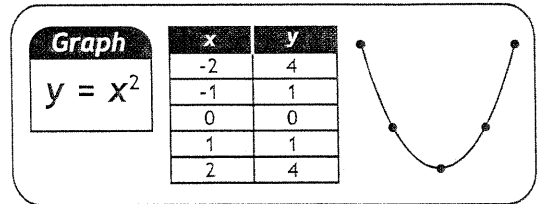
x	y
-2	
-1	
0	
1	
2	



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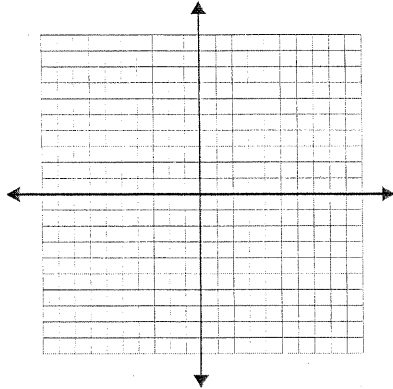
Lesson Notes



Example 2 For each relation, complete the table of values and draw the graph. State if the relation is linear or non-linear.

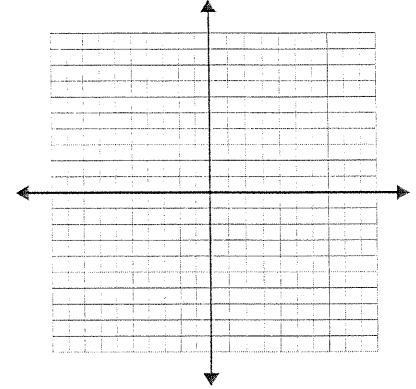
a) $y = x^2$

x	y
-2	
-1	
0	
1	
2	



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

x	y
-4	
-2	
0	
2	
4	



Example 3 For each scenario, state the dependent variable, the independent variable, and the rate. Write the equation.

a) A fruit vendor generates a revenue of R dollars by selling n boxes of plums at \$3 each.

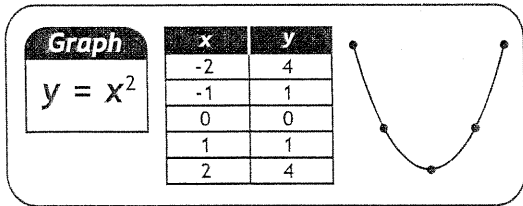
- i) the dependent variable is _____.
- ii) the independent variable is _____.
- iii) the rate is _____.
- iv) the equation is _____.

b) A runner with a speed of 9 m/s can run d metres in t seconds.

- i) the dependent variable is _____.
- ii) the independent variable is _____.
- iii) the rate is _____.
- iv) the equation is _____.

c) A diver experiences a pressure of P kilopascals at a depth of d metres. Underwater pressure increases at 10 kilopascals/metre.

- i) the dependent variable is _____.
- ii) the independent variable is _____.
- iii) the rate is _____.
- iv) the equation is _____.



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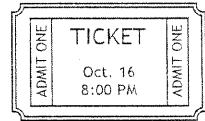
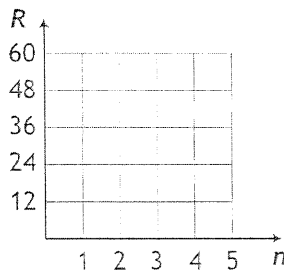
Example 4 Tickets to a concert cost \$12 each. The revenue from ticket sales is R , and the number of tickets sold is n .

a) Write an equation for this scenario.

b) Generate a table of values.

n	R

c) Draw the graph.



d) Is the relation continuous or discrete?

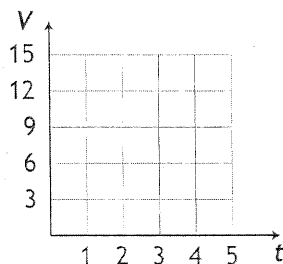
Example 5 A cylindrical tank is being filled with water at a rate of 3 L/min. The volume of water in the tank is V , and the elapsed time is t .

a) Write an equation for this scenario.

b) Generate a table of values.

t	V

c) Draw the graph.



d) Is the relation continuous or discrete?

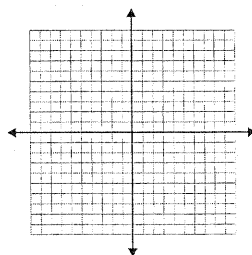
Example 6 A relation is represented by $4x + 2y = 8$.

a) Isolate y so this relation can be graphed.

b) Generate a table of values.

x	y

c) Draw the graph.

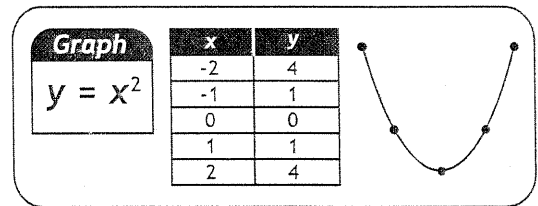


d) Is the relation continuous or discrete?

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Example 7

Nick, a salesman, earns a base salary of \$600/week plus an 8% commission on sales. The amount of money Nick earns in a week is E , and the total value of his sales is s .



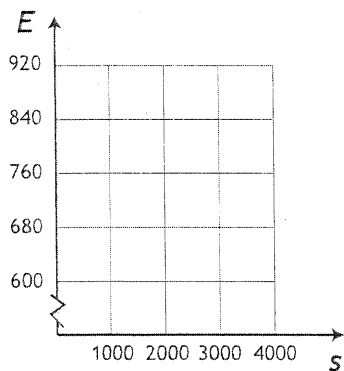
a) Write an equation that relates the variables.

b) Complete the table of values.

s	E
0	
1000	
2000	
3000	
4000	

g) If Nick makes \$6200 in sales one week, what will his earnings be?

c) Draw the graph.

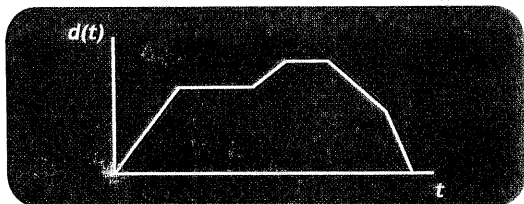


h) How much will Nick have to sell if he makes \$1560 in one week?

d) Is this relation linear or non-linear?

e) Is this relation discrete or continuous?

f) What are the dependent and independent variables?

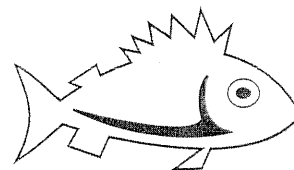


Relations and Functions

LESSON FIVE - *Interpreting Graphs*

Lesson Notes

Introduction



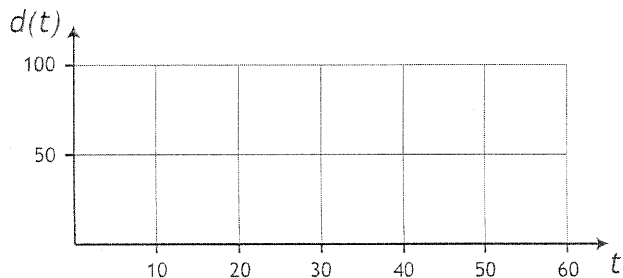
In a 100 m fish race, there are three competitors.

Teleporting Fish - has the ability to instantly warp from location to location.

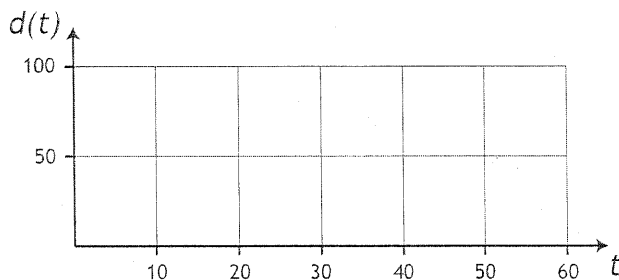
Instant-Speed Fish - can reach any desired speed instantly without accelerating.

Real-World Fish - must speed up and slow down, just like objects in reality.

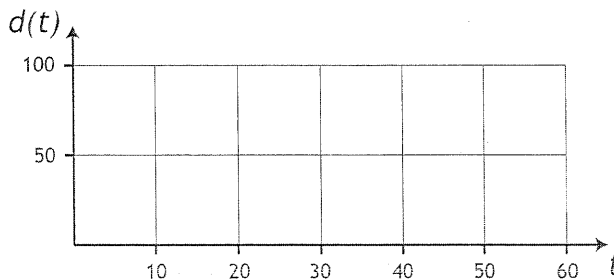
a) *Teleporting Fish* spends the first 20 s of the race resting at the start line. He then warps to the midpoint of the track and rests for another 20 seconds. Finally, he warps to the end and waits 20 seconds while the other fish arrive. Graph this motion.



b) *Instant-Speed Fish* begins the race at 2.5 m/s, and sustains that speed for 20 seconds until she reaches the midpoint. After resting for 20 seconds, she resumes her speed of 2.5 m/s and heads to the finish line.



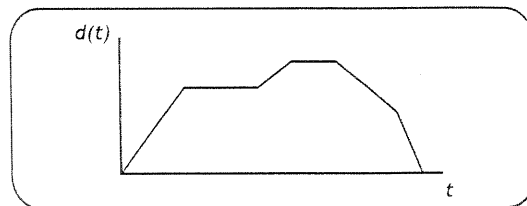
c) *Real-World Fish* accelerates to a speed of 2.5 m/s in 6 seconds, holds that speed for 8 seconds, and then decelerates to zero in 6 seconds - this brings him to the midpoint. After resting for 20 seconds, *Real-World fish* repeats the motion - accelerate for 6 seconds, hold the speed for 8 seconds, and decelerate for 6 seconds. This brings him to the finish line.



Relations and Functions

LESSON FIVE - *Interpreting Graphs*

Lesson Notes



Example 1

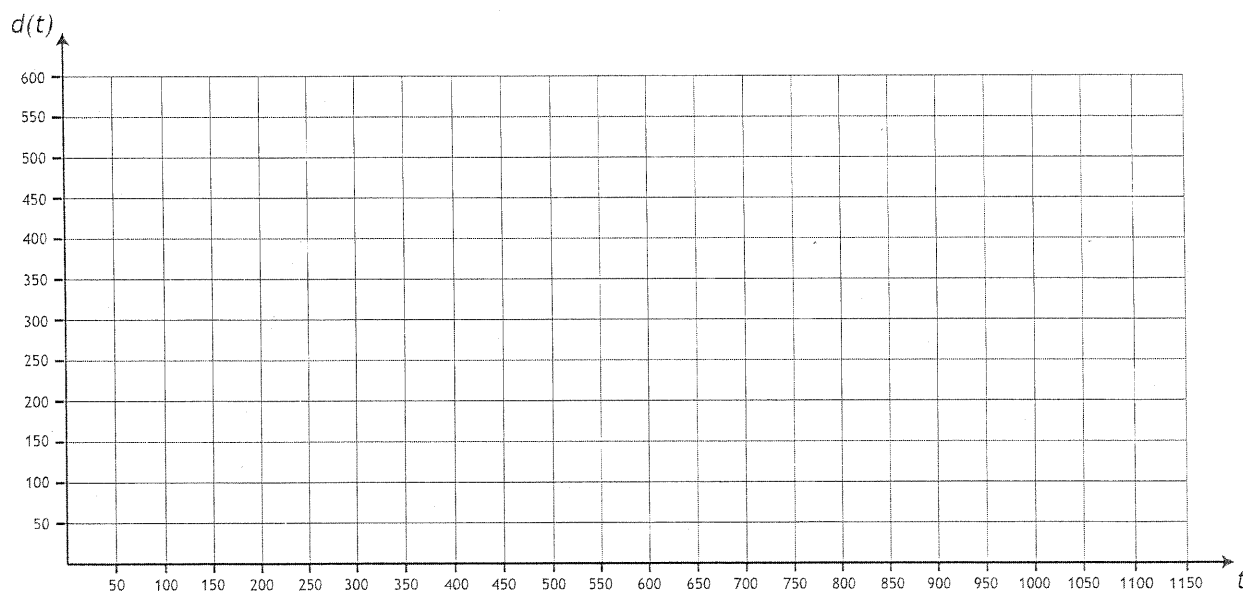
Alex walked halfway to school, but realized he forgot his calculator. He turned around, ran back home, and searched his room for five minutes trying to find the calculator. He then ran two-thirds of the way back to school, but got tired and had to walk the remaining third. Draw a graph representing Alex's journey. Assume instant speed changes.

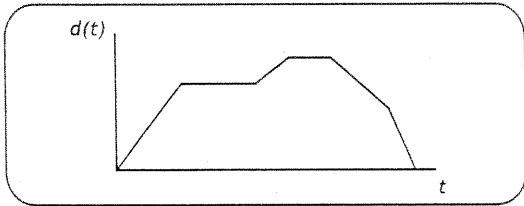
Distance from home to school	600 m
Alex's running speed	2 m/s
Alex's walking speed	1 m/s

Drawing the graph exactly requires calculations using $\text{time} = \frac{\text{distance}}{\text{speed}}$.

Find ordered pairs that will let you draw the graph. Use the space below for your work.

i) walking to school	ii) running back home	iii) looking for calculator	iv) running to school	v) walking to school





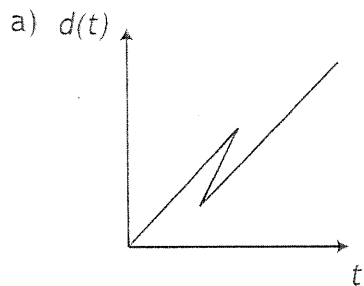
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LESSON FIVE - *Interpreting Graphs*

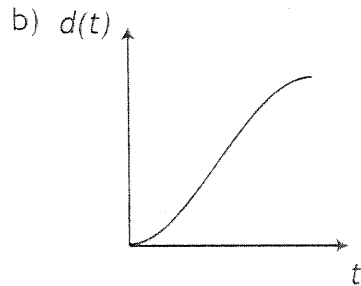
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Example 2

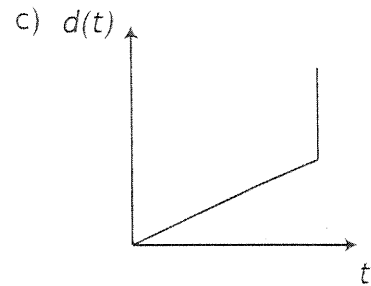
Each of the following graphs represents a potential path Naomi can take from home to school. Determine if each graph represents a possible or impossible motion.



Possible: Yes No



Possible: Yes No

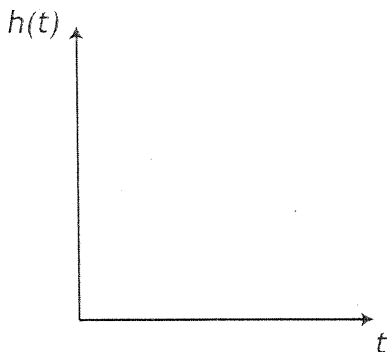


Possible: Yes No

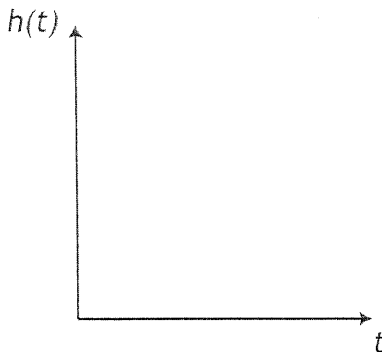
Example 3

Represent each of the following motions in graphical form.

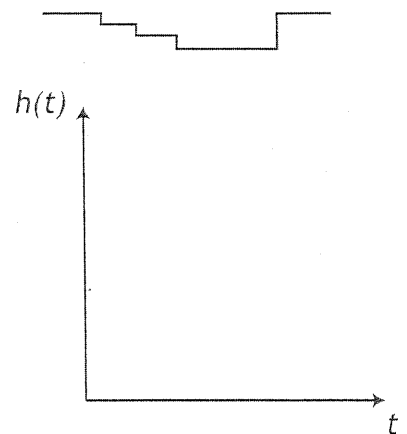
a) A ball is thrown straight up and falls back down.



b) A rubber ball is dropped and bounces three times.



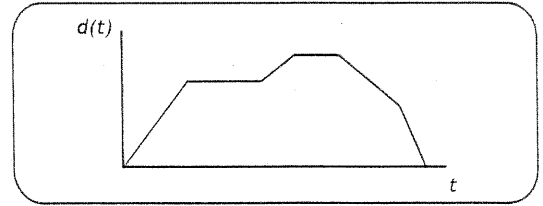
c) The swimming pool below is filled with water.



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LESSON FIVE - *Interpreting Graphs*

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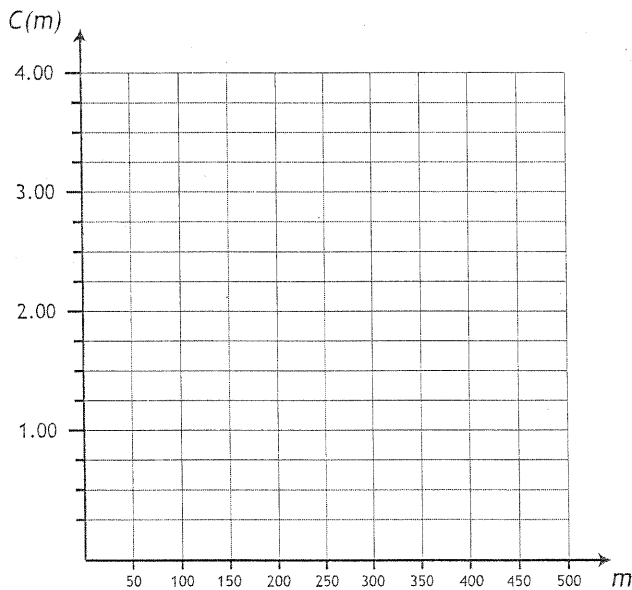
Example 4

The following table shows the Canada Post 2010 price list for mailing letters within Canada.

Letter Mass	Price
up to (and including) 30 g	\$0.57
up to (and including) 50 g	\$1.00
up to (and including) 100 g	\$1.22
up to (and including) 200 g	\$2.00
up to (and including) 300 g	\$2.75
up to (and including) 400 g	\$3.00
up to (and including) 500 g	\$3.25



a) Graph this data



b) State the domain and range

Domain:

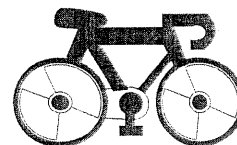
Range:

Math 10C: Relations and Functions

PRACTICE EXAM

1. Caitlin rides her bike to school every day. The table of values shows her distance from home as time passes. An equation that describes the data is:

time (minutes)	distance (metres)
0	0
1	250
2	500
3	750
4	1000
5	1250



- A. $d = -250t$
 B. $d = 250t$
 C. $d = t + 250$
 D. $d = t + 1$

2. The correct table of values for $y = x^2$ is:

A.

x	y
-2	-4
-1	-1
0	0
1	1
2	4

B.

x	y
-2	-4
-1	-2
0	0
1	2
2	4

C.

x	y
-2	4
-1	1
0	0
1	1
2	4

D.

x	y
-2	4
-1	2
0	0
1	2
2	4

3. A fruit vendor generates a revenue of R dollars by selling n boxes of plums at \$3 each. The independent variable is:

- A. R
 B. n
 C. \$3
 D. Both R and n .

4. Tickets to a concert cost \$12 each. The revenue from ticket sales is R , and the number of tickets sold is n . This relation is:

- A. Discrete, because a small quantity of tickets are sold.
 B. Discrete, because tickets can't be purchased in fractional amounts.
 C. Continuous, because a large quantity of tickets are sold.
 D. Continuous, because we don't know how many tickets are sold.

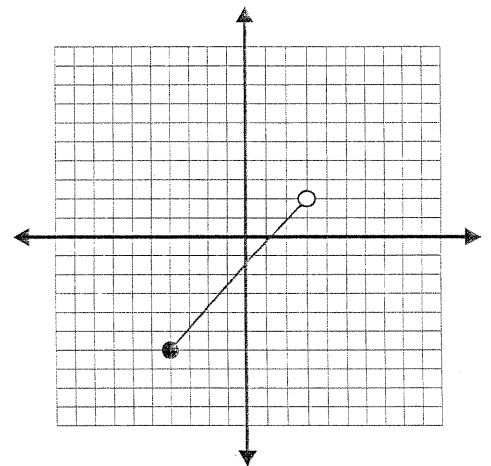
5. Nick, a salesman, earns a base salary of \$600/week plus an 8% commission on sales. The amount of money Nick earns in a week is E , and the total value of his sales is s . Write an equation that relates the variables.
Also, how much will Nick have to sell if he earns \$1560 in one week?



- A. $E = 0.08s + 600$, and Nick will have to sell \$725 worth of product to earn \$1560
 B. $E = 0.08s + 600$, and Nick will have to sell \$12000 worth of product to earn \$1560
 C. $E = 8s + 600$, and Nick will have to sell \$13080 worth of product to earn \$1560
 D. $E = 8s + 600$, and Nick will have to sell \$120 worth of product to earn \$1560

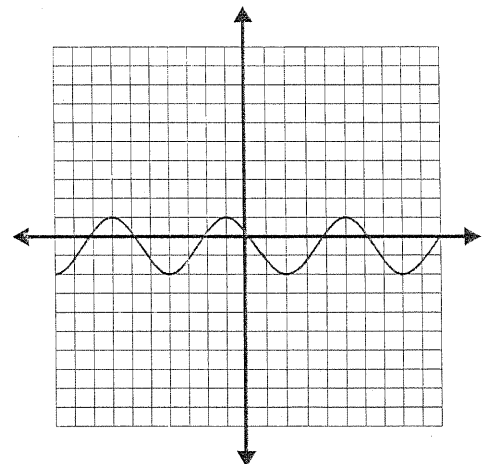
6. The domain and range of this graph using *set notation* is:

- A. Domain: $\{x \mid -4 \leq x < 3, x \in \mathbb{R}\}$
 Range: $\{y \mid -6 \leq y < 2, y \in \mathbb{R}\}$
 B. Domain: $\{x \mid -4 \leq x \leq 3, x \in \mathbb{R}\}$
 Range: $\{y \mid -6 \leq y \leq 2, y \in \mathbb{R}\}$
 C. Domain: $\{x \mid -6 \leq x < 2, x \in \mathbb{R}\}$
 Range: $\{y \mid -4 \leq y < 3, y \in \mathbb{R}\}$
 D. Domain: $\{y \mid -6 \leq y < 2, y \in \mathbb{R}\}$
 Range: $\{x \mid -4 \leq x < 3, x \in \mathbb{R}\}$



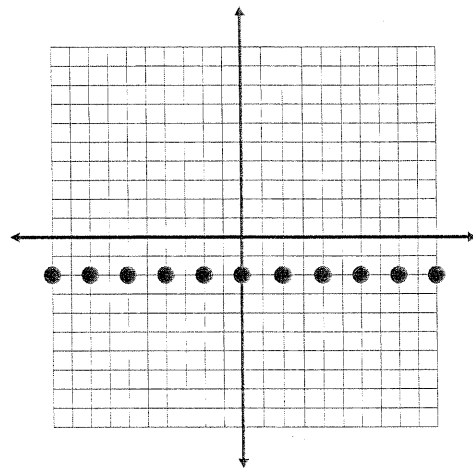
7. The domain and range of this graph using *interval notation* is:

- A. Domain: $(-\infty, \infty)$
 Range: $[-2, 1]$
 B. Domain: $(-1, 1)$
 Range: $[-\infty, \infty]$
 C. Domain: $[-2, 1]$
 Range: $(-\infty, \infty)$
 D. Domain: $(-\infty, \infty)$
 Range: $[-1, 1]$



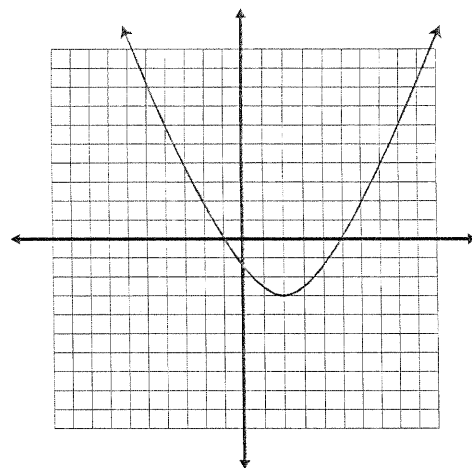
8. The domain and range of this graph is:

- A. Domain: $[-10, 10]$
Range: $[-2, -2]$
- B. Domain: $\{-10, -8, -6, -4, -2, 0, 2, 4, 6, 8, 10\}$
Range: $\{-2\}$
- C. Domain: $\{x \mid -10 \leq x \leq 10, x \in I\}$
Range: $\{y \mid y = -2\}$
- D. Domain: $\{x \mid -10 < x < 10, x \in I\}$
Range: $\{y \mid y = -2\}$



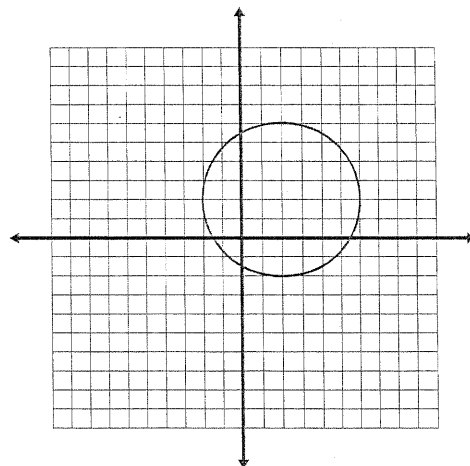
9. The domain and range of this graph is:

- A. Domain: $[-6, 10]$
Range: $[-3, 11]$
- B. Domain: $\{x \mid x \in R\}$
Range: $\{y \mid y \geq -3, y \in R\}$
- C. Domain: $\{x \mid x \geq -3, x \in R\}$
Range: $\{y \mid y \in R\}$
- D. Domain: $\{x \mid x \geq -3, x \in R\}$
Range: $\{y \mid y \geq 0, y \in R\}$

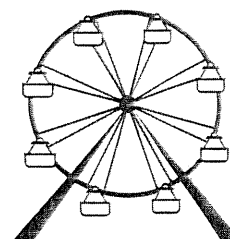


10. The domain and range of this graph is:

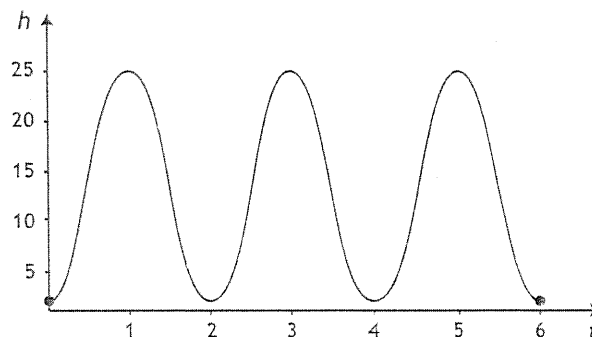
- A. Domain: $-2 \leq x \leq 6$; Range: $-2 \leq y \leq 6$
- B. Domain: $x \in R$; Range: $-2 \leq y \leq 6$
- C. Domain: $-2 \leq x \leq 6$; Range: $y \in R$
- D. Domain: $x \in R$; Range: $y \in R$



11. A Ferris wheel has a radius of 12 m and makes one complete revolution every two minutes. Riders board the wheel at a height of one metre above the ground. A ride lasts for three revolutions of the wheel. The domain and range is:

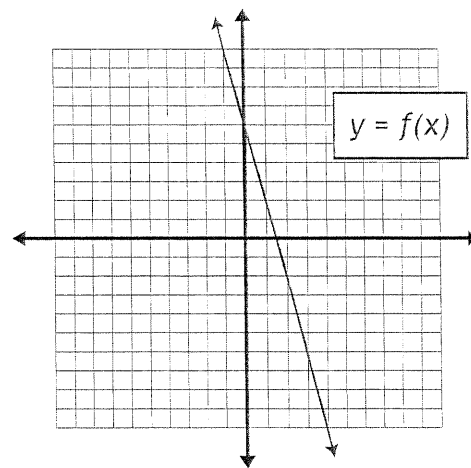


- A. Domain: $0 \leq t \leq 6$; Range: $1 \leq h \leq 26$
- B. Domain: $0 \leq t \leq 2$; Range: $1 \leq h \leq 25$
- C. Domain: $0 \leq t \leq 6$; Range: $1 \leq h \leq 24$
- D. Domain: $0 \leq t \leq 6$; Range: $1 \leq h \leq 25$



12. Given the function $f(x) = -\frac{1}{3}x - 3$, the value of $f(3)$ is:

- A. -13
- B. -12
- C. -4
- D. -2

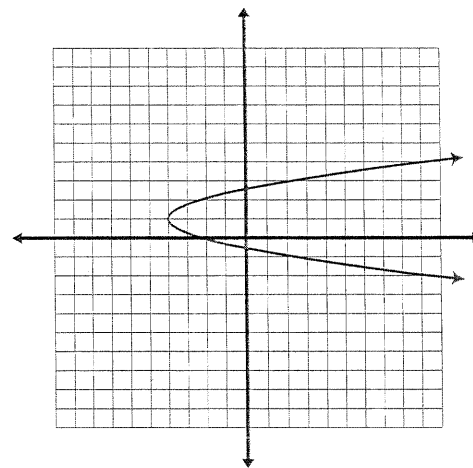


13. Given the graph of $y = f(x)$, the value of $f(3)$ is:

- A. -6
- B. 1.5
- C. 2.1
- D. 6

14. The best statement regarding the graph shown is:

- A. The graph is not a function because it fails the vertical line test.
- B. The graph may not be written as $y = f(x)$.
- C. The graph has a one-to-many mapping of x -values to y -values.
- D. All of the above are true.

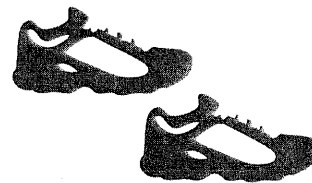


15. The point $(k, -13)$ exists on the graph of $f(x) = -\frac{3}{4}x + 5$. The value of k is:

- A. -2.5
- B. 8
- C. 14.75
- D. 24

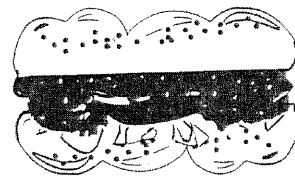
16. A speed walker walks with a speed of 6 km/hour. If the distance walked is d , and the elapsed time is t , write a function that relates the variables. Also, how long does it take for the speed walker to walk 15.6 km?

- A. $d(t) = 15.6t$, and it takes 93.6 hours to walk 15.6 km.
- B. $d(t) = 15.6t$, and it takes 1 hour to walk 15.6 km.
- C. $d(t) = 6t$, and it takes 93.6 hours to walk 15.6 km.
- D. $d(t) = 6t$, and it takes 2.6 hours to walk 15.6 km.



17. The cost of a sandwich is \$4.40 with two toppings, and \$5.00 with five toppings. Write the cost function of the sandwich. Also, what is the price of a sandwich with seven toppings?

- A. $C(n) = 0.60n + 4.40$, and a seven-topping sandwich costs \$5.40
- B. $C(n) = 0.40n + 4.00$, and a seven-topping sandwich costs \$6.80.
- C. $C(n) = 0.20n + 4.40$, and a seven-topping sandwich costs \$5.80.
- D. $C(n) = 0.20n + 4.00$, and a seven-topping sandwich costs \$5.40.



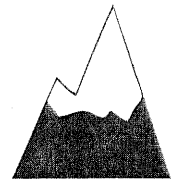
18. The x - and y -intercepts of $f(x) = \frac{2}{3}x + 2$ are:

- A. x -intercept: $(-3, 0)$; y -intercept: $(0, 2)$
- B. x -intercept: $(-1, 0)$; y -intercept: $(0, 2)$
- C. x -intercept: $(1, 0)$; y -intercept: $(0, 3)$
- D. x -intercept: $(2, 0)$; y -intercept: $(0, -3)$

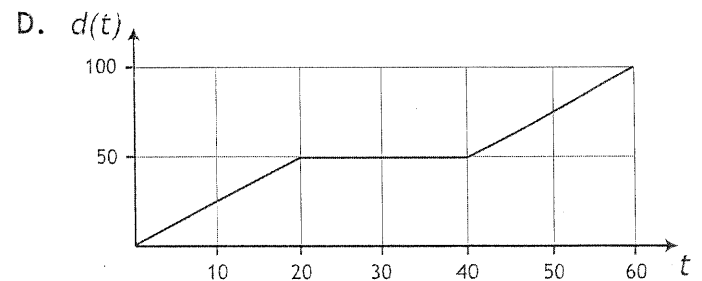
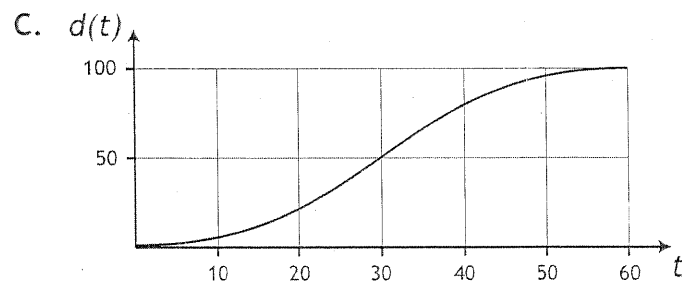
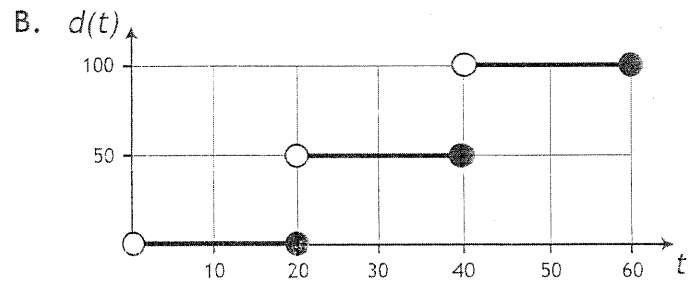
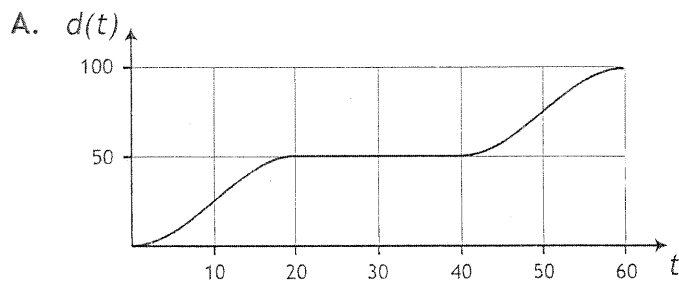
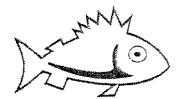
19. The function $f(x) = 3x + k$ has an x -intercept of -2 . The value of k is:

- A. -6
- B. -2
- C. 0
- D. 6

20. A mountain climber is at the peak of a mountain with an altitude of 1400 m. It takes 8 hours for the climber to return to ground level. The climber can descend the mountain at an average speed of 175 m/hour. Write a function that relates the height of the mountain climber (h) to the elapsed time (t). Also, what does the t -intercept represent?

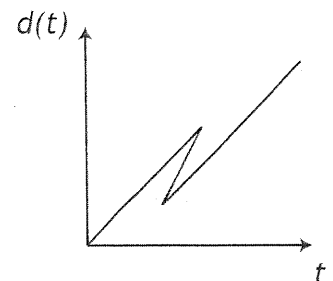


- A. $h(t) = 8t + 175$. The t -intercept is the time it takes to ascend the mountain.
 B. $h(t) = -8t + 1400$. The t -intercept is the time it takes to descend the mountain.
 C. $h(t) = 175t + 1400$. The t -intercept is the time it takes to ascend the mountain.
 D. $h(t) = -175t + 1400$. The t -intercept is the time it takes to descend the mountain.
21. A fish accelerates to a speed of 2.5 m/s in 6 seconds, holds that speed for 8 seconds, and then decelerates to zero in 6 seconds. After resting for 20 seconds, the fish repeats the motion - accelerate for 6 seconds, hold the speed for 8 seconds, and decelerate for 6 seconds. This graph representing this scenario is:



22. The graph on the right represents a potential path Naomi can take from home to school. Which scenario matches the graph?

- A. Naomi walks toward the school at a constant speed, turns around and walks away from the school at a different speed, then resumes walking toward the school at the original speed.
 B. Naomi walks toward the school at a constant speed, turns around and walks away from the school at the same speed, then resumes walking toward the school at the original speed.
 C. Naomi walks north, then south, then north again.
 D. There is no real-world scenario that matches the graph.



Relations and Functions - ANSWER KEY

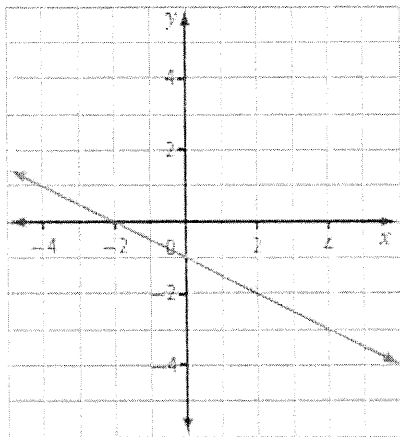
Video solutions are in italics.

- | | |
|--|--|
| 1. B <i>Graphing Relations, Introduction (d)</i> | 12. C <i>Functions, Example 1c</i> |
| 2. C <i>Graphing Relations, Example 2a</i> | 13. A <i>Functions, Example 2a</i> |
| 3. B <i>Graphing Relations, Example 3a</i> | 14. D <i>Functions, Example 2a</i> |
| 4. B <i>Graphing Relations, Example 4d</i> | 15. D <i>Functions, Example 4b</i> |
| 5. B <i>Graphing Relations, Example 7</i> | 16. D <i>Functions, Example 5</i> |
| 6. A <i>Domain and Range, Introduction (c)</i> | 17. D <i>Functions, Example 6a</i> |
| 7. A <i>Domain and Range, Introduction (e)</i> | 18. A <i>Intercepts, Introduction (b)</i> |
| 8. B <i>Domain and Range, Example 2b</i> | 19. D <i>Intercepts, Example 1b</i> |
| 9. B <i>Domain and Range, Example 5a</i> | 20. D <i>Intercepts, Example 3</i> |
| 10. A <i>Domain and Range, Example 5b</i> | 21. A <i>Interpreting Graphs, Introduction (c)</i> |
| 11. D <i>Domain and Range, Example 6</i> | 22. D <i>Interpreting Graphs, Example 2a</i> |

Math 10C Practice Exam: Tips for Students

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1. The equation of the graph below in slope-intercept form is _____.



2. The equation of a line, with a slope of -7 and a y -intercept of 5 , in slope-intercept form is _____.

3. A line has a slope of -3 and passes through the point $(5, -6)$. Write the equation of the line in slope-intercept form. [1 mark]

4. A line passes through the points $(-4, 0)$ and $(4, 4)$. Write the equation of the line in slope-intercept form. [2 marks]

5. Write each of the following linear equations in general form ($Ax + By + C = 0$).

a) $y = -2x + 9$

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

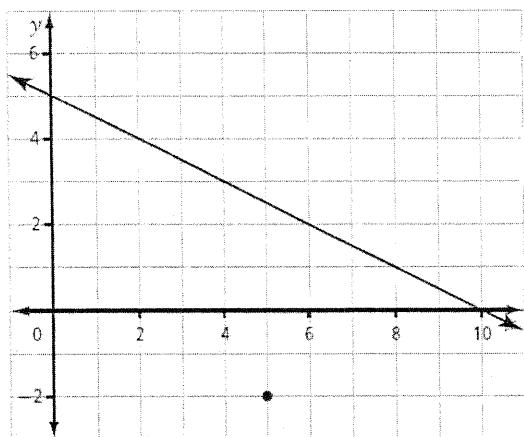
c) $y = -\frac{5}{3}x + \frac{1}{4}$

6. The slope of a line is 7. The slope of a line that is parallel is _____.

7. The slope of a line is $\frac{2}{3}$. The slope of a line that is perpendicular is _____.

8. Write the slope-intercept form and general form for the equation of a line that is parallel to $3x - 2y - 30 = 0$ and passes through the point $(3, -4)$. [3 marks]

9. Write the general form for the equation of a line that is perpendicular to the given line and passes through the given point. [2 marks]



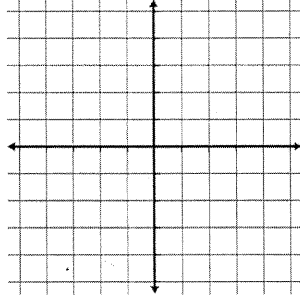
10C – RF6 V2

Relations & Functions – Forms of Equations

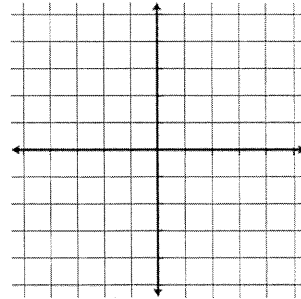
Part I:

1. Graph each linear relation. State the slope and y -intercept of each.

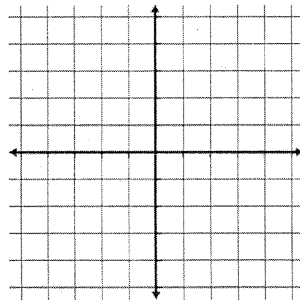
a) $y = \frac{1}{2}x + 5$



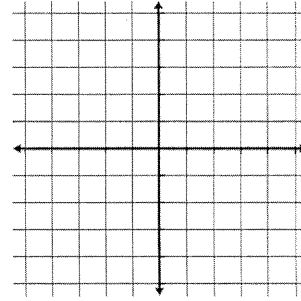
c) $y - 5 = 2(x - 3)$



b) $-3x + 5y - 15 = 0$



d) $2x - 6 = 0$

**Part II:**

2. Rewrite the equation $2x + 3y - 18 = 0$ in

a) Slope-Intercept Form

b) Slope-Point Form

3. An iron horse pump jack starts to pump crude oil into a tank at a constant rate of $1.5 \text{ m}^3/\text{h}$. After 24 hours, the tank contains 32 cubic meters of oil.

a) Write an equation that describes the volume, V , of oil in the tank after, t , hours.

b) If this type of tank holds a maximum of 170 cubic meters of oil, then how long will it take to fill the tank?

c) Was the tank empty before it started filling? Explain.

Part III:

4. Rewrite the equation $y = 2(x - 3) + 5$ in general form.

Math 10C: Linear Functions

PRACTICE EXAM

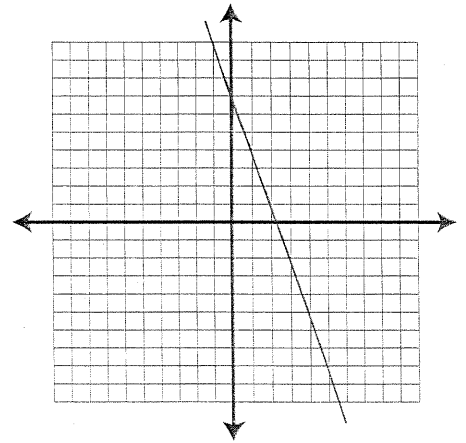
1. The slope of the line is:

A. -3

B. $-\frac{1}{3}$

C. $\frac{1}{3}$

D. 3



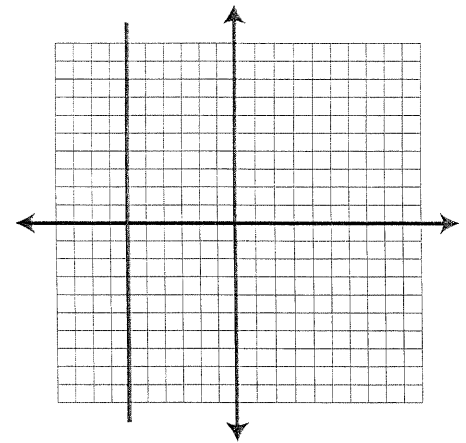
2. The slope of the line is:

A. -6

B. $-\frac{1}{6}$

C. 0

D. Undefined



3. A line has a slope of $\frac{1}{3}$ and the point $(-4, -5)$ exists on the line.

Another point on the line is:

A. $(-6, -7)$

B. $(-3, -4)$

C. $(-1, -4)$

D. $(1, -4)$

4. A line has points located at $(a, 3)$ and $(2, 9)$. What is the value of a if the slope is $\frac{3}{5}$?

A. -8

B. -4

C. 3

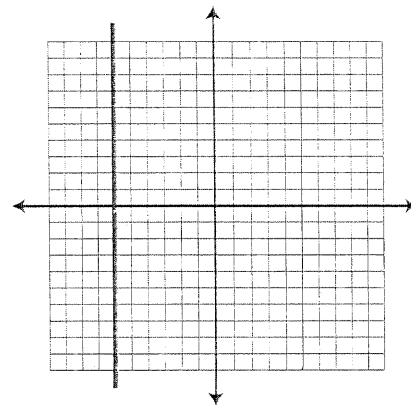
D. 5

5. The speed of a toy car is 0.18 m/s, and the equation relating distance and time is $d = 0.18t$. How many hours would it take for the car to travel 1 km?

- A. 0.18 hours
- B. 1.5 hours
- C. 5.6 hours
- D. 5556 hours

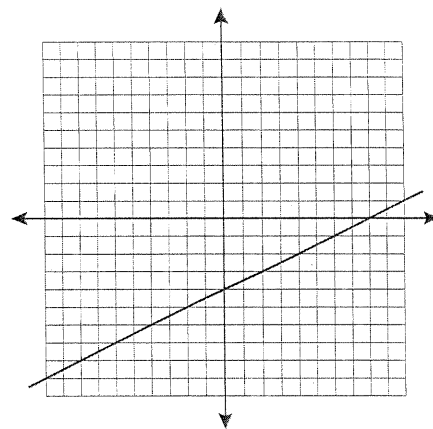
6. The equation of the line is:

- A. $x = -6$
- B. $y = -6$
- C. $x = 0$
- D. $y = 0$



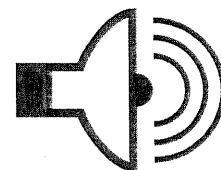
7. The slope-intercept equation of the line is:

- A. $y = -\frac{1}{2}x - 4$
- B. $y = \frac{1}{2}x - 4$
- C. $y = \frac{1}{2}x + 4$
- D. $y = 2x - 4$



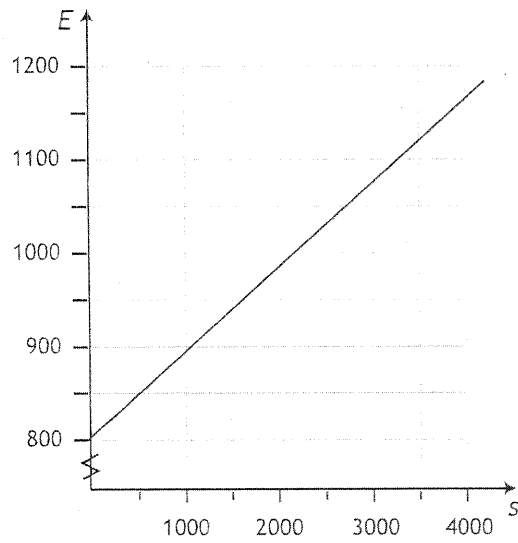
8. The speed of sound at 0°C is 331 m/s. At 15°C , the speed increases to 340 m/s. The function relating the speed of sound (s) to the temperature (T) is:

- A. $s(T) = 15T$
- B. $s(T) = 15T + 331$
- C. $s(T) = 0.6T + 331$
- D. $s(T) = 0.6T + 340$

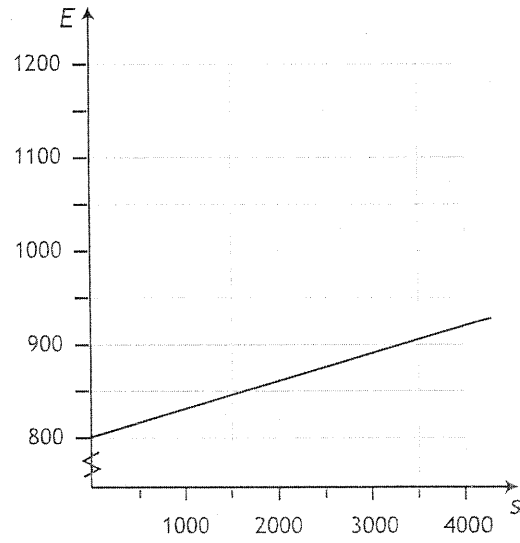


9. John is a salesman earning \$800 per week plus a 9% commission. The function relating John's earnings (E) to the amount of sales (s), along with the corresponding graph, is:

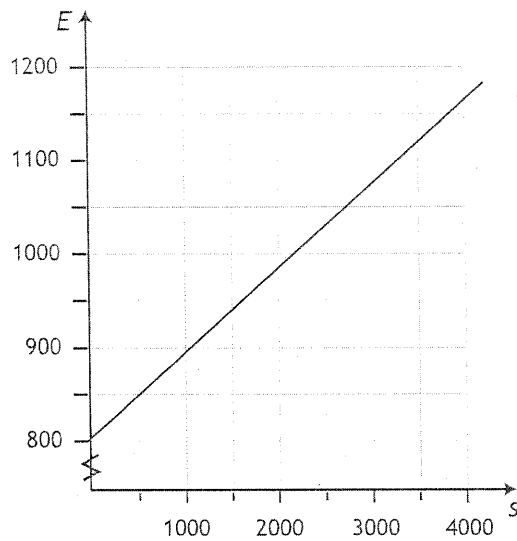
A. $E(s) = 0.9s + 800$



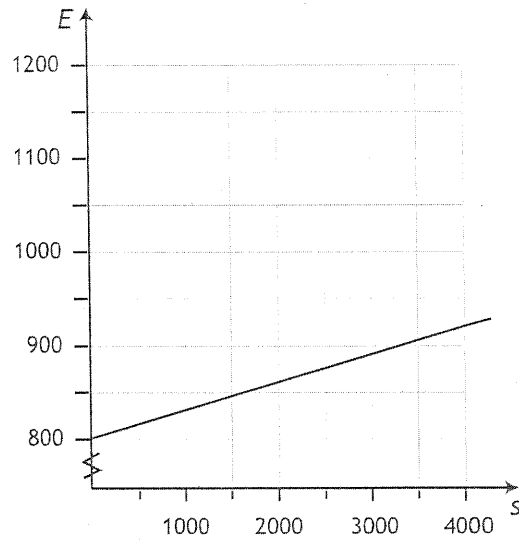
B. $E(s) = 0.9s + 800$



C. $E(s) = 0.09s + 800$



D. $E(s) = 0.09s + 800$

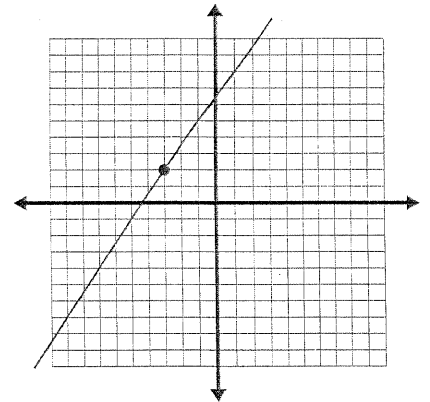


10. The steps required to graph the slope-point equation $y - 3 = -\frac{1}{2}(x + 5)$ are:

- A. Draw a point at $(-3, 5)$. Follow the slope down one unit and left two units to get a second point at $(-4, 3)$. Draw a line between the two points.
- B. Draw a point at $(-5, 3)$. Follow the slope down one unit and right two units to get a second point at $(-3, 2)$. Draw a line between the two points.
- C. Draw a point at $(-3, 5)$. Follow the slope down one unit and right two units to get a second point at $(-1, 4)$. Draw a line between the two points.
- D. Draw a point at $(-5, 3)$. Follow the slope down one unit and left two units to get a second point at $(-7, 2)$. Draw a line between the two points.

11. The slope-point equation of the line is:

- A. $y - 2 = \frac{3}{2}(x + 3)$
- B. $y + 2 = \frac{3}{2}(x - 3)$
- C. $y - 2 = \frac{2}{3}(x + 3)$
- D. $y + 2 = \frac{2}{3}(x - 3)$



12. The slope-point equation of a line passing through the points $(-3, -1)$ and $(2, -6)$ is:

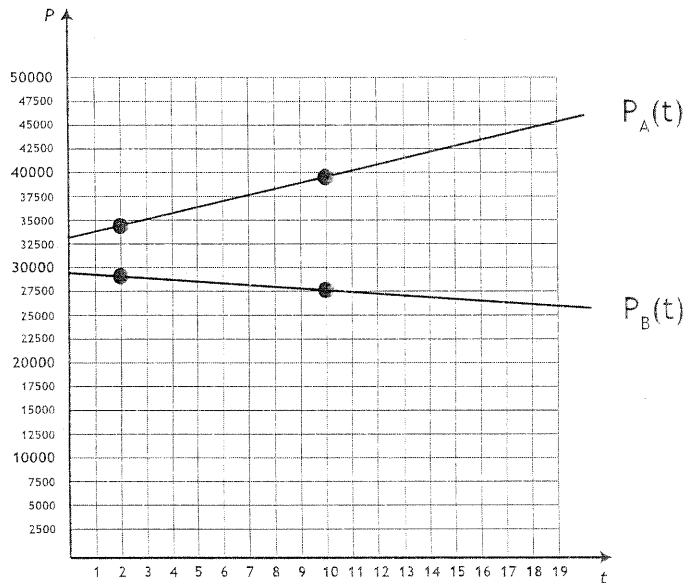
- A. $y - 1 = -(x - 3)$
- B. $y + 1 = -(x + 3)$
- C. $y - 1 = x - 3$
- D. $y + 1 = x + 3$

13. The following table shows population data for two small cities.

Year	Population of City A	Population of City B
2012	34000	29170
2020	38960	27410



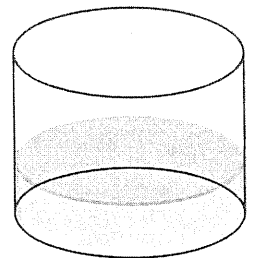
If t represents the number of years since 2010, and P is the population, then the population for each city can be graphed as shown.



The function corresponding to the population of City B is:

- A. $P_B(t) = -220t + 29610$
- B. $P_B(t) = -220t + 29640$
- C. $P_B(t) = -220t + 29680$
- D. $P_B(t) = -220t + 29800$

14. A cylindrical tank contains an unknown amount of water. If water is added to the tank at a rate of 5 L/min for 12 minutes, the volume of the water will be 89 L. The equation for the volume of the tank as a function of time is:



- A. $V(t) = 5t + 12$
- B. $V(t) = 5t + 89$
- C. $V(t) = \frac{1}{5}t + 29$
- D. $V(t) = 5t + 29$

15. The general form equation $\frac{3}{4}x - \frac{3}{2}y - 6 = 0$ can be written in slope-intercept form as:

A. $y = -\frac{1}{4}x - 2$

B. $y = \frac{1}{4}x + 2$

C. $y = -\frac{1}{2}x + 4$

D. $y = \frac{1}{2}x - 4$

16. The x- and y-intercepts of $7x - 8y - 56 = 0$ are:

A. x-intercept: $(-7, 0)$; y-intercept: $(0, 8)$.

B. x-intercept: $(0, -7)$; y-intercept: $(8, 0)$.

C. x-intercept: $(8, 0)$; y-intercept: $(0, -7)$.

D. x-intercept: $(0, 8)$; y-intercept: $(-7, 0)$.

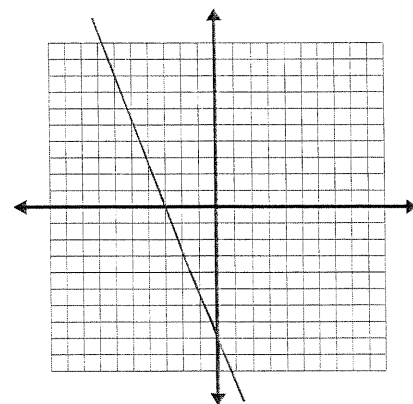
17. The general form equation of the line is:

A. $3x + 8y + 12 = 0$

B. $3x + 8y - 24 = 0$

C. $8x + 3y + 24 = 0$

D. $8x + 3y - 12 = 0$



18. Two positive real numbers, a and b , have a sum of 5. This can be expressed algebraically as $a + b = 5$. The true statement regarding the graph of $a + b = 5$ is:

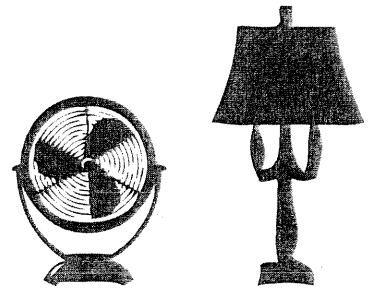
A. The dependent variable is a , so the relation must be graphed as $a = -b + 5$.

B. The dependent variable is b , so the relation must be graphed as $b = -a + 5$.

C. There is no cause-and-effect relationship between a and b , so the graph may be represented with either $a = -b + 5$ or $b = -a + 5$.

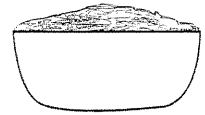
D. This relation cannot be graphed.

19. A small appliance store is having a sale on fans and lamps. A fan costs \$10, and a lamp costs \$20. At the end of the day, the revenue from these items is \$120. If the quantity of fans sold is f , and the quantity of lamps sold is l , the general form equation that relates the variables is:



- A. $f + l - 6 = 0$
- B. $f + 2l - 12 = 0$
- C. $2f + l - 12 = 0$
- D. $2f + l - 6 = 0$

20. There are 400 Calories in one bowl of dry cereal. The equation $C = 400b$ relates the amount of Calories (C) to the number of bowls (b). The true statement regarding the graph of this relation is:



- A. There is no cause-and-effect relationship between the variables, so it can be graphed as $C = 400b$ or $b = \frac{C}{400}$.
- B. The dependent variable is b and the independent variable is C .
- C. The dependent variable is C and the independent variable is 400.
- D. There is a cause-and-effect relationship between the variables, so they should only be graphed as $C = 400b$. The dependent variable is C and the independent variable is b , so we can express this as the function $C(b) = 400b$.

21. Two lines have slopes of $-\frac{2}{a}$ and 3. If the lines are parallel, the value of a is:

- A. $a = -\frac{3}{2}$
- B. $a = -\frac{2}{3}$
- C. $a = \frac{2}{3}$
- D. $a = 3$

22. A line with points at $(-7, 3)$ and $(1, -3)$ is perpendicular to a line with points at $(-1, -3)$ and $(a, 5)$. The value of a is:

- A. 2
- B. 3
- C. 4
- D. 5

23. The slope-intercept equation of a line parallel to $6x - 2y + 10 = 0$ and passing through the point $(-2, -7)$ is:

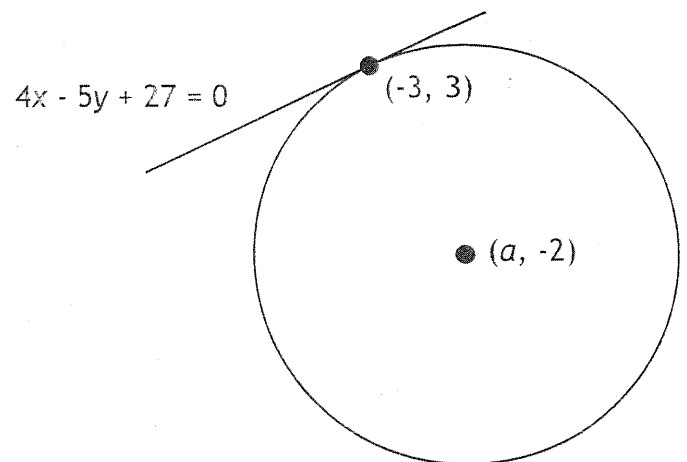
- A. $y = \frac{1}{6}x - 1$
- B. $y = \frac{1}{3}x + 2$
- C. $y = 3x - 1$
- D. $y = 6x + 2$

24. The equation of a line perpendicular to $y + 4 = 0$ and passing through the point $(-8, 9)$ is:

- A. $x = -8$
- B. $y = 0$
- C. $y = -8$
- D. Undefined

25. The line $4x - 5y + 27 = 0$ comes into contact with a circle at the point $(-3, 3)$. The centre of the circle is at the point $(a, -2)$. The value of a is:

- A. -1
- B. 0
- C. 1
- D. 2



Linear Functions - ANSWER KEY
Video solutions are in italics.

- | | |
|--|---|
| 1. A <i>Slope of a Line, Introduction (b)</i> | 13. A <i>Slope-Point Form, Example 4</i> |
| 2. D <i>Slope of a Line, Introduction (d)</i> | 14. D <i>Slope-Point Form, Example 5</i> |
| 3. C <i>Slope of a Line, Example 2a</i> | 15. D <i>General Form, Example 1b</i> |
| 4. A <i>Slope of a Line, Example 3b</i> | 16. C <i>General Form, Example 2a</i> |
| 5. B <i>Slope of a Line, Example 4e</i> | 17. C <i>General Form, Example 3b</i> |
| 6. A <i>Slope-Intercept Form, Introduction (d)</i> | 18. C <i>General Form, Example 4</i> |
| 7. B <i>Slope-Intercept Form, Example 2a</i> | 19. B <i>General Form, Example 5b</i> |
| 8. C <i>Slope-Intercept Form, Example 3b</i> | 20. D <i>General Form, Example 8</i> |
| 9. C <i>Slope-Intercept Form, Example 4a</i> | 21. B <i>Parallel and Perpendicular, Example 1b</i> |
| 10. B <i>Slope-Point Form, Introduction (a)</i> | 22. D <i>Parallel and Perpendicular, Example 2b</i> |
| 11. A <i>Slope-Point Form, Example 2b</i> | 23. C <i>Parallel and Perpendicular, Example 3a</i> |
| 12. B <i>Slope-Point Form, Example 3a</i> | 24. A <i>Parallel and Perpendicular Example 4b</i> |
| | 25. C <i>Parallel and Perpendicular, Example 7</i> |

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Name: _____

10C-RF9 V2

Relations and Functions – Systems of Equations

Part I:

1. Solve each system of equations.

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

b) $y = 2x - 5$
 $4x - y = 7$

c) $2a - 5b = 29$
 $8a - 3b = -3$

Part II:

2. Determine how many solutions each system of equations will have.

a) $y = 2x - 1$
 $2y = 4x - 2$

b) $4x - y - 5 = 0$
 $4x + y - 9 = 0$

c) $y = \frac{2}{5}x - 9$
 $3x - 5y + 10 = 0$

Type equation here.

3. The Leadership team held a car wash to raise money. They washed cars for \$5 each and vans for \$7 each. They washed 45 vehicles and earned \$243. How many of each type of vehicle did they wash?
4. Three times the larger of two numbers is equal to four times the smaller. The sum of the numbers is 21. Find the numbers.

Math 10C: Systems of Equations PRACTICE EXAM

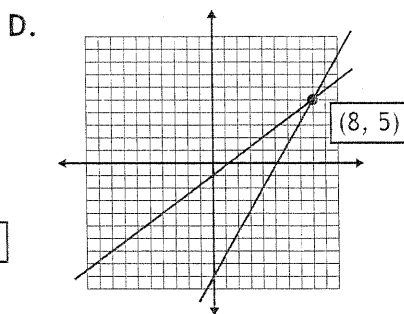
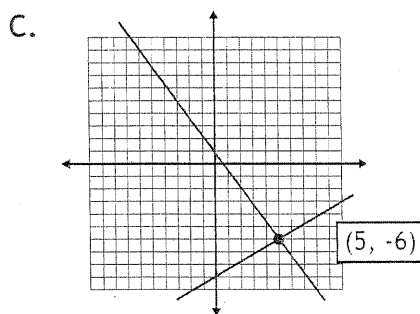
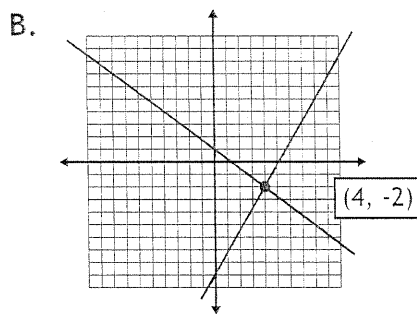
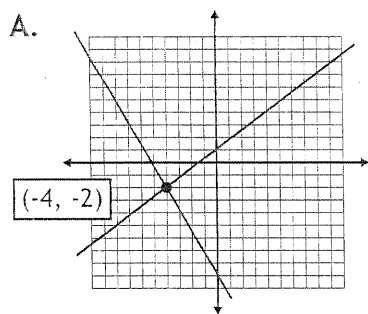
1. An online music store offers two payment methods:

- 1) The customer pays a monthly subscription fee of \$8.00 and songs can be downloaded for \$0.70 each.
2) The customer pays-as-they-go, at the full rate of \$0.90/song.



The two payment methods can be represented with the system of equations:

- A. $C = 0.70n + 8$ and $C = 0.90n$
 B. $C = -0.70n + 8$ and $C = -0.90n$
 C. $C = 0.70n - 8$ and $C = 0.90n$
 D. $C = 8n + 0.70$ and $C = 0.90n$
2. The system of equations $y = -\frac{3}{4}x + 1$ and $y = \frac{7}{4}x - 9$ has the point of intersection:



3. The system of equations $4x - 7y + 35 = 0$ and $5x + 7y + 28 = 0$ can be graphed using:

A. $y = -\frac{4}{7}x - 5$ and $y = \frac{5}{7}x + 4$

B. $y = \frac{4}{7}x + 5$ and $y = -\frac{5}{7}x - 4$

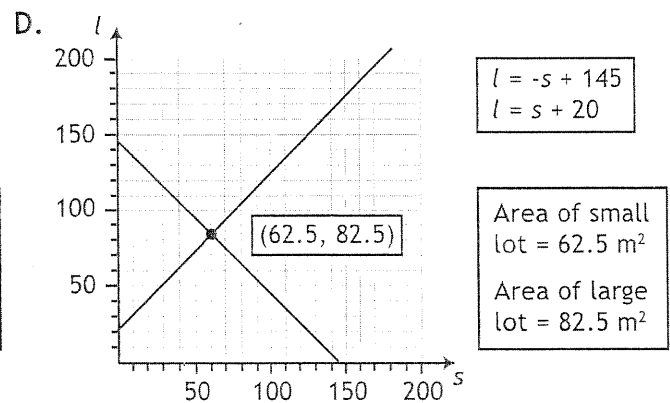
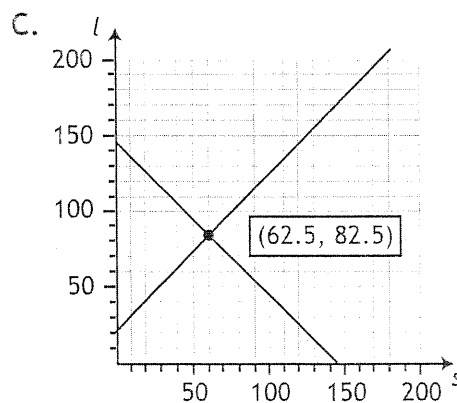
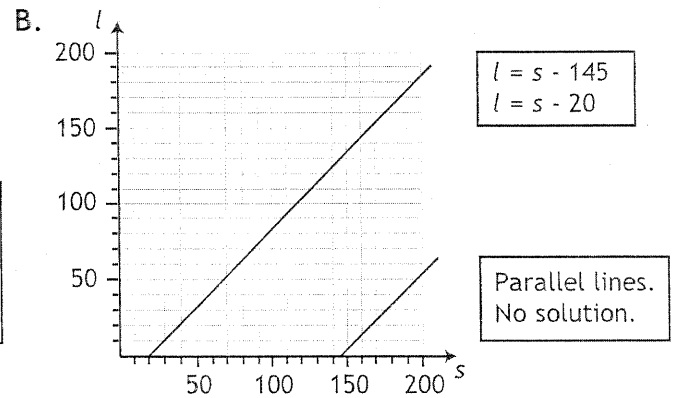
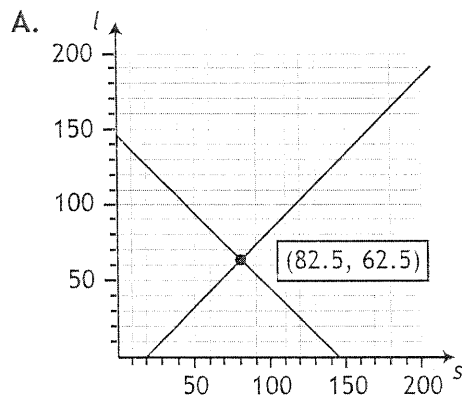
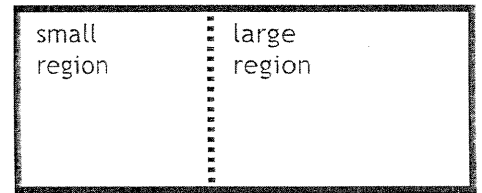
C. $y = \frac{5}{7}x + 4$ and $y = -\frac{4}{7}x - 5$

D. $y = \frac{7}{4}x + 5$ and $y = -\frac{7}{5}x - 4$

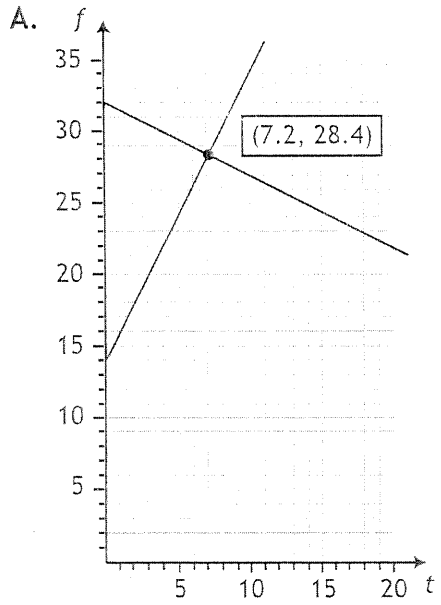
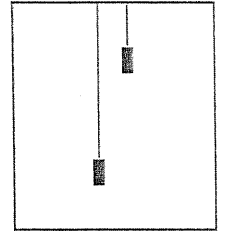
4. The system of equations $y = -\frac{1}{3}x + 6$ and $2x + 6y = 24$ has:
- A. No solution, because the slopes are identical and the y-intercepts are the same.
 - B. No solution, because the slopes are identical and the y-intercepts are different.
 - C. One solution, because the slopes are different.
 - D. Infinite solutions, because the slopes are identical and the y-intercepts are the same.

5. The system of equations $3x + 9y = -9$ and $x + 3y = -3$ has:
- A. No solution, because the slopes are identical and the y-intercepts are the same.
 - B. No solution, because the slopes are identical and the y-intercepts are different.
 - C. One solution, because the slopes are different.
 - D. Infinite solutions, because the slopes are identical and the y-intercepts are the same.

6. A rectangular lot is separated by a fence. The large region has an area 20 m^2 greater than the small region. The total area of the lot is 145 m^2 . The graphical solution to this problem, where s is the area of the small lot and l is the area of the large lot, is shown in:

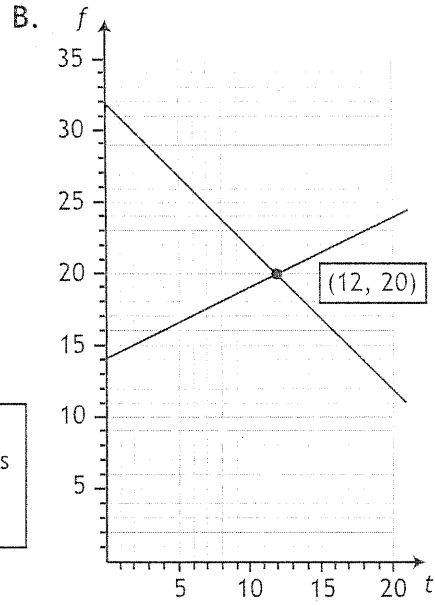


7. In an apartment building, one elevator rises from the 14th floor to the 24th floor in 20 seconds. During that same time, another elevator descends from the 32nd floor to the 12th floor. The graphical solution to this problem, where t is the elapsed time and f is the floor number, is shown in:



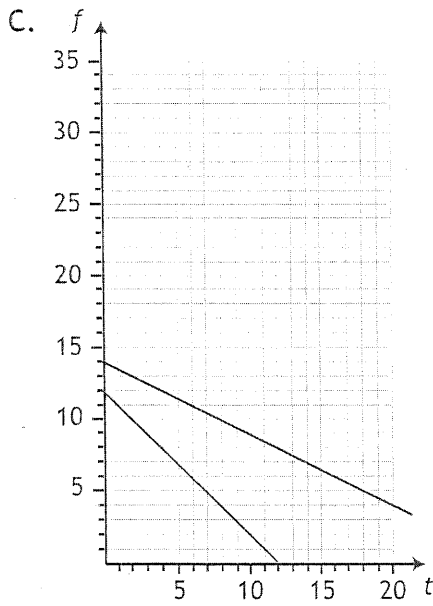
$$\begin{aligned} f &= 2t + 14 \\ f &= -0.5t + 32 \end{aligned}$$

The elevators pass at 7.2 seconds between the 28th and 29th floors.



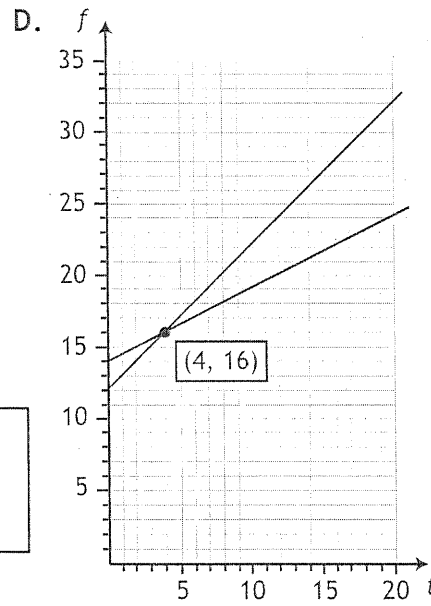
$$\begin{aligned} f &= 0.5t + 14 \\ f &= -t + 32 \end{aligned}$$

The elevators pass at 12 seconds on the 20th floor.



$$\begin{aligned} f &= -0.5t + 14 \\ f &= -t + 12 \end{aligned}$$

The elevators pass at a negative time, so there is no solution.



$$\begin{aligned} f &= 0.5t + 14 \\ f &= t + 12 \end{aligned}$$

The elevators pass at 4 seconds on the 16th floor.

8. Using substitution, the solution to the system of equations $x + 3y = 9$ and $4x - y = 10$ is:
- A. (-5, 1)
 - B. (0, 3)
 - C. (3, 2)
 - D. (4, -1)

Use the following information to answer questions 9, 10, 11 and 18, 19, 20.

Independent Systems ✕	
Systems that yield a definite result, such as $x = -5$ and $y = -4$, are called <i>independent systems</i> .	
The equations of an independent system yield intersecting lines and have one solution.	

Dependent Systems /	Inconsistent Systems //
Systems that yield an identity, such as $0 = 0$ or $2 = 2$, are called <i>dependent systems</i> .	Systems that yield a false result, such as $0 = 12$, are called <i>inconsistent systems</i> .
The equations of a dependent system yield identical lines and have infinite solutions.	The equations of an inconsistent system yield parallel lines and have no solution.

9. The system of equations $x + 6y = -29$ and $x + \frac{1}{4}y = -6$ has: *Solve with substitution.*
- A. No solution, because the system is independent.
 - B. No solution, because the system is inconsistent.
 - C. One solution, because the system is independent.
 - D. Infinite solutions, because the system is dependent.

10. The system of equations $x + 3y = 3$ and $3x + 9y = 9$ has:

Solve with substitution.

- A. No solution, because the system is independent.
- B. No solution, because the system is inconsistent.
- C. One solution, because the system is independent.
- D. Infinite solutions, because the system is dependent.

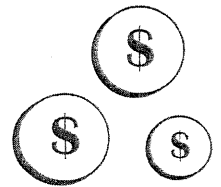
11. The system of equations $2x - y = -13$ and $2x - y = -1$ has:

Solve with substitution.

- A. No solution, because the system is independent.
- B. No solution, because the system is inconsistent.
- C. One solution, because the system is independent.
- D. Infinite solutions, because the system is dependent.

12. Katrina has \$2.50 worth of nickels and dimes. She has 36 coins in total. How many nickels and dimes does she have? Solve using substitution.

- A. 12 dimes and 24 nickels
- B. 13 dimes and 23 nickels
- C. 14 dimes and 22 nickels
- D. 15 dimes and 21 nickels



13. Kory drives from Edmonton to Lloydminster and back. Going to Lloydminster, he drives with an average speed of 96 km/h. For the return trip, he averages a speed of 100 km/h. The total time driving is 5.1 hours. Using this information, calculate the distance from Edmonton to Lloydminster. Solve using substitution.

- A. 200 km
- B. 250 km
- C. 300 km
- D. 350 km



14. James invests a total of \$5000 in two different investments. The first investment earns 2.9% interest, and the second investment earns 4.5% interest. The total interest earned is \$196.20. How much did James invest in each investment? Solve using substitution.

- A. \$1800 in the low-yield investment and \$3200 in the high-yield investment.
- B. \$1900 in the low-yield investment and \$3150 in the high-yield investment.
- C. \$2000 in the low-yield investment and \$3100 in the high-yield investment.
- D. \$2100 in the low-yield investment and \$3050 in the high-yield investment.



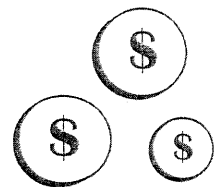
15. One bin of dried fruit mix contains 28% apricots. A different bin of dried fruit mix contains 18% apricots. A new mix is made using one scoop from each bin. This mix has a mass of 600 g, and contains 25% apricots. What was the mass of dried fruit in each scoop? Solve using substitution.
- A. The scoop from the first bin was 420 g, and the scoop from the second bin was 180 g.
 - B. The scoop from the first bin was 430 g, and the scoop from the second bin was 175 g.
 - C. The scoop from the first bin was 440 g, and the scoop from the second bin was 170 g.
 - D. The scoop from the first bin was 450 g, and the scoop from the second bin was 165 g.
16. The system of equations $x + 2y = 0$ and $x + 5y = b$ has the solution $(-2, a)$. Determine the values of a and b .
- A. $a = 1$ and $b = 3$
 - B. $a = 2$ and $b = 2$
 - C. $a = 2$ and $b = 3$
 - D. $a = 3$ and $b = 1$
17. Using elimination, the solution to the system of equations $2x - y = 8$ and $5x - 3y = 21$ is:
- A. $(-1, 1)$
 - B. $(0, -3)$
 - C. $(3, -2)$
 - D. $(4, 0)$
18. The system of equations $x - \frac{1}{2}y = -3$ and $\frac{1}{2}x + y = -4$ has: *Solve with elimination.*
- A. No solution, because the system is independent.
 - B. No solution, because the system is inconsistent.
 - C. One solution, because the system is independent.
 - D. Infinite solutions, because the system is dependent.

19. The system of equations $6x + 4y = 14$ and $x + \frac{2}{3}y = \frac{7}{3}$ has: *Solve with elimination.*
- A. No solution, because the system is independent.
 - B. No solution, because the system is inconsistent.
 - C. One solution, because the system is independent.
 - D. Infinite solutions, because the system is dependent.

20. The system of equations $x - \frac{1}{2}y = 4$ and $2x - y = 5$ has: *Solve with elimination.*
- A. No solution, because the system is independent.
 - B. No solution, because the system is inconsistent.
 - C. One solution, because the system is independent.
 - D. Infinite solutions, because the system is dependent.

21. A coin collection has 33 quarters and nickels. The number of nickels is 5 greater than three times the number of quarters. How many coins of each type are there?
Solve using elimination.

- A. 26 nickels and 7 quarters.
- B. 25 nickels and 8 quarters.
- C. 24 nickels and 9 quarters.
- D. 23 nickels and 10 quarters.



22. It takes 3 hours for a canoe to travel 45 km downstream. The return trip, going upstream, takes 5 hours. What is the speed of the canoe and the speed of the current?
Solve using elimination.

- A. The speed of the canoe is 4 km/h, and the speed of the current is 4 km/h.
- B. The speed of the canoe is 8 km/h, and the speed of the current is 3.5 km/h.
- C. The speed of the canoe is 12 km/h, and the speed of the current is 3 km/h.
- D. The speed of the canoe is 16 km/h, and the speed of the current is 5 km/h.



23. Corrine's mom is 25 years older than Corrine. In two years, Corrine's mom will be twice Corrine's age. How old are Corrine and Corrine's mom? Solve using elimination.
- A. Corrine is 22 and her mom is 47.
 - B. Corrine is 23 and her mom is 48.
 - C. Corrine is 24 and her mom is 49.
 - D. Corrine is 25 and her mom is 50.
24. Ryan and Greg split the driving on a 1335 km trip from Calgary to Winnipeg. Ryan drove to Regina with an average speed of 90 km/h. Greg drove the rest of the way to Winnipeg with an average speed of 100 km/h. The total trip took 14.2 hours. What is the distance between Calgary and Regina? Regina and Winnipeg? Solve using elimination.
- A. Calgary to Regina is 570 km, and Regina to Winnipeg is 765 km.
 - B. Calgary to Regina is 765 km, and Regina to Winnipeg is 570 km.
 - C. Calgary to Regina is 665 km, and Regina to Winnipeg is 670 km.
 - D. Calgary to Regina is 670 km, and Regina to Winnipeg is 665 km.



Systems of Equations - ANSWER KEY

Video solutions are in italics.

- | | |
|---|--------------------------------------|
| 1. A <i>Solving Systems Graphically, Introduction</i> | 13. B <i>Substitution, Example 4</i> |
| 2. B <i>Solving Systems Graphically, Example 1a</i> | 14. A <i>Substitution, Example 6</i> |
| 3. B <i>Solving Systems Graphically, Example 1b</i> | 15. A <i>Substitution, Example 7</i> |
| 4. B <i>Solving Systems Graphically, Example 2c</i> | 16. A <i>Substitution, Example 8</i> |
| 5. D <i>Solving Systems Graphically, Example 3b</i> | 17. C <i>Elimination, Example 1b</i> |
| 6. D <i>Solving Systems Graphically, Example 6</i> | 18. C <i>Elimination, Example 2a</i> |
| 7. B <i>Solving Systems Graphically, Example 8</i> | 19. D <i>Elimination, Example 2b</i> |
| 8. C <i>Substitution, Example 1b</i> | 20. B <i>Elimination, Example 2c</i> |
| 9. C <i>Substitution, Example 2b</i> | 21. A <i>Elimination, Example 3</i> |
| 10. D <i>Substitution, Example 2c</i> | 22. C <i>Elimination, Example 5</i> |
| 11. B <i>Substitution, Example 2d</i> | 23. B <i>Elimination, Example 7</i> |
| 12. C <i>Substitution, Example 3</i> | 24. B <i>Elimination, Example 8</i> |

Math 10C Practice Exam: Tips for Students

- Every question in the practice exam has already been covered in the Math 10C workbook. It is recommended that students refrain from looking at the practice exam until they have completed their studies for the unit.
- Do not guess on a practice exam. The practice exam is a self-diagnostic tool that can be used to identify knowledge gaps. Leave the answer blank and study the solution later.

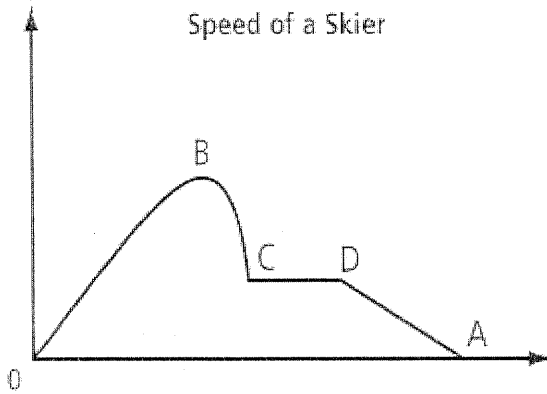
Review for Chapter 6-9 Exam

Multiple Choice

Identify the choice that best completes the statement or answers the question.

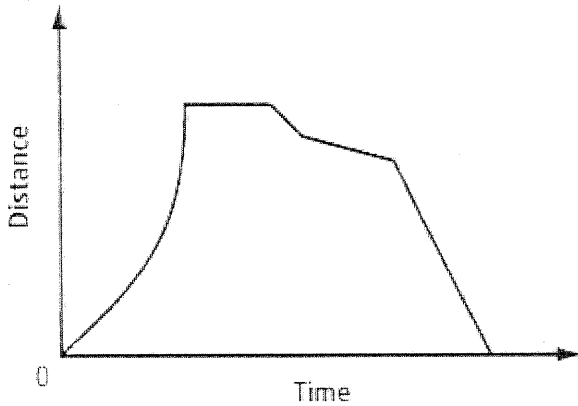
Use the graph to answer the question(s) that follow.

The graph shows how the speed of a skier changes over time as she goes down the slope of a mountain.



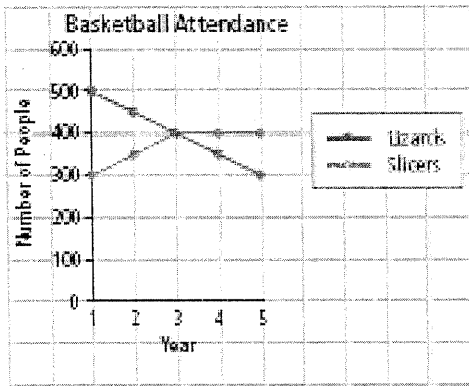
- _____ 1. Which statement describes what is happening to the skier as she moves from point D to point A on the graph?
- a. The skier is slowing down and has stopped.
 - b. The skier is travelling at a constant speed.
 - c. The skier has reached her maximum speed.
 - d. The skier is increasing speed at a constant rate.

2. Which scenario describes the distance-time graph shown below?



- a. A car speeds up at a constant rate, then continues at a constant speed. It slows down for a period of time. It slows down at a slower rate, then slows down at a faster rate until it returns to the original starting point.
- b. A car speeds up at an increasing rate, then continues at a constant speed. It slows down for a period of time. It slows down at a slower rate, then slows down at a faster rate until it returns to the original starting point.
- c. A car speeds up at a constant rate, then stops for a period of time. It starts to move again, slower than before. It slows down at a slower rate, then slows down at a faster rate until it returns to the original starting point.
- d. A car speeds up at an increasing rate, then continues at a constant speed. It slows down for a period of time. It slows down at a faster rate, then slows down at a slower rate until it returns to the original starting point.

3. The graph shows the number of fans for each team who attended basketball games during the playing season. Which team's attendance is changing at a constant rate?



- a. Both teams
- b. Lizards
- c. Neither team
- d. Slicers

4. Which of the following tables of values represent(s) a linear relation?

A		C	
x	y	x	y
-2	-7	-2	4
-4	-14	-4	16
-7	-24.5	-7	49
-8	-28	-8	64

B		D	
x	y	x	y
-2	6	-2	1.4
-4	12	-4	2.0
-7	21	-7	2.6
-8	24	-8	2.8

- a. A
b. A and B
c. C
d. C and D

Name: _____

ID: A

5. Which of the following represent(s) a linear relation?

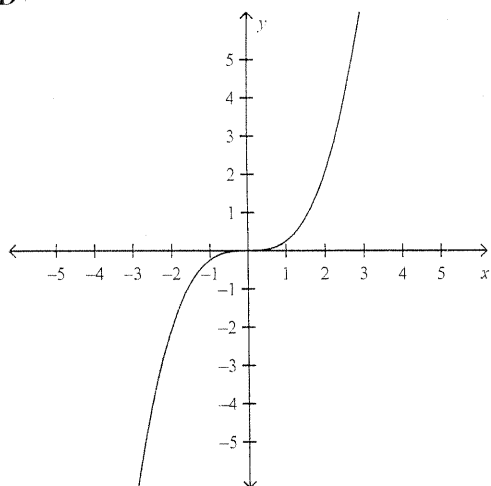
A $\{(2, 5), (3, 8), (5, 14), (6, 17)\}$

B

x	y
1	-4
2	-3
3	-2
4	-1

C $y = 2x^2 - 3$

D

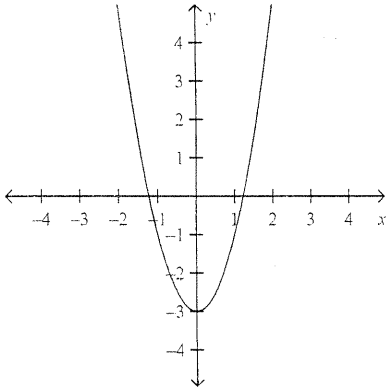


- a. A
- b. A and B

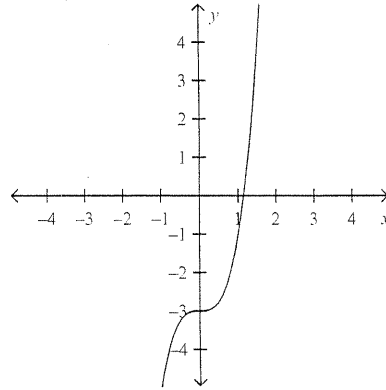
- c. C
- d. C and D

6. Which graph represents the relation $y = 2x^3 - 3$?

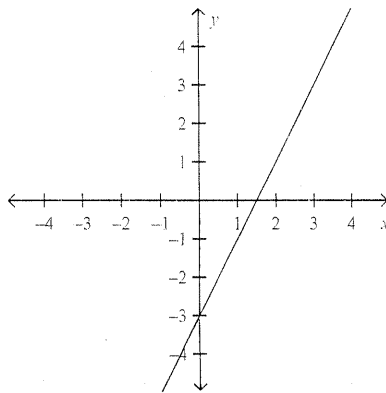
a.



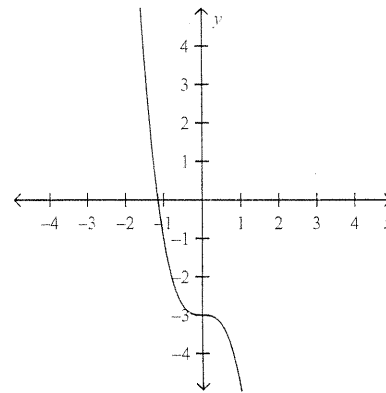
c.



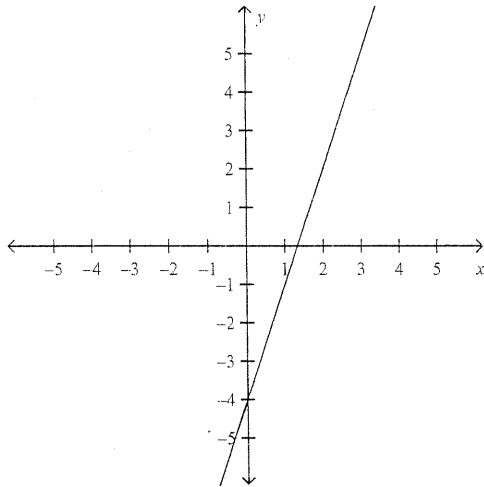
b.



d.



7. State the domain of this function in set notation.



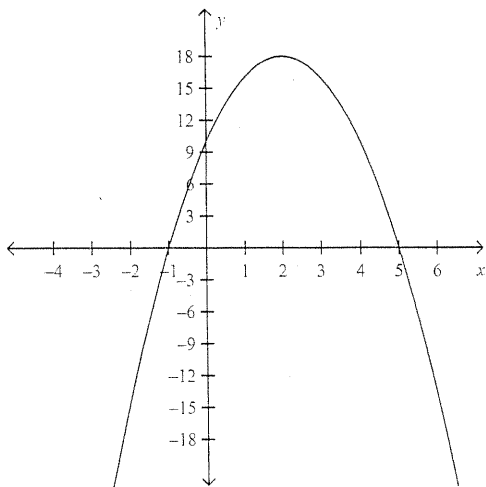
a. $\{x|x \in \mathbb{R}\}$

c. $\{y|y \in \mathbb{R}\}$

b. $\{x|x \neq 1, x \in \mathbb{R}\}$

d. $\{y|y \neq 1, y \in \mathbb{R}\}$

8. Use set notation to state the domain of this function.



- a. $\{x|x \neq -1, 5, x \in \mathbb{R}\}$ c. $\{y|y \leq 18, y \in \mathbb{R}\}$
 b. $\{x|x \in \mathbb{R}\}$ d. $\{y|y \in \mathbb{R}\}$

9. Which of the following represents the domain of the function $y = \frac{3x+1}{x+2}$?

- a. $\{x|x \neq -2, x \in \mathbb{R}\}$ c. $\{y|y \neq 3, y \in \mathbb{R}\}$
 b. $\{x|x \in \mathbb{R}\}$ d. $\{y|y \in \mathbb{R}\}$

10. Identify the range of the function $y = \frac{3}{x+2}$.

- a. $\{x|x \neq -2, x \in \mathbb{R}\}$ c. $\{y|y \neq 0, y \in \mathbb{R}\}$
 b. $\{x|x \in \mathbb{R}\}$ d. $\{y|y \in \mathbb{R}\}$

11. Which of the following represents the range of the relation $\{(0,4), (1,5), (2,6), (3,7)\}$?

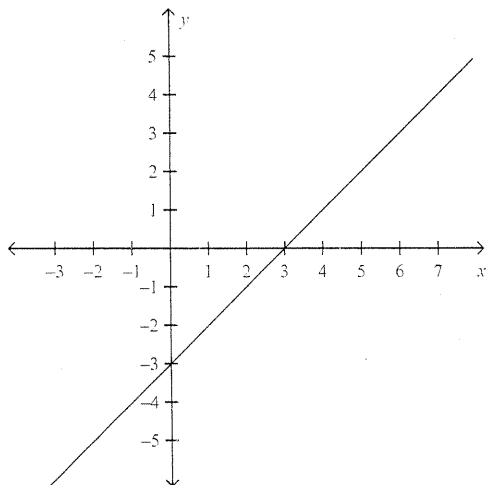
- a. $\{y|y > 3, x \in \mathbb{N}\}$ c. $\{y|4 \leq y \leq 7, y \in \mathbb{N}\}$
 b. $\{x|x \in \mathbb{N}\}$ d. $\{y|y \in \mathbb{N}\}$

12. Which relation has a graph that will satisfy the vertical line test?

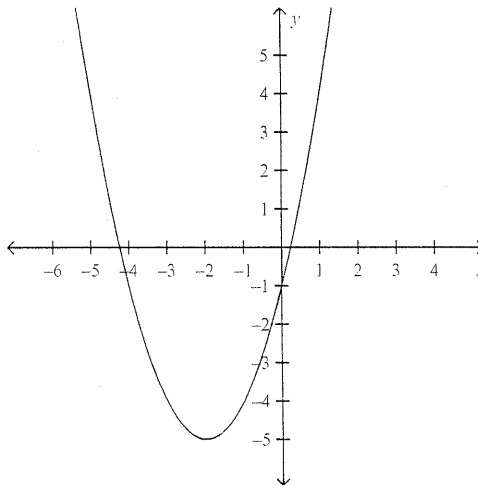
- a. $x^2 + y^2 = 25$ c. $3x^2 + 5y^2 = 18$
 b. $y = 4 \pm \sqrt{x}$ d. $y = 6 - \sqrt{2x+4}$

_____ 13. Which graph represents a relation that is *not* a function?

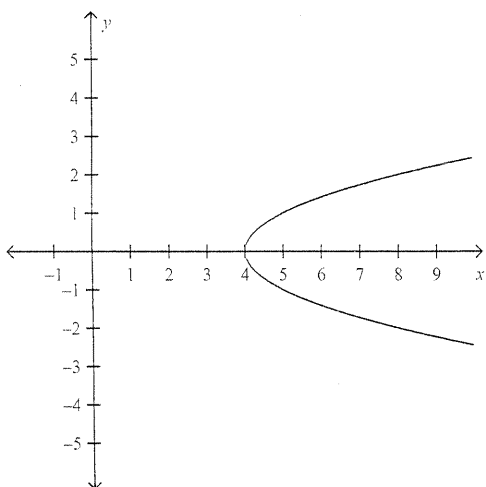
a.



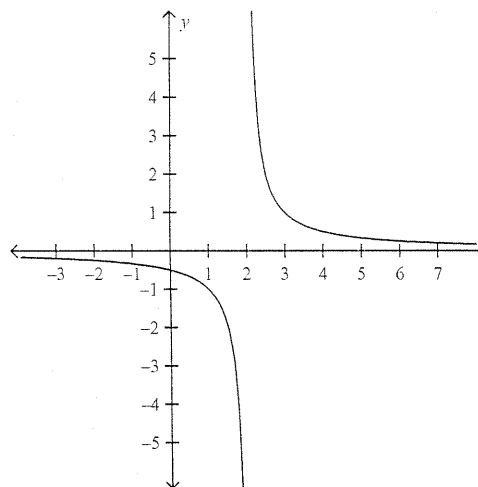
c.



b.



d.



_____ 14. Which relation is *not* a function?

a. $\{(1, 2), (2, 7), (3, 9), (4, 3)\}$

c. $\{(1, 0), (3, 2), (5, 4), (7, 2)\}$

b. $\{(-2, 1), (0, 4), (2, 9), (4, 16)\}$

d. $\{(3, 4), (6, 8), (9, 5), (3, 3)\}$

_____ 15. Given the equation $f(x) = -6x - 2$, determine $f(4)$.

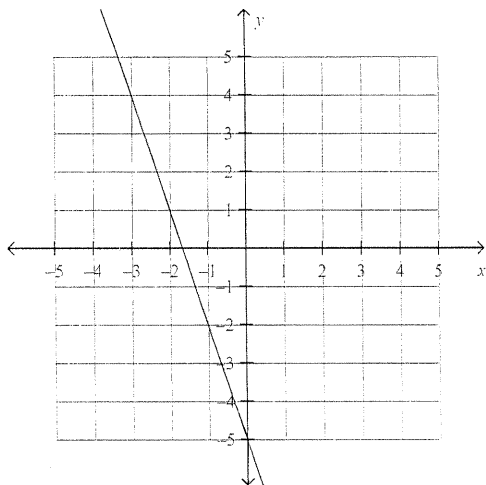
a. -26

c. -22

b. -24

d. 26

- _____ 16. The graph represents the function $f(x)$. What is the value of $f(-3)$?



- a. 1
b. 2
c. 4
d. 5
- _____ 17. Which statement is *not* true?
a. All relations are functions.
b. All functions are relations.
c. A relation is a function if each value in the domain corresponds to exactly one value in the range.
d. Each function has its own rule that is often given using function notation.
- _____ 18. Points $C(5, 7)$ and $D(-3, -12)$ are on a line. What is the run from point D to point C?
a. 19
b. 8
c. -5
d. -8
- _____ 19. Determine the slope of the line that passes through the points $E(-1, 9)$ and $F(2, -3)$.
a. 4
b. $\frac{1}{4}$
c. $-\frac{1}{4}$
d. -4

_____ 20. Use the table of values to determine the slope of the relation.

x	y
-16	-16
-8	-18
0	-20
8	-22
16	-24
24	-26

a. -4

b. $-\frac{1}{4}$

c. $\frac{1}{4}$

d. 4

_____ 21. The rate of change of a horizontal line is

a. infinite

b. negative

c. positive

d. zero

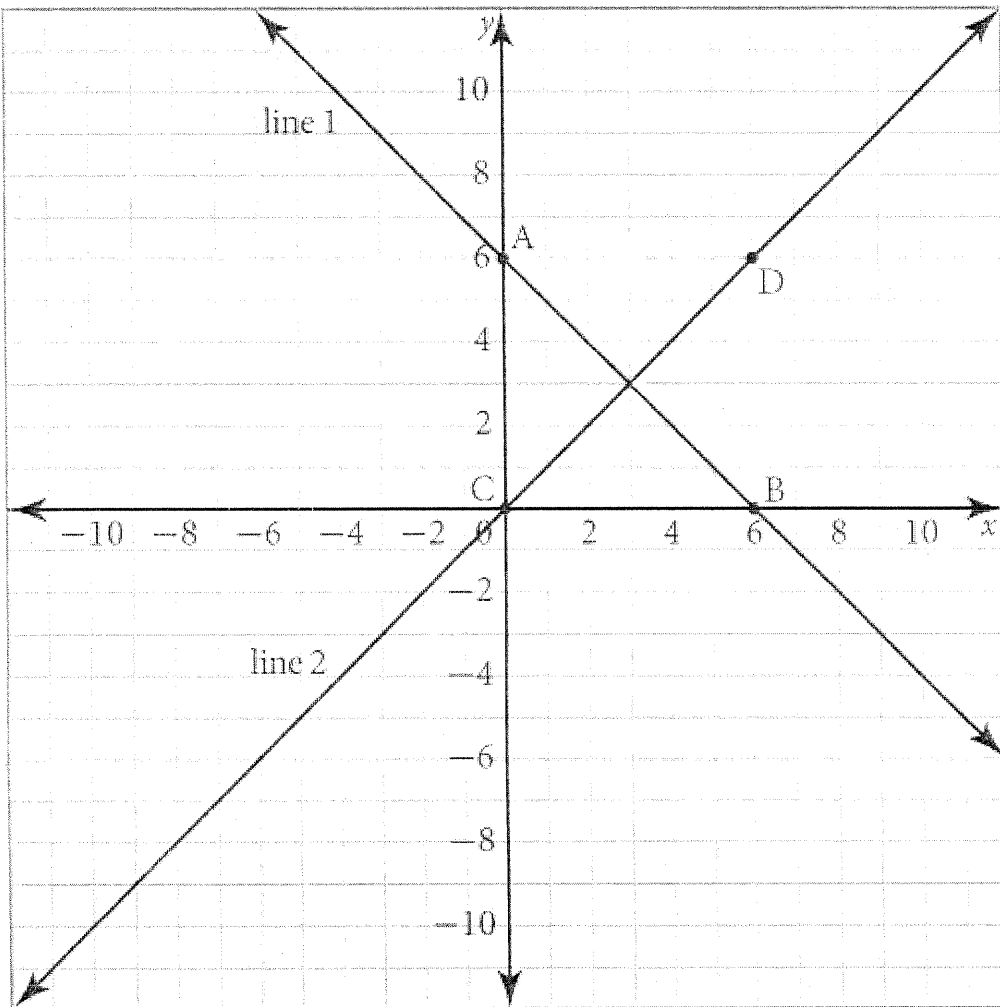
___ 22. Compare the values in the two tables to determine which statement is *not* true.

Line A	
x	y
0	0
1	6
2	12
3	18
4	24

Line B	
x	y
0	-22
1	-16
2	-10
3	-4
4	2

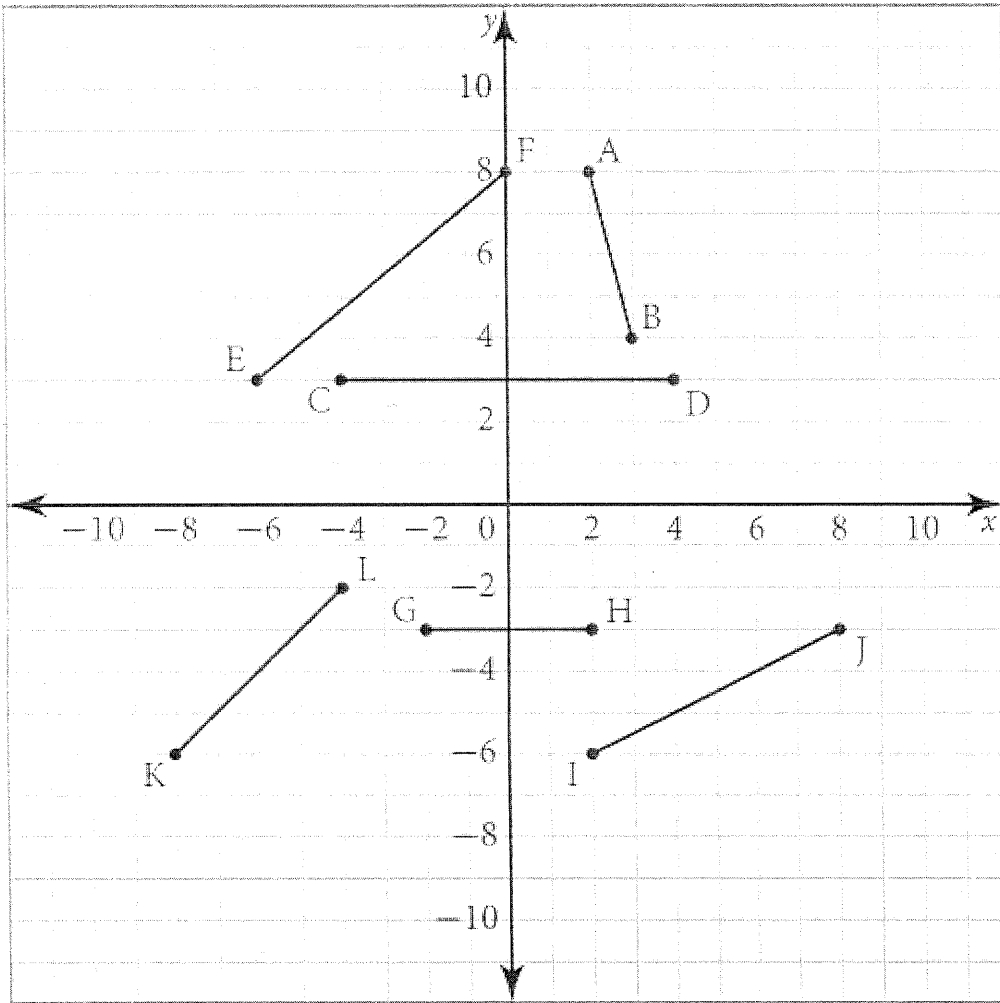
- Line A has a positive slope.
- Line B has a negative slope.
- Line A and line B have the same slope.
- Line A and line B have the same domain and range.

23. Which statement is *not* true about lines 1 and 2?



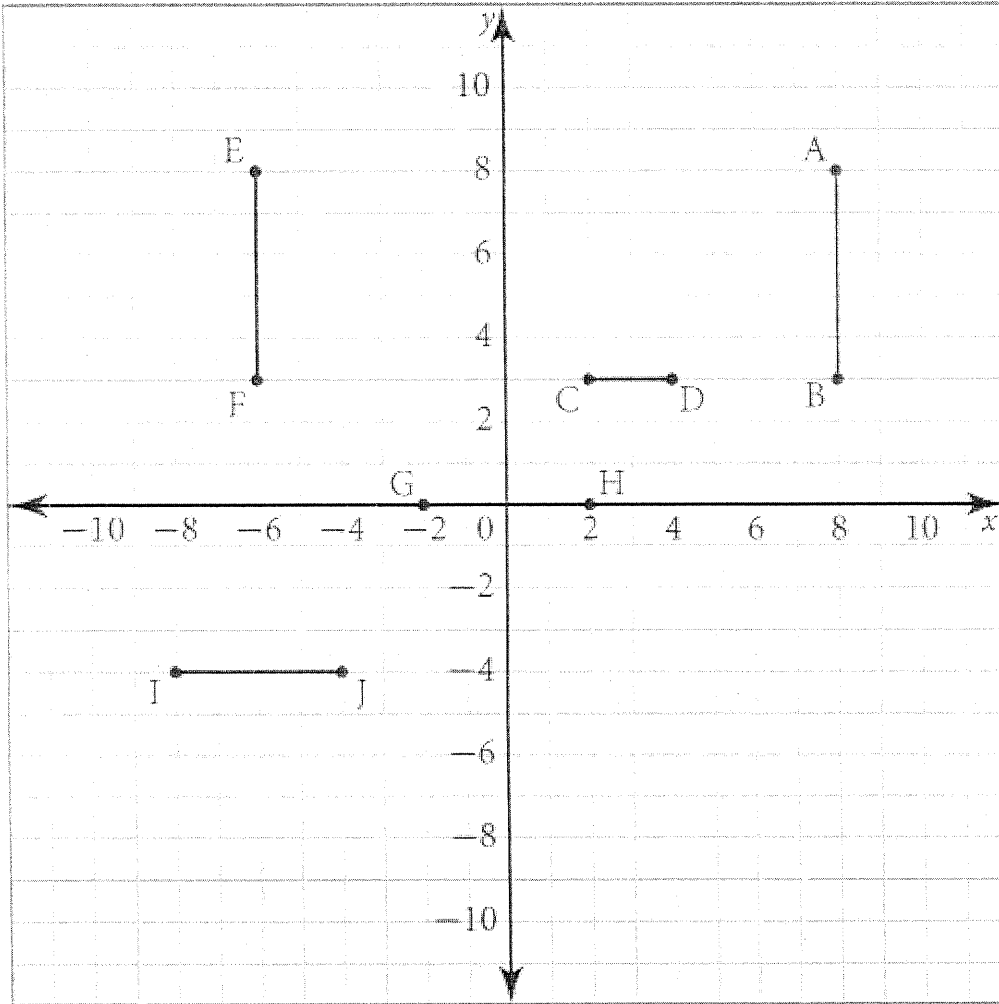
- a. Line 1 has negative slope.
- b. Line 2 has positive slope.
- c. The slope of line 1 is the negative of the slope of line 2.
- d. Line 2 is steeper than line 1.

24. Which line segment(s) in the graph has (have) a positive slope?



- | | |
|---------------------------------|---------------------------------|
| a. line segment AB | c. line segments EF, IJ, and KL |
| b. line segments AB, EF, and CD | d. line segments IJ, KL, and GH |

25. Which line segment(s) in the graph has (have) a slope of zero?



- a. line segment GH
- b. line segments CD, GH, and IJ
- c. line segments AB and EF
- d. line segments AB, CD, EF, GH, and IJ

26. What is the domain of $f(x) = 10^x$?

- a. $\{x \mid x > 0, x \in \mathbb{R}\}$
- b. $\{x \mid x > 10, x \in \mathbb{R}\}$
- c. $\{x \mid x \in \mathbb{R}\}$
- d. $\{y \mid y \in \mathbb{R}\}$

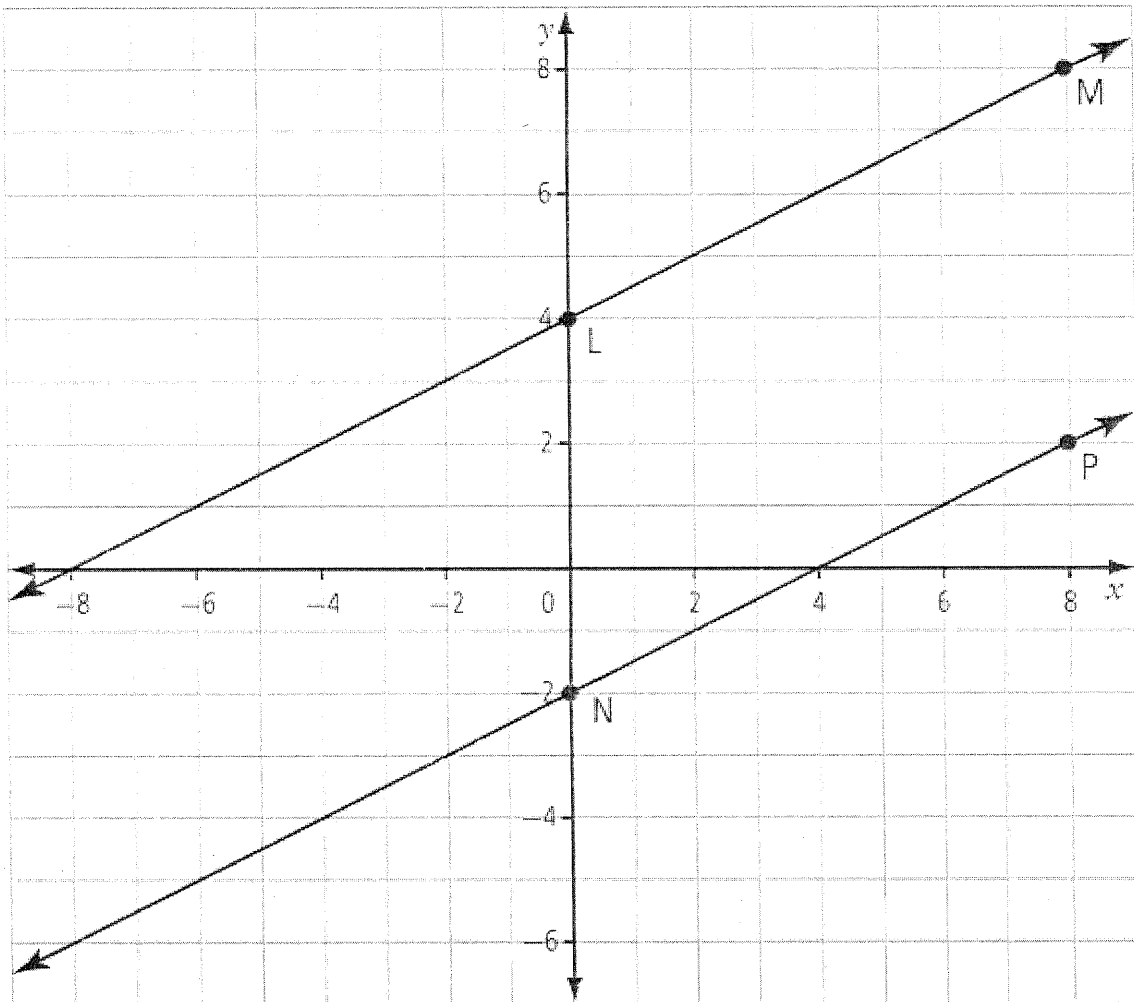
27. In the equation of a line, $y = mx + b$, the y -intercept is represented by the letter

- a. b
- b. m
- c. x
- d. y

28. The y -intercept of the line $y = -4x - 7$ is

- a. -7
- b. -4
- c. 4
- d. 7

- _____ 46. In the graph, the equation of the line containing LM is $y = 0.5x + 4$. The two lines are parallel. What is the equation of the line containing NP?



- a. $y = 0.5x - 2$
b. $y = 0.5x + 2$
c. $y = 2x - 2$
d. $y = 2x + 2$
- _____ 47. Points $G(-3, 8)$ and $H(0, 5)$ are on a line. Which equation represents a line that is parallel to this line?
a. $y = 2x - 8$
b. $y = x - 5$
c. $y = -x + 5$
d. $y = -2x + 8$
- _____ 48. Which equation represents a line that is perpendicular to a line passing through points $G(-3, 8)$ and $H(0, 5)$?
a. $y = -2x + 5$
b. $y = -x + 8$
c. $y = x - 5$
d. $y = 2x - 8$

- _____ 55. The ordered pair (2, 1) is the solution to which of the following linear systems?
- | | |
|-----------------------------------|-----------------------------------|
| a. $2x + y = 3$
$x + 2y = 3$ | c. $3x + 4y = 2$
$2x + 5y = 7$ |
| b. $2x + 3y = 6$
$3x + 2y = 9$ | d. $3x + y = 7$
$x + 2y = 4$ |
- _____ 56. Which of the following linear systems has the ordered pair (1, 1) as a solution?
- | | |
|-----------------------------------|------------------------------------|
| a. $3x + 2y = 3$
$5x + y = 4$ | c. $8x + y = 7$
$14x - 12y = 0$ |
| b. $7x + 2y = 9$
$2x + 7y = 9$ | d. $8x - 2y = 4$
$6x + y = 5$ |
- _____ 57. Translate the statement “eight less than five times a number is two less than three times the number” into an equation.
- | | |
|----------------------|----------------------|
| a. $5x - 8 = 3x - 2$ | c. $5x + 8 = 3x - 2$ |
| b. $5x - 8 = 2 - 3x$ | d. $5x + 8 = 2 + 3x$ |
- _____ 58. Express the following statement as an equation: “Twice a number less three is one half of three times the number.”
- | | |
|----------------------------|--------------------------------|
| a. $\frac{2x-3}{2} = 3x$ | c. $2x - 3 = \frac{3x}{2}$ |
| b. $2x - \frac{3}{2} = 3x$ | d. $2x - 3 = 3x + \frac{1}{2}$ |

Answer the the following question(s) using the information from the scenario below.

KC Fitness Club charges a flat fee of \$25 per month plus \$5 per visit. Workout Zone charges a flat fee of \$35 per month plus \$3 per visit. Let x represent the number of visits per month and let y represent the total cost per month, in dollars.

- _____ 59. Which system of linear equations represents this situation?
- | | |
|---|---|
| a. KC Fitness: $y = 5x + 25$
Workout Zone: $y = 3x + 35$ | c. KC Fitness: $y = 25x - 5$
Workout Zone: $y = 35x - 3$ |
| b. KC Fitness: $y = 5x - 25$
Workout Zone: $y = 3x - 35$ | d. KC Fitness: $y = 25x + 5$
Workout Zone: $y = 35x + 3$ |
- _____ 60. What are the coordinates of the solution to this linear system?
- | | |
|-------------------------------------|-----------------------------------|
| a. $(-5, -50)$ | c. $\left(\frac{1}{5}, 10\right)$ |
| b. $\left(-\frac{1}{5}, -10\right)$ | d. $(5, 50)$ |

- _____ 84. Marie had \$40 000.00 to invest. She invested part of it in bonds paying 1.2% per annum and the remainder in a second mortgage paying 2.8% per annum. If the total interest after 1 year was \$960.00, how much did Marie invest at each rate?
- \$39 040.00 at 1.2% and \$960.00 at 2.8%
 - \$30 000.00 at 1.2% and \$10 000.00 at 2.8%
 - \$10 000.00 at 1.2% and \$30 000.00 at 2.8%
 - \$960.00 at 1.2% and \$39 040.00 at 2.8%
- _____ 85. What is the solution to the linear system $4x - y = 5$ and $-x + y = 1$?
- $(-2, -1)$
 - $(\frac{6}{5}, \frac{11}{5})$
 - $(\frac{4}{3}, \frac{7}{3})$
 - $(2, 3)$
- _____ 86. The perimeter of a rectangle is 36 m. The length is 3 m less than twice the width. What is the length of the rectangle?
- 7 m
 - 22 m
 - 11 m
 - 14 m
- _____ 87. The sum of two numbers is 175 and their difference is 1. What are the two numbers?
- 88 and -87
 - 88 and 87
 - -88 and 87
 - -88 and -87
- _____ 88. Use the elimination method. The solution to the linear system $15x + 5y = 185$ and $-4x + 5y = -5$ is
- $(10, -7)$
 - $(10, 7)$
 - $(-10, -7)$
 - $(-10, 7)$
- _____ 89. The mean of two numbers is -28.5 . The sum of four times one number and three times the other is -156 . What are the numbers?
- -15 and 72
 - 15 and 72
 - -28.5 and -28.5
 - 15 and -72
- _____ 90. What is the solution to the linear system $-4x + 2y = -56$ and $-3x - 6y = 33$?
- $(-9, 10)$
 - $(-9, -10)$
 - $(9, 10)$
 - $(9, -10)$
- _____ 91. Jill has found that the following system of equations represents the expenses and the revenue for running her lemonade stand.
- $$C = 21 + 0.1n$$
- $$C = 0.85n$$
- Determine the minimum number of glasses of lemonade she must sell to make a profit.
- 30
 - 29
 - 28
 - 27
- _____ 92. Doris buys old lamps at the flea market and restores them to sell in her antique shop. It costs her \$414 to rent a truck and \$23 for each lamp she buys. She plans to charge \$69 for each lamp. How many lamps must she sell for her costs to equal her revenue?
- 18
 - 92
 - 6
 - 9

Review for Chapter 6-9 Exam

Answer Section

MULTIPLE CHOICE

1. ANS: A PTS: 1 DIF: B OBJ: Section 6.1
NAT: RF1 TOP: Graphs of Relations
KEY: interpret a graph | distance time graph
2. ANS: B PTS: 1 DIF: C OBJ: Section 6.1
NAT: RF1 TOP: Graphs of Relations
KEY: interpret a graph | distance-time graph
3. ANS: B PTS: 1 DIF: A OBJ: Section 6.1
NAT: RF1 TOP: Graphs of Relations KEY: interpret a graph
4. ANS: B PTS: 1 DIF: C OBJ: Section 6.2
NAT: RF4 TOP: Linear Relations
KEY: linear relation | tables of values | determine if relation linear
5. ANS: B PTS: 1 DIF: B OBJ: Section 6.2
NAT: RF4 TOP: Linear Relations
KEY: linear relation | determine if relation linear
6. ANS: C PTS: 1 DIF: C OBJ: Section 6.2
NAT: RF4 TOP: Linear Relations
KEY: non-linear relation | identify relation from equation
7. ANS: A PTS: 1 DIF: A OBJ: Section 6.3
NAT: RF8 TOP: Domain and Range KEY: domain | set notation
8. ANS: B PTS: 1 DIF: B OBJ: Section 6.3
NAT: RF8 TOP: Domain and Range KEY: domain | set notation
9. ANS: A PTS: 1 DIF: D OBJ: Section 6.3
NAT: RF8 TOP: Domain and Range KEY: domain | set notation
10. ANS: C PTS: 1 DIF: D OBJ: Section 6.3
NAT: RF8 TOP: Domain and Range KEY: range | set notation
11. ANS: C PTS: 1 DIF: B OBJ: Section 6.3
NAT: RF8 TOP: Domain and Range KEY: range | set notation
12. ANS: D PTS: 1 DIF: D OBJ: Section 6.4
NAT: RF2 TOP: Functions KEY: vertical line test | equation to graph
13. ANS: B PTS: 1 DIF: A OBJ: Section 6.4
NAT: RF2 TOP: Functions KEY: vertical line test
14. ANS: D PTS: 1 DIF: B OBJ: Section 6.4
NAT: RF2 TOP: Functions KEY: identify a function | ordered pairs
15. ANS: A PTS: 1 DIF: B OBJ: Section 6.4
NAT: RF2 TOP: Functions KEY: evaluate function
16. ANS: C PTS: 1 DIF: A OBJ: Section 6.4
NAT: RF2 TOP: Functions KEY: evaluate function
17. ANS: A PTS: 1 DIF: A OBJ: Section 6.4
NAT: RF2 TOP: Functions KEY: compare function and relation

18. ANS: B

Run is the change in horizontal distance, which is the change in the x -coordinates.

$$\begin{aligned}\text{run} &= 5 - (-3) \\ &= 8\end{aligned}$$

PTS: 1

DIF: A

OBJ: Section.6.5 NAT: RF3

TOP: Slope

KEY: run | ordered pairs

19. ANS: D

$$\begin{aligned}\text{slope} &= \frac{\text{rise}}{\text{run}} \\ &= \frac{9 - (-3)}{-1 - 2} \\ &= \frac{12}{-3} \\ &= -4\end{aligned}$$

PTS: 1

DIF: B

OBJ: Section 6.5 NAT: RF3

TOP: Slope

KEY: calculate slope | ordered pairs

20. ANS: B

Pick any two points to find the slope. For example, use $(-16, -16)$ and $(-8, -18)$.

$$\begin{aligned}m &= \frac{\text{rise}}{\text{run}} \\ &= \frac{-16 - (-18)}{-16 - (-8)} \\ &= \frac{2}{-8} \\ &= -\frac{1}{4}\end{aligned}$$

The slope is $-\frac{1}{4}$.

PTS: 1

DIF: B

OBJ: Section 6.5 NAT: RF3

TOP: Slope

KEY: calculate slope | table of values

21. ANS: D

The rate of change of a horizontal line is equal to the slope, which is zero. The value of y stays constant as the value of x increases or decreases.

PTS: 1

DIF: A

OBJ: Section 6.5 NAT: RF3

TOP: Slope

KEY: rate of change

22. ANS: B

PTS: 1

DIF: C

OBJ: Section 6.5

NAT: RF3

TOP: Slope

KEY: classify slope | table of values

23. ANS: D

PTS: 1

DIF: A

OBJ: Section 6.5

NAT: RF3

TOP: Slope

KEY: classify slope | graph

24. ANS: C

A line segment with a positive slope slants up from left to right. So, only line segments EF, IJ, and KL have positive slopes.

PTS: 1 DIF: A OBJ: Section 6.5 NAT: RF3
TOP: Slope KEY: positive slope | graph

25. ANS: B

A horizontal line segment has a slope of zero. So, only line segments CD, GH, and IJ have slopes of zero.

PTS: 1 DIF: A OBJ: Section 6.5 NAT: RF3
TOP: Slope KEY: zero slope | graph

26. ANS: C PTS: 1 DIF: D OBJ: Section 4.3 | Section 6.3
NAT: AN3 | RF1 TOP: Rational Exponents | Domain and Range
KEY: rational exponent | domain | set notation

27. ANS: A PTS: 1 DIF: A OBJ: Section 7.1
NAT: RF6 TOP: Slope-Intercept Form KEY: y-intercept | equation of a line

28. ANS: A PTS: 1 DIF: A OBJ: Section 7.1
NAT: RF6 TOP: Slope-Intercept Form KEY: y-intercept | equation of a line

29. ANS: A PTS: 1 DIF: A OBJ: Section 7.1
NAT: RF6 TOP: Slope-Intercept Form KEY: slope | equation of a line

30. ANS: C PTS: 1 DIF: A OBJ: Section 7.1
NAT: RF7 TOP: Slope-Intercept Form

KEY: equation of a line | slope | y-intercept

31. ANS: D PTS: 1 DIF: B OBJ: Section 7.2
NAT: RF6 TOP: General Form KEY: general form | equation of a line

32. ANS: D

Substitute the known values into the equation $A = P + Prt$:

$$A = P + Prt$$

$$A = 200 + (200)(0.05)(10)$$

$$A = 200 + 100$$

$$A = 300$$

The value of the investment after 10 years is \$300.

PTS: 1 DIF: C OBJ: Section 7.1 NAT: RF5
TOP: Slope-Intercept Form KEY: slope-intercept form | interest | problem solving

33. ANS: D PTS: 1 DIF: B OBJ: Section 7.2
NAT: RF1 TOP: General Form KEY: general form | constraints

34. ANS: A PTS: 1 DIF: C OBJ: Section 7.2
NAT: RF6 TOP: General Form

KEY: slope-intercept form | slope | y-intercept

35. ANS: C PTS: 1 DIF: C OBJ: Section 7.2
NAT: RF7 TOP: General Form

KEY: equation of a line | general form | slope | y-intercept

36. ANS: A

The equation of the line in slope-intercept form is $y = 0.5x - 0.25$.

$$y = 0.5x - 0.25$$

$$4y = 4(0.5x) - 4(0.25)$$

$$4y = 2x - 1$$

$$4y - 4y = 2x - 1 - 4y$$

$$0 = 2x - 4y - 1$$

$$2x - 4y - 1 = 0$$

PTS: 1

DIF: C

OBJ: Section 7.2 NAT: RF7

TOP: General Form

KEY: equation of a line | general form | slope | y-intercept

37. ANS: B

PTS: 1

DIF: B

OBJ: Section 7.3

NAT: RF7

TOP: Slope-Point Form

KEY: equation of a line given two points

38. ANS: A

Use the slope formula, and then solve for q :

$$\text{rise} = y_2 - y_1$$

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

$$= -\frac{5}{4} + \frac{1}{4}$$

$$= -\frac{4}{4}$$

$$= -1$$

$$\text{run} = x_2 - x_1$$

$$= q - \frac{1}{2}$$

$$\text{slope} = \frac{\text{rise}}{\text{run}}$$

$$4 = \frac{-1}{q - \frac{1}{2}}$$

$$4\left(q - \frac{1}{2}\right) = \frac{-1}{\left(q - \frac{1}{2}\right)}\left(q - \frac{1}{2}\right)$$

$$4q - 2 = -1$$

$$4q - 2 + 2 = -1 + 2$$

$$4q = 1$$

$$\frac{4q}{4} = \frac{1}{4}$$

$$q = \frac{1}{4}$$

The value of q is $\frac{1}{4}$.

PTS: 1 DIF: D
TOP: Slope-Point Form

OBJ: Section 7.3 NAT: RF3
KEY: slope | slope-point form | problem solving

39. ANS: D

Substitute the coordinates of the x -intercept, $(4, 0)$, into the equation and solve for p :

$$\begin{aligned}
 px + 2y + 8 &= 0 \\
 p(4) + 2(0) + 8 &= 0 \\
 4p + 8 &= 0 \\
 4p + 8 - 8 &= 0 - 8 \\
 4p &= -8 \\
 \frac{4p}{4} &= \frac{-8}{4} \\
 p &= -2
 \end{aligned}$$

The value of p is -2 .

PTS: 1 DIF: D OBJ: Section 7.2 NAT: RF6
 TOP: General Form KEY: x -intercept | general form | equation of a line

40. ANS: A PTS: 1 DIF: B OBJ: Section 7.3
 NAT: RF7 TOP: Slope-Point Form
 KEY: equation of a line given the slope and a point

41. ANS: A PTS: 1 DIF: B OBJ: Section 7.3
 NAT: RF7 TOP: Slope-Point Form
 KEY: equation of a line given the slope and a point

42. ANS: D PTS: 1 DIF: B OBJ: Section 7.3
 NAT: RF7 TOP: Slope-Point Form
 KEY: equation of a line given the slope and a point

43. ANS: D PTS: 1 DIF: B OBJ: Section 7.4
 NAT: RF3 | RF7 TOP: Parallel and Perpendicular Lines
 KEY: parallel lines | slope | equation of a line

44. ANS: B

The slope of the line must be the negative reciprocal of -3 , or $\frac{1}{3}$:

$$\begin{aligned}
 y &= mx + b \\
 -1 &= \left(\frac{1}{3}\right)(3) + b \\
 -1 &= 1 + b \\
 -1 - 1 &= 1 + b - 1 \\
 -2 &= b
 \end{aligned}$$

The equation of the line is $y = \frac{1}{3}x - 2$.

PTS: 1 DIF: B OBJ: Section 7.4 NAT: RF7
 TOP: Parallel and Perpendicular Lines
 KEY: perpendicular lines | equation of a line given the slope and a point

45. ANS: C

Line A has slope 2. Lines C and D have slope 2, which is the same as that of line A. Line B has slope -2 . So, Lines C and D are parallel to line A.

PTS: 1 DIF: B OBJ: Section 7.4 NAT: RF3
 TOP: Parallel and Perpendicular Lines KEY: parallel lines | slope | equation of a line

46. ANS: A

Because the lines are parallel, they have the same slope of 0.5. The y -intercept of the line containing NP is -2 . Substitute $m = 0.5$ and $b = -2$ into $y = mx + b$:

$$y = mx + b$$

$$y = 0.5x - 2$$

The equation of the line containing NP is $y = 0.5x - 2$.

PTS: 1

DIF: B

OBJ: Section 7.4 NAT: RF7

TOP: Parallel and Perpendicular Lines

KEY: parallel lines | equation of a line | graph

47. ANS: C

$$m = \frac{\text{rise}}{\text{run}}$$

$$m = \frac{5 - 8}{0 - (-3)}$$

$$m = \frac{-3}{3}$$

$$m = -1$$

Parallel lines have the same slope. The only line that has a slope of -1 is $y = -x + 5$.

PTS: 1

DIF: B

OBJ: Section 7.4 NAT: RF3

TOP: Parallel and Perpendicular Lines

KEY: slope | parallel lines | equation of a line | ordered pairs

48. ANS: C

$$m = \frac{\text{rise}}{\text{run}}$$

$$m = \frac{5 - 8}{0 - (-3)}$$

$$m = \frac{-3}{3}$$

$$m = -1$$

Perpendicular lines have slopes that are negative reciprocals. The only line that has a slope of $+1$ is $y = x - 5$.

PTS: 1

DIF: B

OBJ: Section 7.4 NAT: RF3

TOP: Parallel and Perpendicular Lines

KEY: slope | perpendicular lines | equation of a line | ordered pairs

49. ANS: C

PTS: 1

DIF: A

OBJ: Section 8.1

NAT: RF9

TOP: Systems of Linear Equations and Graphs

KEY: identify the ordered pair | linear system | graph

50. ANS: A

PTS: 1

DIF: A

OBJ: Section 8.1

NAT: RF9

TOP: Systems of Linear Equations and Graphs

KEY: identify the ordered pair | linear system

51. ANS: D

PTS: 1

DIF: A

OBJ: Section 8.1

NAT: RF9

TOP: Systems of Linear Equations and Graphs

KEY: identify the ordered pair | linear system

52. ANS: A PTS: 1 DIF: D OBJ: Section 8.1
 NAT: RF9 TOP: Systems of Linear Equations and Graphs
 KEY: identify the linear system | ordered pair
53. ANS: B PTS: 1 DIF: C OBJ: Section 8.1
 NAT: RF9 TOP: Systems of Linear Equations and Graphs
 KEY: identify the ordered pair | linear system
54. ANS: A PTS: 1 DIF: A OBJ: Section 8.1
 NAT: RF9 TOP: Systems of Linear Equations and Graphs
 KEY: linear system | identify the ordered pair
55. ANS: D PTS: 1 DIF: B OBJ: Section 8.1
 NAT: RF9 TOP: Systems of Linear Equations and Graphs
 KEY: ordered pair | identify the linear system
56. ANS: B PTS: 1 DIF: A OBJ: Section 8.1
 NAT: RF9 TOP: Systems of Linear Equations and Graphs
 KEY: ordered pair | identify the linear system
57. ANS: A PTS: 1 DIF: B OBJ: Section 8.2
 NAT: RF9 TOP: Modelling and Solving Linear Systems
 KEY: words to equation | model
58. ANS: C PTS: 1 DIF: B OBJ: Section 8.2
 NAT: RF9 TOP: Modelling and Solving Linear Systems
 KEY: words to equation | model
59. ANS: A PTS: 1 DIF: B OBJ: Section 8.2
 NAT: RF9 TOP: Modelling and Solving Linear Systems
 KEY: words to equation | linear system
60. ANS: D PTS: 1 DIF: B OBJ: Section 8.2
 NAT: RF9 TOP: Modelling and Solving Linear Systems
 KEY: identify the ordered pair | linear system
61. ANS: D PTS: 1 DIF: B OBJ: Section 8.2
 NAT: RF9 TOP: Modelling and Solving Linear Systems
 KEY: identify the ordered pair | linear system
62. ANS: C PTS: 1 DIF: B OBJ: Section 8.2
 NAT: RF9 TOP: Modelling and Solving Linear Systems
 KEY: interpret solution | linear system
63. ANS: B PTS: 1 DIF: B OBJ: Section 8.2
 NAT: RF9 TOP: Modelling and Solving Linear Systems
 KEY: words to equation | linear system
64. ANS: C PTS: 1 DIF: B OBJ: Section 8.2
 NAT: RF9 TOP: Modelling and Solving Linear Systems
 KEY: interpret solution | linear system
65. ANS: A
 parallel lines

 PTS: 1 DIF: B OBJ: Section 8.3 NAT: RF9
 TOP: Number of Solutions for Systems of Linear Equations
 KEY: number of solutions | linear system | no solution
66. ANS: B PTS: 1 DIF: A OBJ: Section 8.3
 NAT: RF9 TOP: Number of Solutions for Systems of Linear Equations
 KEY: number of solutions | linear system | one solution

67. ANS: B PTS: 1 DIF: B OBJ: Section 8.3
 NAT: RF9 TOP: Number of Solutions for Systems of Linear Equations
 KEY: number of solutions | linear system | one solution
68. ANS: C
 For $B = -3$, the lines are coincident.
- PTS: 1 DIF: C OBJ: Section 8.3 NAT: RF9
 TOP: Number of Solutions for Systems of Linear Equations
 KEY: determine the coefficient | linear system | infinite number
69. ANS: D
 parallel lines
- PTS: 1 DIF: C OBJ: Section 8.3 NAT: RF9
 TOP: Number of Solutions for Systems of Linear Equations
 KEY: determine the coefficient | linear system | no solution
70. ANS: C
 coincident lines
- PTS: 1 DIF: C OBJ: Section 8.3 NAT: RF9
 TOP: Number of Solutions for Systems of Linear Equations
 KEY: determine the coefficient | linear system | infinite number
71. ANS: A PTS: 1 DIF: A OBJ: Section 8.3
 NAT: RF9 TOP: Number of Solutions for Systems of Linear Equations
 KEY: coincident lines | equivalent equations
72. ANS: D PTS: 1 DIF: B OBJ: Section 8.3
 NAT: RF9 TOP: Number of Solutions for Systems of Linear Equations
 KEY: coincident lines | linear system | equivalent equations
73. ANS: D PTS: 1 DIF: B OBJ: Section 8.3
 NAT: RF9 TOP: Number of Solutions for Systems of Linear Equations
 KEY: coincident lines | equivalent equations | linear system
74. ANS: C PTS: 1 DIF: A OBJ: Section 8.3
 NAT: RF9 TOP: Number of Solutions for Systems of Linear Equations
 KEY: coincident lines | linear system | equivalent equations
75. ANS: B PTS: 1 DIF: A OBJ: Section 9.1
 NAT: RF9 TOP: Solving Systems of Linear Equations by Substitution
 KEY: substitution | identify the ordered pair | linear systems
76. ANS: B PTS: 1 DIF: A OBJ: Section 9.1
 NAT: RF9 TOP: Solving Systems of Linear Equations by Substitution
 KEY: substitution | identify the ordered pair | linear systems
77. ANS: A PTS: 1 DIF: B OBJ: Section 9.1
 NAT: RF9 TOP: Solving Systems of Linear Equations by Substitution
 KEY: substitution | identify the ordered pair | linear systems
78. ANS: B PTS: 1 DIF: B OBJ: Section 9.1
 NAT: RF9 TOP: Solving Systems of Linear Equations by Substitution
 KEY: substitution | identify the ordered pair | linear systems
79. ANS: C PTS: 1 DIF: B OBJ: Section 9.1
 NAT: RF9 TOP: Solving Systems of Linear Equations by Substitution
 KEY: substitution | identify the ordered pair | fraction solution | linear systems

80. ANS: C PTS: 1 DIF: B OBJ: Section 9.3
 NAT: RF9 TOP: Solving Problems Using Systems of Linear Equations
 KEY: substitution | scenario
81. ANS: A PTS: 1 DIF: B OBJ: Section 9.3
 NAT: RF9 TOP: Solving Problems Using Systems of Linear Equations
 KEY: substitution | scenario
82. ANS: A PTS: 1 DIF: C OBJ: Section 9.3
 NAT: RF9 TOP: Solving Problems Using Systems of Linear Equations
 KEY: substitution | scenario
83. ANS: B PTS: 1 DIF: C OBJ: Section 9.3
 NAT: RF9 TOP: Solving Problems Using Systems of Linear Equations
 KEY: substitution | scenario
84. ANS: C PTS: 1 DIF: C OBJ: Section 9.3
 NAT: RF9 TOP: Solving Problems Using Systems of Linear Equations
 KEY: substitution | simple interest | scenario
85. ANS: D PTS: 1 DIF: A OBJ: Section 9.2
 NAT: RF9 TOP: Solving Systems of Linear Equations by Elimination
 KEY: elimination | identify the ordered pair | fraction solution | linear systems
86. ANS: C PTS: 1 DIF: B OBJ: Section 9.3
 NAT: RF9 TOP: Solving Problems Using Systems of Linear Equations
 KEY: elimination | scenario | words to equation
87. ANS: B PTS: 1 DIF: B OBJ: Section 9.2
 NAT: RF9 TOP: Solving Systems of Linear Equations by Elimination
 KEY: elimination | identify two numbers | words to equation
88. ANS: B PTS: 1 DIF: B OBJ: Section 9.2
 NAT: RF9 TOP: Solving Systems of Linear Equations by Elimination
 KEY: elimination | identify the ordered pair | linear systems
89. ANS: D PTS: 1 DIF: B OBJ: Section 9.2
 NAT: RF9 TOP: Solving Systems of Linear Equations by Elimination
 KEY: elimination | identify two numbers | words to equation
90. ANS: D PTS: 1 DIF: C OBJ: Section 9.2
 NAT: RF9 TOP: Solving Systems of Linear Equations by Elimination
 KEY: elimination | identify the ordered pair | linear systems
91. ANS: B PTS: 1 DIF: A OBJ: Section 9.3
 NAT: RF9 TOP: Solving Problems Using Systems of Linear Equations
 KEY: substitution | scenario | linear systems
92. ANS: D PTS: 1 DIF: B OBJ: Section 9.3
 NAT: RF9 TOP: Solving Problems Using Systems of Linear Equations
 KEY: substitution | scenario
93. ANS: C PTS: 1 DIF: B OBJ: Section 9.3
 NAT: RF9 TOP: Solving Problems Using Systems of Linear Equations
 KEY: substitution | scenario
94. ANS: A PTS: 1 DIF: B OBJ: Section 9.3
 NAT: RF9 TOP: Solving Problems Using Systems of Linear Equations
 KEY: substitution | scenario

95. ANS: C PTS: 1 DIF: C OBJ: Section 9.3
NAT: RF9 TOP: Solving Problems Using Systems of Linear Equations
KEY: substitution | scenario
96. ANS: C PTS: 1 DIF: B OBJ: Section 9.3
NAT: RF9 TOP: Solving Problems Using Systems of Linear Equations
KEY: elimination | identify two numbers | scenario
97. ANS: A PTS: 1 DIF: D OBJ: Section 9.3
NAT: RF9 TOP: Solving Problems Using Systems of Linear Equations
KEY: three variables | substitution | words to equation
98. ANS: B PTS: 1 DIF: D OBJ: Section 9.3
NAT: RF9 TOP: Solving Problems Using Systems of Linear Equations
KEY: three variables | words to equation
99. ANS: D PTS: 1 DIF: D OBJ: Section 9.3
NAT: RF9 TOP: Solving Problems Using Systems of Linear Equations
KEY: three variables | identify the coefficient | scenario