

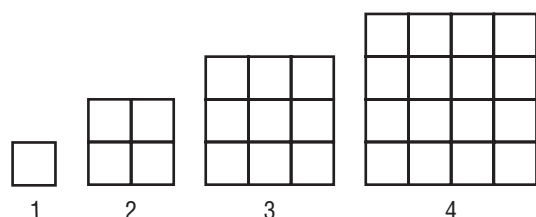
Course 3 Benchmark Test – Second Quarter

1. The table shows how much Addison earns for working various numbers of hours at a part-time job.

Hours, x	Earnings (\$), y
10	72.50
15	108.75
20	145.00

Which of the following describes the constant rate of change?

- A. 5 hours per dollar
 - B. \$5.00 per hour
 - C. 7.25 hours per dollar
 - *D. \$7.25 per hour**
2. Let n represent the figure number in the pattern below.



Which function represents the number of squares in each figure?

- *F. $f(n) = n^2$**
 - G. $f(n) = 2n$
 - H. $f(n) = n^3$
 - I. $f(n) = 4n$
3. Which systems of linear equations has a solution of $(-2, 1)$?

- *A. $2x + 3y = -1$
 $x - y = -3$**
- B. $2x + 3y = 1$
 $x - y = 3$
- C. $2x + 3y = -1$
 $x - y = 3$
- D. $2x + 3y = 1$
 $x - y = -3$

4. What is the solution to the system of equations below?

$$\begin{aligned} 3x - 2y &= 7 \\ -3x + 5y &= 5 \end{aligned}$$

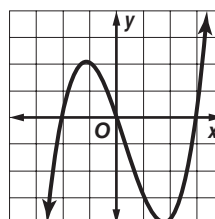
- F. $(3, 1)$
- G. $(0, 1)$
- *H. $(5, 4)$**
- I. no solution

5. **SHORT ANSWER** Missy walked around the school track to warm up. Then she ran several laps before walking to cool down. Sketch a graph to represent Missy's distance run over time.

Sample answer:



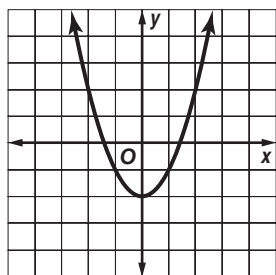
6. Which term describes the function shown below?



- A. constant
- B. linear
- *C. nonlinear**
- D. quadratic

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7. What is the equation of the quadratic function shown in the graph?



- F $y = x^2 + 2$
- *G $y = x^2 - 2$
- H $y = 2x^2$
- I $y = \frac{1}{2}x^2$

8. **SHORT ANSWER** Find the x - and y -intercepts of the linear equation below.

$$4x - 5y = 20$$

(5, 0), (0, -4)

9. What is the slope of the line that passes through $M(-6, 1)$ and $N(2, 5)$?

- A 2
- *B $\frac{1}{2}$
- C $-\frac{1}{2}$
- D -2

10. What is the domain of the function shown in the table?

x	-4	-2	0	2	4
y	-3	7	5	0	-1

- F. all real numbers
 - G. all even integers
 - H. $\{-3, -1, 0, 5, 7\}$
 - *I. $\{-4, -2, 0, 2, 4\}$
11. What are the slope and y -intercept of the linear equation below?

$$y = -5x + 2$$

- A. slope: 2, y -intercept: $(0, -5)$
- B. slope: 2, y -intercept: $(-5, 0)$
- *C. slope: -5, y -intercept: $(0, 2)$
- D. slope: -5, y -intercept: $(2, 0)$

12. A tank contains 550 gallons of water. When the valve is opened, the tank drains at a rate of 12 gallons per minute. Which function shows the relationship between the time t the valve is opened and the amount of water in the tank?

- *F. $A(t) = -12t + 550$
- G. $A(t) = 12t + 550$
- H. $A(t) = 12 + 550t$
- I. $A(t) = -12 + 550t$

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13. Which relation is *not* a function?

A.

x	-2	0	2	4	6
y	3	3	3	3	3

*B.

x	-3	0	2	-3	1
y	-5	4	2	0	-1

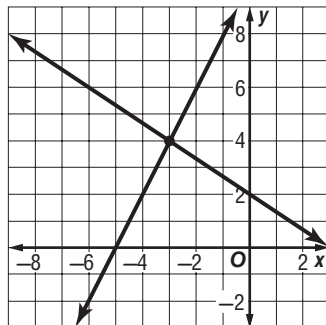
C.

x	1	2	3	4	5
y	1	2	3	4	5

D.

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

14. What is the solution to the system of linear equations shown below?



F. (4, -3)

G. (-4, 3)

*H. (-3, 4)

I. (3, -4)

15. **SHORT ANSWER** What is the equation in slope-intercept form of the line that passes through (-2, 17) and (3, -13)?

$y = -6x + 5$

16. Which linear function has the steepest slope?

A. $y = \frac{1}{2}x - 5$

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

C. $y = 4x - 2$

*D. $y = -6x + 1$

17. The table shows the cost of renting a van from a moving company for different numbers of miles driven.

Miles, m	Cost, C
50	\$42.50
100	\$65.00
150	\$87.50
200	\$110.00

Construct a function that relates the cost of renting a van to the number of miles driven.

F. $C(m) = 0.85m$

G. $C(m) = 0.85m + 10$

H. $C(m) = 0.45m$

*I. $C(m) = 0.45m + 20$

18. Which two points form a line that has a slope of -3?

A. (-5, 3) and (2, 4)

*B. (1, -6) and (-4, 9)

C. (-4, -3) and (5, 0)

D. (2, 8) and (-1, -1)

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19. What are the x - and y -intercepts of the linear equation below?

$$6x - 2y = 12$$

- *F. (2, 0) and (0, -6)
 - G. (0, 2) and (-6, 0)
 - H. (-6, 0) and (2, 0)
 - I. (0, 2) and (0, -6)
20. The quadratic function $h(t) = -16t^2 + 120$ represents the height of an object in feet t seconds after when it falls from a height of 120 feet. What is the height of the object after 1.5 seconds?
- A. 58 ft
 - *B. 84 ft
 - C. 92 ft
 - D. 156 ft

21. **SHORT ANSWER** The table below shows the number of teams remaining in each round of a tournament. Is the number of teams a linear function of the number of rounds? Explain.

Round	Teams
1	32
2	16
3	8
4	4
5	2

No; Sample answer: there is not a constant rate of change.

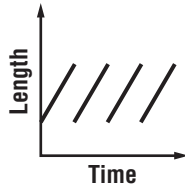
22. What is the constant rate of change of the function represented in the table below?

x	y
-5	23
-1	7
3	-9
7	-25

- F. 16
 - G. 4
 - *H. -4
 - I. -16
23. The slope of a line is $-\frac{1}{5}$ and the y -intercept is (0, 6). What is the equation of the line in slope-intercept form?
- A. $x + 5y = 30$
 - B. $x - 5y = 30$
 - C. $y = -\frac{1}{5}x - 6$
 - *D. $y = -\frac{1}{5}x + 6$
24. Which of the following equations represents a horizontal line?
- F. $y = x$
 - G. $y = -x + 1$
 - *H. $y = -12$
 - I. $x = 5$

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25. **SHORT ANSWER** The graph below shows the length of Michael's hair as a function of time. Describe the change in the length of Michael's hair over time.



Michael's hair grows at a steady rate until he gets it cut. This cycle is continually repeated.