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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?

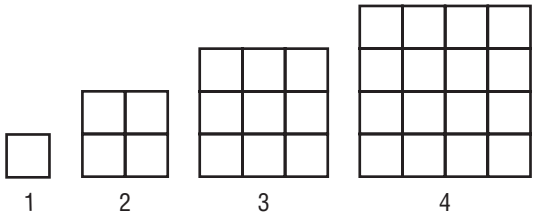
A. 5 hours per dollar

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?

$$3x - 2y = 7$$
$$-3x + 5y = 5$$

F. (3, 1)

G. (0, 1)

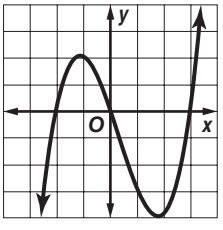
***H.** (5, 4)

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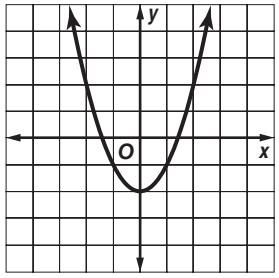
7. What is the equation of the quadratic function shown in the graph?



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

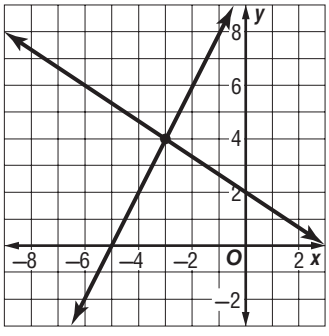
C.

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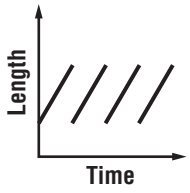
25. SHORT ANSWER The graph below shows the length of Michael's hair as a function of time. Describe the change in the length of Michael's hair over time.



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