

TEST NAME: CC1 Benchmark Review
TEST ID: 832403
GRADE: 09 - Ninth Grade
SUBJECT: Mathematics
TEST CATEGORY: My Classroom

Student: _____

Class: _____

Date: _____

1. Which equation is equivalent to $-3(x + 2) = -7$?

- A. $(-3)x + 2 = -7$
- B. $(-3)x + (-3)2 = -7$
- C. $(-3)x + (-3 + 2) = -7$
- D. $(-3)x + (-3)2 = (-3)(-7)$

2. Use Equations I, II, and III to answer the question.

Equation I	Equation II	Equation III
$y = 3^2x + 5$	$y = 3x^2 + 5$	$y = 3x + 5^2$

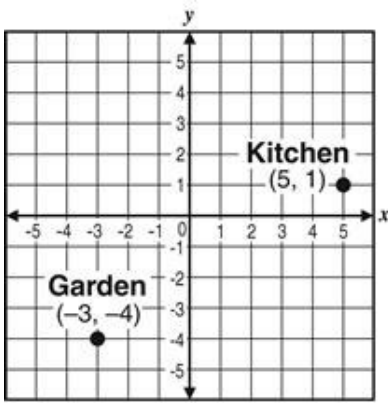
Which equation(s) defines a linear function?

- A. Equation I only
- B. Equation II only
- C. Equations I and III
- D. Equations II and III

3. Which is an equation of a line that passes through the points $(-3, 3)$ and $(2, 8)$?

- A. $y = x + 6$
- B. $y = 2x + 3$
- C. $y = 2x + 8$

4. Abigail must move a bucket of tomatoes from her garden to her kitchen, as represented on the grid below.



If each grid unit represents 2 meters, what is the distance from Abigail's garden directly to her kitchen, to the nearest tenth of a meter?

- A. 9.4 meters
 - B. 13.0 meters
 - C. 18.9 meters
 - D. 26.0 meters
5. A candy store wants to mix candy worth \$8 a pound with 30 pounds of candy worth \$3 a pound to get a mix that can be sold for \$6 a pound. What is the difference in the weights of the \$8 candy and the \$3 candy?
- A. 15 pounds
 - B. 30 pounds
 - C. 45 pounds
 - D. 75 pounds
6. Counting the number of cricket chirps can provide an estimate of the temperature. The formula below gives the temperature in degrees Celsius based on the number of cricket chirps (n) in 15 seconds.

$$C = \frac{5n + 40}{9}$$

This formula can be rearranged to solve for the number of chirps as a function of the temperature in degrees Celsius. Which formula has been rearranged correctly?

- A. $n = \frac{9}{5}C - 8$
- B. $n = \frac{9}{5}C - 40$
- C. $n = \frac{9}{5}(C - 8)$
- D. $n = \frac{9}{5}(C - 40)$

7. The charges, C , in dollars from a taxi company for traveling a distance of x miles is represented by the equation $C = 3x + 2$. Which of the following is a possible step and valid explanation for the process of solving for x in terms of C ?
- $C = 3x + 2 - 2$; The subtraction equality property must first be used to transform the equation in terms of the miles traveled.
 - $C - 2 = 3x + 2 - 2$; The distributive property must first be used to simplify the charge equation.
 - $\frac{C - 2}{3} = 3x$; The commutative property must be used in the second step to prove that the sides of the charge equation are equal.
 - $\frac{C - 2}{3} = \frac{3x}{3}$; The division equality property must be used in the second step to isolate and solve for the number of miles traveled.
8. Which is equivalent to $50 + 5x - 100x + 100 \geq 5 + 50x - 200$?
- $-95x + 150 \geq 50x - 195$
 - $-95x + 150 \geq 50x + 195$
 - $95x + 150 \geq 50x - 195$
 - $95x + 150 \geq 50x + 195$
9. Which point is an **approximate** solution to the equation $y = 5(1.1)^x$?
- (3, 15)
 - (2, 11)
 - (-1, 4.5)
 - (-2, 2.3)
10. If $f(x) = -2x + 5$ and $g(x) = 3^x$, what is the x -coordinate of the point where $f(x) = g(x)$?
- 9
 - 5
 - 3
 - 1

11. Consider the expression $(3j - 5)[3(2j + 7) - 4k(6j - 8)]$.

Which expression represents a factor of the given expression?

- A. $(2j + 7)$
- B. $(6j - 8)$
- C. $(3 - 4k)$
- D. $(3j - 5)$

12. The volume, V , of a rectangular box with a square base and height h inches can be modeled by the function $V = h(16 - 2h)^2$.

Which conclusion is not valid?

- A. The width of the box is represented by $16 - 2h$.
- B. The length of the box is represented by $16 - 2h$.
- C. The height of the box is between 0 and 8 inches.
- D. The height of the box is between 8 and 16 inches.

13. Jessie deposited \$6,000 in a savings account. The amount in the account after 1, 2, and 3 years is shown below.

\$6,240, \$6,480, \$6,720, ...

Which expression represents the total amount in her account at the end of t years?

- A. $6000 + 240t$
- B. $6240 + 240t$
- C. $6000t + 240$
- D. $6240t + 240$

14. Which equation represents the formula for the general term, g_n , of the geometric sequence $3, 1, \frac{1}{3}, \frac{1}{9}, \dots$?

- A. $g_n = \left(\frac{1}{3}\right)^{n-2}$
- B. $g_n = \left(\frac{1}{3}\right)^{1-n}$
- C. $g_n = (3)^{n-2}$
- D. $g_n = (3)^{1-n}$

15. The graph of which function is wider than the graph of $f(x) = 2x^2 - 4$?

- A. $g(x) = 3x^2 - 4$
- B. $g(x) = 2x^2 + 4$
- C. $g(x) = 2x^2 - 8$
- D. $g(x) = x^2 - 4$

16. What is the range of $f(x) = -x^2 + 10x - 22$?

- A. $f(x) < -5$
- B. $f(x) < 3$
- C. $f(x) < -3$
- D. $f(x) < 5$

17. What is the value of $g(-2)$ for the function $g(x) = 3x + 2$?

- A. -4
- B. $-\frac{4}{3}$
- C. $\frac{3}{4}$
- D. 3

18. Look at the pattern shown below.

2, 4, 16, 256 ...

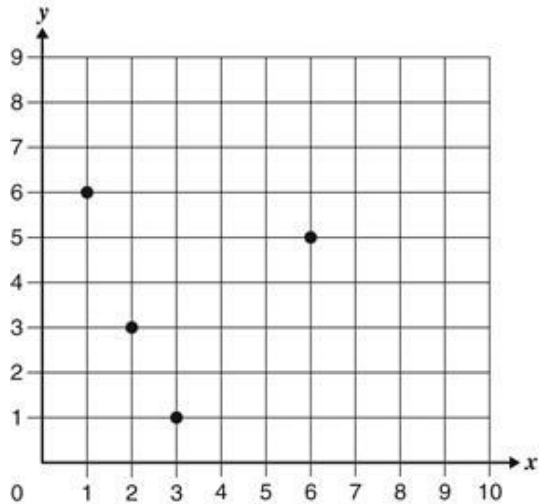
What is $f(n + 1)$ in terms of $f(n)$, where n represents the position of a term in this pattern?

- A. $(f(n))^2$
- B. $2(f(n))$
- C. $(f(n) - 1)^2$
- D. $2(f(n) - 1)$

19. Which statement about the graphs of $f(x) = 3x - 4$ and $g(x) = 3x + 4$ is true?

- A. The graphs of f and g have the same x -intercept.
- B. The graphs of f and g have the same y -intercept.
- C. The graphs of f and g are perpendicular.
- D. The graphs of f and g are parallel.

20. A relation is graphed below.

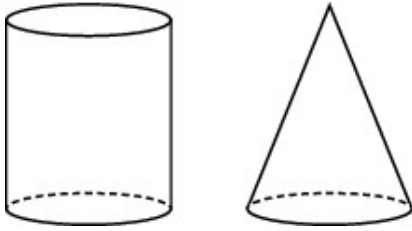


What is the domain of this relation?

- A. $\{1, 2, 3, 6\}$
 - B. $\{1, 3, 5, 6\}$
 - C. $\{0, 1, 2, 3, 4, 5, 6\}$
 - D. $\{1, 2, 3, 6, 5, 3, 1, 6\}$
21. What is the average rate of change for the function $f(x) = 4(0.5)^x$ over the interval $-1 \leq x \leq 2$?

- A. 9
- B. $\frac{1}{9}$
- C. $-\frac{3}{7}$
- D. $-\frac{7}{3}$

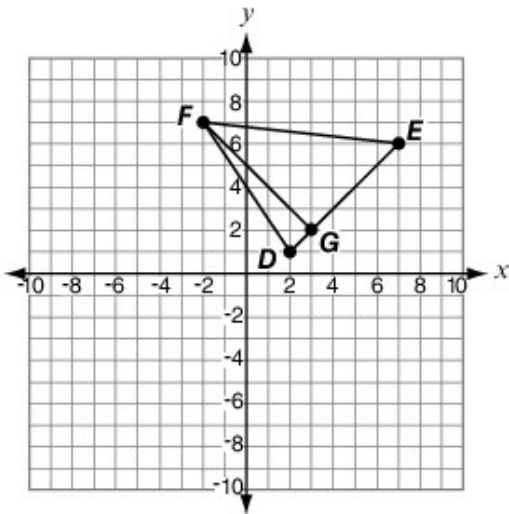
22. The cylinder and the cone shown below have the same height, and their bases have the same radius.



How does the volume of the cylinder (V_{cyl}) compare to the volume of the cone (V_{cone})?

- A. $(V_{cyl}) = 2V_{cone}$
- B. $V_{cyl} = \frac{1}{3}V_{cone}$
- C. $V_{cyl} - V_{cone} = 3V_{cone}$
- D. $V_{cyl} - V_{cone} = 2V_{cone}$
23. A spherical storage tank has a volume, V , of 17,157 cubic feet. What is the **approximate** diameter of this tank? (Use $V = \frac{4}{3}\pi r^3$, where V is volume and r is radius.)
- A. 8 feet
- B. 16 feet
- C. 32 feet
- D. 64 feet

24. In the figure below, the perpendicular drawn from F meets \overline{DE} at G . What is the area of triangle FDE ?



- A. 25 square units
- B. 50 square units
- C. $5\sqrt{26}$ square units
- D. $15\sqrt{2}$ square units
25. Joe plans to install a concrete driveway in front of his house. Which of these measurements best describes the volume of concrete in one truck load?
- A. 8 cubic feet
- B. 8 cubic yards
- C. 8 cubic kilometers
- D. 8 cubic centimeters

26. The expression $\frac{C}{A}$ represents the cost per square foot to carpet a room, where C is the total cost for A square feet. Which expression represents the cost of carpeting per square yard?

A. $\frac{9C}{A}$

B. $\frac{3C}{A}$

C. $\frac{C}{9A}$

D. $\frac{C}{3A}$

27. Jerry cut a piece of paper that was 25 millimeters long. Susan estimated that the length of the strip was 21 millimeters long. What is the relative error in her estimation?

A. 0.16

B. 0.19

C. 0.84

D. 1.19

28. Which statement is **correct** about the value of $100^{\frac{1}{2}}$?

A. The expression $100^{\frac{1}{2}} = 10$ is correct because $100 = 10^2$ and $(10^2)^{\frac{1}{2}} = 10^1$.

B. The expression $100^{\frac{1}{2}} = 10000$ is correct because $100 = 10^2$ and $(10^2)^{\frac{1}{2}} = 10^4$.

C. The expression $100^{\frac{1}{2}} = 15$ is correct because $100 = 10^2$ and $(10^2)^{\frac{1}{2}} = 10^{\frac{3}{2}} = \frac{3}{2}(10)$.

D. The expression $100^{\frac{1}{2}} = 25$ is correct because $100 = 10^2$ and $(10^2)^{\frac{1}{2}} = 10^{\frac{5}{2}} = \frac{5}{2}(10)$.

29. Which expression is equivalent to $\sqrt{12}$?

A. $4\sqrt{3}$

B. $3\sqrt{4}$

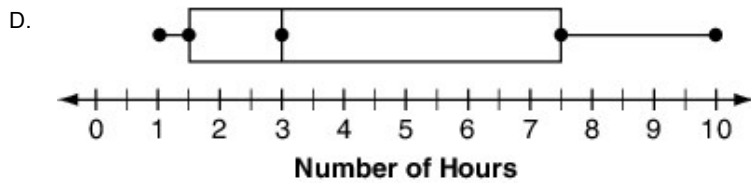
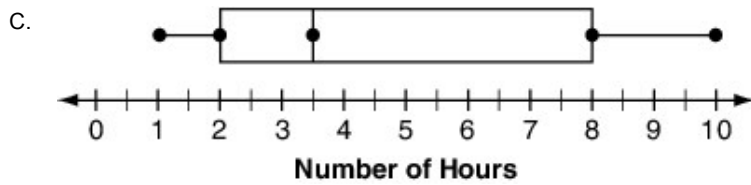
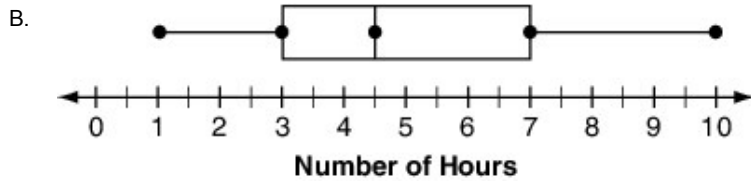
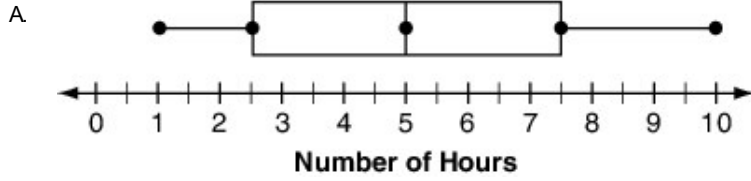
C. $2\sqrt{6}$

D. $2\sqrt{3}$

30. Dave records the number of hours he spent watching television each day for a period of 10 days as shown.

5, 1, 2, 6, 3, 4, 7, 8, 10, 4

Which box-and-whisker plot represents the data he recorded?



31. Ben wants to compare the scores of this year's basketball games to the scores of last year's games. He made the following double stem-and-leaf plot to make his comparison.

Comparison of Basketball Scores Between the Last Two Years		
Last Year	Stem	This Year
995	0	
97753	1	999
6654	2	7889
9	3	456778
	4	233
	5	2

What is the difference between the median score this year and the median score last year?

- A. 16
 - B. 17
 - C. 18
 - D. 20
32. Given the data set below:
- 15, 56, 58, 60, 63, 75, 80, 80, 85
- How does the outlier affect the distribution of the data?
- A. The outlier skews the distribution to the left.
 - B. The outlier skews the distribution to the right.
 - C. The outlier makes the distribution more symmetrical.
 - D. The outlier has no effect on the distribution.