

EOCT Study Guide

Name:

Date:

CCGPS Coordinate Algebra Formula Sheet

Below are the formulas you may find useful as you work the problems. However, some of the formulas may not be used. You may refer to this page as you take the test.

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|---|--|
| <p style="text-align: center;">Area</p> <p>Rectangle and Parallelogram $A = bh$</p> <p>Triangle $A = \frac{1}{2}bh$</p> <p>Circle $A = \pi r^2$</p> <p>Trapezoid $A = \frac{1}{2}(h)(b_1 + b_2)$</p> | <p style="text-align: center;">Mean Absolute Deviation</p> $\frac{\sum_{i=1}^n x_i - \bar{x} }{n}$ <p>the average of the absolute deviations from the mean for a set of data</p> |
| <p style="text-align: center;">Circumference</p> <p>$C = \pi d$ $\pi \approx 3.14$</p> | <p style="text-align: center;">Distance Formula</p> $d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$ |
| <p style="text-align: center;">Volume</p> <p>Rectangular Prism/Cylinder $V = Bh$</p> <p>Pyramid/Cone $V = \frac{1}{3}Bh$</p> <p>Sphere $V = \frac{4}{3}\pi r^3$</p> | <p style="text-align: center;">Slope Formula</p> $m = \frac{y_2 - y_1}{x_2 - x_1}$ |
| <p style="text-align: center;">Surface Area</p> <p>Rectangular Prism $SA = 2lw + 2wh + 2lh$</p> <p>Cylinder $SA = 2\pi r^2 + 2\pi rh$</p> | <p style="text-align: center;">Midpoint Formula</p> $M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$ |
| <p style="text-align: center;">Pythagorean Theorem</p> $a^2 + b^2 = c^2$ | <p style="text-align: center;">Interquartile Range</p> <p>the difference between the first quartile and third quartile of a set of data</p> |

| | |
|--|---|
| <p>1) A rectangle has a length of 12 m and a width of 400 cm. What is the perimeter of the rectangle?</p> <p>A. 824 cm B. 1600 cm C. 2000 cm D. 3200 cm</p> | <p>2) The tension caused by a wave moving along a string is found using the formula $T = \frac{mv^2}{L}$. If m is the mass of the string in grams, L is the length of the string in centimeters, and v is the velocity of the wave in centimeters per second, what is the unit of the tension of the string, T?</p> <p>A. gram-centimeters per second squared B. centimeters per second squared C. grams per centimeter-second squared D. centimeters squared per second</p> |
| <p>3) The distance a car travels can be found using the formula $d = rt$, where d is the distance, r is the rate of speed, and t is time. How many miles does the car travel, if it drives at a speed of 70 miles per hour for $\frac{1}{2}$ hour?</p> <p>A. 35 miles B. 70 miles C. 105 miles D. 140 miles</p> | <p>4) A certain population of bacteria has an average growth rate of 0.02 bacteria per hour. The formula for the growth of the bacteria's population is $A = P(2.71828)^{0.02t}$, where P_0 is the original population, and t is the time in hours.</p> <p>If you begin with 200 bacteria, about how many bacteria will there be after 100 hours?</p> <p>A. 7 B. 272 C. 1,478 D. 20,000</p> |

5) The sum of the angle measures in a triangle is 180° . Two angles of a triangle measure 20° and 50° . What is the measure of the third angle?

- A. 30°
- B. 70°
- C. 110°
- D. 160°

6) Which equation shows $P = 2l + 2w$ when solved for w ?

- A. $w = \frac{2l}{P}$
- B. $w = \frac{2l - P}{2}$
- C. $w = 2l - \frac{P}{2}$
- D. $w = \frac{P - 2l}{2}$

7) Bruce owns a business that produces widgets. He must bring in more in revenue than he pays out in costs in order to turn a profit.

- It costs \$10 in labor and materials to make each of his widgets.
- His rent each month for his factory is \$4000.
- He sells each widget for \$25.

How many widgets does Bruce need to sell each month to make a profit?

- A. 160
- B. 260
- C. 267
- D. 400

| | |
|---|--|
| <p>1) Which equation shows $ax - w = 3$ solved for w?</p> <p>A. $w = ax - 3$ B. $w = ax + 3$ C. $w = 3 - ax$ D. $w = 3 + ax$</p> | <p>2) Which equation is equivalent to $\frac{7x}{4} - \frac{3x}{8} = 11$?</p> <p>A. $17x = 88$ B. $11x = 88$ C. $4x = 44$ D. $2x = 44$</p> |
| <p>3) Which equation shows $4n = 2(t - 3)$ solved for t?</p> <p>A. $t = \frac{4n - 2}{3}$ B. $t = \frac{4n + 2}{3}$ C. $t = 2n - 3$ D. $t = 2n + 3$</p> | <p>4) Which equation shows $6(x + 4) = 2(y + 5)$ solved for y?</p> <p>A. $y = x + 3$ B. $y = x + 5$ C. $y = 3x + 7$ D. $y = 3x + 17$</p> |

5) This equation can be used to find h , the number of hours it takes Flo and Bryan to mow their lawn.

$$\frac{h}{3} + \frac{h}{6} = 1$$

How many hours will it take them to mow their lawn?

- A. 6
- B. 3
- C. 2
- D. 1

6) A ferry boat carries passengers back and forth between two communities on the Peachville River.

- It takes 30 minutes longer for the ferry to make the trip upstream than downstream.
- The ferry's average speed in still water is 15 miles per hour.
- The river's current is usually 5 miles per hour.

This equation can be used to determine how many miles apart the two communities are.

$$\frac{m}{15-5} = \frac{m}{15+5} + 0.5$$

What is m , the distance between the two communities?

- A. 0.5 miles
- B. 5 miles
- C. 10 miles
- D. 15 miles

7) For what values of x is the inequality

$$\frac{2}{3} + \frac{x}{3} > 1$$

true?

- A. $x < 1$
- B. $x > 1$
- C. $x < 5$
- D. $x > 5$

8) A manager is comparing the cost of buying ball caps with the company emblem from two different companies.

- Company X charges a \$50 fee plus \$7 per cap.
- Company Y charges a \$30 fee plus \$9 per cap.

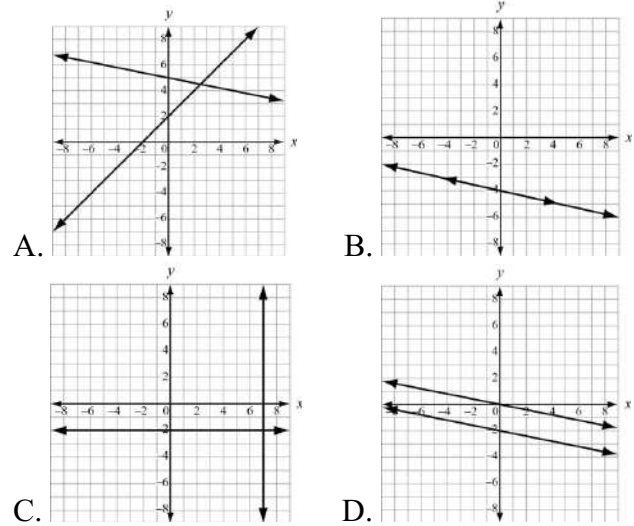
For what number of ball caps will the manager's cost be the same for both companies?

- A. 10 caps
- B. 20 caps
- C. 40 caps
- D. 100 caps

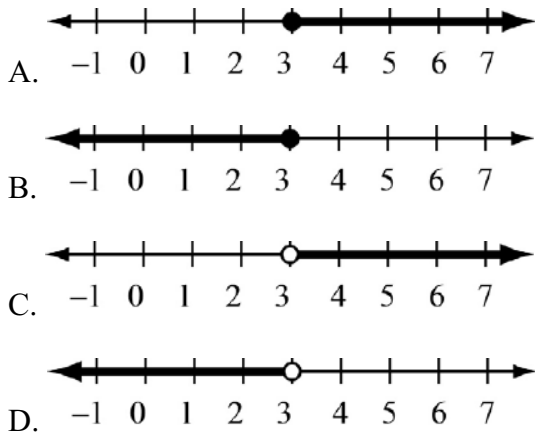
9) A shop sells one-pound bags of peanuts for \$2 and three-pound bags of peanuts for \$5. If 9 bags are purchased for a total cost of \$36, how many three-pound bags were purchased?

- A. 3
- B. 6
- C. 9
- D. 18

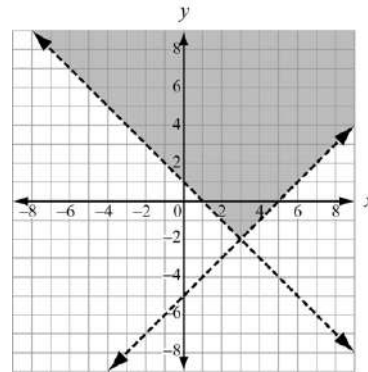
10) Which graph represents a system of linear equations that has multiple common coordinate pairs?



11) Which graph represents $x > 3$?

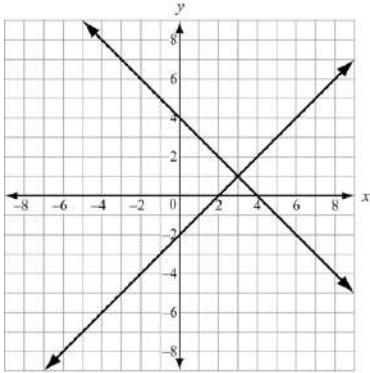


12) Which pair of inequalities is shown in the graph?



- A. $y > -x + 1$ and $y > x - 5$
- B. $y > x + 1$ and $y > x - 5$
- C. $y > -x + 1$ and $y > -x - 5$
- D. $y > x + 1$ and $y > -x - 5$

1) Two lines are graphed on this coordinate plane.



Which point appears to be a solution of the equations of both lines?

- A. (0, -2)
- B. (0, 4)
- C. (2, 0)
- D. (3, 1)

2) Based on the tables, at what point do the lines $y = -x + 5$ and $y = 2x - 1$ intersect?

| $y = -x + 5$ | |
|--------------|-----|
| x | y |
| -1 | 6 |
| 0 | 5 |
| 1 | 4 |
| 2 | 3 |
| 3 | 2 |

| $y = 2x - 1$ | |
|--------------|-----|
| x | y |
| -1 | -3 |
| 0 | -1 |
| 1 | 1 |
| 2 | 3 |
| 3 | 5 |

- A. (1, 1)
- B. (3, 5)
- C. (2, 3)
- D. (3, 2)

3) The first term in this sequence is -1.

| | | | | | | |
|-------|----|---|---|---|---|-----|
| n | 1 | 2 | 3 | 4 | 5 | ... |
| a_n | -1 | 1 | 3 | 5 | 7 | ... |

Which function represents the sequence?

- A. $a_n = a_{n-1} + 1$
- B. $a_n = a_{n-1} + 2$
- C. $a_n = 2a_{n-1} - 1$
- D. $a_n = 2a_{n-1} - 3$

4) Which function is modeled in this table?

| x | $f(x)$ |
|-----|--------|
| 1 | 8 |
| 2 | 11 |
| 3 | 14 |
| 4 | 17 |

- A. $f(x) = x + 7$
- B. $f(x) = x + 9$
- C. $f(x) = 2x + 5$
- D. $f(x) = 3x + 5$

5) Which explicit formula describes the pattern in this table?

| d | C |
|-----|-------|
| 2 | 6.28 |
| 3 | 9.42 |
| 5 | 15.70 |
| 10 | 31.40 |

- A. $d = 3.14 \times C$
 B. $3.14 \times C = d$
 C. $31.4 \times 10 = C$
 D. $C = 3.14 \times d$

6) If $f(12) = 4(12) - 20$, which function gives $f(x)$?

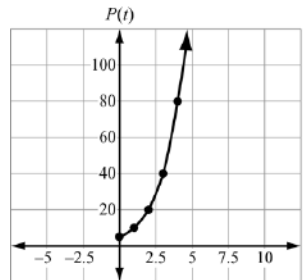
- A. $f(x) = 4x$
 B. $f(x) = 12x$
 C. $f(x) = 4x - 20$
 D. $f(x) = 12x - 20$

7) A farmer owns a horse that can continuously run an average of 8 miles an hour for up to 6 hours. Let y be the distance the horse can travel for a given x amount of time in hours. The horse's progress can be modeled by a function.

Which of the following describes the domain of the function?

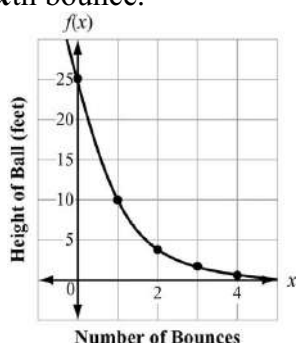
- A. $0 \leq x \leq 6$
 B. $0 \leq y \leq 6$
 C. $0 \leq x \leq 48$
 D. $0 \leq y \leq 48$

8) A population of squirrels doubles every year. Initially there were 5 squirrels. A biologist studying the squirrels created a function to model their population growth, $P(t) = 5(2^t)$ where t is time. The graph of the function is shown. What is the range of the function?



- A. any real number
 B. any whole number greater than 0
 C. any whole number greater than 5
 D. any whole number greater than or equal to 5

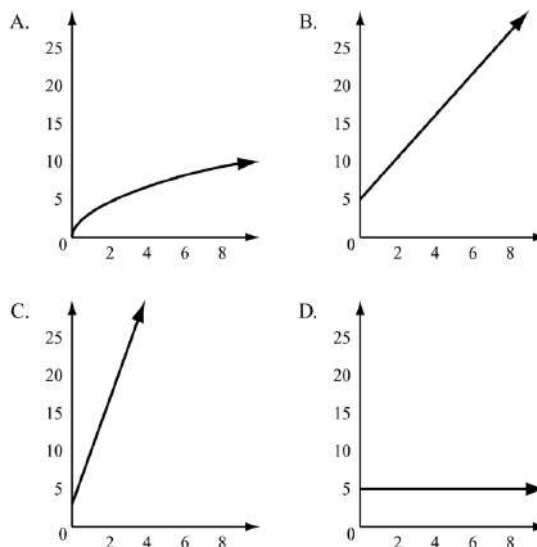
9) The function graphed on this coordinate grid shows $f(x)$, the height of a dropped ball in feet after its x th bounce.



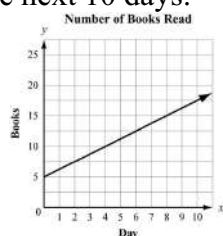
On which bounce was the height of the ball 10 feet?

- A. bounce 1
- B. bounce 2
- C. bounce 3
- D. bounce 4

10) To rent a canoe, the cost is \$3 for the oars and life preserver, plus \$5 an hour for the canoe. Which graph models the cost of renting a canoe?



11) Juan and Patti decided to see who could read the most books in a month. They began to keep track after Patti had already read 5 books that month. This graph shows the number of books Patti read for the next 10 days.



If Juan has read no books before the fourth day of the month and he reads at the same rate as Patti, how many books will he have read by day 12?

- A. 5
- B. 10
- C. 15
- D. 20

12) Which function represents this sequence?

| | | | | | | |
|-------|---|----|----|-----|-----|-----|
| n | 1 | 2 | 3 | 4 | 5 | ... |
| a_n | 6 | 18 | 54 | 162 | 486 | ... |

- A. $f(n) = 3^{n-1}$
- B. $f(n) = 6^{n-1}$
- C. $f(n) = 3(6^{n-1})$
- D. $f(n) = 6(3^{n-1})$

13) The first term in this sequence is 3.

| | | | | | | |
|-------|---|----|----|----|----|-----|
| n | 1 | 2 | 3 | 4 | 5 | ... |
| a_n | 3 | 10 | 17 | 24 | 31 | ... |

Which function represents the sequence?

- A. $f(n) = n + 3$
- B. $f(n) = 7n - 4$
- C. $f(n) = 3n + 7$
- D. $f(n) = n + 7$

14) The points $(0, 1)$, $(1, 5)$, $(2, 25)$, $(3, 125)$ are on the graph of a function. Which equation represents that function?

- A. $f(x) = 2^x$
- B. $f(x) = 3^x$
- C. $f(x) = 4^x$
- D. $f(x) = 5^x$

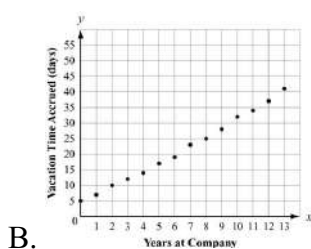
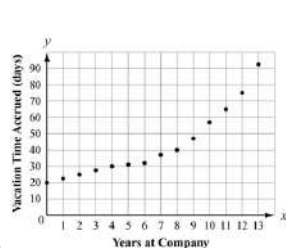
15) A function g is an odd function. If $g(-3) = 4$, which other point lies on the graph of g ?

- A. $(3, -4)$
- B. $(-3, -4)$
- C. $(4, -3)$
- D. $(-4, 3)$

16) Which statement is true about the function $f(x) = 7^x$?

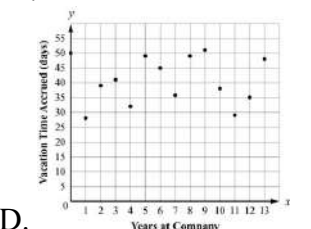
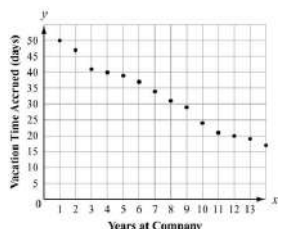
- A. The function is odd because $-f(x) = f(-x)$.
- B. The function is even because $-f(x) = f(-x)$.
- C. The function is odd because $f(x) = f(-x)$.
- D. The function is even because $f(x) = f(-x)$.

17) Which scatter plot BEST represents a model of linear growth?



A.

B.



C.

D.

19) Which table represents an exponential function?

A.

| | | | | | |
|---|---|---|---|---|---|
| x | 0 | 1 | 2 | 3 | 4 |
| y | 5 | 6 | 7 | 8 | 9 |

B.

| | | | | | |
|---|---|----|----|----|----|
| x | 0 | 1 | 2 | 3 | 4 |
| y | 0 | 22 | 44 | 66 | 88 |

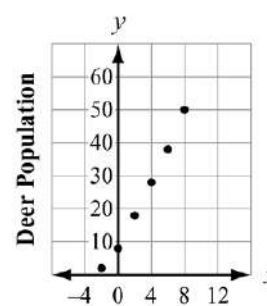
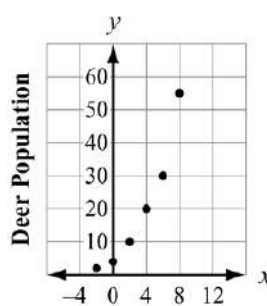
C.

| | | | | | |
|---|---|----|----|----|----|
| x | 0 | 1 | 2 | 3 | 4 |
| y | 5 | 13 | 21 | 29 | 37 |

D.

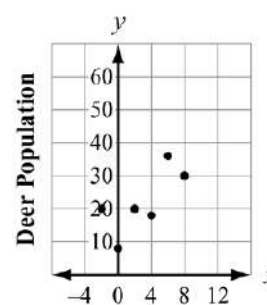
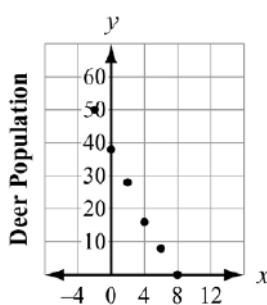
| | | | | | |
|---|---|---|---|----|----|
| x | 0 | 1 | 2 | 3 | 4 |
| y | 0 | 3 | 9 | 27 | 81 |

18) Which scatter plot BEST represents a model of exponential growth?



A.

B.



C.

D.

20) If the parent function is $f(x) = mx + b$, what is the value of the parameter m for the line passing through the points $(-2, 7)$ and $(4, 3)$?

- A. -9
- B. $-\frac{3}{2}$
- C. -2
- D. $-\frac{2}{3}$

Georgia Department of Education
ANSWERS

| UNIT 1 | UNIT 2 | UNIT 3 | | | |
|--|---|---|----|----|----|
| 1. D 2. A 3. A 4. C 5. C 6. D 7. C | 1. A 2. B 3. D 4. C 5. C 6. C 7. B 8. A 9. B 10. B 11. C 12. A | 1. D 2. C 3. B 4. D 5. D 6. C 7. A 8. D 9. A 10. C 11. B 12. D 13. B 14. D 15. A 16. D 17. B 18. A 19. A 20. D | 1. | 1. | 1. |