

Reading and Writing

27 QUESTIONS

DIRECTIONS

The questions in this section address a number of important reading and writing skills. Each question includes one or more passages, which may include a table or graph. Read each passage and question carefully, and then choose the best answer to the question based on the passage(s).

All questions in this section are multiple-choice with four answer choices. Each question has a single best answer.

1

2

1**Module
1****1**

3

5

4

CONTINUE 

1

Module
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CONTINUE 

1**Module
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9

CONTINUE 

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Module
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10

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**Module
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11

12

CONTINUE 

1**Module
1****1**

13

14

15

CONTINUE 

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**Module
1**

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20

22

21

23

CONTINUE ➔

24

25

Math

22 QUESTIONS

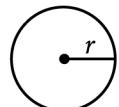
DIRECTIONS

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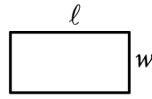
NOTES

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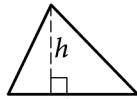
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REFERENCE


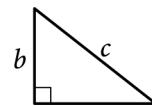
$$\begin{aligned} A &= \pi r^2 \\ C &= 2\pi r \end{aligned}$$



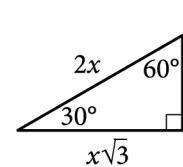
$$A = \ell w$$



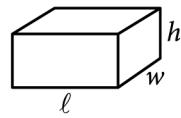
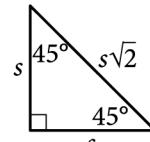
$$A = \frac{1}{2} bh$$



$$c^2 = a^2 + b^2$$



Special Right Triangles



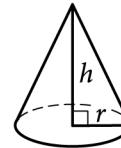
$$V = \ell wh$$



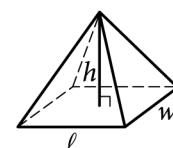
$$V = \pi r^2 h$$



$$V = \frac{4}{3}\pi r^3$$



$$V = \frac{1}{3}\pi r^2 h$$



$$V = \frac{1}{3} \ell w h$$

The number of degrees of arc in a circle is 360.

The number of radians of arc in a circle is 2π .

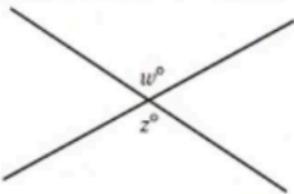
The sum of the measures in degrees of the angles of a triangle is 180.

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- Don't include **symbols** such as a percent sign, comma, or dollar sign in your circled answer.

1



Note: Figure not drawn to scale.

In the figure, two lines intersect at a point. If $w = 128$, what is the value of z ?

- A. 28
- B. 52
- C. 64
- D. 128

2

Sabrina has a goal to save at least \$240. Sabrina has already saved \$180. If x represents the additional amount of money, in dollars, Sabrina needs to save to meet her goal, which inequality represents this situation?

- A. $\frac{x}{180} \geq 240$
- B. $180x \geq 240$
- C. $180 + x \geq 240$
- D. $180 - x \geq 240$

3

The function f is defined by $f(x) = 12x + 18$. What is the y -coordinate of the y -intercept of the graph of $y = f(x)$ in the xy -plane?

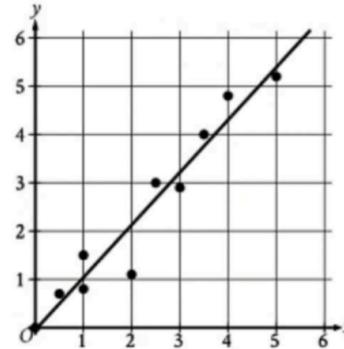
4

A certain pigeon species can fly at an average speed of 16 meters per second when in continuous flight. At this rate, how many meters would this pigeon species fly in 4 seconds?

- A. 64
- B. 20
- C. 16
- D. 12

5

In the given scatterplot, a line of best fit for the data is shown.



Which of the following equations best represents this line of best fit?

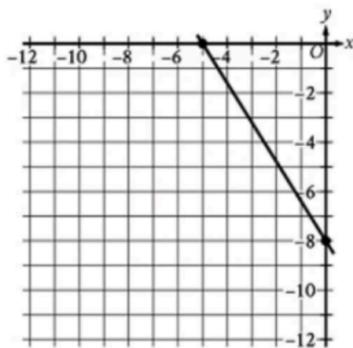
- A. $y = 1.1x$
- B. $y = -1.1x$
- C. $y = 5.2$
- D. $y = -5.2$

6

The function d is defined by $d(x) = 200 - 6^x$. What is the value of $d(0)$?

- A. 140
- B. 194
- C. 199
- D. 200

7



The graph of line h is shown in the xy -plane. Line k (not shown) is defined by $sx + 40y = t$, where s and t are constants. If line k is graphed in this xy -plane, the result is a graph of two linear equations. This system of two linear equations has no solution. Which of the following is NOT a possible value of t ?

- A. 200
- B. 64
- C. -8
- D. -320

8

Line k is defined by $y = 7x + 2$. Line j is parallel to line k in the xy -plane and passes through the point $(0, 3)$. Which equation defines line j ?

- A. $y = 7x + 3$
- B. $y = -3x + 3$
- C. $y = -7x + 3$
- D. $y = 3x + 3$

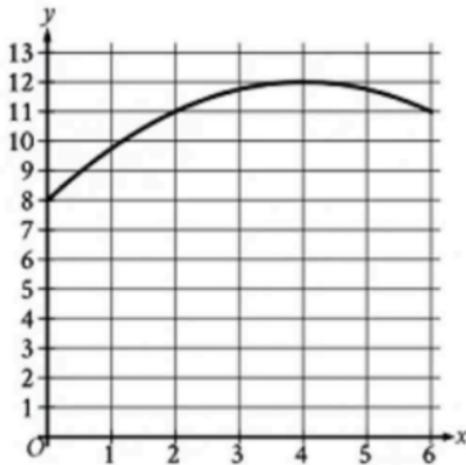
9

If $x + 4y = 41$ and $7x - 20y = -97$, what is the value of y ?

10

For the linear function f , the graph of $y = f(x)$ in the xy -plane has a slope of 28 and passes through the point $(0, 0)$. The function f is defined by $f(x) = ax$, where a is a constant. What is the value of a ?

11



The graph models the number of active projects a company was working on x months after the end of November 2011, where $0 \leq x \leq 6$. According to the model, what is the predicted number of active projects the company was working on at the end of November 2011?

- A. 0
- B. 8
- C. 11
- D. 12

12

The list gives the number of individuals in each of 6 groups of ring-tailed lemurs.

17, 4, 20, 17, 18, 6

What is the range of the numbers of individuals for the 6 groups of ring-tailed lemurs?

13

$$d = 15t$$

The given equation relates the distance d , in inches, of an object from its starting position to the time t , in seconds, since the object started moving. What is the rate of change of the object's distance from its starting position over time?

- A. $15t$ inches per second
- B. 15
- C. $\frac{1}{15}$ inches per second
- D. $\frac{1}{15t}$ inches per second

14

What is the slope of the graph of $y = \frac{1}{2}(15x + 12) + 3x$ in the xy -plane?

15

x	$f(x)$
-37	4
-9	0
33	6

The table shows three values of x and their corresponding values of $f(x)$, where $f(x) = \frac{kx + 45}{x + 2}$ and k is a constant. What is the value of k ?

16

The function f is defined by $f(x) = \frac{x + 11}{3}$, and $f(a) = 16$, where a is a constant. What is the value of a ?

- A. 9
- B. 16
- C. 37
- D. 59

17

Jasmin grows bean pods in her garden. This year, she harvested 330 bean pods and saved 10% of them to plant next year. How many of the harvested bean pods did Jasmin save to plant next year?

- A. 23
- B. 33
- C. 41
- D. 43

18

A sphere has a radius of $\frac{8}{3}$ feet. What is the volume, in cubic feet, of the sphere?

- A. $\frac{3\pi}{8}$
- B. $\frac{32\pi}{9}$
- C. $\frac{17\pi}{3}$
- D. $\frac{2048\pi}{81}$

19

A company that manufactures staplers calculates its monthly profit, in dollars, by subtracting its fixed monthly costs, in dollars, from its monthly sales revenue, in dollars. The equation $11000 = 2.00x - 6500$ represents this situation for a month where x staplers are manufactured and sold. Which statement is the best interpretation of $2.00x$ in this context?

- A. The monthly sales revenue, in dollars, from selling x staplers
- B. The monthly sales revenue, in dollars, from each stapler sold
- C. The monthly cost, in dollars, of manufacturing each stapler
- D. The monthly cost, in dollars, of manufacturing x staplers

20

If $\frac{x - 16}{27} = \frac{x - 16}{9}$, what is the value of $x + 16$?

- A. 0
- B. 3
- C. 16
- D. 32

21

$$8|7 - x| + 1 = 81$$

What is the sum of the solutions to the given equation?

- A. -14
- B. -3
- C. 10
- D. 14

22

A company offers two subscription plans for digital storage. Plan A charges a flat fee of \$25 per month. Plan B charges \$10 per month plus \$0.75 per gigabyte of storage used. For how many gigabytes of storage will the monthly cost of both plans be the same?

- A. 15
- B. 20
- C. 25
- D. 30

STOP

If you finish before time is called, you may check your work on this module only.
Do not turn to any other module in the test.

No Test Material On This Page

Math

22 QUESTIONS

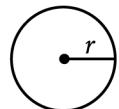
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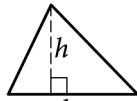
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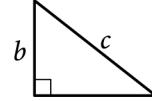
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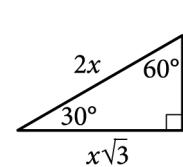
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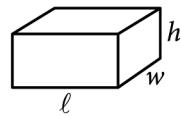
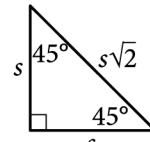
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Special Right Triangles



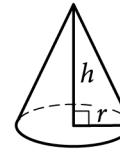
$$V = \ell wh$$



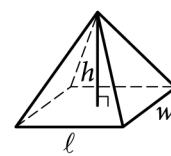
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$$V = \frac{4}{3}\pi r^3$$



$$V = \frac{1}{3}\pi r^2 h$$



$$V = \frac{1}{3} \ell w h$$

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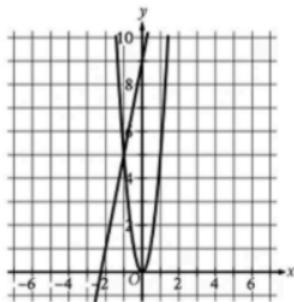
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1

Levi and Marissa each have stamp collections. The number of stamps in Levi's collection is 200% of the number of stamps in Marissa's collection. If there are 460 stamps in Marissa's collection, how many stamps are in Levi's collection?

- A. 230
- B. 460
- C. 920
- D. 1380

2



The graph of a system of a linear equation and a quadratic equation is shown. Which of the following is a solution (x, y) to the system?

- A. $(-1, 5)$
- B. $(0, 0)$
- C. $(5, -1)$
- D. $(1, 5)$

3

An object moves at a speed of $\frac{3}{50}$ feet per second. What is this speed, in yards per second? (3 feet = 1 yard)

- A. 50
- B. 6
- C. $\frac{9}{50}$
- D. $\frac{1}{50}$

4

Which expression is equivalent to $158t^3 - 24t^2u$?

- A. $2t(79t^2 - 12u)$
- B. $2t^2(79t - 12u)$
- C. $2tu(79t^2 - 12)$
- D. $2t^2u(79t - 12)$

5

Circle K has a radius of 2 millimeters (mm). Circle L has an area of $144\pi \text{ mm}^2$. What is the total area, in mm^2 , of circles K and L ?

- A. 14π
- B. 28π
- C. 56π
- D. 148π

6

Which expression is equivalent to $2\left(x - \frac{3}{2}\right)(x + 14)$?

- A. $x^2 + 25x - 21$
- B. $2x^2 + 11x - 21$
- C. $2x^2 + 25x - 42$
- D. $2x^2 - 42$

7

The function f is defined by $f(x) = (-7)(4)^x + 31$. What is the y -intercept of the graph of $y = f(x)$ in the xy -plane?

- A. $(0, 24)$
- B. $(0, 4)$
- C. $(0, 31)$
- D. $(0, -7)$

8

In right triangle RST , the sum of the measures of angle R and angle S is 90 degrees. The value of $\sin(R)$ is $\frac{2\sqrt{10}}{7}$. What is the value of $\cos(S)$?

- A. $\frac{3\sqrt{10}}{20}$
- B. $\frac{2\sqrt{10}}{7}$
- C. $\frac{7\sqrt{10}}{20}$
- D. $\frac{2\sqrt{10}}{3}$

9

$$y < 42 - 7x$$

$$\frac{y}{7} > 10$$

Which inequality represents the x values for all solutions (x, y) that satisfy the given system of inequalities in the xy -plane?

- A. $x > 6$
- B. $x < 6$
- C. $x > -4$
- D. $x < -4$

10

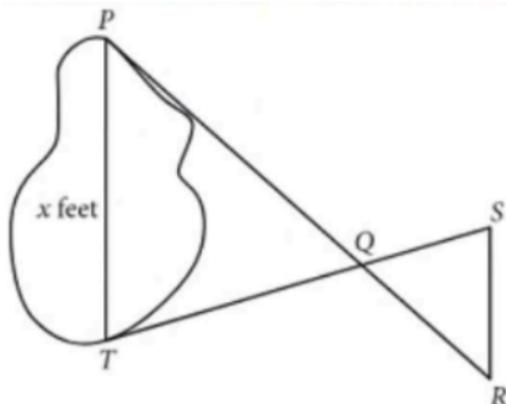
In the xy -plane, an equation of circle A is

$$(x - 2)^2 + (y - 3)^2 = 9.$$

Circle B has the same center as circle A but has a radius that is twice the radius of circle A . Which equation represents circle B ?

- A. $(x - 2)^2 + (y - 3)^2 = 18$
- B. $(x - 2)^2 + (y - 3)^2 = 36$
- C. $(x - 2)^2 + (y - 3)^2 = 54$
- D. $(x - 2)^2 + (y - 3)^2 = 81$

11



Note: Figure not drawn to scale.

A property owner wants to find the length x , in feet, across a pond as represented in the figure. \overline{PR} intersects \overline{ST} at point Q , and $\angle PTQ$ is congruent to $\angle RSQ$. The lengths represented by PQ , TQ , QS , and RS were determined to be 4200 feet, 8400 feet, 1400 feet, and 1600 feet, respectively. What is the value of x ?

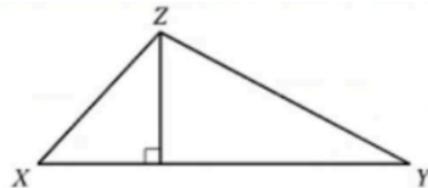
12

$$PC = N(44 - C)$$

The given equation relates the variables P , N , and C . Which expression represents the value of C for distinct positive values of P and N ?

- A. $\frac{C(N + P)}{N}$
- B. $\frac{PC}{44 - C}$
- C. $\frac{44N}{N + P}$
- D. $\frac{44N}{P + 1}$

13



Note: Figure not drawn to scale.

In the figure shown, the measure of angle X is 52° . The length of \overline{XY} is 24 units and the length of \overline{XZ} is 17 units. What is the area, in square units, of triangle XYZ ?

- A. 204
- B. 408
- C. $204 \sin 52^\circ$
- D. $408 \sin 52^\circ$

14

A partially filled container containing 24 milliliters of water is placed under a leaky faucet that produces one 0.03-milliliter drop of water every 3 seconds. Until the container is full, which of the following can be used to represent the volume v , in milliliters, of water in the container t seconds after it is placed under the faucet, where t is a multiple of 3?

- A. $v = 0.01t + 24$
- B. $v = 0.03t + 24$
- C. $v = 0.09t + 24$
- D. $v = 3t$

15

A research manager selected 2 random samples of ovens of a certain type to estimate the average amount of time this type of oven takes to preheat to 325 degrees Fahrenheit ($^{\circ}$ F). The research manager recorded the amount of time, in minutes, each oven takes to preheat to 325° F. Based on the first sample, the research manager estimated that this type of oven takes an average of 15.2 minutes to preheat to 325° F, with an associated margin of error of 1 minute. Based on the second sample, the research manager estimated that this type of oven takes an average of 15.4 minutes to preheat to 325° F, with an associated margin of error of 2.2 minutes. Assuming the margins of error were calculated the same way, which of the following best explains why the first sample obtained a smaller margin of error than the second sample?

- A. The first sample contained more ovens than the second sample.
- B. The first sample contained fewer ovens than the second sample.
- C. The first sample took more time on average to preheat to 325° F than the second sample.
- D. The first sample took less time on average to preheat to 325° F than the second sample.

16

$$-\frac{3}{19}rx + \frac{s}{8} = 10 - \frac{5}{57}x$$

In the given equation, r and s are constants. The equation has no solution. What is the value of r ?

17

$$-8x(x + 9) = 40$$

One solution to the given equation can be written as

$x = -\frac{s + \sqrt{t}}{2}$, where s and t are positive integers. What is the value of $\frac{s}{t}$?

- A. $\frac{9}{101}$
- B. $\frac{9}{76}$
- C. $\frac{9}{61}$
- D. $\frac{18}{61}$

18

The equation $N(m) = 65(Q)^{\frac{st}{4}}$ gives the predicted population $N(m)$, in thousands, of a certain bacteria colony m minutes after the initial measurement, where Q is a constant greater than 1. The predicted population increases by $p\%$ every 120 seconds. What is the value of p in terms of Q ?

- A. $100 \left(Q^{\frac{1}{2}} + 1 \right)$
- B. $100 \left(Q^3 + 1 \right)$
- C. $100 \left(Q^{\frac{1}{2}} - 1 \right)$
- D. $100 \left(Q^{30} - 1 \right)$

19

A quadratic function models the height, in feet, of an object above the ground in terms of the time, in seconds, after the object was launched. According to the model, the object was launched from a height of 0 feet and reached its maximum height of 1600 feet 10 seconds after it was launched. Based on the model, what was the height, in feet, of the object 7 seconds after it was launched?

20

The function p is defined by

$p(x) = a \left((x + 5)^2 - b \right) \left((x + 5)^2 - c \right)$, where a , b , and c are constants. In the xy -plane, the graph of $y = p(x)$ passes through the points $(-6, 30)$ and $(0, 342)$. What is the value of $p(-10) + p(-4)$?

21

$$13(x - n) = 13y + 13n$$

One of the equations in a system of two linear equations is given, where n is a positive constant. The system has no solution. Which equation could be the second equation in this system?

- A. $2x - 2y = 4n$
- B. $2x + 2y = 2n$
- C. $2x + 2y = 4n$
- D. $2x - 2y = 2n$

22

$$(x - k)^2 = (k - 4a)(x - k)$$

In the given equation, a and k are constants, where $k > 4a$. The sum of the solutions to the equation is $3k + 35$. What is the value of a ?

STOP

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