Reading

Writing and Language

Math without Calculator

Math with Calculator

Questions Overview

17
Total Questions







Questions Overview

17
Total Questions







Test Questions Key

Easy

Medium

Hard

Correct

Omitted

Unscorable

Multi-Gridded / Incorrect

Math without Calculator Test Questions

The questions in your score report may not be in the same order as you saw on test day.

< Previous

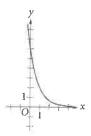
Next: Question 2 >

What value of n is the solution to the equation 12n+9=6n-9?

View Answer and Explanation ightharpoonup

- A. -3
- B. -2
- c. -1
- D. 0

⟨ Previous: Question 1



What is an equation of the graph shown?

View Answer and Explanation ightharpoonup

A.
$$y = 2(\frac{1}{3})^{x}$$

B.
$$y = 6\left(\frac{1}{3}\right)^x$$

C.
$$y = 8\left(\frac{1}{2}\right)^x$$

D.
$$y = 12 \left(\frac{1}{2}\right)^{x}$$

Question Difficulty: Easy

Next: Question 3 >

Previous: Question 2

Next: Question 4 >

$$f(x) = 200^{\frac{x}{10}}$$

The number of subscribers to a newsletter can be modeled by the given function f, where f(x) is the estimated number of subscribers on the xth day after the newsletter was first published. Which of the following is the best interpretation of f(10) = 200 in this context?

View Answer and Explanation ➤

- A. On the 10th day after the newsletter was first published, the newsletter was modeled to have 200 subscribers.
- B. On the 10th day after the newsletter was first published, the newsletter was modeled to have 200 more subscribers than on the 9th day.
- C. On the 200th day after the newsletter was first published, the newsletter was modeled to have 10 subscribers.
- D. On the 200th day after the newsletter was first published, the newsletter was modeled to have 10 more subscribers than on the 199th day.

Previous: Question 3

Next: Question 5 >

$$-5x(3x+2)-3x(x+4)$$

Which of the following is equivalent to the expression above?

View Answer and Explanation ➤

A.
$$-(9x-11x^2)$$

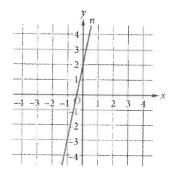
B.
$$-2(9x^2+11x)$$

C.
$$-2(9x^2+11)$$

D.
$$-2x(6x-1)$$

Previous: Question 4

Next: Question 6 >



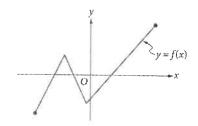
Line n is shown in the xy-plane. Line k (not shown) is perpendicular to line n. What is the slope of line k?

View Answer and Explanation ightharpoonup

- A. $-\frac{1}{2}$
- B. $-\frac{1}{5}$
- C. 2
- D. 5

Previous: Question 5

Next: Question 7 >



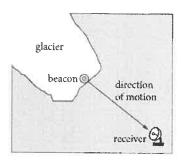
The complete graph of the function f is shown in the xy-plane above. How many solutions does the equation f(x) = 0 have?

View Answer and Explanation ightharpoonup

- A. One
- B. Two
- C. Three
- D. Four

Previous: Question 6

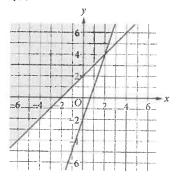
Next: Question 8 >



A geologist places a beacon on the leading edge of a glacier to measure its speed. A stationary receiver is placed 200 feet away from the beacon in the direction of motion of the glacier, as represented in the diagram above. The beacon is observed to move at a constant rate. After 30 days it is 185 feet away from the receiver. Assuming the beacon continues to move at the same rate, how far from the receiver will the beacon be after a total of 90 days?

View Answer and Explanation ➤

- A. 45 feet
- B. 140 feet
- C. 155 feet
- D. 170 feet



The shaded region shown represents all the solutions to which system of inequalities?

View Answer and Explanation

A.
$$y \le \frac{1}{3}x - 2$$

$$y \le 2x + 1$$

$$y \ge \frac{1}{3}x - 2$$

$$y \ge 2x + 1$$

$$y \le 3x - 2$$

$$y \le x + 2$$

$$y \ge 3x - 2$$

$$y \ge x + 2$$

Which linear equation has no solution?

View Answer and Explanation

A.
$$2x + 4x = 3x$$

B.
$$2x + 4x + 1 = 4x$$

C.
$$2x + 4x + 2 = 5x$$

D.
$$2x + 4x + 3 = 6x$$

$$ax^2 + bx + c = 0$$

In the equation above, a, b, and c are nonzero constants. If the equation has exactly following must be true?

View Answer and Explanation

A.
$$b+c=0$$

B.
$$a+b+c=0$$

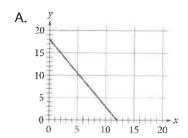
C.
$$b^2 = 4ac$$

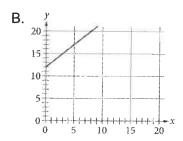
D.
$$-b = 4ac$$

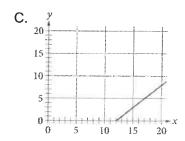
Math without Calculator: Question 11

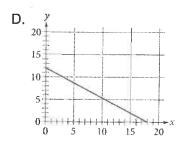
A farmer can grow 30 tons of pumpkins per acre in soil type 1 and 20 tons per acre in soil type 2. The farmer plans to grow 360 tons of pumpkins. The farmer's plan can be modeled by the equation 30x + 20y = 360, where x and y are the number of acres of soil type 1 and soil type 2, respectively. Which graph represents this equation?

View Answer and Explanation









Previous: Question 10

Next: Question 12

$$f(x) = -(x+100)^2 - 50$$

What is the maximum value of the given function?

View Answer and Explanation

- A. -100
- B. -50
- C. 50
- D. 100

$$x^2 - y^2 = 100$$
$$x + y = 5$$

The solution to the given system of equations is (x,y). What is the value of x-y?

View Answer and Explanation

- A. 5
- B. 10
- C. 20
- D. 25

Question Difficulty: Hard

$$x+y=12$$
$$x-2y=9$$

If (x,y) is the solution to the system of equations above, what is the value of x?

View Answer and Explanation **Question Difficulty:** Medium

72

p(w) = 8w + 4

The function p shown gives the perimeter p(w), in inches, of a rectangle that has a width of W inches and 3w + 2 inches. For each inch that the width increases, by how many inches will the perimeter of the increase?

View Answer and Explanation **Question Difficulty:** Hard

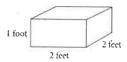
$$x^2 - 4x + 2 = 0$$

The solutions to the quadratic equation above can be written as $x = \frac{r + \sqrt{t}}{2}$ and where r and t are constants. What is the value of t?

View Answer and Explanation

Question Difficulty: Hard

Math without Calculator: Question 17



A gift-wrapping company charges customers based on the surface area of the gift box. The company charges \$0.30 per square foot of surface area. What will the company charge, in dollars, to gift wrap the box shown? (Disregard the \$ sign when gridding your answer. For example, if your answer is \$1.37, grid 1.37)

View Answer and Explanation ➤ Question Difficulty: Medium

Score Overview (/viewscore/overview)

Score Details (/viewscore/details)

<u>Test Questions</u> (/viewscore/testquestions)

Skills Insight (/viewscore/skillsinsight)

NMSC Selection Index (/viewscore/nmsc)



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Reading

Writing and Language

Math without Calculator

Math with Calculator

Questions Overview

31
Total Questions







Brass is a metal alloy that consists of copper and zinc. High brass is 65% copper by mass, and low brass is 80% copper by mass. A factory uses 2,000 kilograms of copper to produce x kilograms of high brass and y kilograms of low brass. Which equation represents this situation?

View Answer and Explanation ➤

A.
$$0.65x + 0.80y = 2,000$$

B.
$$0.80x + 0.65y = 2,000$$

c.
$$(0.65)(0.80)(x+y) = 2,000$$

D.
$$(0.80+0.65)(x+y) = 2,000$$

Math with Calculator: Question 2

2,6,12,47,83

What is the median of the data set shown?

View Answer and Explanation ightharpoonup

- A. 9
- B. 12
- C. 30
- D. 81

Math with Calculator: Question 3

The Mississippi River has a length of 2,340 miles. Which value is closest to the length, in <u>kilometers</u>, of the river? (Use 1 mile = 1.61 kilometers.)

View Answer and Explanation ➤

- A. 1,453
- B. 2,338
- C. 3,767
- D. 4,680

Math with Calculator: Question 4

The function f is defined by f(x) = 6x - 5. For what value of x does f(x) = 7?

View Answer and Explanation ➤

- A. 2
- B. 7
- C. 12
- D. 37

Math with Calculator: Question 5

Which expression is equivalent to $(-4x^5+2x^3-6x)(-2x^4+3x)$?

View Answer and Explanation ➤

A.
$$8x^{20} - 4x^{12} - 12x^5 + 12x^4 + 6x^3 - 18x$$

B.
$$-8x^{20} + 4x^{12} + 12x^5 - 12x^4 - 6x^3 + 18x$$

C.
$$8x^9 - 4x^7 - 12x^6 + 12x^5 + 6x^4 - 18x^2$$

D.
$$-8x^9 + 4x^7 + 12x^6 - 12x^5 - 6x^4 + 18x^2$$

Math with Calculator: Question 6

The population density of a certain neighborhood in Chicago is approximately 11,909 people per square mile. The area of this neighborhood is 1.75 square miles. Which value best approximates the population of this neighborhood?

View Answer and Explanation ➤

- A. 2,977
- B. 6,805
- C. 20,840
- D. 32,749

Math with Calculator: Question 7

The side length of square ABCD is 3 times the side length of square EFGH. The perimeter of square ABCD is how many times the perimeter of square EFGH?

View Answer and Explanation ➤

- A. 3
- B. 6
- C. 9
- D. 12

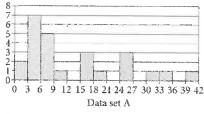
Question Difficulty: Easy

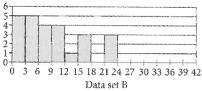
Previous: Question 6

Next: Ouestion 8 >

Math with Calculator: Question 8

The histograms shown summarize the values in two data sets. Each data set has 25 values.



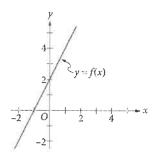


Which of the following statements best compares the standard deviations of the two data sets?

View Answer and Explanation ➤

- A. The standard deviation of data set A is greater than the standard deviation of data set B.
- B. The standard deviation of data set B is greater than the standard deviation of data set A.
- C. The standard deviations are equal.
- D. There is not enough information to compare the standard deviations.

Math with Calculator: Question 9



The line shown is the graph of the function f. If the line is shifted 6 units down, the resulting line is the graph of the function g. Which of the following defines g?

View Answer and Explanation ➤

A.
$$g(x) = x$$

B.
$$g(x) = x + 2$$

c.
$$g(x) = 2x - 4$$

D.
$$g(x) = 2x - 2$$

Second Second

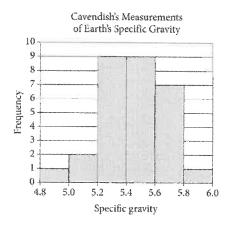
Math with Calculator: Question 10

When the expression $x^2 + 9x - 36$ is factored in the form (x + a)(x + b), where a and b are integers, which of the following could be the value of a ?

View Answer and Explanation ightharpoonup

- A. 3
- B. 4
- C. 9
- D. 12

Math with Calculator: Question 11



In 1798, Henry Cavendish measured Earth's specific gravity—the ratio of the density of Earth to the density of water. His measurements are summarized by the histogram shown. The first bar represents measurements of at least 4.8 but less than 5.0. The second bar represents measurements of at least 5.0 but less than 5.2, and so on. How many of his measurements are at least 5.4 but less than 5.8?

View Answer and Explanation ightharpoonup

- A. 2
- B. 7
- C. 9
- D. 16

Math with Calculator: Question 12

$$4|3x-5|=16$$

What are all the solutions to the given equation?

View Answer and Explanation ➤

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

Math with Calculator: Question 13

For a piano, the ratio of the fundamental frequency of a note to the fundamental frequency of the next higher note is approximately 1 to 1.06. A certain note has a fundamental frequency of 370 hertz. Which of the following is closest to the fundamental frequency, in hertz, of the next higher note?

View Answer and Explanation ➤

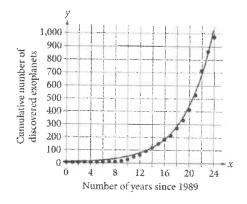
- A. 392
- B. 376
- C. 364
- D. 349

If
$$15x+6=-2$$
, what is the value of $5x+2$?

View Answer and Explanation ightharpoonup

- A. 4 15
- B. __<u>8</u>
- C. $-\frac{2}{3}$
- D. $-\frac{2}{5}$

An exoplanet is a planet that orbits a star outside of our solar system. The scatterplot shows the relationship between x, the number of years since 1989, and y, the cumulative number of discovered exoplanets. An exponential model for the data is also shown.



Which equation best represents the exponential model shown in the scatterplot?

View Answer and Explanation

A.
$$y = 1.25(5.28)^{x}$$

B.
$$y = 1.25(5.28)^{-x}$$

C.
$$y = 5.28(1.25)^{x}$$

D.
$$y = 5.28(1.25)^{-x}$$

$$2x + 3y = 13$$

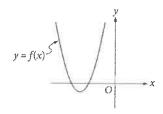
$$x + 2y = 10$$

If (x,y) is the solution to the given system of equations, what is the value of x+y?

View Answer and Explanation ➤

- A. 3
- B. 4
- C. 7
- D. 10

Math with Calculator: Question 17



The graph of the quadratic function f is shown in the xy-plane. Which of the following could define f?

View Answer and Explanation ightharpoonup

A.
$$f(x) = (x-3)(x-5)$$

B.
$$f(x) = (x-3)(x+5)$$

c.
$$f(x) = (x+3)(x-5)$$

D.
$$f(x) = (x+3)(x+5)$$

Questions 18 and 19 refer to the following information.

The Harvey Bakery owns 3 trucks. The table lists selected data about each truck. Maximum fuel capacity is the volume of fuel that the fuel tank holds when full. Average fuel consumption is the mean number of gallons of fuel consumed per mile when the truck is driven.

Harvey Bakery Vehicles

Truck Maximum fuel capacity (gallons) Average fuel consumption (gallons per mile)

A 18.0

0.050

B 12.0

0.029

C 15.4

0.040

The maximum fuel capacity of truck A is p% greater than the maximum fuel capacity of truck B. What is the value of p?

View Answer and Explanation

A. 20

B. 33

C. 50

D. 67

Questions 18 and 19 refer to the following information.

The Harvey Bakery owns 3 trucks. The table lists selected data about each truck. Maximum fuel capacity is the volume of fuel that the fuel tank holds when full. Average fuel consumption is the mean number of gallons of fuel consumed per mile when the truck is driven.

Harvey Bakery Vehicles

Truck Maximum fuel capacity (gallons) Average fuel consumption (gallons per mile)

A	18.0	0.050
В	12.0	0.029
C	15.4	0.040

In a week, truck C consumed 15 gallons of fuel. How many miles did truck C travel that week?

View Answer and Explanation

A. 0.6

B. 375

C. 600

D. 2,667

Math with Calculator: Question 20

The US House of Representatives includes members from all 50 states. On November 12, 2014, it had 87 members from California, Colorado, and New York, which made up 20% of its total members. How many representatives on this date were <u>not</u> from California, Colorado, or New York?

View Answer and Explanation ightharpoonup

- A. 174
- B. 348
- C. 435
- D. 870

Math with Calculator: Question 21

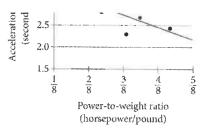
$$5x - 3y = 10$$

$$20x - 12y = 40$$

How many solutions does the given system of equations have?

View Answer and Explanation ➤

- A. Zero
- B. Exactly one
- C. Exactly two
- D. Infinitely many



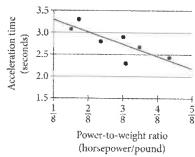
The power-to-weight ratio of a car is the car's power, in horsepower, divided by its weight, in pounds. The acceleration time of a car, in seconds, is the time that it takes the car to accelerate from 0 to 60 miles per hour. The scatterplot shows the power-to-weight ratio and the acceleration time for each of 7 high-performance cars. A line of best fit for the data is also shown.

For how many of the 7 high-performance cars is the acceleration time predicted by the line of best fit less than the actual acceleration time?

View Answer and Explanation ➤

- A. 3
- B. 4
- C. 5
- D. 6

Questions 22 and 23 refer to the following information.



The power-to-weight ratio of a car is the car's power, in horsepower, divided by its weight, in pounds. The acceleration time of a car, in seconds, is the time that it takes the car to accelerate from 0 to 60 miles per hour. The scatterplot shows the power-to-weight ratio and the acceleration time for each of 7 high-performance cars. A line of best fit for the data is also shown.

One of the 7 high-performance cars is to be selected at random. What is the probability that the selected car will have an acceleration time greater than 2.5 seconds and a power-to-weight ratio greater than $\frac{2}{8}$ horsepower/pound?

View Answer and Explanation

- A. 2 5
- B. 3
- c. $\frac{2}{7}$
- D. $\frac{3}{7}$

Math with Calculator: Question 24

Which of the following situations is best modeled by an increasing linear function?

View Answer and Explanation ✓

- A. A farmer sells 15% more produce at each successive farmers market compared to the previous market.
- B. A clothing-store chain hires an additional 20 employees for every new store opened.
- C. A jewelry maker creates 10% more necklaces per day than each previous day.
- D. A theater group performs for 8 fewer people than each previous performance.

Second to Test Questions

Math with Calculator: Question 25

$$y = 2^{x}$$
$$y = 3x - 1$$

The graphs of the two given equations intersect at points (1,2) and (3,8) in the xy-plane. For what values of x does the graph of the linear equation lie above the graph of the exponential equation?

View Answer and Explanation ➤

- A. 1 < x < 3
- B. 2 < x < 8
- c. x < 1 and x > 3
- D. x < 2 and x > 8

For positive values of j and k, j is 25% of k. Which expression represents k in terms of j ?

View Answer and Explanation ightharpoonup

- A. <u>j</u> 25
- B. <u>25*j*</u> 100
- c. 100*j*
- D. <u>25j</u>

Imani pours iced tea into an empty dispenser at a rate of x liters every y minutes. Which expression represents the number of minutes it would take Imani to fill the dispenser with 11 liters of iced tea?

View Answer and Explanation ➤

- A. $\frac{x}{11y}$
- B. $\frac{y}{11x}$
- C. $\frac{11x}{y}$
- D. 11y

Question Difficulty: Hard

Math with Calculator: Question 28

A spinner is divided into sections of equal size. Each section is either blue or green and labeled with either an even or odd number, as summarized in the table.

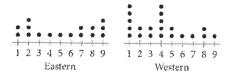
	Blue	Green	Tota
Even	10	6	16
Odd	5	10	15
Total	15	16	31

If the spinner landed in a section with an odd number, what is the probability that the spinner landed in a blue section? (Assume that the spinner cannot land on the border between sections. Express your answer as a decimal or fraction, not as a percent.)

View Answer and Explanation ➤ Question Difficulty: Medium

Math with Calculator: Question 29

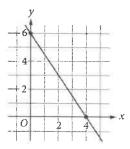
Number of House Representatives per State



The dot plots above show the number of House representatives in states with fewer than 10 representatives for 16 eastern states and 21 western states in the United States. What is the median number of House representatives for all 37 states represented in the dot plots?

View Answer and Explanation ➤ Question Difficulty: Medium

Math with Calculator: Question 30



An equation of the line shown in the xy-plane can be written as Ax + By = 12, where A and B are constants. What is the value of A?

View Answer and Explanation ightharpoonup

Question Difficulty: Hard

Math with Calculator: Question 31

The function $H(x) = -0.0005(x - 1905)^2 + 310$ models the horsepower at the wheels of a vehicle with a poorly maintained diesel engine as a function of the engine speed x, in revolutions per minute (rpm), where $1600 \le x \le 2100$. What is the engine speed, in rpm, at which the vehicle's estimated horsepower at the wheels is greatest?

View Answer and Explanation ➤ Question Difficulty: Hard

Filters

Response

All Answers	
Difficulty	
All Difficulties	
Subscores/Cross-Test Scores	
All Scores	

Question	Correct Answer	Your Answer	Difficulty	Subscores/Cross-Test Scores
- Paragraphic Control of Control	A			Heart of Algebra
2	В			Passport to Advanced Math
3	A			Passport to Advanced Math
4	В	***************************************		Passport to Advanced Math
5	В			Heart of Algebra
<u>6</u>	С		:	Passport to Advanced Math

Question	Correct Answer	Your Answer	Difficulty	Subscores/Cross-Test Scores
7	С			Analysis in Science Heart of Algebra
8	D			Heart of Algebra
9	D			Heart of Algebra
10	С			Passport to Advanced Math
menone de la companya	A			Heart of Algebra
<u>*2</u>	В			Passport to Advanced Math
<u>13</u>	С			Passport to Advanced Math
14	11		1	Heart of Algebra
<u>15</u>	8			Heart of Algebra
<u>16</u>	8			Passport to Advanced Math
17	4.8,24/5			Analysis in History/ Social Studies

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Math with Calculator Test Questions

The questions in your score report may not be in the same order as you saw on test day.

▽Filters

Response



Question	Correct Answer	Your Answer	Difficulty	Subscores/Cross-Test Scores
^	\$	\$	\$	
1	Α			Analysis in Science Heart of Algebra
<u>2</u>	В		:	Problem Solving and Data Analysis
<u>3</u>	С			Analysis in History/ Social Studies Problem Solving and Data Analysis
<u>4</u>	Α			Heart of Algebra
<u>5</u>	С			Passport to Advanced Math
<u>6</u>	С			Analysis in History/ Social Studies Problem Solving and Data Analysis
7	Α			N/A
<u>8</u>	А			Problem Solving and Data Analysis
<u>9</u>	С			Heart of Algebra

Question	Correct Answer	Your Answer	Difficulty	Subscores/Cross-Test Scores
^	\$	\$	\$	
<u>10</u>	D			Passport to Advanced Math
<u>11</u>	D			Analysis in Science Problem Solving and Data Analysis
<u>12</u>	D			Passport to Advanced Math
<u>13</u>	Α			Problem Solving and Data Analysis
<u>14</u>	С			Heart of Algebra
<u>15</u>	С			Analysis in Science Problem Solving and Data Analysis
<u>16</u>	A	: :		Heart of Algebra
<u>17</u>	D			Passport to Advanced Math
<u>18</u>	C			Analysis in History/ Social Studies Problem Solving and Data Analysis
<u>19</u>	В			Analysis in History/ Social Studies Heart of Algebra
<u>20</u>	В			Analysis in History/ Social Studies Problem Solving and Data Analysis
<u>21</u>	D	***************************************		Heart of Algebra
<u>22</u>	B		÷	Analysis in Science Problem Solving and Data Analysis
<u>23</u>	D			Analysis in Science Problem Solving and Data Analysis
<u>24</u>	В			Problem Solving and Data Analysis
<u>25</u>	A			Passport to Advanced Math

Question	Correct Answer	Your Answer	Difficulty	Subscores/Cross-Test Scores
^	\$	\$	\$	
<u>26</u>	С			Problem Solving and Data Analysis
<u>27</u>	D			Problem Solving and Data Analysis
<u>28</u>	1/3,.333		-	Problem Solving and Data Analysis
<u>29</u>	4	ı		Analysis in History/ Social Studies Problem Solving and Data Analysis
<u>30</u>	3			Heart of Algebra
<u>31</u>	1905			Analysis in Science Passport to Advanced Math

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 $\label{eq:psat-nmsqt-psat-nmsqt-psat-nmsqt-psat-nmsqt-psat-nmsqt-psat-10?} PSAT/NMSQT^{®} \ (https://collegereadiness.collegeboard.org/psat-nmsqt-psat-10?navld=gf-pn)$

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