Math

22 QUESTIONS | 35 MINUTES

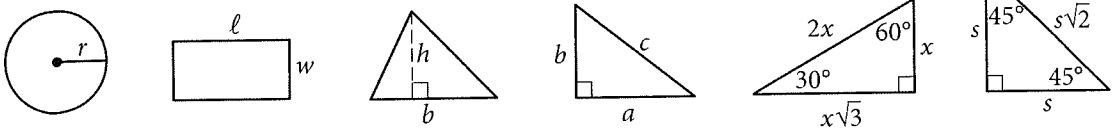
DIRECTIONS

The questions in this section address a number of important math skills. Use of a calculator is permitted for all questions.

NOTES

Unless otherwise indicated: • All variables and expressions represent real numbers. • Figures provided are drawn to scale. • All figures lie in a plane. • The domain of a given function is the set of all real numbers x for which $f(x)$ is a real number.

REFERENCE



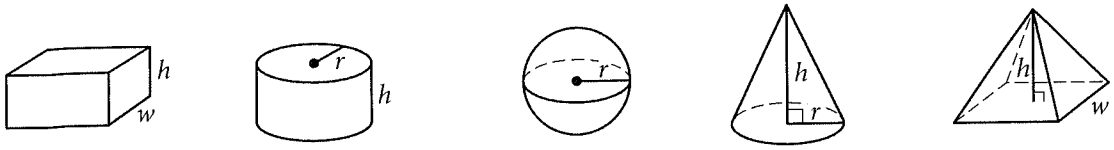
$A = \pi r^2$
$C = 2\pi r$

$A = \ell w$

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

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

Special Right Triangles



$V = \ell wh$

$V = \pi r^2 h$

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

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

$V = \frac{1}{3}\ell wh$

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.

CONTINUE

For **multiple-choice questions,** solve each problem, choose the correct answer from the choices provided, and then circle your answer in this book. Circle only one answer for each question. If you change your mind, completely erase the circle. You will not get credit for questions with more than one answer circled, or for questions with no answers circled.

For **student-produced response questions,** solve each problem and write your answer next to or under the question in the test book as described below.

- Once you've written your answer, circle it clearly. You will not receive credit for anything written outside the circle, or for any questions with more than one circled answer.
- If you find more than one correct answer, write and circle only one answer.
- Your answer can be up to 5 characters for a positive answer and up to 6 characters (including the negative sign) for a negative answer, but no more.
- If your answer is a fraction that is too long (over 5 characters for positive, 6 characters for negative), write the decimal equivalent.
- If your answer is a decimal that is too long (over 5 characters for positive, 6 characters for negative), truncate it or round at the fourth digit.
- If your answer is a mixed number (such as 3.!. 2), write it as an improper fraction (7/2) or its decimal equivalent (3.5).
- Don't include symbols such as a percent sign, comma, or dollar sign in your circled answer.

CONTINUE

1

Ash has a walking and cycling routine. For every minute she walks, she burns 20 calories. And for every minute she cycles, she burns 35 calories. If she burns 340 calories on a particular day after walking for x minutes and cycling for y minutes, which of the following equations best represents her routine?

A) $340 - 20x = 35y$

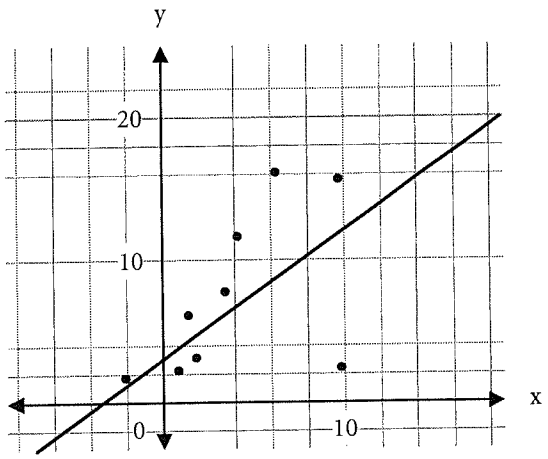
B) $35y - 20x = 340$

C) $340 - 20y = 35x$

D) $35x - 20y = 340$

2

The graph below shows velocity (y–*axis*) plotted against time (x–*axis*). For how many data points is the actual value higher than the predicted values on the line of best fit?



A) 9

B) 6

C) 3

D) 2

CONTINUE

3

x	$f(x)$
-2	30
0	12
3	0
5	2

Which of the following is a factor of $f(x)$?

A) $(x+2)$

B) $(x-3)$

C) x

D) $(x-5)$

4

What is the value of s for the following system of equations?

$$(t-5)+2(s-3)=8$$

$$2(t-5)-3(s-3)=-19$$

5

How many solutions does the equation below have?

$$3(x-2)-2(x-1)=-x+2(x+2)-8$$

A) 0

B) 1

C) 2

D) Infinitely many

6

Which of the following is equivalent to $2g^{\frac{4}{5}}g^{\frac{2}{5}}$?

A) $\sqrt[5]{2g^6}$

B) $\sqrt[5]{32g^6}$

C) $2\sqrt[6]{g^5}$

D) $\sqrt[6]{2g^5}$

7

A researcher found the mean mass of all cheetahs in a park. He found that the mean mass of all cheetahs in the park is between 120 *lbs* and 182 *lbs*. What is the value of the margin of error for the mean mass of the cheetahs in the park?

8

What is the value of $f(6)$, if $f(2x) = 9x - 7$?

A) 20

B) 47

C) 101

D) 11

CONTINUE

9

A teacher takes note of the shoe sizes for 21 students in his class and creates the table below. Which of the following statements is true about the data below?

Shoe size	Frequency
1	3
2	4
3	4
4	7
5	2
6	1

A) The mean is greater than the median

B) The mean is the same as the median

C) The median is greater than the mean

D) There isn't enough information to answer the question.

10

What is the value of a in the given equation $27^{x} \div 81^{-x} = 3^{ax}$?

11

If the value of the sum of interior angles of the hexagon is $b\pi$, what is the value of b?

A) 0.25

B) 1

C) 4

D) 2

12

What is the value when 80 is increased by 200%?

A) 200

B) 160

C) 240

D) 280

13

If $1+\frac{a\sqrt{2}}{2}$ is a solution to the equation $2x^2-4x-7=0$, what is the possible value of a?

14

A real estate company kept a track of the number of houses it sold in October. Its team came up with the model $h(t) = 262 - 8t$, and t represents the number of days. Which of the following best represents 262?

A) The number of houses at the end of October

B) The number of houses at the beginning of October

C) The number of houses sold per day in October

D) The number of houses sold in the first 8 days of October.

15

ABC is a right-angled triangle, where B is 90° and angle C is 30°. If AC = 32, what is the area of triangle ABC.

A) $128\sqrt{3}$

B) $128\sqrt{2}$

C) $16\sqrt{3}$

D) $16\sqrt{2}$

16

If $(5xy+3)-(6xy-2xy^2+2)=axy^2+bxy+c$, what is the value of $a + b$?

17

What is the product of the roots for the equation $3x^2+6x-24=0$?

A) 3

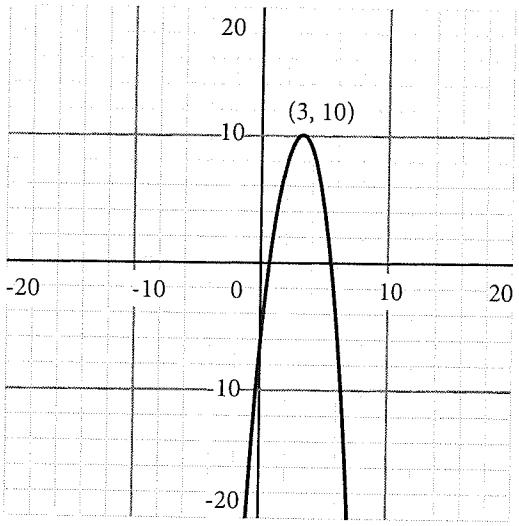
B) −8

C) 2

D) −2

18

Which of the following best represents the equation of the graph below?



A) $y=2(x+3)^2+10$

B) $y=-2(x-3)^2+10$

C) $y=2(x-3)^2+10$

D) $y=-2(x+3)^2+10$

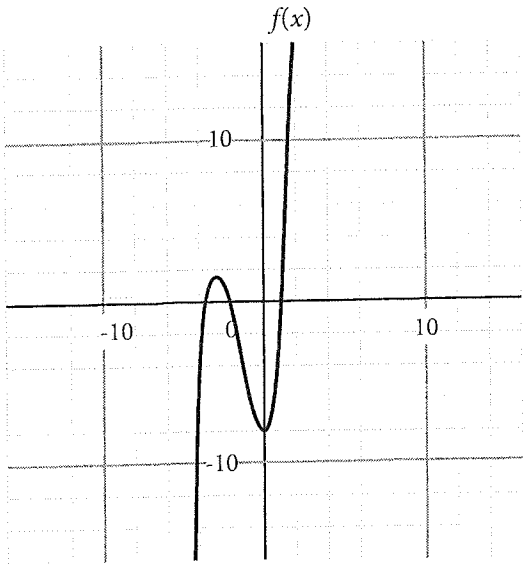
CONTINUE

19

If $-3(-2+2x) = ax + b$, what is the value of ab?

20

What is the possible value of $f(x)$ when $x = 0$?



A) 8

B) −8

C) 4

D) −4

21

If $\frac{3}{4}(x-5)=27$, what is the value of $x - 5$?

A) 41

B) 36

C) $\frac{81}{4}$

D) 31

22

Which of the following coordinates would be true for the following system of inequalities?

$$y > -2x - 1$$

$$3y < x + 9$$

A) (−2, 1)

B) (1, 4)

C) (3 , 1)

D) (−3, 3)

CONTINUE

No Test Material On This Page