

Name:

Date:

1

On February 18, from 9 a.m. until 2 p.m., the temperature rose from -14°F to 36°F . What was the total increase in temperature during this time period?

- (1) 50° (3) 32°
 (2) 36° (4) 22°

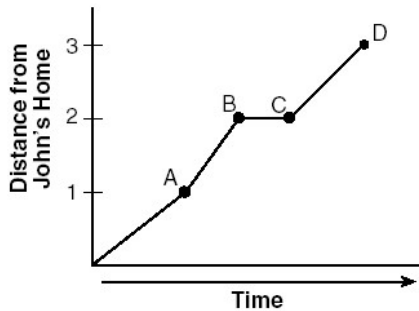
2

The number 8.375×10^{-3} is equivalent to

- (1) 0.0008375 (3) 0.08375
 (2) 0.008375 (4) 8,375

3

John left his home and walked 3 blocks to his school, as shown in the accompanying graph.



What is one possible interpretation of the section of the graph from point B to point C ?

- (1) John arrived at school and stayed throughout the day.
 (2) John waited before crossing a busy street.
 (3) John returned home to get his mathematics homework.
 (4) John reached the top of a hill and began walking on level ground.

4

What is the value of $\frac{x^2 - 4y}{2}$, if $x = 4$ and $y = -3$?

- (1) -2 (3) 10
 (2) 2 (4) 14

5

What is a common factor of $x^2 - 9$ and $x^2 - 5x + 6$?

- (1) $x + 3$ (3) $x - 2$
(2) $x - 3$ (4) x^2

6

If $a > 0$, then $\sqrt{9a^2 + 16a^2}$ equals

- (1) $\sqrt{7a}$ (3) $5a$
(2) $5\sqrt{a}$ (4) $7a$

7

What is the sum of $\frac{2}{x}$ and $\frac{x}{2}$?

- (1) 1 (3) $\frac{4+x}{2x}$
(2) $\frac{2+x}{2x}$ (4) $\frac{4+x^2}{2x}$

8

If $2x^2 - x + 6$ is subtracted from $x^2 + 3x - 2$, the result is

- (1) $x^2 + 2x - 8$ (3) $-x^2 + 2x - 8$
(2) $x^2 - 4x + 8$ (4) $-x^2 + 4x - 8$

9

The expression $(a^2 + b^2)^2$ is equivalent to

- (1) $a^4 + b^4$ (3) $a^4 + 2a^2b^2 + b^4$
(2) $a^4 + a^2b^2 + b^4$ (4) $a^4 + 4a^2b^2 + b^4$

10

What is the solution set of the equation $3x^2 - 34x - 24 = 0$?

- (1) $\{-2, 6\}$ (3) $\{-\frac{2}{3}, 12\}$
(2) $\{-12, \frac{2}{3}\}$ (4) $\{-6, 2\}$

11

The inequality $\frac{1}{2}x + 3 < 2x - 6$ is equivalent to

- (1) $x < -\frac{5}{6}$ (3) $x < 6$
(2) $x > -\frac{5}{6}$ (4) $x > 6$

12

What is the least common denominator of $\frac{1}{2}$, $\frac{2}{7x}$, and $\frac{5}{x}$?

- (1) $9x$ (3) $14x$
(2) $2x$ (4) $14x^2$

13

If $3x$ is one factor of $3x^2 - 9x$, what is the other factor?

- (1) $3x$ (3) $x - 3$
(2) $x^2 - 6x$ (4) $x + 3$

14

If the mass of a proton is 1.67×10^{-24} gram, what is the mass of 1,000 protons?

- (1) 1.67×10^{-27} g (3) 1.67×10^{-22} g
(2) 1.67×10^{-23} g (4) 1.67×10^{-21} g

15

At the beginning of her mathematics class, Mrs. Reno gives a warm-up problem. She says, "I am thinking of a number such that 6 less than the product of 7 and this number is 85." Which number is she thinking of?

- (1) $11\frac{2}{7}$ (3) 84
(2) 13 (4) 637

16

The number of people on the school board is represented by x . Two sub-committees with an equal number of members are formed, one with $\frac{2}{3}x - 5$ members and the other with $\frac{x}{4}$ members. How many people are on the school board?

- (1) 20 (3) 8
(2) 12 (4) 4

17

The line $3x - 2y = 12$ has

- (1) a slope of $\frac{3}{2}$ and a y -intercept of -6
- (2) a slope of $-\frac{3}{2}$ and a y -intercept of 6
- (3) a slope of 3 and a y -intercept of -2
- (4) a slope of -3 and a y -intercept of -6

18

If $(x - 4)$ is a factor of $x^2 - x - w = 0$, then the value of w is

- (1) 12
- (2) -12
- (3) 3
- (4) -3

19

If the temperature in Buffalo is 23° Fahrenheit, what is the temperature in degrees Celsius? [Use the formula $C = \frac{5}{9}(F - 32)$.]

- (1) -5
- (2) 5
- (3) -45
- (4) 45

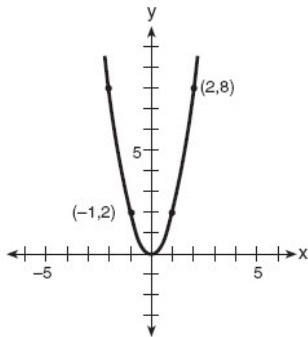
20

If $3(x - 2) = 2x + 6$, the value of x is

- (1) 0
- (2) 5
- (3) 12
- (4) 20

21

Which quadratic function is shown in the accompanying graph?



- (1) $y = -2x^2$
- (2) $y = 2x^2$
- (3) $y = -\frac{1}{2}x^2$
- (4) $y = \frac{1}{2}x^2$

22

If $f(x) = 4x^0 + (4x)^{-1}$, what is the value of $f(4)$?

- (1) -12
- (2) 0
- (3) $1\frac{1}{16}$
- (4) $4\frac{1}{16}$

23

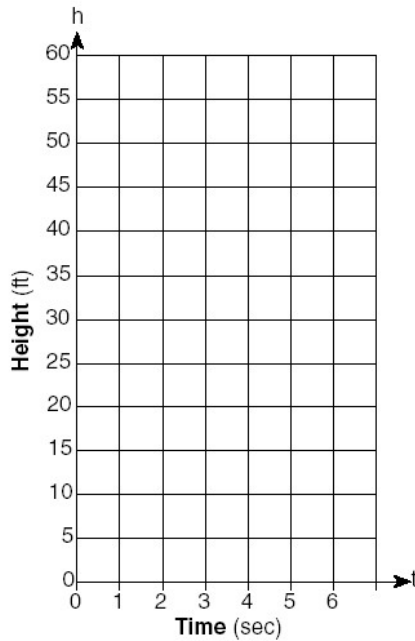
The expression $\sqrt[4]{16a^6b^4}$ is equivalent to

- (1) $2a^2b$
- (2) $2a^{\frac{3}{2}}b$
- (3) $4a^2b$
- (4) $4a^{\frac{3}{2}}b$

24

Tom throws a ball into the air. The ball travels on a parabolic path represented by the equation $h = -8t^2 + 40t$, where h is the height, in feet, and t is the time, in seconds.

- a On the accompanying set of axes, graph the equation from $t = 0$ to $t = 5$ seconds, including all integral values of t from 0 to 5.
- b What is the value of t at which h has its greatest value?

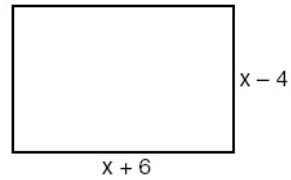


25

Brett was given the problem: "Evaluate $2x^2 + 5$ when $x = 3$." Brett wrote that the answer was 41. Was Brett correct? Explain your answer.

26

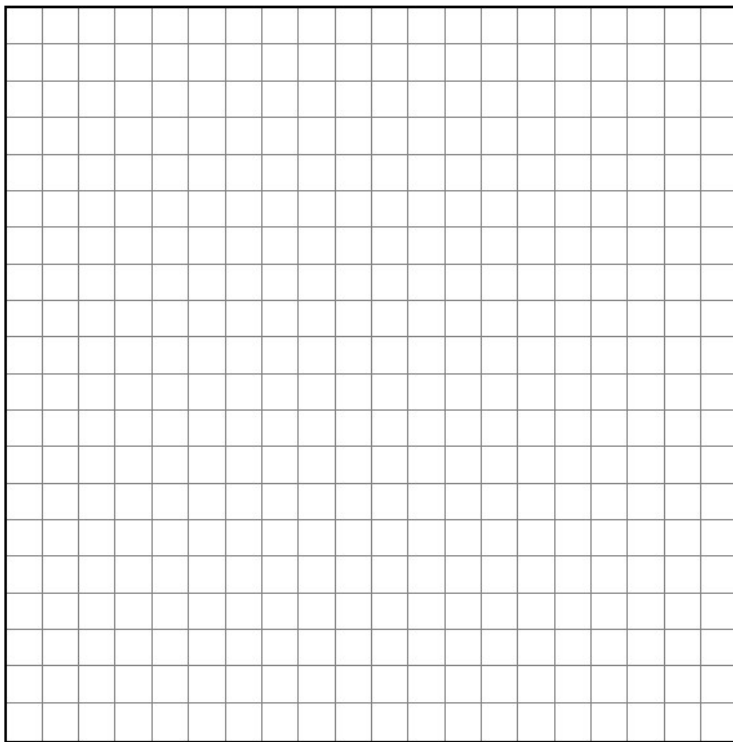
Express both the perimeter and the area of the rectangle shown in the accompanying diagram as polynomials in simplest form.



Solve the following system of equations algebraically or graphically:

$$\begin{aligned}x^2 + y^2 &= 25 \\ 3y - 4x &= 0\end{aligned}$$

[The use of the accompanying grid is optional.]



Solve for all values of q that satisfy the equation $\sqrt[3]{3q+7} = q + 3$.