Algebra1 Quick Quiz 12132023

Question 1.

The volume, V, of a cylinder with radius r and height h can be found using this equation.

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

Which of the following equations has been correctly rearranged to solve for h?

Ⓐ $h = V + \pi r^2$

Ⓑ $h = V - \pi r^2$

Ⓒ $h = \frac{\pi r^2}{V}$

Ⓓ $h = \frac{V}{\pi r^2}$

Question 2

The volume, V, of a cylinder with radius r and height h can be found using this equation.

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

Which of the following equations has been correctly rearranged to solve for r?

Ⓐ $r = \sqrt{\frac{\pi h}{V}}$

Ⓑ $r = \sqrt{\frac{V}{\pi h}}$

Ⓒ $r = \frac{\pi h}{2V}$

Ⓓ $r = \frac{V}{2\pi h}$

Question 3.

The distance a free falling object has traveled can be modeled by the equation $d = \frac{1}{2}at^2$, where a is acceleration due to gravity and t is the amount of time the object has fallen. What is t in terms of a and d?

(1) $t = \sqrt{\frac{da}{2}}$

(2) $t = \sqrt{\frac{2d}{a}}$

(3) $t = \left(\frac{da}{d}\right)^2$

(4) $t = \left(\frac{2d}{a}\right)^2$

Question 4.

A student is asked to solve the equation $4(3x - 1)^2 - 17 = 83$.
The student's solution to the problem starts as

$$4(3x - 1)^2 = 100$$
$$(3x - 1)^2 = 25$$

A correct next step in the solution of the problem is

(1) $3x - 1 = \pm 5$

(2) $3x - 1 = \pm 25$

(3) $9x^2 - 1 = 25$

(4) $9x^2 - 6x + 1 = 5$

Question 5.

Consider this function.

$$f(x) = 3x^2 - 7$$

The graph of $f(x)$ is translated 4 units down to create the graph of $g(x)$.

Which of the following functions represents $g(x)$?

Ⓐ $g(x) = -x^2 - 3$

Ⓑ $g(x) = -x^2 - 11$

Ⓒ $g(x) = 3x^2 - 3$

Ⓓ $g(x) = 3x^2 - 11$

Question 6.

What are the solutions to the equation $x^2 - 8x = 24$?

(1) $x = 4 \pm 2\sqrt{10}$

(2) $x = -4 \pm 2\sqrt{10}$

(3) $x = 4 \pm 2\sqrt{2}$

(4) $x = -4 \pm 2\sqrt{2}$

Question 7.

The area of a square is represented by this expression.

$$g^2 + 8g + 16$$

Which of the following expressions represents the length of one side of the square?

Ⓐ $g + 16$

Ⓑ $g + 8$

Ⓒ $g + 4$

Ⓓ $g + 2$

Question 8.

Determine the smallest integer that makes $-3x + 7 - 5x < 15$ true.

Question 9.

You should be able to figure this out without graphing software but you will need to use a calculator though.

A landscaper is creating a rectangular flower bed such that the width is half of the length. The area of the flower bed is 34 square feet. Write and solve an equation to determine the width of the flower bed, to the *nearest tenth of a foot*.

Question 10.

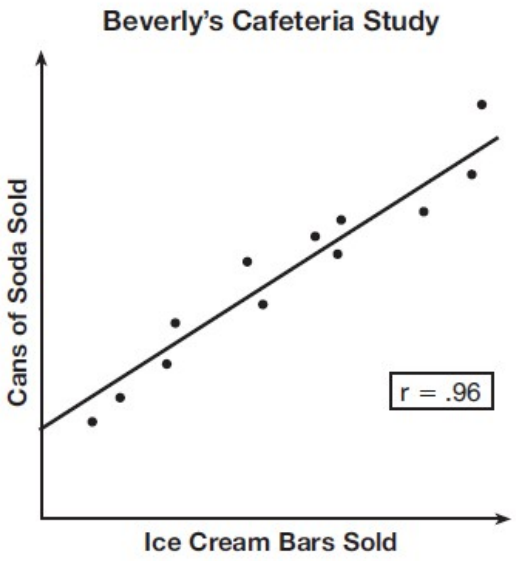
The equation to determine the weekly earnings of an employee at The Hamburger Shack is given by $w(x)$, where x is the number of hours worked.

$$w(x) = \begin{cases} 10x, & 0 \le x \le 40 \\ 15(x - 40) + 400, & x > 40 \end{cases}$$

Determine the difference in salary, *in dollars*, for an employee who works 52 hours versus one who works 38 hours.

Bonus Question
Question 11

Beverly did a study this past spring using data she collected from a cafeteria. She recorded data weekly for ice cream sales and soda sales. Beverly found the line of best fit and the correlation coefficient, as shown in the diagram below.



Given this information, which statement(s) can correctly be concluded?

I. Eating more ice cream causes a person to become thirsty.
II. Drinking more soda causes a person to become hungry.
III. There is a strong correlation between ice cream sales and soda sales.

(1) I, only
(2) III, only
(3) I and III
(4) II and III