

Algebra Work at home 03202020

Question 1

Which expression can be simplified to the form $3\sqrt[3]{y + 3}$, where y is a positive integer?

- A. $\sqrt{18}$
- B. $\sqrt{63}$
- C. $\sqrt{75}$
- D. $\sqrt{84}$

Question 2

A dog's body temperature (t), in degrees Fahrenheit ($^{\circ}\text{F}$), is considered normal when the value of the expression below is no more than 0.75.

$$|t - 101.75|$$

A dog's body temperature is 101.2°F . Based on the expression, which statement about the dog's body temperature is true?

- A. Since normal body temperature is from 100.25°F to 103.25°F , the dog's body temperature is considered normal.
- B. Since normal body temperature is from 100.25°F to 103.25°F , the dog's body temperature is not considered normal.
- C. Since normal body temperature is from 101°F to 102.5°F , the dog's body temperature is considered normal.
- D. Since normal body temperature is from 101°F to 102.5°F , the dog's body temperature is not considered normal.

Question 3.

Over one week, a snack booth at a fair sold 362 cans of soft drinks for \$1.75 each and 221 hot dogs for \$2.35 each. Which calculation will give the **closest estimate** of the sales of soft drinks and hot dogs?

- A. $300(2) + 200(2)$
- B. $400(2) + 200(2)$
- C. $400(2) + 200(3)$
- D. $400(2) + 300(3)$

Question 4.

When $x^3 - 2x^2 - 15x$ is factored completely, which expression is one of the factors?

- A. $x - 5$
- B. $x + 5$
- C. $x^2 - 5x$
- D. $x^2 - 2x - 15$

Question 5.

A clothing company sells hats online to its customers. The price of each hat is p dollars. The shipping cost is s dollars. The equation shown below can be used to find the total cost (c), in dollars, when n hats are purchased.

$$c = np + s$$

Which equation can be used to find the price of each hat when 5 hats are purchased, the shipping cost is \$6, and the total cost is \$41?

- A. $c = 5(6) + 41$
- B. $c = 6(41) + 5$
- C. $41 = 5p + 6$
- D. $41 = 6p + 5$

Question 6.

An equation and some of the steps used to solve the equation are shown below. One step is missing.

$$\begin{aligned}2(x - 3) + 10x &= 5(3 + x) \\&? \\2x - 5x + 10x &= 15 + 6 \\7x &= 21 \\x &= 3\end{aligned}$$

Which set of statements is **most likely** the missing step and the property that justifies the step?

- A. $2x - (3 + 10x) = 5(3 + x)$
This step is justified by the associative property.
- B. $2(x - 3) = 5(3 + x) - 10x$
This step is justified by the associative property.
- C. $2x - 6 + 10x = 15 + 5x$
This step is justified by the distributive property.
- D. $2x - 3 + 10x = 15 + x$
This step is justified by the distributive property.

Question 7.

A student is selling small and large frozen pizzas for a school fund-raiser.

- The student earns \$3 for each small pizza sold.
- The student earns \$4 for each large pizza sold.
- The student has sold exactly 30 pizzas.
- The student has earned \$100.

How many small pizzas and large pizzas has the student sold?

Question 8.

The system of equations below describes the relationship between the time (t), in seconds, two objects have been traveling and each object's velocity (v), in feet per second.

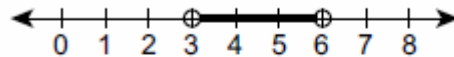
$$\begin{aligned}v &= -32t \\v &= -32t + 16\end{aligned}$$

Based on the system of equations, which statement about the velocity of the objects is true?

- A. The objects never travel at the same velocity.
- B. The objects always travel at the same velocity.
- C. The objects travel at the same velocity only after they have been traveling for $\frac{1}{4}$ second.
- D. The objects travel at the same velocity only after they have been traveling for $\frac{1}{2}$ second.

Question 9.

The solution set of an inequality is shown below.

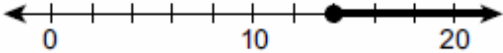
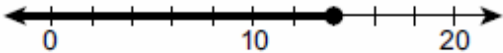
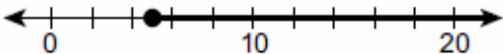
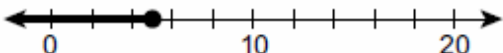


Which inequality has this solution set?

- A. $1 < 3x < 2$
- B. $1 < x + 2 < 4$
- C. $6 < 2x < 9$
- D. $6 < x + 3 < 9$

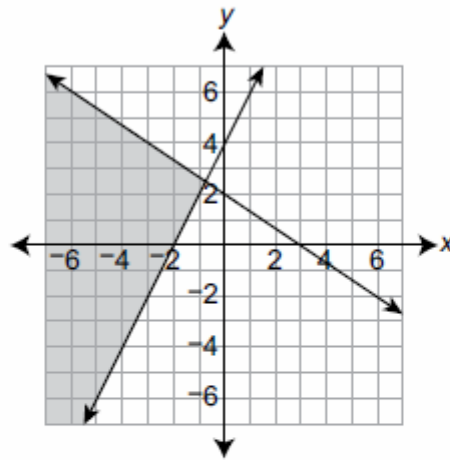
Question 10.

Sandy has at least 2 times as many pencils as David has. David has 3 pencils more than Pietro has. Pietro has 4 pencils. Which number line shows the solution set for the possible numbers of pencils that Sandy has?

- A. 
- B. 
- C. 
- D. 

Question 11

The graph of the solution set for a system of inequalities is shown below.



Which system of inequalities is represented by the graph?

- A. $-2x + y \leq 4$
 $2x + 3y \leq 6$
- B. $-2x + y \geq 4$
 $2x + 3y \geq 6$
- C. $-2x + y \leq 4$
 $2x + 3y \geq 6$
- D. $-2x + y \geq 4$
 $2x + 3y \leq 6$

Question 12

A teacher is buying word games and board games for his students.

- Each word game can be played by up to 4 students.
- Each board game can be played by 2 students.
- The teacher needs enough games for 30 students to play at the same time.
- The maximum amount that the teacher can spend on the games is \$200.

The number of word games (x) and the number of board games (y) the teacher buys must satisfy the system of linear inequalities below.

$$4x + 2y \geq 30$$

$$14.5x + 18y \leq 200$$

The teacher plans to buy 5 word games and 8 board games. Which statement about the number of games the teacher plans to buy is true?

- A. There will be enough games for 30 students to play at the same time, but the total cost will be greater than the maximum amount.
- B. There will be enough games for 30 students to play at the same time, and the total cost will be less than the maximum amount.
- C. There will not be enough games for 30 students to play at the same time, and the total cost will be greater than the maximum amount.
- D. There will not be enough games for 30 students to play at the same time, but the total cost will be less than the maximum amount.

Question 13

In a science experiment, a scientist records the wavelengths of six waves. The wavelengths, in nanometers, are listed below.

$$0.0001 \quad \frac{5}{100} \quad 10^{-3} \quad 1.0001 \quad \frac{1}{1,000} \quad 2 \times 10^{-2}$$

A. Which two wavelengths are equal to one another?

equal wavelengths: _____ and _____

B. Which wavelength is the shortest?

shortest wavelength: _____

To find the speed of a wave, the scientist uses the formula shown below.

$$\text{speed} = (\text{wavelength}) \cdot (\text{frequency})$$

The wave with wavelength 10^{-3} nanometer has a frequency of 10^x . The speed of the wave is 10^y , where $y > 3$.

C. Write an inequality in terms of x to represent all possible values of x .

inequality: _____

The wavelength of a seventh wave is recorded. The wavelength is greater than 2×10^{-2} nanometer and less than $\frac{5}{100}$ nanometer.

D. Write a possible wavelength, in nanometers, for the seventh wavelength. Write the possible wavelength as a fraction with a denominator of 100.

possible wavelength: _____ nanometer

Question 14

Four people each deliver food to people's homes.

Curtis charges a flat fee of \$2.50 for each delivery plus \$0.20 per mile for each mile he drives. For one delivery, Curtis drives 6 miles.

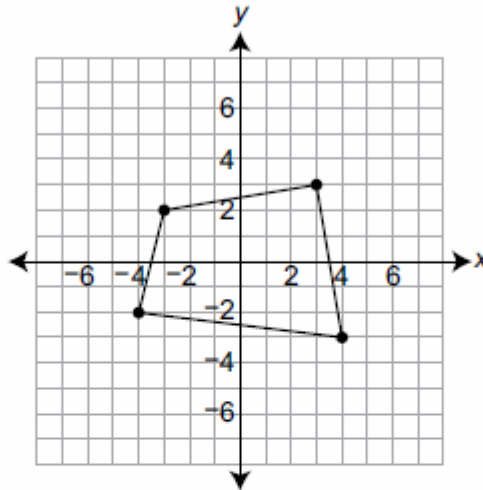
- A.** How much does Curtis charge to deliver the food?

Audrey charges a flat fee of \$4 for each delivery plus a certain amount, in dollars per mile, for each mile she drives. For a distance of 30 miles, Curtis and Audrey charge the same amount.

- B.** How much does Audrey charge, in dollars per mile? Show or explain all your work.

Question 15

A graph of a relation is shown below.



Removing which line segment from the graph would make the relation a function of x ?

- A. the line segment with endpoints $(-4, -2)$ and $(-3, 2)$
- B. the line segment with endpoints $(-3, 2)$ and $(3, 3)$
- C. the line segment with endpoints $(3, 3)$ and $(4, -3)$
- D. the line segment with endpoints $(4, -3)$ and $(-4, -2)$

Question 16

The set of ordered pairs below is a relation.

$$\{(0.5, 2), (1.5, 5), (4.0, 12), (6.5, 15)\}$$

Which relation has the same domain as the given relation?

- A. $\{(1, 5), (2, 2), (-3, 15), (-8, 12)\}$
- B. $\{(0.5, 1), (1.5, 4), (4.0, 11), (6.5, 14)\}$
- C. $\{(2, 1.1), (5, 2.2), (12, 3.3), (15, 4.4)\}$
- D. $\{(-1, 6.5), (-3, 1.5), (-6, 4.0), (-10, 0.5)\}$

Question 17

A teacher buys some pencils.

- He buys 2 pencils for each of his students.
- He buys 10 additional pencils.
- Each pencil costs \$0.10.

Which equation describes the total amount of money (y), in dollars, that the teacher spends on pencils as a function of the number of students (x) he has?

- A. $y = 1.20x$
- B. $y = 2.00x$
- C. $y = 0.20x + 1$
- D. $y = 0.10x + 12$

Question 18

The table below represents a function of x .

x	y
4	16
6	12
8	8
10	4

Which equation describes the function?

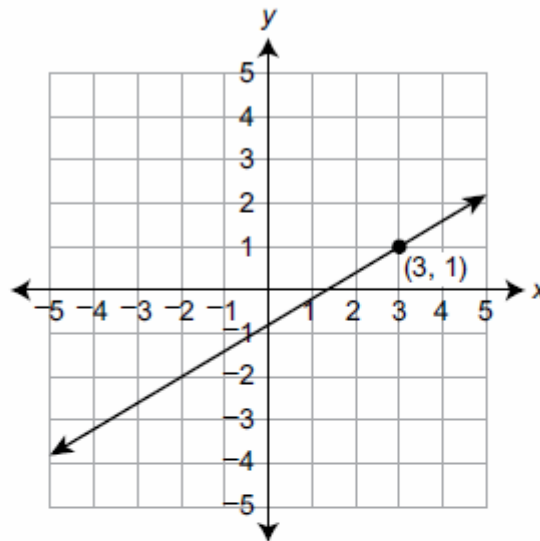
- A. $y = -2x + 12$
- B. $y = -2x + 24$
- C. $y = 2x + 12$
- D. $y = 2x + 24$

Question 19

Bari paid a total of \$62 for 3 hours of driving lessons. This included a \$20 fee for the driver's manual and an hourly rate for use of the car. What is the hourly rate Bari paid?

Question 20

The graph shown below represents a linear function.



Which equation describes the linear function?

- A. $y + 1 = \frac{3}{5}(x + 3)$
- B. $y - 1 = \frac{3}{5}(x + 3)$
- C. $y + 1 = \frac{3}{5}(x - 3)$
- D. $y - 1 = \frac{3}{5}(x - 3)$