Question 1 of 26

The average (arithmetic mean) of a, $2a$, and 9 is 7.

Quantity A	**Quantity B**
5	a

- ○ Quantity A is greater.
- ○ Quantity B is greater.
- ○ The two quantities are equal.
- ○ The relationship cannot be determined from the information given.

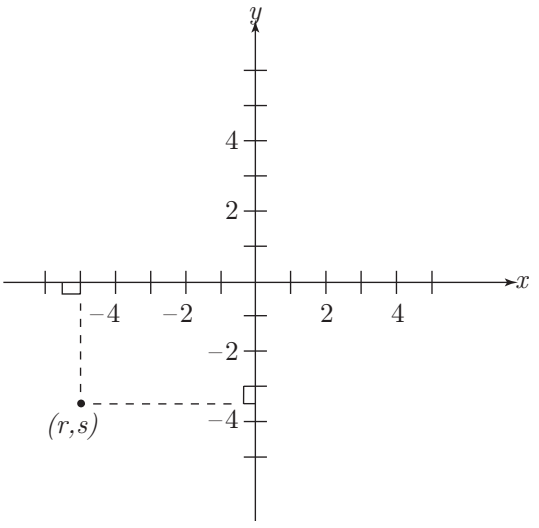
Question 2 of 26

$$12 > 3x - 9y$$

Quantity A	**Quantity B**
6	$x - 3y$

- ○ Quantity A is greater.
- ○ Quantity B is greater.
- ○ The two quantities are equal.
- ○ The relationship cannot be determined from the information given.

Question 3 of 26



Quantity A	**Quantity B**
r	s

- ○ Quantity A is greater.
- ○ Quantity B is greater.
- ○ The two quantities are equal.
- ○ The relationship cannot be determined from the information given.

Question 4 of 26

$$\begin{array}{r} 145.3 \\ -AB.A \\ \hline 66.6 \end{array}$$

In the correctly calculated subtraction problem shown above, a and b represent digits from 0 to 9, inclusive.

Quantity A	**Quantity B**
15	$A + B$

- ○ Quantity A is greater.
- ○ Quantity B is greater.
- ○ The two quantities are equal.
- ○ The relationship cannot be determined from the information given.

Question 5 of 26

For all integers a and b, $a \# b = -|a + b|$

Quantity A	**Quantity B**
$(-10) \# 7$	$7 - 10$

- ○ Quantity A is greater.
- ○ Quantity B is greater.
- ○ The two quantities are equal.
- ○ The relationship cannot be determined from the information given.

Question 6 of 26

Company X sold 300 products this year. It sold twice as many of Product A as it did of Product C, and half of the products sold were Product B. Company X sold no products other than A, B, and C.

Quantity A	**Quantity B**
The number of Product A sold	100

- ○ Quantity A is greater.
- ○ Quantity B is greater.
- ○ The two quantities are equal.
- ○ The relationship cannot be determined from the information given.

Question 7 of 26

$z \neq 0$

Quantity A	**Quantity B**
$\frac{99z}{100}$	$\frac{100}{99z}$

- ○ Quantity A is greater.
- ○ Quantity B is greater.
- ○ The two quantities are equal.
- ○ The relationship cannot be determined from the information given.

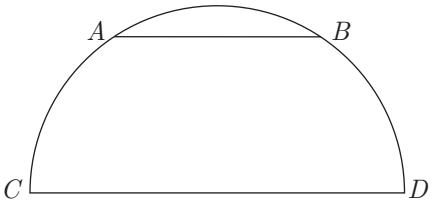
Question 8 of 26

In a garden, there are only red, yellow, and blue flowers. One–third of the flowers are red, and 40 percent are blue. One flower is chosen at random.

Quantity A	**Quantity B**
The probability that the flower chosen is not red	The probability the flower chosen is not yellow

- ○ Quantity A is greater.
- ○ Quantity B is greater.
- ○ The two quantities are equal.
- ○ The relationship cannot be determined from the information given.

Question 9 of 26



In the semicircle above, the length of arc AC is equal to the length of arc BD, and the length of arc AB is less than the length of arc BD.

Quantity A	**Quantity B**
$\frac{\text{the length of chord } AB}{\text{the length of chord } CD}$	$\frac{1}{2}$

- ○ Quantity A is greater.
- ○ Quantity B is greater.
- ○ The two quantities are equal.
- ○ The relationship cannot be determined from the information given.

Question 10 of 26

What is the value of $(4 + a)(4 - b)$ when $a = 4$ and $b = -4$?

- ◯ –64
- ◯ –16
- ◯ 0
- ◯ 16
- ◯ 64

Question 11 of 26

If the average (arithmetic mean) of two numbers is 35 and one of the numbers is k, then what is the other number in terms of k ?

- ◯ $35 + k$
- ◯ $35 - k$
- ◯ $35 - 2k$
- ◯ $70 - k$
- ◯ $70 - 2k$

Question 12 of 26

Alejandro calculated 25 percent of x instead of a 25 percent increase in x. Which of the following operations could Alejandro perform on his answer to produce the correct solution?

Indicate <u>all</u> such values.

- ☐ Add x
- ☐ Multiply by x
- ☐ Divide by 0.25
- ☐ Multiply by 5

Question 13 of 26

If the ratio of $x : y$ is 6 : 7, and x is equal to 15, then the value of y is

- ◯ 7
- ◯ 13.5
- ◯ 17
- ◯ 17.5
- ◯ 20

Question 14 of 26

If $x \neq 0$, what is the value of b when $x = a(b + c)$?

- ◯ $c - \frac{a}{x}$
- ◯ $\frac{x}{a} - c$
- ◯ $ax - c$
- ◯ $ax + c$
- ◯ $x - ac$

Question 15 of 26

$$\frac{3^6 + 3^4 + 3^2}{3^2 + 3^4 + 3^6}$$

Question 16 of 26

If $k = 6 \times 17$, then which of the following is a multiple of k ?

- ◯ 68
- ◯ 78
- ◯ 85
- ◯ 136
- ◯ 204

Question 17 of 26

The ratio of the degree measures of the angles of a triangle is 2 : 3 : 4. Which of the following is the sum of the degree measures of the smallest and largest angles?

- ◯ 40°
- ◯ 80°
- ◯ 100°
- ◯ 120°
- ◯ 140°

Question 18 of 26

The price of a slice of pizza is $(8a + b)$ cents, the price of a soda is $(8b + a)$ cents, and the sum of the two prices is \$1.35.

Quantity A	**Quantity B**
a	b

- ◯ Quantity A is greater.
- ◯ Quantity B is greater.
- ◯ The two quantities are equal.
- ◯ The relationship cannot be determined from the information given.

Question 19 of 26

If $y = \sqrt{0.36x^8}$, then $y =$

- ◯ $0.06x^2$
- ◯ $0.06x^4$
- ◯ $0.06x^5$
- ◯ $0.6x^2$
- ◯ $0.6x^4$

Question 20 of 26

If $x^2 + 2xy + y^2 = 25$, then $(x + y)^3$ could be

- ◯ 5
- ◯ 15
- ◯ 50
- ◯ 75
- ◯ 125

Question 21 of 26

A grain elevator moves 200 pounds of grain every 15 minutes. If the elevator starts moving grain at noon, and stops some time between 3:00 P.M. to 4:00 P.M., which of the following could be the weight, in pounds, of the grain moved by the elevator?

Indicate all such values.

- ☐ 800
- ☐ 2,400
- ☐ 2,732
- ☐ 3,000
- ☐ 3,200
- ☐ 3,600

Question 22 of 26

If $a = (0.404)^3$, $b = \sqrt[3]{0.404}$, and $c = 0.404$, then which of the following is true?

- ◯ $a > b > c$
- ◯ $b > a > c$
- ◯ $a > c > b$
- ◯ $c > a > b$
- ◯ $b > c > a$

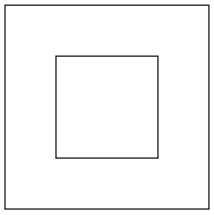
Question 23 of 26

At least 15 percent of the students registered for Professor Tyler's course dropped out before the end of the course. The drop-out rate for Professor Quin's course was 20 percent greater than that for Professor Tyler's course. If 120 students remained on the last day of Professor Quin's class, which of the following could be the number of students who signed up for Professor Quin's class?

Indicate <u>all</u> such values.

- ☐ 42
- ☐ 135
- ☐ 142
- ☐ 146
- ☐ 147
- ☐ 162
- ☐ 184
- ☐ 185

Question 24 of 26



In the figure above, if the area of the larger square region is twice the area of the smaller square region, and if a diagonal of the smaller square has a length of 1 foot, then a side of the larger square is how many feet longer than a side of the smaller square?

- ○ $\frac{2-\sqrt{2}}{2}$
- ○ $\sqrt{2-1}$
- ○ 1
- ○ $\sqrt{2}$
- ○ 2

Question 25 of 26

If $5a - 3b = -9$ and $3a + b = 31$, then $a + b =$

- ○ –7
- ○ –3
- ○ 6
- ○ 13
- ○ 19

Question 26 of 26

Claire estimates her chances of being admitted to her top five schools as follows: 80 percent for Debs U, 70 percent for Powderly State, 50 percent for Randolph A&M, 20 percent for Reuther, and 10 percent for Chavez Poly. If Claire's estimates are correct, her chance of being admitted to at least one of her top five schools is between

- ○ 75% and 79.99%
- ○ 80% and 84.99%
- ○ 85% and 89.99%
- ○ 90% and 94.99%
- ○ 95% and 99.99%