KMF Math Sprint Practice - Section 4 Medium

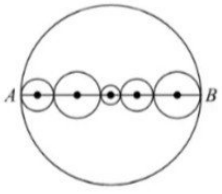
Question: 1

$y-x=1$

Quantity A	Quantity B
$\frac{5^x}{5^y}$	$\frac{1}{5}$

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

Question: 2



The centers of the five smaller circles all lie on segment AB, which is a diameter of the largest circle, and each circle is tangent to two of the other circles.

Quantity A	Quantity B
The circumference of the largest circle	The sum of the circumferences of the five smaller circles

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

Question: 3

$|x-3| = y$, where $x < 3$

Quantity A	Quantity B
x - 3	y

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

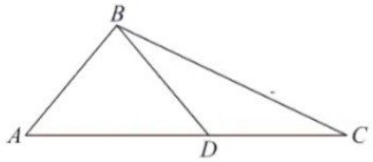
Question: 4

List A consists of n integers and list B consists of k integers. The average (arithmetic mean) of the integers in list A is less than the average of the integers in list B. The sum of the integers in list A is 524 and the sum of the integers in list B is 565.

Quantity A	Quantity B
n	k

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

Question: 5



In the figure shown, AB=BD=DC and the degree measure of angle ABD is 80.

Quantity A	Quantity B
The degree measure of angle DBC	30

Question: 6

$$x^{-1}y^{-1}>0$$

Quantity A	Quantity B
$\frac{x^{-1}}{y^{-1}}$	$\frac{x}{y}$

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

Question: 7

Today a certain machine is worth 20 percent less than it was worth a year ago, and it is worth x percent less than it was worth two years ago. A year ago the machine was worth 20 percent less than it was worth two years ago.

Quantity A	Quantity B
x	40

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

Question: 8

Quantity A	Quantity B
$\frac{100!}{99!}$	$\frac{(100!-99!)}{98!}$

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

Question: 9

1 cup=8 ounces

1 pint=2 cups

1 quart=2 pints

A large coffee jug contains 3 quarts, 1 pint, and 1.5 cups of coffee. What is the greatest number of 12-ounces mugs of coffee that can be filled from the jug?

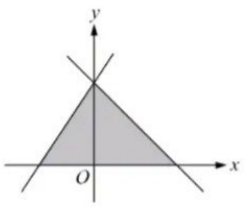
- 6
- 9
- 10
- 12
- 15

Question: 10

If the average (arithmetic mean) of the list of positive integers 2, x, y and 7 is 3, then the median of the list of integers is?

- 1
- 2
- 3
- 4
- 5

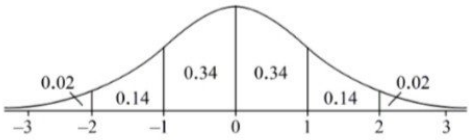
Question: 11



The shaded triangle in the xy-plane above is bounded by the x-axis and the graphs of y=-x+3 and y=$(\frac{3}{2})$x+3. What is the area of the triangle?

- 3
- 4.5
- 7.5
- 10.5
- 15

Question: 12



The random variable X has the standard normal distribution with a mean of 0 and a standard deviation of 1, as shown. Probabilities, rounded to the nearest 0.01, are indicated for the six intervals shown. The random variable Y has a normal distribution with a mean of 2 and a standard deviation of 1. Using the probabilities shown, approximately how much greater is the probability that the value of Y is between 1 and 2 than the probability that the value of X is between 1 and 2?

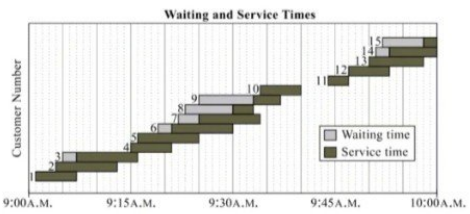
- 0.10
- 0.12
- 0.14
- 0.20
- 0.34

Question: 13

In a group of 100 adults, each owns a DVD player, a CD player, or both. If 60 adults own a DVD player and 70 adults own a CD player, how many adults own both?

Question: 14

Each of the 15 customers who arrived at a customer service desk between 9 AM and 10 AM was served in order of arrival by one of the two customer service representatives. Each representative served one customer at a time and finished with that customer before serving any other customers. The graph shows the waiting and service times, recorded to the nearest minute, for customers numbered 1 to 15.

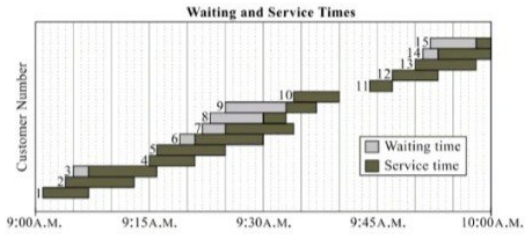


Of customers 4, 6, 8, 9 and 10, which one was served by the customer service representative who served customer 1?

- Customer 4
- Customer 6
- Customer 8
- Customer 9
- Customer 10

Question: 15

Each of the 15 customers who arrived at a customer service desk between 9 AM and 10 AM was served in order of arrival by one of the two customer service representatives. Each representative served one customer at a time and finished with that customer before serving any other customers. The graph shows the waiting and service times, recorded to the nearest minute, for customers numbered 1 to 15.

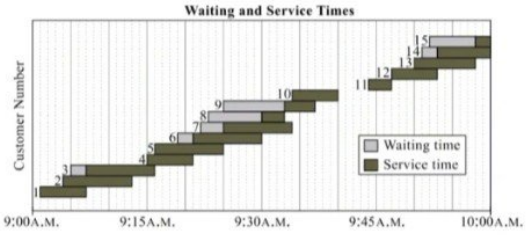


According to the recorded times, which customer had the greatest ratio of waiting time to service time?

- Customer 6
- Customer 7
- Customer 8
- Customer 9
- Customer 15

Question: 16

Each of the 15 customers who arrived at a customer service desk between 9 AM and 10 AM was served in order of arrival by one of the two customer service representatives. Each representative served one customer at a time and finished with that customer before serving any other customers. The graph shows the waiting and service times, recorded to the nearest minute, for customers numbered 1 to 15.



What was the range of the recorded service times, in minutes, for the 15 customers?

- 4
- 6
- 7
- 9
- 14

Question: 17

In a certain sequence of numbers, the 1^{st} term is equal to 1 and each term after the 1^{st} term is equal to 12 times the square of the preceding term. If the 5^{st} term of the sequence is equal to 12^{n}, what is the value of n?

Question: 18

The operation a¤b is defined for all numbers a and b by a¤b=a+3b+6. If c¤c=c, what is the value of c?

- -3
- -2
- $-\frac{3}{2}$
- 0
- $\frac{3}{2}$

Question: 19

A certain store sells circular rugs at a constant price per square foot. If a circular rug with diameter 5 feet costs $250, what is the cost of a circular rug with diameter 9 feet?

- $450
- $810
- $900
- $1620
- $1800

Question: 20

A company has assets worth $150,000 and liabilities worth $70,000, giving it an asset-to-liability ratio of approximately 2.1. The company will borrow x dollars, and the amount borrowed will be added to both the assets and the liabilities. If the asset-to-liability ratio is to be greater than 1.2 after the money is borrowed, which of the following could be the value of x?

Indicate all such values.

- [ ] 300,000
- [ ] 320,000
- [ ] 340,000
- [ ] 360,000