KMF Math Sprint Practice - Section 18 Medium

Question: 1

$ab \neq 0$

Quantity A	Quantity B
$\sqrt{a^2 + b^2}$	$\sqrt{a^2} + \sqrt{b^2}$

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

Question: 2

Quantity A	Quantity B
$\frac{(5!+6!)}{(6!+7!)}$	$\frac{1}{6}$

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

Question: 3

The speed of light is $3*10^8$ meters per second, rounded to the nearest 10^8 meters per second. A "light-hour" is the distance that light travels in an hour.

Quantity A	Quantity B
The number of kilometers in a light-hour	10^{10}

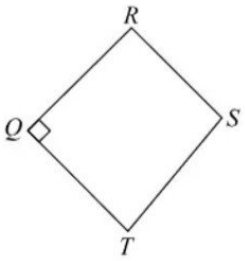
Question: 4

$y+5 > x$

Quantity A	Quantity B
y+2	x-2

- ○ 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 quadrilateral QRST, the length of RS is less than the length of QT, and RS is parallel to QT.

Quantity A	Quantity B
The length of QR	The length of ST

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

Question: 6

Quantity A	Quantity B
The standard deviation of the numbers 45, 64, 83, and 53	The standard deviation of the numbers 55, 81, 47, and 62

Question: 7

$x > 0$ and $\frac{5}{27}\ x^2 = x$

Quantity A	Quantity B
x	5

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

Question: 8

$r > 0$

Quantity A	Quantity B
The area of a circular region with radius r	The area of a circular region with radius r^2

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

Question: 9

A certain machine devotes 45 seconds every 3 hours to a system check, and the machine is in operation 24 hours a day. At this rate, how many days of production will it take for the machine to spend a total of 3 hours on systems checks?

- ○ 5
- ○ 8
- ○ 15
- ○ 30
- ○ 40

Question: 10

Week	1	2	3	4	5
Revenue	$850	$1,200	$1,100	$900	$950
Expenses	$600	$650	$950	$800	$650

The table above shows a certain store's weekly revenue and expenses for five weeks. What is the store's median weekly profit for the five weeks?

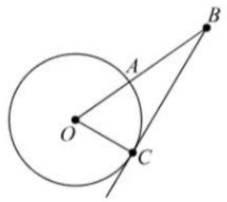
- ○ $150
- ○ $200
- ○ $250
- ○ $270
- ○ $300

Question: 11

In the decimal number 1,375.2648, which digit has a place value that is 1,000 times the place value of the digit 6?

- ○ 1
- ○ 3
- ○ 4
- ○ 5
- ○ 7

Question: 12



In the figure above, BC is tangent to the circle with center O and radius 6. If BA=4, what is the area of the triangular region BCO?

- 24
- 36
- 40
- 48
- It cannot be determined from the information given.

Question: 13

On May 5, 2004, the closing price of Stock A was $60.00, which was a decrease of 8 percent from the closing price of the stock on the previous day, May 4, 2004. On May 6, 2004, the closing price of the stock was exactly the same as the closing price on May 4, 2004. What was the percent increase in the closing price of the stock from May 5, 2004 to May 6, 2004?

Give your answer to the nearest whole percent.

_____%

Question: 14

Number of Motor Vehicles Owned by a Random Sample of 900 Families

Number of Motor Vehicles Owned	Number of Families
At least 1	900
At least 2	610
At least 3	250
More than 3	75

Approximately what percent of the families in the sample own more than 3 motor vehicles?

- 2.8%
- 3.5%
- 4.2%
- 8.3%
- 27.5%

Question: 15

Number of Motor Vehicles Owned by a Random Sample of 900 Families

Number of Motor Vehicles Owned	Number of Families
At least 1	900
At least 2	610
At least 3	250
More than 3	75

How many of the families own exactly 2 motor vehicles?

- 610
- 360
- 285
- 250
- 175

Question: 16

Number of Motor Vehicles Owned by a Random Sample of 900 Families

Number of Motor Vehicles Owned	Number of Families
At least 1	900
At least 2	610
At least 3	250
More than 3	75

If a family were selected at random from the survey sample, what is the probability that the family would own more than 2 motor vehicles?

- $\frac{5}{18}$
- $\frac{13}{36}$
- $\frac{2}{5}$
- $\frac{3}{5}$
- $\frac{61}{90}$

Question: 17

If $3^x+3^x+3^x=9^{x-2}$, what is the value of x?

Question: 18

Each digit of a 20-digit number is either a 1, 2, 3, 4, or 5. If the average (arithmetic mean) of 15 of the 20 digits of the number is 2.8 and if M is the average of all 20 digits of the number, then M must satisfy which of the following inequalities?

- $1.95 \leq M \leq 2.25$
- $2.15 \leq M \leq 2.50$
- $2.25 \leq M \leq 2.55$
- $2.35 \leq M \leq 3.35$
- $2.45 \leq M \leq 3.55$

Question: 19

Minutes	Number of Students
0 to 19	10
20 to 39	21
40 to 59	9
60 to 79	3
80 to 99	3

The frequency distribution above summarizes the numbers of minutes, rounded to the nearest integer, that 46 students individually spent studying for an exam. Based on the information given, which of the following statements must be true?

Indicate all such statements.

- ☐ The total number of minutes that all of the students spent studying is greater than 1,500.
- ☐ The average (arithmetic mean) number of minutes spent studying per student is greater than 25.
- ☐ The range of the numbers of minutes spent studying is greater than 60.

Question: 20

The operation □ is defined by r □s=12 r^{-1}(s+3) for all positive numbers r and s. If x□ 3=18, what is the value of x?

- ○ $\frac{1}{4}$
- ○ $\frac{1}{2}$
- ○ $\frac{3}{2}$
- ○ 2
- ○ 4