KMF Math Sprint Practice - Section 15 Medium

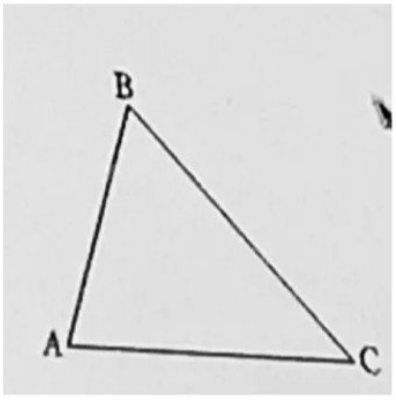
Question: 1

On the number line, points R, S, and T have coordinates r, s, and t, respectively, where r=2t. Point R is to the right of point S, and point T is to the left of point R.

Quantity A	Quantity B
t	s

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

Question: 2



In triangle ABC shown, AB=BC and the measure of angle BAC is 58 degrees.

Quantity A	Quantity B
AC	AB

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

Question: 3

$a > 1$

Quantity A	Quantity B
$\frac{a}{a-1}$	$\frac{a+1}{a}$

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

Question: 4

$0 < a < b < c$

$r=\frac{a}{a+b+c}$, $s=\frac{b}{a+b+c}$, and $t=\frac{c}{a+b+c}$.

Quantity A	Quantity B
The average (arithmetic mean) of r, s and t	$\frac{1}{3}$

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

Question: 5

x and y are integers

$9^{6x}=81^{3y}$

Quantity A	Quantity B
x	y

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

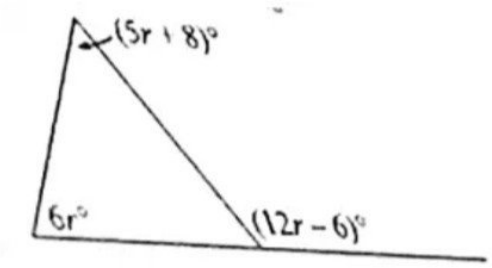
Question: 6

In a quality control study, 200 boxes of brackets were examined; each box contained 50 brackets. For each box, the ratio, f, of the number of defective brackets in the box to the total number of brackets in the box was recorded. The number of defectives per box varied from 1 to 12, inclusive.

Quantity A	**Quantity B**
The sum of the 200 values of f	The sum of the squares of the 200 values of f

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

Question: 7



Quantity A	**Quantity B**
r	12

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

Question: 8

$$T_1, T_2, T_3, \ldots\ldots\ldots, T_k, \ldots\ldots\ldots$$

The sequence shown is defined by $T_1 = 2$ and $T_{k+1} = \frac{1}{3}\, T_k$ for each positive integer k.

Quantity A	**Quantity B**
T_5	$(3^{11})T_{16}$

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

Question: 9

Bob's current salary is 10 percent greater than Sam's current salary. Bob and Sam will each receive an increase to their respective salaries at the end of the year, and after the increases in their salaries will be equal. If Bob's increase will equal 5 percent of his current salary, then Sam's increase will be what percent of Sam's current salary?

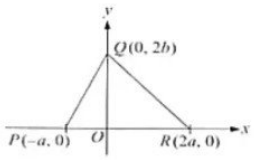
- ○ 10.5%
- ○ 12.5%
- ○ 15.5%
- ○ 18.5%
- ○ 20.5%

Question: 10

If $(a+b)^2 - 6(a+b) + 9 = 0$, what is the value of a+b?

- ○ -5
- ○ -3
- ○ -1
- ○ 1
- ○ 3

Question: 11



Which of the following gives the area of triangular region PQR in the figure above?

- $\frac{3ab}{2}$
- 2ab
- 3ab
- 4ab
- 6ab

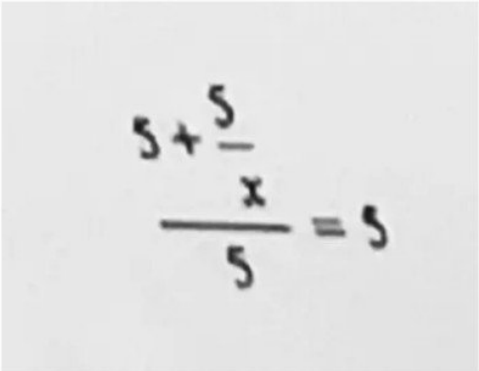
Question: 12

Value of x	Frequency
15	4
16	15
17	10
18	8
19	6
20	2
21	2

For the frequency distribution of the variable x shown in the table above, what is the median value of x?

- 16
- 16.5
- 17
- 17.5
- 18

Question: 13



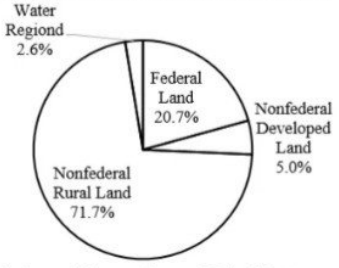
In the equation above, what is the value of x?

x=_____

Question: 14

Area of Federal and Nonfederal Land and Water Regiond in the Contigous United States, 1997

Area of the Contigous United States, 1997



Total Area of the contiguous United States: 3,027,699 square miles

Area of Selected States (in square miles)

State	Federal Land	Nonfederal Developed Land	Nonfederal Rural Land	Water Regiond	Total Area
California	75,913	8,886	66,216	7,595	158,610
Maryland	2,863	2,017	6,848	569	12,297
Missouri	4,322	4,145	57,614	3,628	69,709
New Jersey	1,061	2,889	3,606	594	8,150
Vermont	1,030	541	7,908	138	9,617
Wyoming	45,600	1,119	49,214	1,884	97,817

Approximately what was the ratio of the area of the non federal rural land in Maryland to the total area of the nonfederal rural land in the contiguous United States in 1997?

- $\frac{1}{3}$
- $\frac{1}{30}$
- $\frac{1}{300}$
- $\frac{1}{3,000}$
- $\frac{1}{30,000}$

Question: 15

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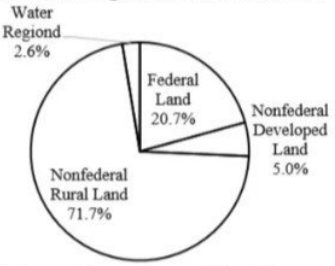

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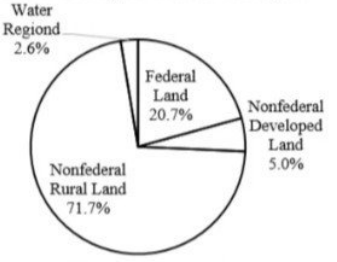
Of the six states listed in the table, how many contained more than 2 percent of the nonfederal development land in the contiguous United States in 1997?

- None
- One
- Two
- Three
- More than three

Question: 16

Area of Federal and Nonfederal Land and Water Regiond in the Contigous United States, 1997

Area of the Contigous United States, 1997



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Which of the following is closest to the percent of federal land in the contiguous United States that was part of California in 1997?

- 3%
- 4%
- 6%
- 9%
- 12%

Question: 17

The sales tax on clothing items in Country A is 25 percent of the purchase price of the item, and the sales tax on clothing items in Country B is 20 percent of the purchase price of the item. If the two countries have the same currency and if the price of a certain clothing item is the same in both countries, what percent greater is the amount of sales tax on the clothing item purchased in Country A than the amount of sales tax on the clothing item purchased in Country B?

_____%

Question: 18

A certain box is in the shape of a cube. If the total surface area of the box is 384 square feet, what is the total length, in feet, of all the edges of the box?

- 48
- 64
- 72
- 80
- 96

Question: 19

The probability that event R will occur is 0.35, and the probability that events R and T will both occur is p. What is the least possible value of p?

- 0.00
- 0.35
- 0.50
- 0.65
- 0.70

Question: 18

A certain box is in the shape of a cube. If the total surface area of the box is 384 square feet, what is the total length, in feet, of all the edges of the box?

- ○ 48
- ○ 64
- ○ 72
- ○ 80
- ○ 96

Question: 19

The probability that event R will occur is 0.35, and the probability that events R and T will both occur is p. What is the least possible value of p?

- ○ 0.00
- ○ 0.35
- ○ 0.50
- ○ 0.65
- ○ 0.70

Question: 20

Among 16 textbooks purchased by a bookstore, each textbook was either a mathematics textbook or a chemistry textbook, and each textbook was either new or used. Of the mathematics textbooks purchases, $\frac{1}{2}$ were used. Of the chemistry textbooks purchased, $\frac{2}{3}$ were used. Which of the following could be the total number of textbooks purchased that were used?

Indicate all such numbers.

- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 9
- ☐ 10
- ☐ 11
- ☐ 12