KMF Math Sprint Practice - Section 1 Medium

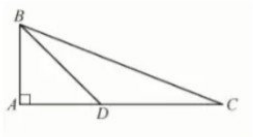
Question: 1

The positive integer x is 7 greater than a multiple of 13, and $2512 < x^2 < 3596$

Quantity A	Quantity B
x	55

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

Question: 2



AB=12, AC=30, and AD= 2/5(AC).

Quantity A	Quantity B
The measure of angle BDC	120

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

Question: 3

q, r and s are consecutive positive integers and $q < r < s$.

Quantity A	Quantity B
$\frac{qs}{r}$	$r-\frac{1}{r}$

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

Question: 4

A number is to be randomly selected from the integers from 1 through 87.

Quantity A	**Quantity B**
The probability that the number selected will have a units digit of 6	The probability that the number selected will have a tens digit of 6

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

Question: 5

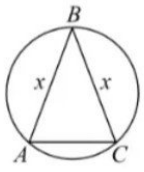
w, x, y and z are integers

$w < x$ and $y < z$

Quantity A	**Quantity B**
wy	xz

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

Question: 6



Triangle ABC is inscribed in the circle.

Quantity A	**Quantity B**
The radius of the circle	The length of AC

Question: 7

In region A, 17 percent of the acres that are planted with corn are planted with a certain hybrid seed. In region B, which borders region A, 11 percent of the acres that are planted with corn are planted with the same hybrid seed.

Quantity A	**Quantity B**
Of all the acres planted with corn in region A and region B combined, the percent of acres that are planted with the hybrid seed	14%

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

Question: 8

$0 < a < b < 1$

c and d are positive integers such that $c < d$

Quantity A	**Quantity B**
a^{c-d}	b^{d-c}

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

Question: 9

23, 21, 20, 32, 34, 35, 26, 31, 30, 24

For which integer in the list above are 90 percent of the integers in the list less than that integer?

- ○ 23
- ○ 24
- ○ 30
- ○ 34
- ○ 35

Question: 10

If r=s^2, s=t^3, and t=u^4, what is r in terms of u?

- u^9
- u^{10}
- u^{12}
- u^{14}
- u^{24}

Question: 11

Yesterday a certain merchant had $1,285.00 in total sales. If $\frac{1}{2}$ of the total sales were from the sale of merchandise that had been reduced by 50 percent, what would have been the total sales yesterday if all of the merchandise had been sold at full price?

- $1,606.25
- $1,642.50
- $1,927.50
- $2,232.75
- $2,570.00

Question: 12

In the xy-plane, a triangle has vertices (0, 0), (k, 0) and (k, -4k), where k>0. If the area of the region enclosed by the triangle is 32, what is the value of k?

- $4\sqrt{2}$
- $2\sqrt{2}$
- $\sqrt{2}$
- 4
- 8

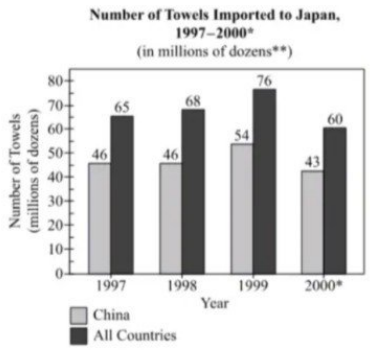
Question: 13

Each of the 1,800 households that participated in a survey owned either one car, two cars, or no cars. If 740 of the households owned only one car and at least $\frac{1}{3}$ of the households owned two cars, what is the greatest possible value of the ratio of the number of households that owned no cars to the number of households that owned two cars?

Give your answer as a fraction.

Question: 14

For each of the years 1997 through 2000*, the graph shows the number of towels imported to Japan from China, and the total number of towels imported to Japan from all countries, including China.

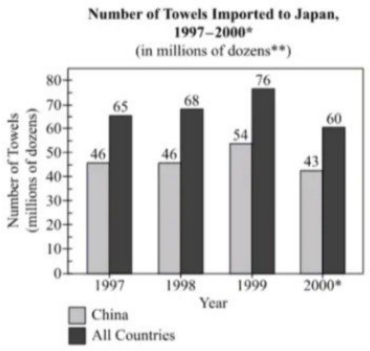


In 1998, how many of the imported towels were not imported from China?

- 260 million
- 264 million
- 268 million
- 272 million
- 276 million

Question: 15

For each of the years 1997 through 2000*, the graph shows the number of towels imported to Japan from China, and the total number of towels imported to Japan from all countries, including China.

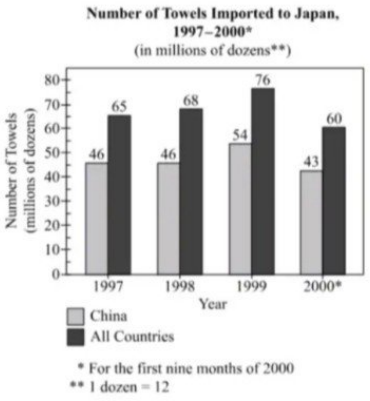


If the average (arithmetic mean) number of towels imported from China per month was the same for the last 3 months of 2000 as it was for the first 9 months of 2000, approximately how many million dozen towels were imported from China during the 12 months of 2000?

- 57
- 63
- 76
- 80
- 86

Question: 16

For each of the years 1997 through 2000*, the graph shows the number of towels imported to Japan from China, and the total number of towels imported to Japan from all countries, including China.



In 1999, the ratio of the number of towels imported from China to the total number of towels imported from countries other than China was closets to which of the following?

- 7 to 2
- 3 to 1
- 5 to 2
- 2 to 1
- 3 to 2

Question: 17

The sum of ten different positive integers is 101. What is the greatest possible value of the maximum among the integers?

Question: 18

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

Question: 19

It costs d dollars to buy t thumbtacks. At this rate, what is the cost of t+2,500 thumbtacks, in dollars?

- $\frac{2500t+t^2}{d}$
- $\frac{2500t+t}{d}$
- $\frac{td+d}{2500t}$
- $\frac{2500td+d}{t}$
- $\frac{2500d+td}{t}$

Question: 20

For a group of 9 steel beams stored together, the average (arithmetic mean) length of the beams is 7.2 meters and the median length is 8.4 meters. Two additional steel beams-one that is longer than all 9 beams and one that is shorter than all 9 beams-will be stored with the 9 beams. For the combined group of 11 steel beams, the average length is m meters and the median length is d meters. Which of the following statements must be true?

Indicate all such statements.

- ☐ $m < 7.2$
- ☐ $m = 7.2$
- ☐ $m > 7.2$
- ☐ $d < 8.4$
- ☐ $d = 8.4$
- ☐ $d > 8.4$