KMF Math Sprint Practice - Section 10 Medium

Question: 1

The equation $x^3 - x^2 - 2x = 0$ has three different roots.

Quantity A	Quantity B
The product of the three roots	-2

○ Quantity A is greater.

○ Quantity B is greater.

○ The two quantities are equal.

○ The relationship cannot be determined from the information given.

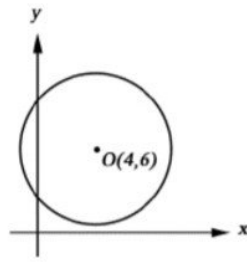## Question: 2

$x \neq -1$ and $x \neq 0$

Quantity A	Quantity B
$\dfrac{1}{1+\frac{1}{x}}$	$\dfrac{x}{x+1}$

○ Quantity A is greater.

○ Quantity B is greater.

○ The two quantities are equal.

○ The relationship cannot be determined from the information given.

Question: 3

(4, 6) is the center of the circle above.

Quantity A	Quantity B
The radius of the circle	6

○ Quantity A is greater.

○ Quantity B is greater.

○ The two quantities are equal.

○ The relationship cannot be determined from the information given.

Question: 4

$$|x| \leq 6 \text{ and } |y| \leq 4$$

x and y are integers, where x≠0. M is the greatest possible value of $|\frac{y}{x}|$.

Quantity A	Quantity B
M	1

○ Quantity A is greater.

○ Quantity B is greater.

○ The two quantities are equal.

○ The relationship cannot be determined from the information given.

Question: 5

The function f is defined for all numbers x by $f(2x)=x^2-2x+8$.

Quantity A	Quantity B
f(6)	12

○ Quantity A is greater.

○ Quantity B is greater.

○ The two quantities are equal.

○ The relationship cannot be determined from the information given.

Question: 6

$$x \neq -2$$

Quantity A	Quantity B
(x+2)x	(x+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: 7

$$\frac{1}{2} < r < 1$$

Quantity A	Quantity B
2r	$\frac{1}{r}$

○ Quantity A is greater.

○ Quantity B is greater.

○ The two quantities are equal

○ The relationship cannot be determined from the information given

Question: 8

In a competition, a certain contestant scored either 2 points or 4 points in each round of the competition. This contestant's average (arithmetic mean) score for the entire competition was 3.8 points per round.

| Quantity A	Quantity B
9 times the number of rounds in which the contestant scored for 2 points	The number of rounds in which the contestant scored for 4 points

○ Quantity A is greater.

○ Quantity B is greater.

○ The two quantities are equal.

○ The relationship cannot be determined from the information given.

Question: 9

If x, y and z are consecutive positive integers and if x+y+z is even, how many of the four integers xy, yz, zx, and xyz are even?

○ None

○ One

○ Two

○ Three

○ Four

Question: 10

Distribution I   Distribution II   Distribution III
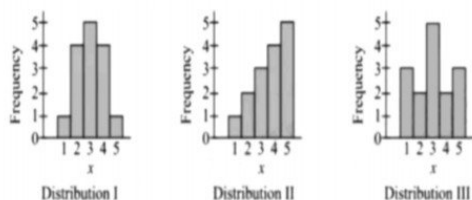
In the three frequency distributions, the variable x has integer values from 1 through 5. For which of the distributions is the average (arithmetic mean) of the 15 values of x equal to the median of the 15 values of x?

○ I only

○ II only

○ I and III only

○ II and III only

○ I, II and III

Question: 11

Which of the following best represents the graph of the equation y-5x+4=0 in the xy-plane?
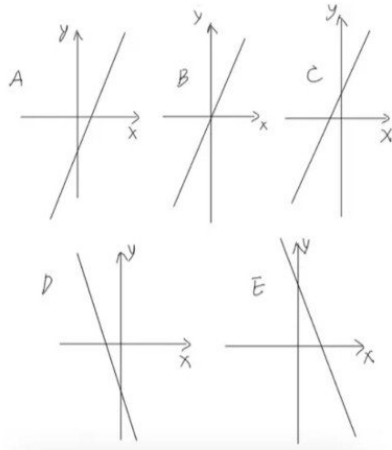
- ○ A
- ○ B
- ○ C
- ○ D
- ○ E

Question: 12

An artist has 3 hooks on the wall and 5 different pictures. How many different arrangements of 3 pictures can be formed if the artist puts one of the 5 pictures on each hook?

- ○ 12
- ○ 15
- ○ 30
- ○ 60
- ○ 125

Question: 13

The length of a model car is 8.2 centimeters, and the ratio of the length of the model car to the length of the actual car that it represents is 1 to 64. The length of the actual car is how many meters? (1 centimeter=0.01 meter)
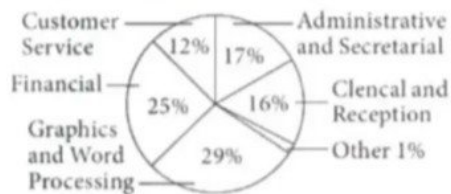
Give your answer to the nearest 0.1 meter.

_____meters

Question: 14

Hours Billed by Employees of Company X, 1996-2000

Number of Hours Billed, 1996-2000

Distribution of Hours Billed
by Employee Job Category, 2000

For the employees in the customer service job category in 2000, the average billing rate was $18.50 per hour. Which of the following is the best estimate of the total amount billed by employees in the customer service job category in 2000?
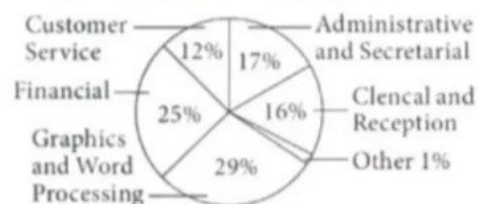
○ $12,000,000

○ $1,200,000

○ $120,000

○ $12,000

○ $1,200

Question: 15

Hours Billed by Employees of Company X, 1996-2000

Number of Hours Billed, 1996-2000

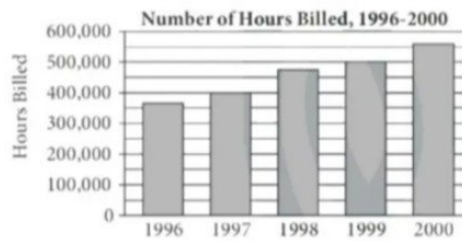Distribution of Hours Billed
by Employee Job Category, 2000

Which of the following is closest to the ratio of the number of hours billed by employees in 1999 to the number of hours billed by employees in 1996?
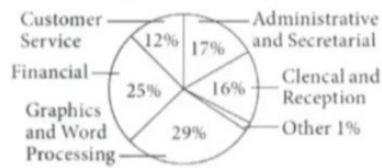
○ 2 to 3

○ 3 to 4

○ 4 to 3

○ 5 to 3

○ 7 to 4

Question: 16

Hours Billed by Employees of Company X, 1996-2000

Number of Hours Billed, 1996-2000

Hours Billed (y-axis): 0, 100,000, 200,000, 300,000, 400,000, 500,000, 600,000

Years (x-axis): 1996, 1997, 1998, 1999, 2000

Distribution of Hours Billed by Employee Job Category, 2000

- Customer Service — 12%
- Administrative and Secretarial — 17%
- Financial — 25%
- Clencal and Reception — 16%
- Graphics and Word Processing — 29%
- Other 1%

If the number of hours billed by employees in the customer service job category was the same in 1999 as it was in 2000, which of the following is closest to the percent of the total number of hours billed by employees in 1999 that was billed by employees in the customer service category in 1999?

- ○ 19%
- ○ 17%
- ○ 15%
- ○ 13%
- ○ 12%

Question: 17

The sum of n numbers is greater than 48. If the average (arithmetic mean) of the n numbers is 1.2, what is the least possible value of n?

[   ]

Question: 18

A bicycle is traveling at a constant rate such that the wheels rotate 72 degrees per 0.1 second. If each wheel of the bicycle has a diameter of 26 inches, how many inches does the bicycle travel in 2 seconds?

- ○ 52
- ○ 52π
- ○ 104
- ○ 104π
- ○ 396
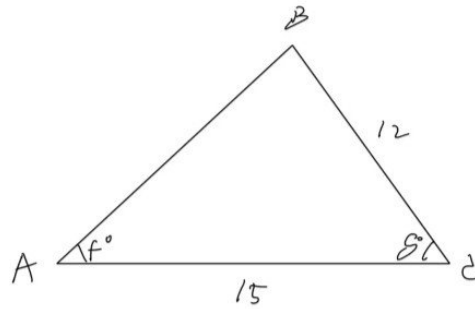
Question: 19

In the figure, AC=15 and BC=12. If f+g=90, then the area of the triangular region is ?

- ○ 108
- ○ 90
- ○ 81
- ○ 54
- ○ 9

Question: 20

Monthly Budget

Budget Category	Last Month	This Month
Discretionary spending	$375	Less than last month
Food	$625	Less than last month
Rent	$1,000	5 percent more than last month
Transportation	$250	Same as last month
Utilities	$250	Same as last month
Total	$2,500	$2,500

The table above shows a family's monthly budget for last month and a comparison of this month's budget with last month's budget. Which of the following could be the amount budgeted for discretionary spending this month?

Indicate all such amounts.

- ☐ $410
- ☐ $390
- ☐ $370
- ☐ $350
- ☐ $330
- ☐ $310