

Q1. The median and mean of a frequency distribution are 12 and 15 respectively. Then the mode is:

- (a) 3
- (b) 4
- (c) 6
- (d) 33

Q2. A sum of money yields compound interest Rs.720.00 in one year and Rs.1483.20 in two years, compounded annually. What is the rate of interest?

- (a) 5.00%
- (b) 7.25%
- (c) 6.00%
- (d) 8.50%

Q3. Two trains are moving in the opposite direction at the speed of 15 km/hr and 60 km/hr, whose lengths are 640 metres and 360 metres respectively. What is the time taken by slower train to cross the faster train?

- (a) 36 sec
- (b) 32 sec
- (c) 40 sec
- (d) 48 sec

Q4. A diver rowing at the speed of 3 km/h in still water takes double the time going 50 km upstream compared to going 50 km downstream. The speed of the diver downstream is

- (a) 3 km/h
- (b) 6km/h
- (c) 4 km/h
- (d) 5 km/h

Q5. If the total surface area of a cube is $864 m^2$, then its volume is:

- (a) $1728 m^3$
- (b) $1428 m^3$
- (c) $1228 m^3$
- (d) $1528 m^3$

Q6. Two vertices of ΔABC are $A(-1, 4)$ and $B(5, 2)$ and its centroid is $G(0, -3)$. The coordinate of C is

- | | |
|---------------|---------------|
| (a) (4, 3) | (b) (4, 15) |
| (c) (-4, -15) | (d) (-15, -4) |

Q7. The mid term of the series $2 + 4 + 6 + 8 + \dots + 198$ is

- (a) 50
- (b) 90
- (c) 100
- (d) 99

Q8. If the sum of two numbers is 54 and the LCM and HCF of these numbers are 84 and 6, respectively, then the sum of the reciprocal of the numbers is

(a) $\frac{3}{28}$

(b) $\frac{28}{3}$

(c) $\frac{1}{9}$

(d) $\frac{3}{26}$

Q9. The average height of 16 students of a group is 160 cm. If the average height of the first 6 students in the group is 150 cm and those of the last 8 students is 165 cm, then find the average height of the remaining two students, in cm.

(a) 170 cm

(b) 150 cm

(c) 160 cm

(d) 180 cm

Q10. A card is selected at random from a pack of 52 playing cards. The selected card is a queen, the probability of this card to be a card of spade is:

(a) $\frac{15}{52}$

(b) $\frac{1}{4}$

(c) $\frac{1}{13}$

(d) $\frac{17}{52}$

Solutions:

S1. Ans. (c)

Sol. In a frequency distribution, the relationship between median, mean, and mode is
 $3 \times \text{Median} - 2 \times \text{Mean}$.

Given that the median is 12 and the mean is 15

$$\text{Mode} = 3 \times 12 - 2 \times 15$$

$$\text{Mode} = 36 - 30$$

$$\text{Mode} = 6$$

S2. Ans. (c)

Sol. Given

A sum of money yields compound interest Rs. 720.00 in one year and Rs. 1483.20 in two years, compounded annually.

1st year interest always same in simple and compound interest.

Then, 720 is 1st year interest. if we want 2nd years in simple interest = $720 \times 2 = 1440$

Now compound interest in 2nd years = 1483.20

Difference between in 2nd years interest in simple and compound interest = $1483.20 - 1440 =$

43.2

Now we calculate interest in yearly,

$$\frac{43.2}{720} \times 100 = 6.00\%$$

S3. Ans. (d)

Sol. Given:

Speed of train1 = 15 km/h

Speed of train2 = 60 km/h

Length of train1 = 640 m

Length of train2 = 360 m

Speed = Distance / Time

As the train is moving in the opposite direction,

=> Relative speed = Speed of train1 + speed of train2 = 15 + 60 = 75 km/hr

$$75 \text{ km/hr} = 75 \times \frac{5}{18}$$

The length of train is the distance he travelled to cross the train

⇒ Speed = Distance / Time

$$\Rightarrow 75 \times \frac{5}{18} = \frac{640 + 360}{\text{Time}}$$

Time = 48sec

S4. Ans. (c)

Sol. Given

Speed of the diver in still water = 3km/h

Time taken upstream = 2 × time taken downstream

Distance both upstream and downstream = 50 km/h

Let the speed of stream = x km/h

$$\frac{50}{3+x} = \frac{1}{2}$$

$$\frac{3-x}{3+x} = \frac{1}{2}$$

$$6 - 2x = 3 + x$$

$$3 = 3x$$

$$x = 1 \text{ km/h}$$

Downstream speed = 3 + 1 = 4 km/h

S5. Ans. (a)

Sol. Given:

Total surface area of cube = 864 m^2

We have

Total surface area of cube = $6a^2$

$$\Rightarrow 6a^2 = 864$$

$$\Rightarrow a^2 = 144$$

$$\Rightarrow a = 12 \text{ m}$$

Now, volume of cube = $a^3 = (12)^3 = 1728 \text{ m}^3$

S6. Ans. (c)

Sol. Two vertices of ΔABC are A (- 1, 4) and B(5 , 2).

Let the third vertex be C(a, b).

Then, the co - ordinates of its centroid are $G \left(\frac{-1+5+a}{3}, \frac{4+2+b}{3} \right)$

i.e., $G \left(\frac{4+a}{3}, \frac{6+b}{3} \right)$

But it is given that the centroid is G (0 , -3)

Therefore, $\frac{4+a}{3} = 0$ and $\frac{6+b}{3} = -3$

$\Rightarrow 4 + a = 0$ and $6 + b = -9$

$\Rightarrow a = -4$ and $b = -15$

Hence, the third vertex of ΔABC is C(-4 , -15)

S7. Ans. (c)

Sol. We have

$2 + 4 + 6 + 8 + \dots + 198$ is arithmetic progression.

Here, we have to find arithmetic mean which is given by

$$A.M. = \frac{2 + 198}{2} = \frac{200}{2} = 100$$

So, mid term is 100.

S8. Ans. (a)

Sol. Given:

$$x + y = 54$$

$$xy = 84 \times 6$$

We have

Product of two numbers = LCM $\times$ HCF

Product of two numbers are

$$\Rightarrow xy = 84 \times 6$$

For reciprocal we have to divide the sum part from multiply part

$$\frac{x + y}{xy} = \frac{54}{84 \times 6}$$

$$\Rightarrow \frac{1}{y} + \frac{1}{x} = \frac{3}{28}$$

S9. Ans. (a)

Sol. Given:

The average height of 16 students of a group = 160 cm

The average height of the first 6 students of a group = 150 cm

The average height of the last 8 students of a group = 165 cm

We have

$$\text{Average} = \frac{\text{Number of observations}}{\text{Sum of observations}}$$

Sum of heights = Average $\times$ Number of students

Sum of all heights of all 16 students = $160 \times 16 = 2560$ cm

Sum of heights of first 6 students = $150 \times 6 = 900$ cm

Sum of heights of last 8 students = $165 \times 8 = 1320$ cm

Height of remaining 2 students = $2560 - (900 + 1320)$

= $2560 - 2220$

= 340 cm

Average height of remaining 2 students = $\frac{340}{2}$

Average height of remaining 2 students = 170 cm

S10. Ans. (b)

Sol. Number of spade cards = 13

Number of queen in spade set = 1

$$n(\text{spade queen}) = {}^{13}C_1$$

$$n(\text{Total number of cases}) = {}^{52}C_1$$

$$P(\text{Spade queen}) = \frac{{}^{13}C_1}{{}^{52}C_1} = \frac{13}{52} = \frac{1}{4}$$