Maths Questions for CLAT Exam

CLAT Maths Quiz 9

Directions: Read the following questions carefully and choose the right answer.

1. Deepa bought a calculator at 30% discount on the listed price. Had she not got the discount, she would have paid Rs. 82.50 extra. At what price did she buy the calculator?

A. Rs. 192.50

B. Rs. 275

C. Rs. 117.85

D. Can't be determined

2. The average score of Rajeev, Mahendra and Suresh is 63. Rajeev's score is 15 less than that of Sunny and 10 more than that of Mahendra. If Sunny scored 30 marks more than the average score of Rajeev, Mahendra and Suresh, what is the sum of Mahendra's and Suresh's score?

A. 120

B. 117

C. Can't be determined

D. 111

3. The number of seats in an auditorium is increased by 25%. The price of a ticket is also increased by 12%. Then the increase in revenue collection will be:

A. 38%

B. 40%

C. 49%

D. 51%

4. Consider a circle with centre at O and radius r. Points A and B lie on its circumference and a point M lies outside of it such that M, A and O lie on the same straight line. Then, the ratio of MA to MB is

A. equal to 1

B. equal to r

C. greater than 1

D. less than 1

5. Find the H.C.F and L.C.M of $\frac{2}{3}, \frac{8}{9}, \frac{16}{81}$ and $\frac{10}{27}$.

A. $\frac{3}{82}, \frac{80}{3}$

B. $\frac{2}{81}, \frac{80}{3}$

C. $\frac{2}{81}, \frac{90}{3}$

D. None of these

6. The radii of the bases of a cylinder and a cone are in the ratio 3: 4 and their heights are in the ratio 2: 3. Find the ratio of their volumes.

A. 9: 8

B. 3: 5

C. 1: 2

D. Can't be determined

7. From the top of a cliff 90 m high, the angles of depression of the top and bottom of a tower are observed to be 30° and 60°, respectively. What is the height of the tower?

A. 30 m

B. 45 m

C. 60 m

D. 75 m

8. $\frac{180 \times 15 - 12 \times 20}{140 \times 8 + 2 \times 55}$ **= ?**

A. 1/7

B. 4. 5

C. 2

D. 4

9. If $\left(x^2 + \frac{1}{x^2}\right) = 17$**, then what is** $\left(x^3 - \frac{1}{x^3}\right)$ **equal to?**

A. 75/16

B. 63/8

C. 95/8

D. None of these

10. If the compound interest accrued on an amount of Rs. 15,000 in two years is Rs. 2,496, what is the rate of interest p.c.p.a.?

A. 8%

B. 10%

C. 6%

D. Can't be determined

Correct answers:

1	2	3	4	5	6	7	8	9	10
A	D	B	D	B	A	C	C	B	A

Explanations:

1. Let the original price be x, then

30% of x = 82.50

$x = \frac{82.50}{30} \times 100 = \text{Rs. } 275$

Deepa bought calculator in 275 – 82.50 = Rs. 192.50

Hence, option A is correct.

2. According to the question, the average score of Rajeev, Mahendra and Suresh is 63.

∴ Sunny's score = 63 + 30 = 93

Now,

Rajeev's score = 93 – 15 = 78

Mahendra's score = 78 – 10 = 68

∴ Suresh's score = 63 × 3 – (78 + 68) = 43

∴ (Mahendra + Suresh)'s scores = 68 + 43 = 111

Hence, option D is correct.

3. We know that, Revenue = (No. of seats) × (Price of a ticket)

To solve this question, we can apply a short trick approach

$\text{Net\% effect} = \left(x + y + \frac{xy}{100}\right)\%$

Where,

x is the percent increase in the no. of seats = 25%

y is the percent increase in the price of a ticket = 12%

By the net% effect, we get

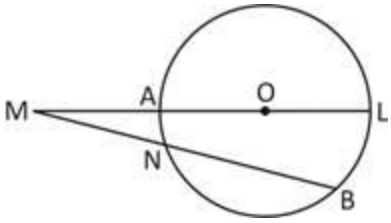
Net% effect = $(25 + 12 + \frac{25 \times 12}{100})\%$

$= (37 + 3)\% = 40\%$

So, the revenue will increase by 40%.

Hence, option (B) is correct.

4. Since, secants ∠A and BN are intersecting at an exterior point M, then



$LM \times AM = BM \times NM$

$\Rightarrow \frac{MA}{MB} = \frac{MN}{LM} < 1$

Hence, option D is correct.

5. H.C.F of given fractions = $\frac{\text{H.C.F of 2, 8, 16, 10}}{\text{L.C.M of 3, 9, 81, 27}} = \frac{2}{81}$.

L.C.M of the given fractions = $\frac{\text{L.C.M of 2, 8, 16, 10}}{\text{H.C.F of 3, 9, 81, 27}} = \frac{80}{3}$.

Hence, option B is correct.

6. Let the radii of the cylinder and cone be 3r and 4r and their heights be 2h and 3h respectively.

$\therefore \frac{\text{Volume of cylinder}}{\text{Volume of cone}} = \frac{\pi \times (3r)^2 \times 2h}{(1/3)\pi \times (4r)^2 \times 3h} = \frac{9}{8} = 9 : 8.$

Hence, option A is correct.

7. Given, AB = 90 m

$\angle ADE = 30^\circ$

And $\angle ACB = 60^\circ$

Then, DC = ?

Ratio of angles,

$$\frac{\tan 30^\circ}{\tan 60^\circ} = \frac{AE}{AB} \quad [\because ED = BC]$$

$$\frac{\frac{1}{\sqrt{3}}}{\sqrt{3}} = \frac{AE}{90}$$

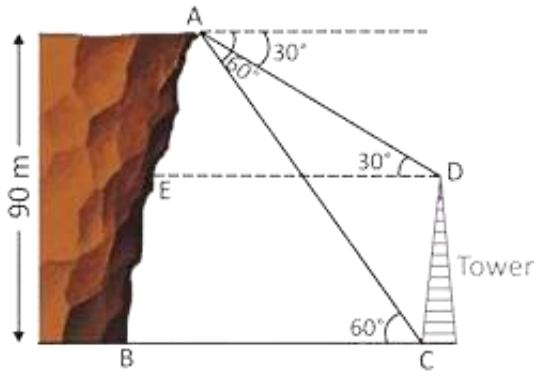
$$\frac{1}{3} = \frac{AE}{90}$$

AE = 30 m

Now, DC = EB

= AB – AE

= 90 – 30 = 60 m



Hence, option C is correct.

8. By the applying BODMAS rule, we get

Given expression = $\frac{2700 - 240}{1120 + 110} \Rightarrow \frac{2460}{1230} \Rightarrow 2.$

Hence, option C is correct.

9. $(x^2 + \frac{1}{x^2}) = \frac{17}{4}$

$\Rightarrow x^2 + \frac{1}{x^2} + 2 - 2 = \frac{17}{4} \Rightarrow (x - \frac{1}{x})^2 + 2 = \frac{17}{4}$

$\Rightarrow (x - \frac{1}{x})^2 = \frac{17}{4} - 2 \Rightarrow (x - \frac{1}{x})^2 = \frac{9}{4}$

$\Rightarrow (x - \frac{1}{x}) = \frac{3}{2}$

On cubing both side, we get

$\Rightarrow (x - \frac{1}{x})^3 = (\frac{3}{2})^3$

$\Rightarrow x^3 - \frac{1}{x^3} - 3 \times \frac{1}{x}.x\,(x - \frac{1}{x}) = \frac{27}{8}$

$\Rightarrow x^3 - \frac{1}{x^3} = \frac{27}{8} + 3 \times (\frac{3}{2})$

$\Rightarrow x^3 - \frac{1}{x^3} = \frac{27}{8} + \frac{9}{2}$

$\Rightarrow (x^3 - \frac{1}{x^3}) = \frac{63}{8}$

Hence, option B is correct.

10. Principal (P) = Rs. 15000; CI = Rs. 2496; Time (t) = 2 years.

Let the rate be R% per annum. then,

$CI = [P(1 + \frac{R}{100})^t - 1]$

Or

$\Rightarrow 2496 = 15000[(1 + \frac{R}{100})^2 - 1]$

$\frac{2496}{15000} + 1 = (1 + \frac{R}{100})^2 \Rightarrow \frac{17496}{15000} = (1 + \frac{R}{100})^2$

$\Rightarrow \frac{729}{625} = (1 + \frac{R}{100})^2$

Comparing,

$\Rightarrow (\frac{27}{25})^2 = (1 + \frac{R}{100})^2 \Rightarrow \frac{27}{25} = 1 + \frac{R}{100}$

$R = (\frac{27}{25} - 1) \times 100 \Rightarrow R = 8\%$

Hence, option A is correct.