Maths Questions for CLAT Exam.

CLAT Maths Quiz 50

Directions: Read the following Questions carefully and choose the right answer:

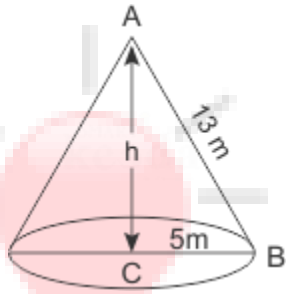
1. If $x^{1/3} + y^{1/3} = z^{1/3}$, then $(x + y - z) + 3x^{1/3}y^{1/3}z^{1/3}$ is equal to

A. – 1 B. 1 C. 0 D. 27

2. Two medians of a triangle AD and BE intersect each other at 90° at point G. If AD = 9 cm and BE = 6 cm, then the length of BD is

A. 10 cm B. 6 cm C. 5 cm D. 3 cm

3. There is a conical tent, its slant height is 13 m and diameter is 10 m. Find the cost of painting the curved surface area of the tent at the rate of Rs. 1.4 per m^2.



A. Rs. 286 B. Rs. 290 C. Rs. 274 D. Rs. 268

4. There are four persons A, B, C and D and at a time we can arrange only two persons. Find the total number of arrangements.

A. 10 B. 12 C. 15 D. 25

5. A coin is tossed 7 times, what is the probability that head appears even number of times?

A. $\frac{1}{2}$ B. $\frac{1}{4}$ C. 1 D. $\frac{1}{3}$

6. When the angle of the sun becomes 30° from 60°, then the length of shadow of a tower increased by 40 m. What will be the height of the tower?

A. 10√3 m B. 5√3m C. 20√3 m D. 20m

7. 12 men can complete a job in 8 days. 6 days after they start, 4 more men join them. How many more days will they take to complete the job?

A. 1 day B. 1.5 days C. 1.2 days D. 1.25 days

8. Two cyclists cover the same distance at 15 km/hr and 16 km/hr, respectively. Find the distance travelled by each, if one takes 16 minutes longer than the other does.

A. 52 km B. 55 km C. 64 km D. 66 km

9. A 40 L mixture of milk and water contains 10% water. How much water must be added to this mixture so that it contains 20% water?

A. 6 L B. 8 L C. 5 L D. 4 L

10. Vinay Kumar invested Rs. 1600 for 3 years and Rs. 1100 for 4 years at the same rate of simple interest. If the total interest from these investments is Rs. 506, what was the rate of interest?

A. 5.5% B. 5.8% C. 4.6% D. 6.2%

Correct Answers:

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

Explanations:

1. $\because x^{1/3} + y^{1/3} = z^{1/3}$

$\Rightarrow x^{1/3} + y^{1/3} - z^{1/3} = 0$

As, we know if $a + b + c = 0$.

then $a^3 + b^3 + c^3 = 3abc$

Here, $a = x^{1/3}$, $b = y^{1/3}$ $c = -z^{1/3}$

Hence,

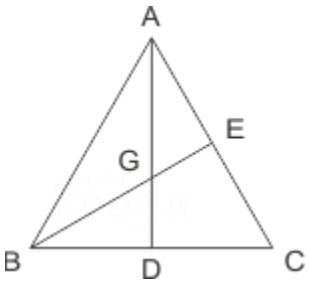
$[x^{1/3}]^3 + [y^{1/3}]^3 + [-(z)^{1/3}]^3 = 3 \times x^{1/3} \times y^{1/3} \times (-z)^{1/3}$

$\Rightarrow x + y - z = -3x^{1/3} y^{1/3} z^{1/3}$

$\Rightarrow (x + y - z) + 3x^{1/3} y^{1/3} z^{1/3} = 0$

Hence, option C is correct.

2.



As AD = 9 cm

G will divide AD in 2 : 1

∴ GD = 3 cm

and BE = 6 cm

As G will divide BE in 2 : 1

Hence, $BG = \frac{2}{3} \times 6 = 4$ cm

In ΔBGD, $BD^2 = 3^2 + 4^2 \Rightarrow BD = 5$ cm (∵ AD ⊥ BE).

Hence, option C is correct.

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3. Here slant height l = 13 m

Curved surface area of cone

$= \pi rl = \frac{22}{7} \times 5 \times 13$

So, the cost of construction

$= \frac{22}{7} \times 5 \times 13 \times 1.4 =$ Rs. 286

Hence, option A is correct.

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4. Total number of arrangements (permutations) is AB, BA, AC, CA, AD, DA, BC, CB, CD, DC, BD and DB or we can say that out of 4 persons we have to arrange only 2 at a time, so that total number of permutations is ${}^4P_2$

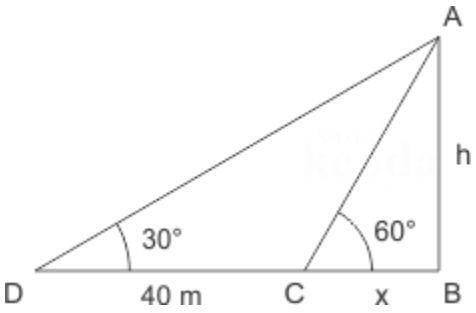
${}^4P_2 = \frac{4!}{(4-2)!} = \frac{4!}{2!} = \frac{4 \times 3 \times 2}{2!} = 12$

Hence, option B is correct.

5. It is obvious that in every toss either head or tail will appear. Either the head will come odd or even number n times. So, the probability is 1/2 regardless the number of times it is tossed.

Hence, option A is correct.

6.



Let AB = h and BC = x m

∴ DB = 40 + x

In ΔABC, $\tan 60° = \frac{AB}{BC}$

$\Rightarrow \sqrt{3} = \frac{h}{x}$ .....(i)

In ΔABD, $\tan 30° = \frac{AB}{BD}$

$\Rightarrow \frac{1}{\sqrt{3}} = \frac{h}{x + 40}$ .....(ii)

Solving (i) and (ii),

h = 20 √3m

Hence, option C is correct.

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7. Total work = 12 × 8 = 96 units

12 men finish 6 days of work = 12 × 6 = 72 units.

∴ Work left = 96 – 72 = 24 units

Now, number of men = 12 + 4 = 16

∴ Time taken = $\frac{24}{16}$ = 1.5 days

Hence, option B is correct.

8. Let the required distance be x km.

$\therefore \frac{x}{15} - \frac{x}{16} = \frac{16}{60}$

$\Rightarrow 16x - 15x = 64 \Rightarrow x = 64$

Hence, the required distance = 64 km.

Hence, option C is correct.

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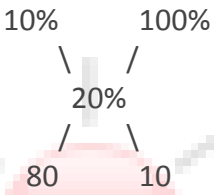
9. To a mixture containing 10% water, pure water (100%) is mixed to get the resultant solution containing 20% water.

Applying the rule of alligation, average concentration of constituents



Ratio of the volumes = 8 : 1 or 40 : 5

$\therefore$ To 40 L of solution, 5 L of water must be added.

Method : II

36 L of milk in the original mixture now becomes 80% of the mixture. Hence, the total volume of the new solution = 45 L. So the extra 5 L must be the water that was added.

Hence, option C is correct.

10.

$\frac{1600 \times 3 \times R}{100} + \frac{1100 \times 4 \times R}{100} = 506$

$\Rightarrow 92R = 506$

$\Rightarrow R = \frac{506}{92} = 5.5\%$

Hence, option A is correct.