Maths Questions for CLAT Exam.

CLAT Maths Quiz 41

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

1. A man is 36 years old and his son is one - fourth as old as him. In how many years will the son be four - seventh as old as his father?

A. 18 years | B. 27 years | C. 25 years | D. 30 years

2. If $x + \frac{1}{x} = \sqrt{3}$, then the value of $x^{18} + x^{12} + x^6 + 1$ is

A. 0 | B. 1 | C. 2 | D. 3

3. Find the area of the triangle whose vertices are (7, 3), (2, 5) and (4, 8).

A. $\frac{39}{2}$ unit | B. $\frac{19}{2}$ unit | C. $\frac{23}{2}$ unit | D. $\frac{3}{2}$ unit

4. A rectangular sheet of length 24 cm and of width 22 cm is rolled along the length into a right cylinder. What will be the volume of this cylinder? (π = 22/7)

A. 1025 cm^3 | B. 1014 cm^3 | C. 1008 cm^3 | D. 1033 cm^3

5. If two fair dice are thrown simultaneously what is the probability that the sum of the number on the top faces is less than 4?

A. $\frac{1}{12}$ | B. $\frac{1}{25}$ | C. $\frac{1}{15}$ | D. $\frac{1}{18}$

6. A tower is at a distance of 40 m from an object. From the top of the tower the angle of depression of the object is 60°. Find the height of the tower.

A. 30√5 m | B. 40√3 m | C. 30√7 m | D. 35√6 m

7. What is the average speed of a man if he travels 1/2 the time at a speed of 40 kmph, 1/3 the time at 50 kmph and the rest of the time at 60 kmph?

A. 48 kmph | B. 46.5 kmph | C. 43.6 kmph | D. 46.66 kmph

8. 5 men can pack 10 boxed in 6 days, working 6 hours a day. Then in how many days can 12 men pack 16 boxed working 8 hrs a day?

A. 6 days | B. 8 days | C. 3 days | D. 5 days

9. A vessel contains 36 L of milk. 12 L of milk is taken out and is replaced by an equal amount of water. If this process is repeated once more, then what will be the final quantity of milk in the vessel?

A. 15 L B. 16 L C. 17 L D. 18 L

10. Find the amount on a sum of Rs. 10000 after 3 years at 10%, 8% and 12% rates for each year respectively.

A. Rs. 13305.60 B. Rs. 13515 C. Rs. 14824.60 D. Rs. 12746.80

Correct Answers:

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

Explanations:

1. Let son will be 4/7 of his father's age in x years.

Then, $9 + x = \frac{4}{7}(36 + x)$

$\Rightarrow 7(9 + x) = 4(36 + x)$

$\Rightarrow 63 + 7x = 4(36 + x)$

$\Rightarrow 3x = 81 \Rightarrow x = 27$

Hence, the son will be 4/7th as old as father, after 27 years.

Hence, option B is correct.

2. $x + \frac{1}{x} = \sqrt{3}$

$\Rightarrow x^3 + \frac{1}{x^3} + 3 \times x \times \frac{1}{x}\left(x + \frac{1}{x}\right) = 3\sqrt{3}$

$\Rightarrow x^3 + \frac{1}{x^3} + 3(\sqrt{3}) = 3\sqrt{3}$

$\Rightarrow x^3 + \frac{1}{x^3} = 0$ .....(i)

Now $x^{18} + x^{12} + x^6 + 1$

$= x^{15}\left[x^3 + \frac{1}{x^3}\right] + x^3\left[x^3 + \frac{1}{x^3}\right]$

$= \left[x^3 + \frac{1}{x^3}\right](x^{15} + x^3) = 0.$

Hence, option A is correct.

3. Let $(x_1, y_1) = (7, 3)$, $(x_2, y_2) = (2, 5)$, and $(x_3, y_3) = (4, 8)$.

Area of the triangle

$= \left| \frac{1}{2} [x_1 (y_2 - y_3) + x_2 (y_3 - y_1) + x_3 (y_1 - y_2)] \right|$

$= \left| \frac{1}{2} [7 (5 - 8) + 2 (8 - 3) + 4 (3 - 5)] \right|$

$= \left| \frac{1}{2} [-21 + 10 - 8] \right| = \left| \frac{-19}{2} \right| = \frac{19}{2}$ units

Hence, option B is correct.

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4. Length of the cylinder = 22 cm and circumference of circular base = 24 cm

$= 2\pi r = 24 \Rightarrow r = \frac{24 \times 7}{2 \times 22}$

$\Rightarrow r = \frac{42}{11}$ cm

$\therefore$ Volume of cylinder $= \pi r^2 l = \frac{22}{7} \times \frac{42}{11} \times \frac{42}{11} \times 22 = 1008 \text{ cm}^3$

Hence, option C is correct.

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5. Total number of possible events i.e. (1, 1), (1, 2), (1, 3), (1, 4), (1, 5), (1, 6), (2, 1), (2, 2)... and, so on.

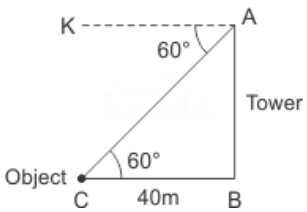
$\therefore$ There will be $6 \times 6 = 36$ possible events.

Number of favourable events {(1, 1), (1, 2) and (2, 1)} = 3

So, the reqd. probability $= \frac{3}{36} = \frac{1}{12}$

Hence, option A is correct.

6.



Let AB is a tower and C is the object.

If we draw a line AK Parallel to BC, then $\angle KAC = \angle ACB$ (Alternate angles)

$\tan 60° = \frac{AB}{BC} = \frac{AB}{40} \Rightarrow \sqrt{3} = \frac{AB}{40}$; so $AB = 40\sqrt{3}$

Hence, the height of the tower is $40\sqrt{3}$m

Hence, option B is correct.

7. In this case, the average speed will be the weighted average

i.e. $\frac{1}{2} \times 40 + \frac{1}{3} \times 50 + \frac{1}{6} \times 60 = 46.66$ kmph

Hence, option D is correct.

8.

We know that, $\frac{m_1 d_1 h_1}{w_1} = \frac{m_2 d_2 h_2}{w_2}$

$\therefore d_2 = \frac{5 \times 6 \times 6 \times 16}{12 \times 8 \times 10} = 3$ days

Hence, option C is correct.

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9. Amount of milk left in the vessel

= Original amount of milk in the vessel $\times \left(1 - \frac{12}{36}\right)^2$

$= 36 \times \left(1 - \frac{12}{36}\right)^2 = 36 \times \frac{4}{9} = 16$ L

Hence, option B is correct.

10.

Amount = $10000 \left(1 + \frac{10}{100}\right)\left(1 + \frac{8}{100}\right)\left(1 + \frac{12}{100}\right)$

$= 10000 \times 1.1 \times 1.08 \times 1.12 =$ Rs. 13305.60

Hence, option A is correct.