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Maths Questions for CLAT Exam.

CLAT Maths Quiz 44

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

1.
$$\frac{5 + 3 \times 15 + 3 + 16 \text{ of } \frac{1}{8}}{3 + 21 \div 3 + 24 \div 6 \text{ of } 4} = ?$$

A. 2

B. $\frac{21}{11}$

C. $\frac{11}{13}$

D. $\frac{1}{2}$

2. A number when divided by 119 leaves remainder 19. If the same number is divided by 17, the remainder will be

A. 12

B. 10

C. 7

D. 2

3. The average of five numbers is 27. If one number is excluded, the average becomes 25. The excluded number is :

A. 25

B. 27

C. 30

D. 35

4. Two numbers are respectively 19% and 70% more than a third number. What percentage is the first number of the second number?

A. 70% of the second

B. 45% of the first

C. 60% of the second

D. 50% of the first

5. What is the CI received on a sum of Rs. 26000 for three years compounded semi - annually at 10%, 12% and 8% rates of interest for years 1, 2, and 3 respectively?

A. Rs. 9837.28

B. Rs. 8836.17

C. Rs. 8925.38

D. Rs. 8728.19

6. Akash buys a certain variety of rice and mixes it with another variety of rice costing Rs. 25 per kg in the ratio of 5 : 4 . If the mixture costs Rs. 20 per kg, what is the cost price of the other variety?

A. Rs. 8

B. Rs. 12

C. Rs. 16

D. Rs. 20

7. A and B agreed to do a work for Rs. 112. A alone can do it in 7 days and B alone in 8 days. If with the help of a boy they finish the work in 3 days, then what amount does the boy gets?

A. Rs. 18

B. Rs. 22

C. Rs. 25

D. Rs. 27

8. If I travel along the three sides of an equilateral triangle at speeds of 30 kmph, 40 kmph and 50 kmph respectively, what is my average speed for the entire journey?

A. 38.3 kmph

B. 36.5 kmph

C. 41 kmph

D. 37.8 kmph

9. The sum of two numbers is 2490. if 6.5% of one number is equal to 8.5% of other, then one of the numbers is

A. 1400

B. 1100

C. 1079

D. 1490

10. If $x + \frac{1}{x} = a$, then the value of $x^3 + \frac{1}{x^3}$ is

A. $a^3 + 2a$

B. $a^3 + 3a$

C. $3a + a^2$

D. $a^2 + a$

Correct Answers:

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

Explanations:

1.

$$\frac{5 + 3 \times 15 + 3 + 16 \text{ of } \frac{1}{8}}{3 + 21 \div 3 + 24 \div 6 \text{ of } 4} = \frac{5 + 3 \times 15 \div 3 + 2}{3 + 21 \div 3 + 24 \div 24}$$

$$= \frac{5 + 3 \times 5 + 2}{3 + 7 + 1} = \frac{5 + 15 + 2}{11} = \frac{22}{11} = 2$$

Hence, option A is correct.

2.

As number will be of form $119K + 19$

and 119 is divisible by 17, so remainder when 19 is divided by 17 = 2.

Hence, option D is correct.

3.

Let the five numbers be a, b, c, d and e.

$$\frac{a + b + c + d + e}{5} = 27$$

$$\Rightarrow a + b + c + d + e = 135 \dots (i)$$

Let e be the excluded number,

$$\text{Then, } \frac{a + b + c + d}{4} = 25$$

$$\Rightarrow a + b + c + d = 100 \dots (ii)$$

Subtract, (ii) from (i), we get

$$e = 35$$

Hence, option D is correct.

4. Let the third number be 100.

Then, the first number is $100 + 19 = 119$ and the second number is 170.

$\therefore$ The first is $\frac{119}{170} \times 100 = 70\%$ of the second

Method II :

First number is $\frac{100 + 19}{100 + 70} \times 100 = 70\%$ of second

Hence, option A is correct.

5.

$$\text{Amount} = 26000 \left(1 + \frac{5}{100}\right)^2 \left(1 + \frac{6}{100}\right)^2 \left(1 + \frac{4}{100}\right)^2$$

$$\text{Amount} = \text{Rs. } 34836.17$$

$$\text{CI} = 34836.17 - 26000 = \text{Rs. } 8836.17$$

Hence, option B is correct.

6. Let the cost of the cheaper variety of rice be Rs. x per kg.

Using alligation :

$$\begin{array}{cc} x & 25 \\ \backslash & / \\ & 20 \\ / & \backslash \\ 5 & 4 \end{array}$$

$$\Rightarrow \frac{25 - 20}{20 - x} = \frac{5}{4} \Rightarrow 20 - x = 4$$

$$\text{or } x = 16$$

$\therefore$ Cost price of cheaper variety of rice = Rs. 16 per kg.

Hence, option C is correct.

7. A's 3 days' work + B's 3 days' work + Boy's 3 day's work = 1

$$\text{Or, } \frac{3}{7} + \frac{3}{8} + \text{Boy's 3 day's work} = 1$$

$$\text{Or, Boy's day's work} = 1 - \left(\frac{3}{7} + \frac{3}{8}\right) = \frac{11}{56}$$

$$\text{Ratio of shares} = \frac{3}{7} : \frac{3}{8} : \frac{11}{56} = 24 : 21 : 11$$

$$\therefore \text{Boy's share} = \frac{112}{24 + 21 + 11} \times 11 = \text{Rs. } 22$$

Hence, option B is correct.

8. Just to revise, average speed is a weighted average speed (with weights equal to the time and not distance) and defined as the total distance travelled divided by total time taken. And it is not necessarily equal to the average of the speeds. To revise the fundamentals of average speed, please visit the chapter on mixtures and the topic on unusual mixtures.

$$\begin{aligned} \text{Average speed} &= \frac{d}{\frac{d/3}{30} + \frac{d/3}{40} + \frac{d/3}{50}} \\ &= \frac{3 \times 30 \times 40 \times 50}{40 \times 50 + 30 \times 50 + 30 \times 40} = \frac{3 \times 30 \times 40 \times 50}{2000 + 1500 + 1200} \\ &= \frac{3 \times 30 \times 40 \times 50}{4700} = \frac{1800}{47} = 38.3 \text{ kmph} \end{aligned}$$

Hence, option A is correct.

9. Let one number be x and other number be $(2490 - x)$.

$$\text{Then, } \frac{6.5}{100}x = \frac{8.5}{100}(2490 - x)$$

$$\Rightarrow 6.5x = 8.5 \times 2490 - 8.5x$$

$$\Rightarrow 15x = 8.5 \times 2490$$

$$\Rightarrow x = \frac{8.5 \times 2490}{15}$$

$$\Rightarrow x = 8.5 \times 166 = 1411$$

$$\text{and other number} = 2490 - 1411 = 1079$$

Hence, option C is correct.

10.

$$\because x - \frac{1}{x} = a$$

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

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

$$\Rightarrow x^3 - \frac{1}{x^3} = a^3 + 3a$$

Hence, option B is correct.



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