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Maths Questions for CLAT Exam

CLAT Maths Quiz 13

Directions: Kindly study the following Questions carefully and choose the right answer:

1. The ratio between a two-digit number and the sum of the digits of that number is 4 : 1. If the digit in the unit's is three more than the digit in the ten's places, what is the number?

A. 25 B. 36

C. 47 D. 58

2. Rahul gives a crystal diamond ring to his wife Vijeta on their wedding anniversary. However, the ring falls off Vijeta's hand and breaks into three pieces the weights of which are in the ratio of 2 : 3 : 4. The value of each piece is directly proportional to the square of their weights. The given value of the diamond in the ring was Rs. 24300. Find the loss due to breakage.

A. Rs. 14300 B. Rs. 11400

C. Rs. 14600 D. Rs. 15600

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3. A train leaves a station A at 7 am and reaches another station B at 11 am. Another train leaves B to 8 am and reaches A at 11:30 am. The two trains cross one another at

A. 8:36 AM B. 8:56 AM

C. 9:00 AM D. 9:24 AM

4. In the Mumbai Zoo, there are some ducks and some rabbits. If the head are counted there are 160, while the legs are 450. What will be numbers of Rabbit in the zoo?

A. 65 B. 60

C. 95 D. 85

5. There are 50 students in a class. 40% of the students like Orange and 50% of the students like Mango. If 10 students like both of them, then how many students like either Orange or Mango or both of them?

A. 30 B. 35

C. 40 D. 45

6. B and C together can complete a work in 8 days. A and B, and A and C together can complete the same work in 12 days and 16 days respectively. In how many days can A, B and C together complete the same work?

A. $3\frac{9}{13}$ days

B. $7\frac{5}{13}$ days

C. $7\frac{5}{12}$ days

D. $3\frac{5}{12}$ days

7. A man takes 3 hours 45 minutes to row a boat 22.5 km downstream of a river and 2 hours 30 minutes to cover a distance of 10 km up stream. Find the speed of the river current in km/hr.

A. 1 km/hr

B. 2 km/hr

C. 3 km/hr

D. 4 km/hr

8. Monika, Neha and Bharti are three sister. Monika and Neha are twins. The ratio of sum of the ages of Monika and Neha is same as that of Bharti alone. Three years earlier the ratio of age of Monika and Bharti was 5 : 11. What will be the age of Bharti 7 years hence?

A. 20 years

B. 10 years

C. 25 years

D. None of these

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9. A reduction of 20% in the price of rice enables a person to buy 2 kg more for Rs 30. Find the reduced and the original price per kg of rice.

A. Rs 3 and $3\frac{3}{4}$ per kg

B. Rs. 3 and $2\frac{3}{4}$ per kg

C. Rs. 2 and $2\frac{5}{4}$ per kg

D. Can't be determined

10. The average of the first and the second of three number is 15 more than the average of the second and the third of these numbers. What is the difference between the first and the third of these three numbers?

A. 15

B. 45

C. 60

D. None of these

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Correct Answers:

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

Explanations:

1. Let the ten's digit be x. then, unit's digit = (x + 3).

Sum of the digits = x + (x + 3) = 2x + 3.

Let the number = 10x + (x +3) = 11x + 3

So, $\frac{11x + 3}{2x + 3} = \frac{4}{1}$

$\Rightarrow$ 11x + 3 = 4(2x + 3) $\Leftrightarrow$ 11x + 3 = 4 (2x + 3)

$\Rightarrow$ 3x = 9 $\Rightarrow$ x = 3

Hence, required number = 11x + 3 $\Rightarrow$ 36.

Hence, option B is correct.

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2. Ratio of each piece of diamond = 2x : 3x : 4x

$\therefore$ Solid crystal diamond = 2x + 3x + 4x = 9x

$\therefore$ Cost of solid crystal diamond = $(9x)^2 = 81x^2$

Cost of broken pieces of diamond = $(2x)^2 + (3x)^2 + (4x)^2 = 29x^2$

$\therefore$ Loss = $81x^2 - 29x^2 = 52x^2$

Given, $81x^2 = 24300$

$\therefore$ $x^2 = \frac{24300}{81} = 300$

∴ Loss = 52 × 300 = Rs. 15600.

Hence, option D is correct.

3. Kindly refer to the video or go through the explanation given below:

Let the distance between the stations A & B be 4 kms.

∴ Speed A → B = $\frac{4}{4}$ = 1 km/hr

& Speed B → A = $\frac{4}{7/2} = \frac{8}{7}$ km/hr

Suppose they meet x hours after 8 am.

Distance covered by both the trains to meet each other = Distance covered by them from 8 am

$(1 + \frac{8}{7}) \times x = 3$ kms (∵ Train A has already covered 1 km from 7 am to 8 am)

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$\Rightarrow \frac{15}{7}x = 3$

∴ $x = \frac{7}{5}$hr = 1 hr 24 mins

∴ They will meet at 9 : 24 AM. (After adding 1 hr 24 mins to 8 am.)

Hence, option D is correct.

4. Let, Ducks = x, Rabbit = y

As, Duck has 2 legs and rabbit has 4 legs,

Both have one head,

2x + 4y = 450 ...1

$x + y = 160$

$2x + 2y = 320$ 2

Equation 1 – Equation 2

$2y = 130$

$y = 65$

Hence, option A is correct.

5. The distribution of the fruits are given below:

The number students who like only Mangoes- 40% of 50 = 20

The number students who like only Oranges- 50% of 50 = 25

$n(A \cup B) = n(A) + n(B) – n(A \cap B)$

Therefore, the number of students who like either Orange or Mango or both of them

20 + 25 – 10 = 35

Hence, option B is correct

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

(A + B + C) together finish the work in

$$[\frac{2xyz}{xy + yz + zx}] \ days$$

A and B together finish a piece work = x = 12 days

B and C together finish a piece work = y = 8 days

C and A together finish a piece work = z = 16 days

By the short trick approach:

A, B and C can do the work in

$= \frac{2 \times 12 \times 8 \times 16}{12 \times 8 + 8 \times 16 + 16 \times 12}$ days

After taking 8 as a common term we get,

$= \frac{2 \times 12 \times 16}{12 + 16 + 24}$ days

After taking 4 as a common term we get,

$= \frac{2 \times 3 \times 16}{3 + 4 + 6}$days $= \frac{96}{13} = 7\frac{5}{13}$days

Hence, option B is correct.

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7. Given,

Downstream time = 3 h 45 mins. $= \frac{15}{4}$ h

So, Speed of downstream $= \frac{22.5}{15/4} = \frac{22.5 \times 4}{15} = 6$ km/hr

Upstream time = 2 h 30 mins. $= \frac{5}{2}$ h

Now, Speed of upstream $= \frac{10}{5/2} = \frac{10 \times 2}{5} = 4$ km/hr

By the short trick approach, we get

Speed of the current $= \frac{1}{2}$ [DOWNSTREAM rate – UPSTREAM rate]

$= \frac{1}{2} \times (6 - 4) = \frac{2}{2} = 1$km/hr

Hence, option A is correct.

8. Since Monika and Neha are twins so their ages be same. Let their ages be x and and age of Bharti be y, then,

$x + x = y$ **...(i)**

and $\frac{(x-3)}{(y-3)} = \frac{5}{11}$

$\Rightarrow 11x - 33 = 5y - 15$

$\Rightarrow 11x - 5y = 18$

Now, from equation (i) putting y in terms of x, we get

$11x - 10x = 18$

$\Rightarrow x = 18$

So, the age of Bharti 7 years hence will be 18 + 18 + 7 = 43 years.

Hence, option D is correct.

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

Reduced price = $(\frac{Ax}{100n})$per kg

Original price = $(\frac{Ax}{(100-x)n})$per kg

Where,

'x' is the percentage of reduction in the price of an article = 20%

'n' is the increased weight after the reduction of price = 2 kg

'A' is the price of increased weight = Rs. 30

The reduced price of rice = $\frac{30 \times 20}{100 \times 2}$ = Rs. 3 per kg.

and

The original price of rice = $\frac{30 \times 20}{(100-20)2} = \frac{15}{4}$

$= \text{Rs. } 3\frac{3}{4} \text{ per kg}$

Hence, option A is correct.

10. Let the three numbers be x, y and z respectively.

Then, $(\frac{x + y}{2}) - (\frac{y + z}{2}) = 15$

or, $\frac{x + y - y - z}{2} = 15$

or, x – z = 30 Therefore, the difference between the first and the third number is 30.

Hence, option D is correct.

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