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# Mixed Maths Questions for SBI PO Pre, IBPS PO Pre, IBPS Clerk Mains and SBI Clerk Mains Exams.

## Bank PO Maths Quiz 2

Direction: Study the following questions carefully and choose the right answer.

1. A boy goes to school at a speed of 5 km/h and returns to the village at a speed of 4 km/h. If he takes 4 hours and 30 minutes in all, what is the distance between the village and the school?

- A. 7 km                      B. 10 km                      C. 4 km                      D. 5 km                      E. None of these

2. A trader has Mangoes worth Rs. 800, a part of which he sells for 10% loss and other part for 20% profit to make overall 10% profit. What is the worth of Mangoes he sold at 10% and 20% respectively?

- A. Rs. 233.3, Rs. 566.7                      B. Rs. 266.6, Rs. 533.4                      C. Rs. 280, Rs. 5200                      D. Rs. 600, Rs. 200  
E. None of these

3. Average age of a class of 30 students is 13 years. The average age of a group of 9 students is 12 years and the average age of another group of 10 students is 14 years. What is the average age of the rest of the students?

- A. 14.91 years                      B. 13 years                      C. 13.91 years                      D. 16.91 years                      E. 12.91 years

4. The students of a class are divided into 3 groups depending on their performance in a test – the top, middle and bottom. The top group consists of 45% of the students, the middle group consists of 30% of the students and the rest are in the bottom group. The average marks of the bottom group are 20, those of the middle are 25 while the average marks for the entire class are 26. Find the average marks of the top group.

- A. 7                      B. 12                      C. 22                      D. 30                      E. None of these

5. On what sum of money will the simple interest for 3 years at 8 percent per annum be half of the compound interest on Rs. 800 for 2 years at 10 percent per annum?

- A. Rs. 125                      B. Rs. 150                      C. Rs. 175                      D. Rs. 200                      E. None of these

6. Ananya, Dhairya and Chintu started a business investing Rs. 10000, 15000, 18000 respectively. Ananya kept the money for whole year, Dhairya kept his entire amount for 9 months and Chintu kept his money for 7 months. If after a year, Chintu earned Rs. 2100, find the difference between the profit of Ananya and Dhairya.

- A. Rs. 200                      B. Rs. 250                      C. Rs. 160                      D. Rs. 300                      E. None of these

7. In a room everybody shakes hands with everybody else. The total number of hand-shakes is 66. The total number of persons in the room is:

- A. 11                      B. 14                      C. 10                      D. 12                      E. None of these

8. The distance between two stations New Delhi and Howrah is 1800 km. From a station Gaya which is between New Delhi and Howrah, two cars x and y started simultaneously with speeds 84 kmph and 88 kmph towards New Delhi and Howrah respectively. After reaching their respective destinations, they reverse their direction and continue travelling. After x crosses Gaya and travels an additional 5 km, it crosses y. What is the distance between New Delhi and Gaya?

- A. 922.22 km              B. 876.6 km              C. 1600 km              D. 4520 km              E. Data insufficient

9. A jar contains a mixture of oil and water in the ratio 22 : 3. 50 litres of the mixture was taken out and 25 litres of water was added to it. If water was 34% in the resultant mixture, what was the initial quantity of the mixture in the jar? (in litres)

- A. 175                      B. 125                      C. 150                      D. 75                      E. None of these

10. Consider 3 people Katappa, Bahubali and Rajamouli. Katappa and Bahubali can fill a cistern in 2 hr and 2.5 hr respectively while Rajamouli can empty the cistern in 1 hr. If all three of them start working at 5:00 pm, 5:30 pm and 6:00 pm respectively, then at what time will the cistern get emptied?

- A. 12 AM                      B. 12 PM                      C. 1 PM                      D. 1 AM                      E. None of these

**Correct Answers:**

<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>	<b>6</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>
B	B	E	D	E	B	D	B	B	D

## Explanations:

1. Let the distance between village and school =  $x$  km  
Time taken to travel from village to school at a speed of 5 km/h

$$t_1 = \frac{x}{5} \text{ hrs}$$

Time taken to travel from school to village at a speed of 4 km/h

$$t_2 = \frac{x}{4} \text{ hr}$$

Given: total time taken = 4 hrs 30 minute

$$t = t_1 + t_2 = 4\frac{30}{60} \text{ hrs}$$

$$t = \frac{9}{2} \text{ hrs}$$

$$\text{Thus, } \frac{x}{5} + \frac{x}{4} = \frac{9}{2}$$

Or,  $x = 10$  km

∴ The distance between village and school = 10 km

Hence option B is correct.

2. Let's the trader sells Mango worth Rs. ' $x$ ' at 10% loss

∴ The worth of Mango sold at 20% profit = Rs.  $(800 - x)$

S.P. of Mango sold at 10% loss = worth - loss =  $x - (10\% \text{ of } x)$

$$= \frac{9x}{10}$$

S.P. of Mango sold at 20% profit =  $(800 - x) + [20\% \text{ of } (800 - x)]$

$$= \frac{6}{5}(800 - x)$$

According to the given information, the trader earns 10% Profit.

∴ Total S.P. = Total C.P. + Profit =  $800 + (10\% \text{ of } 800) = \text{Rs. } 880$

$$\therefore \frac{9x}{10} + 6 \times \frac{800 - x}{5} = 880$$

$$\Rightarrow \frac{9x + 12 \times (800 - x)}{10} = 880$$

$$\Rightarrow 9600 - 3x = 8800$$

$$\Rightarrow 3x = 800$$

$$\Rightarrow x = \text{Rs. } 266.6$$

∴ He sells Mango worth Rs. 266.6 at 10% loss

He sells Mango worth Rs.  $(800 - x) = \text{Rs. } 533.4$  at 20% profit

Hence option B is correct.

3.

$$\text{Average} = \frac{\text{Sum of all quantities}}{\text{Total number of quantities}}$$

∴ Sum of ages of students = Average × number of students

The average age of 30 students is 13

∴ Sum of ages of 30 students = Average × number of students

$$\Rightarrow \text{Sum of ages of 30 students} = 30 \times 13 = 390 \text{ years}$$

Average age of group of 9 students is 12.

$$\Rightarrow \text{Sum of ages of 9 students} = 12 \times 9 = 108 \text{ years}$$

Average age of group of 10 students is 14.

$$\Rightarrow \text{Sum of ages of 10 students} = 14 \times 10 = 140 \text{ years}$$

Let the number of remaining students be x

$$\therefore x + 9 + 10 = 30$$

$$\Rightarrow x + 19 = 30$$

$$\Rightarrow x = 11 \text{ students}$$

∴ Sum of ages of 11 students = (Sum of ages of 30 students) – (Sum of ages of 9 students + Sum of ages of 10 students)

$$\Rightarrow \text{Sum of age of 11 students} = 390 - (108 + 140) = 390 - 248 = 142 \text{ years}$$

$$\therefore \text{Average age of 11 students} = \frac{\text{Sum of ages of 11 students}}{11}$$

$$\Rightarrow \text{Average age of 11 students} = \frac{142}{11} = 12.91$$

∴ Average age of remaining students in 12.91 years

Hence option E is correct.

4.

	Top	Middle	Bottom	Total
Number of student	45	30	25	100
Average	P	25	20	26

Let the total number of students in the class = 100. The data given in the question is shown in the table.

Let average of top group be P

$$(45 \times P) + (30 \times 25) + (20 \times 25) = (100 \times 26)$$

$$\Rightarrow P = 30$$

Hence correct option is (D).

5. Let the sum of money be Rs. x

According to the formula for simple interest -

$$\Rightarrow \text{S.I.} = \frac{P \times R \times T}{100}$$

$$\Rightarrow \text{S.I.} = \frac{x \times R \times T}{100}$$

$$\Rightarrow \text{S.I.} = \frac{x \times 8 \times 3}{100}$$

$$\Rightarrow \text{S.I.} = \frac{24x}{100}$$

According to the question;

S.I. is half of the C.I

$$\text{i.e. } \frac{24x}{100} = \frac{1}{2} \times 168$$

$$\Rightarrow x = \frac{(84 \times 100)}{24}$$

$$\therefore x = 350$$

Thus, the sum of money will be Rs. 350.

Hence option E is correct.

6. Ratio of the capital =  $10000 \times 12 : 15000 \times 9 : 18000 \times 7$

$$= 40 : 45 : 42$$

Chintu's profit is Rs. 2100.

$$42x = 2100$$

$$x = 50$$

Difference between Ananya and Dhairya's profit =  $45x - 40x$

$$= 5x = 5 \times 50 = \text{Rs. } 250$$

Hence, option B is correct.

7. Let the total number of persons be N.

Given, total number of hand-shakes is 66

For a hand shake we require two people, total number of handshake is  ${}^N C_2$

$$\therefore {}^N C_2 = 66$$

$$\therefore N(N-1) / 2 = 66$$

$$\Rightarrow N^2 - N = 132$$

$$\Rightarrow N^2 - N - 132 = 0$$

$$\Rightarrow (N - 12)(N + 11) = 0$$

$$\Rightarrow N = 12 \text{ persons}$$

Hence option D is correct.

8. Distance between New Delhi and Howrah is 1800 km

Let distance between New Delhi and Gaya is x

Distance between Gaya and Howrah is  $(1800 - x)$  km

$$\therefore \frac{(2x + 5)}{84} = \frac{2(1800 - x) - 5}{88}$$

$$\therefore x = 876.569 \text{ km}$$

Distance between New Delhi and Gaya is  $876.569 \approx 876.6$  km

Hence, correct option is (B)

9. Let the quantity of oil and water be  $22x$  and  $3x$  respectively.

Total quantity of mixture =  $25x$

Then, 50 litres of mixture is taken out

$$\text{Now, oil removed} = 50 \times \frac{22}{25} = 44$$

$$\therefore \text{Oil remaining} = 22x - 44$$

$$\text{Water removed} = 50 \times \frac{3}{25} = 6$$

$$\text{Water in the new mixture} = 3x - 6 + 25 \Rightarrow 3x - 19$$

$$\text{Now, new ratio: } \frac{3x + 19}{22x - 44} = \frac{34}{66}$$

$$\text{or, } \frac{3x + 19}{22x - 44} = \frac{17}{33}$$

$$\text{or, } 17(22x - 44) = 33(3x + 19)$$

$$\text{or, } 374x - 99x = 627 + 748$$

$$\text{or, } 275x = 1375$$

$$\therefore x = 5$$

$$\therefore \text{Initial mixture} = 22x + 3x = 25x = 25 \times 5 = 125 \text{ litres}$$

Hence, option B is correct.

**10.** Suppose it takes 't' hours to empty the cistern starting from 6:00 pm

Part of the cistern filled in 1 hr by Katappa and Bahubali are  $\frac{1}{2}$  and  $\frac{1}{2.5}$  respectively and Part of the cistern emptied in 1 hr by rajamouli is  $\frac{1}{1}$

Starting from 6 PM, they will operate for  $(t + 1)$  hr,  $(t + \frac{1}{2})$  hr and  $t$  hrs respectively

the cistern will get emptied after  $t$  hours. So,

$$\frac{t + 1}{2} + \frac{(t + 1/2)}{2.5} - \frac{t}{1} = 0$$

Solving we get  $t = 7$  hr

Hence, cistern will be empty 7 hrs after 6 PM. i.e. at 01:00 AM

Hence, option D is correct.





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