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# Mixed Maths Questions for LIC AAO

## LIC AAO Maths Quiz 20

Directions: Read the following questions carefully and choose the right answer.

**1. Ranu and Bhanu can separately do a piece of work in 18 days and 12 days respectively. They worked together for 6 days, after which Bhanu was replaced by Shivam. If the work was finished in next 2 days, then what is the number of days in which Shivam alone can do the work?**

- A. 28 days                      B. 36 days                      C. 20 days  
D. 24 days                      E. None of these

**2. A shopkeeper gives a discount of 10% on the marked price and then charges sales tax on the amount obtained. He charges a % sales tax up to Rs. 5000 and b% tax for orders with marked price more than Rs. 5000. If a customer pays Rs. 180 as sales tax when he purchases goods worth Rs. 4000 marked price, and Rs. 189 when he purchases goods worth Rs. 7000 as marked price, find the value of (a + b).**

- A. 6                                      B. 7                                      C. 8  
D. 9                                      E. None of these

**3. In a city, 85% of the people use mobile phones. 60% of the mobile phone users use smartphones and 75% of the smartphones are 3G whereas only 20% of non-smartphones are 3G. If there are 120000 phones which are 3G phones, then what is the approximate population of the city?**

- A. 266370                      B. 243800                      C. 368980  
D. 286402                      E. None of these

**4. In how many different ways can the letters of the word 'OPTICAL' be arranged so that be the vowels always come together?**

- A. 48                                      B. 120                                      C. 540  
D. 720                                      E. None of these

**5. Reshma bought a hand bag for Rs. 2500. Later she marked up its price by 15% and she sold it at a discount of 6%. What is percentage profit earned by Reshma on this transaction?**

- A. 9%                                      B. 8.8%                                      C. 9.25%  
D. 8.1%                                      E. None of these

**6. If the incomes of Arun and Varun are in the ratio 5 : 7 and their expenditure are in the ratio 3 : 4, then find the ratio of their savings.**

- A. 3 : 5                                      B. 2 : 5                                      C. 5 : 7  
D. Can't be determined      E. None of these

**7. Aalia says, "I am twice as old as what Deepika will be two years hence." Deepika says, "I am three years younger to Priyanka ", and Priyanka says, " My age is three less than the average age of three of us." Find the total of the ages of the three.**

- A. 37                                      B. 47                                      C. 41  
D. 51                                      E. None of these

**8. Rs. 1,000 become Rs. 1,160 in 4 years at a certain rate of simple interest. If the rate of interest is increased by 3 percent points, in 4 years, Rs. 1,000 will amount to how many rupees?**

- A. Rs. 1280                                      B. Rs. 1420                                      C. Rs. 1340  
D. Rs. 1628                                      E. None of these

**9. Hashmi, Jay and Manav can individually make road in 3 hours, 5 hours and 6 hours respectively. Find the approximate time taken by them to make the road if all of them work together.**

- A. 1 hour and 25 minutes
- B. 1 hour and 43 minutes
- C. 1 hour and 32 minutes
- D. 2 hours and 25 minutes
- E. None of these

**10. Train A and Train B are moving in the same direction. Anshu is walking inside Train A in the direction of movement of the train at the speed of 4km/h. Shiva is walking inside Train B in the direction opposite to the movement of the train at 7 kmph. The relative speed of Anshu and Shiva with respect to each other is 6 kmph. What is speed of the train B if speed of train A is 40kmph?**

- A. 47 kmph
- B. 50 kmph
- C. 45 kmph
- D. 40 kmph
- E. None of these

**Correct answers:**

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

**Explanations:**

**1.**

Work done by Ranu and Bhanu in 6 days

$$= \frac{6}{18} + \frac{6}{12} = \frac{1}{3} + \frac{1}{2} = \frac{5}{6}$$

$$\text{Remaining work} = 1 - \frac{5}{6} = \frac{1}{6}$$

which is finished by Shivam and Ranu in 2 days.

$$\text{Ranu can do } \frac{2}{18} = \frac{1}{9} \text{ work in 2 days}$$

$$\Rightarrow \frac{1}{6} - \frac{1}{9} = \frac{3-2}{18} = \frac{1}{18} \text{ work is done Shivam in 2 days}$$

Therefore, Shivam can do the complete work in 36 days.

Hence, option B is correct.

**2.**

Rs. 180 tax is charged at a % since it is less than Rs. 5000.

Similarly, Rs. 189 is charged at b%

ST is charged after applying discount.

Marked Price	After discount (10%)	Sales tax
4000	3600	180 (at a%)
7000	6300	189 (at b%)

Hence,  $a\%$  of 3600 = 180

$$\text{i.e. } \frac{a \times 3600}{100} = 180 \Rightarrow a = 5$$

$$\text{Similarly, } \frac{b \times 6300}{100} = 189 \Rightarrow b = 3$$

Therefore,  $a + b = 5 + 3 = 8$

Hence, option C is correct.

**3.**

Total Population having 3G phones = 120000

No. of smart phones =  $85\% \times 60\% \times 75\% + 85\% \times 40\% \times 20\%$

$$\text{Total population} = \frac{120000}{85\% \times 60\% \times 75\% + 85\% \times 40\% \times 20\%}$$

$$= \frac{120000}{0.85 \times 0.6 \times 0.75 + 0.85 \times 0.4 \times 0.2}$$

$$= \frac{120000}{.3825 + 0.068}$$

$$= \frac{120000}{0.4505} = 266370.69 \approx 266370$$

Hence, option A is correct.

**4.**

The number of letters in the word OPTICAL is seven, in which three vowels (AIO) are considered as one.

∴ No. of ways 4 letters (PTCL) and group of three vowels which are considered as one letter can be arranged = 5!

and the no. of ways 3 vowels (AIO) can be arranged = 3!

∴ Total no. of ways = 5! × 3! = 720

Hence, option D is correct.

**5.**

Cost price = Rs. 2500

Marked price = 115% of 2500 = Rs. 2875

6% discount was given on marked price.

New price = 94% of 2875 = Rs. 2702.5

∴ Profit % =  $\frac{2702.5 - 2500}{2500} \times 100 = 8.1\%$

Hence, option D is correct.

**6.**

Let the incomes of Arun and Varun be 5a and 7a respectively.

Let their expenditure be 3b and 4b respectively.

Savings = Income – Expenditure

$$\therefore \frac{\text{Arun's savings}}{\text{Varun's savings}} = \frac{(5a - 3b)}{(7a - 4b)}$$

The values of a and b are not known.

Hence, the ratio of savings cannot be determined.

Hence, option E is correct.

**7.**

Let the age of Aalia, Deepika and Priyanka be A, B and C.

Hence,

$$A = 2(B + 2), B = C - 3 \text{ and } C = [(A + B + C)/3] - 3$$

$$\therefore A = 2 \times (C - 3 + 2) = 2C - 2$$

$$\text{Then } 3 \times (C + 3) = A + B + C$$

$$\therefore 3C + 9 = 2C - 2 + C - 3 + C$$

$$\therefore 3C + 9 = 4C - 5$$

$$\therefore C = 14$$

$$\therefore A = 26 \text{ and } B = 11$$

$$\therefore A + B + C = 26 + 11 + 14 = 51$$

Hence, option D is correct.

**8.**

$$SI = \text{Rs. } (1160 - 1000) = \text{Rs. } 160$$



$$\therefore \text{Rate} = \frac{100 \times 160}{1000 \times 4} = 4\% \text{ p.a.}$$

$$\therefore \text{New rate, } R_n = 4 + 3 = 7\% \text{ p.a.}$$

So, at the rate of 7% in 4 rate of interest will be 28%

Amount will be 128% of 1000 = 1280

Hence, option A is correct.

**9.**

Let the total work done be the LCM of 3, 5, and 6 i.e. 30 units.

So work done by Hashmi is  $\frac{30}{3} = 10$  units per hour

Work done by Jay is  $\frac{30}{5} = 6$  units per hour

Work done by Manav is  $\frac{30}{6} = 5$  units per hour

Total work done all of them together per hour =  $10 + 6 + 5 = 21$  units

Time taken =  $\frac{\text{Total work}}{\text{Total work done per hour}} = \frac{30}{21}$  hours

= 1.43 hours which is 1 hour 25 minutes

Hence, option A is correct.

**10.**

Speed of Train A = 40 kmph

Speed of Train B = x kmph (Suppose)

Anshu's absolute speed =  $40 + 4 = 44$  kmph (since he's walking in the same direction as the train)

Shiva's absolute speed =  $x - 7$  kmph (since he's walking in the opposite direction as the train)

The relative speed = 6

Therefore,  $44 + (x - 7) = 6$

$x = 45$  kmph

Hence, option C is correct.



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