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SBI PO PRE MATHS QUIZ 20

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

1. Two containers X and Y contain equal volume of water and alcohol respectively. 5 litres of water is taken out from X and poured into Y. From the resulting solution in Y, 5 litres of mixture is taken out and poured into X. Now if the quantity of water in both the containers is same after the two transfers, find out the volume of alcohol in container Y initially.

- A. 18 litres B. 10 litres C. 5 litres D. 15 litres
E. None of these

2. Raj goes out to shop on a rainy day. He travels at a speed of n km/hr when it's raining and at a speed of $(n - 1)$ km/hr when it stops raining. If his average speed for the journey is 3.2 km/hr. Find the fraction of the distance which he covered while it was raining. Given, that n is an integer.

- A. $1/4$ B. $1/6$ C. $1/7$ D. $1/8$
E. None of these

3. Ram and Aman work in a printing press where they have to print a minimum of 100 magazines each day to earn a daily wage of Rs. 300. If they print more than 100 magazines they are paid extra money for each extra magazine printed. Ram is paid Rs.

328 and Aman is paid Rs. 336. Find the amount paid per extra magazine if Aman printed 2 more magazines than Ram.

- A. Rs. 5 B. Rs. 7 C. Rs. 6 D. Rs. 8
- E. None of these

4. Sumit is appointed on a salary of Rs. 1500/month(fixed which he will get regardless of sales) and the condition that for every sales of a refrigerator of Rs. 10,000, he will get 45% of salary and 10% of the sales as a reward. The incentive scheme is not valid for the first Rs. 10,000 of sales. What should be the value of sales if he wants to earn Rs. 8200 in a particular month?

- A. Rs. 60,000 B. Rs. 50,000 C. Rs. 35,000 D. Rs. 40,000
- E. None of these

5. Three partners A, B and C started a business a total investment of Rs. 7200. A's investment was Rs. 600 more than that of B while B's investment was Rs. 300 less than C. At the end of one year the business generated Rs. 864 profit which was distributed in the ratio of the investment of the partners. A invested 25 % of his profit in saving scheme which assures 15% return as interest in one year. What was the interest earned by A from the saving scheme in one year?

- A. Rs. 12.15 B. Rs. 15.12 C. Rs. 10.12 D. Rs. 16.12
- E. None of these

6. A team leader took a project to complete it in 24 days in which 6 people had to work continuously. Due to unforeseen circumstances, the project had to be completed at an earlier

date. The leader then kept adding 6 men after every 2 days to get the work done early. Find the number of days in which the work is completed.

- A. $6\frac{3}{4}$ days B. 8 days C. $12\frac{1}{2}$ days D. $8\frac{4}{5}$ days
E. None of these

The respective ratio of Milk and Water in two mixtures is 5 : 3, and 7 : 9. If these mixtures are mixed in the ratio of 6 : 5 then water is approximately what percent less than milk in the new mixture?

- A. 15.25% B. 14.73% C. 18.28% D. 13.28%
E. 13.98%

8. 20 labourers can complete a work in 15 days. All of them started the work together, but on every alternate day starting from the 2nd day, some labourers did not turn up to the work. The number of the labourers who did not turn up to the work on the 2nd day was 2, on the 4th day was 4, on the 6th day was 6 and so on. In how many days was the work completed?

- A. 20 days B. $\frac{41}{2}$ days C. $\frac{40}{2}$ days D. 25 days
E. None of these

9. Two travellers left simultaneously point A for point B, the first tourist covers each kilometre 2 minutes faster than the second. After travelling 30% of the way, the first traveller returns to A, stopped there for 102 minutes and again started for B. The two travellers arrived at B simultaneously. What is the distance between A and B if the second traveller covered it in 2.5 hours?

A. 60 km

B. 50 km

C. 45.5 km

D. 65 km

E. None of these

10. Two persons P and Q start simultaneously towards each other from two points A & B respectively which are 40 km apart and they meet 2 hours after the start. Then they continued their trips and the person Q arrived at Point A 7 hours 30 minutes earlier than P arrived at B. Which of these could be the speed of the person P?

A. 4 km/hr

B. 8 km/hr

C. 7 km/hr

D. 9 km/hr

E. 10 km/hr



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Correct answers:

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

Explanations:

1.

Container X Container Y
Water Alcohol
X litres Y litres

And it is given that, $X = Y$

Now step I : 5 litres of taken from X and poured into Y

Container X Container Y
 $X - 5$ litres (water) $Y + 5$ litres (mixture)

step II : from container Y, 5 litres of mixture taken out and poured in to container X,

In the 5 litres, water = $\frac{25}{(Y + 5)}$ and Milk = $\frac{5Y}{(Y + 5)}$

Now,

Container X		Container Y	
Milk	Water	Milk	Water
$\frac{5Y}{(Y + 5)}$	$\frac{25}{(Y + 5)} + X - 5$	$Y - \frac{5Y}{(Y + 5)}$	$5 - \frac{25}{(Y + 5)}$

Now it is given that in the final mixture in both the containers volume of water is same

$$\frac{25}{Y + 5} + X - 5 = 5 - \frac{25}{Y + 5}$$

And it is known that $X = Y$

Hence by solving this we get, $Y = 5$ litres.

Hence, option C is correct.

2.

Let the time for which he travelled in rain be 'a' hr and time for which he travelled when it stopped raining be 'b' hr.

Given, Raj travels at a speed of n km/hr when it's raining and at a speed of $(n - 1)$ km/hr when it stops raining.

Average speed = 3.2 km/hr

Thus, $n > 3.2 > n - 1$

$\therefore n > 3.2$ or $n < 4.2$

As n is an integer, $n = 4$ km/hr.

Now, Raj travels at a speed of 4 km/hr when its raining and at a speed of 3 km/hr when its not raining.

Total distance travelled = $4a + 3b$

Total time taken = $a + b$

$$= \frac{4a + 3b}{a + b} = 3.2$$

$$\Rightarrow 4a + 3b = 3.2a + 3.2b$$

$$\Rightarrow 0.8a = 0.2b$$

$$\Rightarrow b = 4a$$



Total distance travelled = $4a + 12a = 16a$

Fraction of distance travelled in the rain = $\frac{4a}{16a} = \frac{1}{4}$

Hence, option A is correct.

3.

Let the number of extra magazines printed by Aman be 'a'.

Number of extra magazines printed by Ram = $a - 2$

Let the price paid per extra magazine printed be 'b'.

Thus, $300 + a \times b = 336$ ---- (1) and $300 + (a - 2) \times b = 328$ ----- (2)

(1) - (2)

$$\Rightarrow ab - ab + 2b = 8$$

$$\Rightarrow b = 4$$

None of the options match.

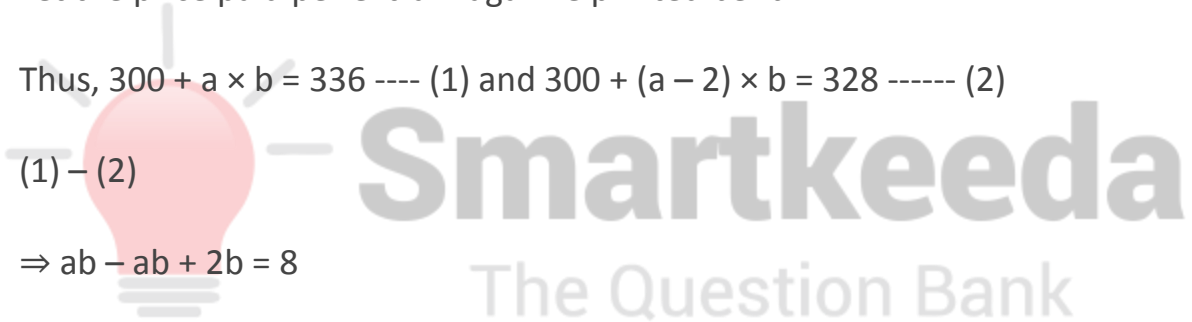
Hence, option E is correct.

4.

Let the number of Rs. 10,000 sales he achieves over the initial Rs. 10,000 be x

For every Rs. 10,000 sales he gets 45% of basic salary and 10% of the sales as a reward

$$\Rightarrow \text{Reward} = 1500 \times \frac{45}{100} + 10,000 \times \frac{10}{100}$$



$$\Rightarrow \text{Reward} = 675 + 1000 = \text{Rs. } 1675$$

For every Rs. 10,000 over the initial INR 10,000, he will get Rs. 1675 extra

\therefore For x number of sales of every Rs. 10,000, he will get $1675x$ extra

Now, his total income = His basic salary + Extra income (reward)

$$\Rightarrow \text{His total income} = 1500 + 1675x$$

If he want to earn Rs. 8200 in a particular month

$$\Rightarrow 8200 = 1500 + 1675x$$

$$\Rightarrow 1675x = 6700$$

$$\Rightarrow x = 4$$

$$\text{Total sales} = 10,000 + (4 \times 10000) = \text{Rs. } 50,000$$

Hence, Rs. 50,000 is the value of sales if he wants to earn Rs. 8200 in a particular month.

Hence, option B is correct.

5.

Let the investment of C be Rs. X .

Investment of B be Rs. $(X - 300)$

Investment of A be Rs. $(X - 300 + 600)$

$$\text{Total investment} = 7200 = X + (X - 300) + (X - 300 + 600)$$

$$X = 2400$$



Investment of C is Rs. X = Rs. 2400

Investment of B is Rs. (X - 300) = Rs. 2100

Investment of A is Rs. (X - 300 + 600) = Rs. 2700

Ratio = C : B : A = 8 : 7 : 9

$$\text{A share} = 864 \times \frac{9}{24} = \text{Rs. } 324$$

Investment of A in saving scheme = 25% of A = 25% × 324 = Rs. 81

$$\text{Interest earned by A} = 81 \times 15 \times \frac{1}{100} = \text{Rs. } 12.15$$

Hence, option A is correct.

6.

Work should be completed in 24 days by 6 men initially.

Part of work completed by 1 man in 1 day

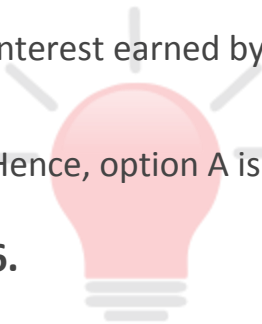
$$= \frac{1}{6 \times 24} = \frac{1}{144}$$

Total work = 1

Part of work completed in 2 days by 6 men

$$= 2 \times 6 \times \frac{1}{144} = \frac{1}{12} \text{ part}$$

Now, 6 men are added.



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Part of work completed in 4 days

$$= \frac{1}{12} + 2 \times 12 \times \frac{1}{144} = \frac{1}{12} + \frac{1}{6} = \frac{1}{4}$$

Now, 6 men are added.

Part of work completed in 6 days

$$= \frac{1}{4} + 2 \times 18 \times \frac{1}{144} = \frac{1}{2}$$

Now, 6 men are added

Part of work completed in 8 days

$$= \frac{1}{2} + 2 \times 24 \times \frac{1}{144} = \frac{5}{6}$$

Now 6 men are added.

$$\text{Part of work left} = \frac{1}{6}$$

Total number of men = 30

Time taken to complete $\frac{1}{6}$ th of the work by 30 men

$$= 144 \times \frac{1}{6} \times \frac{1}{30} = \frac{24}{30} = \frac{4}{5} \text{ days}$$

Work is completed in $8 \frac{4}{5}$ days

Hence, option E is correct.



7.

The ratio of milk and water in the first mixture = [5: 3] X 2 X 6

The ratio of milk and water in the second mixture = [7: 9] X 1 X 5

The quantity of milk in the new mixture = $5 \times 2 \times 6 + 7 \times 1 \times 5 = 60 + 35 = 95$

The quantity of water in the new mixture = $3 \times 2 \times 6 + 9 \times 1 \times 5 = 36 + 45 = 81$

The reqd. % = $\frac{(95 - 81) \times 100}{95} =$ approximately 14.74%

Hence, option B is correct.

8.

Let each of the labourer can do 1 unit work in a day.

The total work = $(20 \times 15) = 300$ units

According to the question the number of labourer who turns up for the work on the first day is 20.

On the second day was 18,

on the third day was 20

on the fourth day was 16

on the 6th day was = 14

total work on the first 20 days = $[(20 + 18) + (20 + 16) + (20 + 14) + \dots + (20 + 0)] = 290$ units

On the 21st day 20 labourers would turn up and completed the remaining

10 units of work in half a day.

Hence, the reqd. number of days = $\frac{41}{2}$ days

Therefore, option B is correct.

9.

Let the total distance between points A and B is X km.

Now Second traveller takes 2.5 hours to complete X distance.

So, his speed is = $\frac{x}{2.5}$ km/h

Now it is given that the first traveller takes 2 minutes less than second traveller in every km.

Then the first traveller travels 1 km in = $\frac{2.5}{x} - \frac{2}{60}$ hours

Now the speed of first traveller is = $\frac{30x}{75 - x}$ km/h

Now he travels 30% of total distance that is = $\frac{3x}{10}$

And then he returns to A, then total distance travelled by first traveller is
= $\frac{6x}{10}$

Then he stays at A for 102 minutes and then travel towards B.

Total Time taken = Time to travel $\frac{6x}{10}$ km + time to travel x km + 102 minutes

$$\frac{\frac{6x}{10}}{\frac{30x}{75-x}} + \frac{\frac{x}{30x}}{\frac{30x}{75-x}} + \frac{17}{10} = \frac{5}{2}$$

By solving this we get $x = 60$ km.

Hence, option A is correct.

10.

Solve this by using options:-

From the question we can say,

Their relative speed is 20 Km/h and the person P would take 7:30 hours more than the person Q

From 1st option, their speeds be 4 Km/h And 16 Km/h

At this the time taken would be 10 hrs and 2:30 hours by P and Q respectively

So, from 1st option the condition is satisfied so 1st is the right choice.

Hence, option A is correct.



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