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Time and Distance Questions for SBI PO Pre, IBPS PO Pre, SBI Clerk Mains and IBPS Clerk Mains Exams.

Time and distance Quiz 9

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

1. A driver of a auto rickshaw sees a lorry 60 meters ahead of him. After 30 seconds the lorry is 90 meters behind. If the speed of the auto rickshaw is 38 kmph, then what is the speed of the lorry?

- A. 23 kmph B. 25 kmph C. 20 kmph D. 18 kmph E. None of these

2. There are three athletes A, B and C at a same point. A starts running from a point at a speed of 40 m/min. After 5 minutes, B starts running after A with a speed of 50 m/min. Simultaneously, C also starts running after A at 60 m/min. What distance has C covered (in m) when he catches A?

- A. $\frac{500}{3}$ B. $\frac{1300}{3}$ C. $\frac{700}{3}$ D. 600 E. None of these

3. Salman was travelling on one side of the Yamuna express way with a constant speed of 120 kmph in his car. Govinda was travelling with a constant speed of 80 kmph in the opposite direction. When they crossed each other, Salman decided to take a U-turn and meet him. But before taking a U turn, Salman had to travel for another 3 minutes. How long will it take for Salman to meet Govinda? [Assume time taken by Salman to take U turn is negligible]

- A. 29 minutes B. 28 minutes C. 30 minutes D. 33 minutes E. None of these

4. The taxi charges in a city consist of fixed charges and additional charges per kilometer. The fixed charges are for a distance of up to 5 km and additional charges are applicable per kilometer thereafter. The charge for a distance of 10 km is Rs. 350 and for 25 km is Rs. 800. The charge for a distance of 30 km is-

- A. Rs. 800 B. Rs. 750 C. Rs. 900 D. Rs. 950 E. None of these

5. A Volvo tourist bus with only the driver inside has a speed of 80 kmph. Its maximum speed reduces by a quantity which is directly proportional to the number of passengers (excluding the driver) seated inside. The maximum speed of the bus reduces by 20 kmph, if there are 5 passengers. A maximum of how many passengers should be seated so that the bus can move?

- A. 20 B. 19 C. 25 D. 17 E. None of these

6. The length of a circular track is 800 m. Virat and Amresh started from the same point on the track and ran in opposite directions. Virat took 12 minutes to cover one kilometer while Amresh took only 9 minutes to cover the same distance. They kept running for 90 minutes. How many times did they cross each other?

- A. 10 B. 20 C. 21 D. 30 E. None of these

7. 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. 5 km D. 4 km E. None of these

8. The distance between two bus stops of Lucknow and Delhi is 450 km. A bus starts from Lucknow and moves towards Delhi at an average speed of 15 km/h. Another bus starts from Delhi, 20 minutes earlier than the first bus and moves towards Lucknow at an average speed of 20 km/h. How far from Lucknow and from Delhi will the two buses will meet respectively:

- A. 190 km, 260 km B. 290 km, 160 km C. 260 km, 190 km D. 160 km, 290 km E. None of these

9. The average speed of a train is five times of the average speed of a car. If the difference between the time taken by them to cover a distance of 1260 km is 168 hours then find the time taken by the train will take to cover the same distance?

- A. 33.6 hours B. 42 hours C. 56 hours D. 21 hours E. None of these

10. Raju can travel from his house to school in x hours if he does not stop anywhere. One day, he increases his speed by 4 km per hour but stops for 15 minutes on a tea shop then he reaches 5 minutes earlier. If the distance from his house to the school is 40 km then find the value of x ?

- A. 4 B. 2 C. 1 D. 1.7 E. None of these

Correct Answers:

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

Explanations:

1.

$$\text{Relative speed} = \frac{\text{Total distance}}{\text{Total time}} = \frac{60 + 90}{30} = 5 \text{ m/s}$$

$$\therefore 5 \text{ m/s} = 5 \times \frac{18}{5} = 18 \text{ kmph}$$

Now relative speed = speed of auto rickshaw – speed of lorry

or, $18 = 38 - \text{speed of lorry}$

$$\therefore \text{Speed of lorry} = 38 - 18 = 20 \text{ km/h}$$

Hence, option C is correct.

2. When B started, A is ahead by $40 \times 5 = 200 \text{ m}$

But C will catch A before the B as he is faster than the B.

Since A and C run in the same direction, relative speed of C = $60 - 40 = 20 \text{ m/min}$

$$\therefore \text{Time taken by C to actually catch A} = \frac{200}{20} = 10 \text{ mins.}$$

Distance actually covered by C in this duration = $10 \times 60 = 600 \text{ m}$

Hence, option D is correct.

3. Distance Travelled by Salman in 3 minutes

$$= \frac{3}{60} \times 120 = 6 \text{ km}$$

$$\text{Distance travelled by Govinda in 3 minutes} = \frac{3}{60} \times 80 = 4 \text{ km}$$

Hence Salman will have to travel a distance of 10 km before catching up with Govinda.

Relative speed of Salman to that of Govinda after taking U turn = $120 - 80 = 40 \text{ kmph}$

$$\therefore \text{Time taken by Salman after taking U turn to Meet Govinda} = 10/40 = 15 \text{ minutes}$$

Total time taken by Salman to meet Govinda = $(3 + 15) \text{ minutes} = 18 \text{ minutes}$

Hence, option E is correct.

4. Let the fixed charges = Rs. x (for the first 5 km)

and the additional charges = Rs. y /km

As per the question,

$$x + 5y = 350 \dots(i)$$

$$x + 20y = 800 \dots(ii)$$

On solving eqn. (i) and (ii), we get

$$x = 200, y = 30$$

\therefore Charge for a distance of 30 km.

$$= x + 25y = 200 + 30 \times 25 = \text{Rs. } 950$$

Hence, option D is correct.

5. If R is the reduction in maximum speed and N is the number of passengers, then R is proportional to N

$\Rightarrow R = NK$ where K is constant of proportionality,

Given data: $R = 20$, when $N = 5$, hence $K = 4$

Maximum number of passenger that bus can't move = $(80 - N \times K) = 80 - N \times 4 \Rightarrow N = 20$

So number of passenger for bus just move = $20 - 1 = 19$

Hence correct option (B) is correct.

6. The time taken to cover one kilometer for Virat and Amresh is in the ratio 4 : 3

Their speeds are in the ratio 3 : 4.

Virat covers $\frac{3}{7}$ th of the track and Amresh covers $\frac{4}{7}$ th from one crossing to the next i.e.

Virat covers $\frac{3}{7} \times 800$ m from one crossing to the next.

In 90 min, Virat covers $\frac{90}{12} \times (1000) = 7500$ m.

The number of crossings = $\frac{7500 \times \frac{7}{3}}{800} = \frac{175}{8} = 21.87$

So, they will meet 21 times.

Hence correct option is (C).

7. 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.

8. Let after travelling "t" hr the two bus met each other
If the bus starting from Lucknow have travelled for time "t" hr
then bus starting from Delhi will have travelled for

$$\left(t + \frac{20}{60}\right) \text{ hr}$$

and so the equation

$$(15 \times t) + 20 \times \left(t + \frac{20}{60}\right) = 450$$

$$\Rightarrow 15t + 20t = 450 - \frac{20}{3}$$

$$\Rightarrow 35t = \frac{1330}{3}$$

$$\Rightarrow t = \frac{38}{3} \text{ hr}$$

Distance from Lucknow when the two bus will meet = (average speed of bus from Lucknow to Delhi) × (time "t" for which it travelled

$$= 15 \times \frac{38}{3} \text{ km} = 5 \times 38 \text{ km} = 190 \text{ km}$$

Distance from Delhi when they meet = 450km – 190 km = 260km

Hence, option A is correct.

9. Let the average speed of the car = x km per hour

Then, the average speed of the train = $5x$ km per hour

According to the question,

$$\frac{1260}{x} - \frac{1260}{5x} = 168$$

$$1260 \times 4 = 5x \times 168$$

$$x = \frac{1260 \times 4}{5 \times 168} = 6$$

The speed of the train = $5x = 5 \times 6 = 30$ km per hour

The time it will take to cover 1260 km = $\frac{1260}{30} = 42$ hours

Hence, option B is correct.

10. Let the speed = a km per hr

When he increases his speed by 4 km per hour

New speed = $a + 4$ km per hour

He stops for 15 minutes on a tea shop then he reaches 5 minutes earlier it means if he had not stopped for 15 minutes then he would have reached $15 + 5 = 20$ minutes earlier @ $a + 4$ km per hour

We know that, time = $\frac{\text{distance}}{\text{speed}}$

$$\frac{40}{a} - \frac{40}{a+4} = \frac{20}{60}$$

$$40 \times 3(a+4-a) = a(a+4)$$

$$40 \times 3 \times 4 = 480 = a(a+4)$$

By solving, $a = 20$ km per hour

Value of $x = \frac{\text{distance}}{\text{speed}} = \frac{40}{20} = 2$ hours

Hence, option B is correct.



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