

Examrace

Aptitude Logical Reasoning Time and Distance 2020 Competitive Exams Part 5

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1. A boy goes to his school from his house at a speed of 3 km/hr and returns at a speed of 2 km/hr. If he takes 5 hours in going and coming. The distance between his house and school is?

- A. 5 km
- B. 5.5 km
- C. 6 km
- D. 6.5 km

Ans: C

Explanation:

$$\text{Average speed} = \frac{(2 \times 3 \times 2)}{(3 + 2)} = \frac{12}{5} \text{ km/hr.}$$

$$\text{Distance travelled} = \frac{12}{5} \times 5 = 12 \text{ km.}$$

$$\text{Distance between house and school} = \frac{12}{2} = 6 \text{ km.}$$

2. A man on tour travels first 160 km at 64 km/hr and the next 160 km at 80 km/hr. The average speed for the first 320 km of the tour is?

- A. 35.55 km/hr
- B. 36 km/hr
- C. 71.11 km/hr
- D. 71 km/hr

Ans: C

Explanation:

$$\text{Total time taken} = \left(\frac{160}{64} + \frac{160}{80} \right) = \frac{9}{2} \text{ hrs.}$$

$$\text{Average speed} = 320 \times \frac{2}{9} = 71.11 \text{ km/hr}$$

3. A boy rides his bicycle 10 km at an average speed of 12 km/hr and again travels 12 km at an average speed of 10 km/hr. His average speed for the entire trip is approximately?

- A. 10.4 km/hr
- B. 10.8 km/hr
- C. 11 km/hr
- D. 12.2 km/h

Ans: B

Explanation:

Total distance travelled = $10 + 12 = 22$ km /hr.

Total time taken = $\frac{10}{12} + \frac{12}{10} = \frac{61}{30}$ hrs.

Average speed = $22 \times \frac{30}{61} = 10.8$ km/hr.

4. Robert is traveling on his cycle and has calculated to reach point A at 2 p.m. if he travels at 10 km/hr; he will reach there at 12 noon if he travels at 15 km/hr. At what speed must he travel to reach A at 1 p.m.?

- A. 8 kmph
- B. 11 kmph
- C. 12 kmph
- D. 14 kmph

Ans: C

Explanation:

Let the distance travelled be x km.

Then, $\frac{x}{10} - \frac{x}{15} = 2$

$3x - 2x = 60 \Rightarrow x = 60$ km.

Time taken to travel 60 km at 10 km/hr = $\frac{60}{10} = 6$ hrs.

So, Robert started 6 hours before 2. p.m. i.e., at 8 a.m.

Required speed = $\frac{60}{5} = 12$ kmph.

5. A train can travel 50% faster than a car. Both start from point A at the same time and reach point B at 75 kms away from A at the same time. On the way, however, the train lost about 12.5

minutes while stopping at the stations. The speed of the car is?

- A. 100 km/hr
- B. 110 km/hr
- C. 120 km/hr
- D. 130 km/hr

Ans: C

Explanation:

Let speed of the car be x km/hr.

Then, speed of the train = $\frac{150}{100}x = \frac{3}{2}x$ km/hr .

$$\frac{75}{x} - \frac{75}{\frac{3}{2}x} = \frac{125}{10 \times 60}$$

$$\frac{75}{x} - \frac{50}{x} = \frac{5}{24} = 120 \text{ km/hr.}$$

6. Excluding stoppages, the speed of a bus is 54 km/hr and including stoppages, it is 45 km/hr. For how many minutes does the bus stop per hour?

- A. 9
- B. 10
- C. 12
- D. 20

Ans: B

Explanation:

Due to stoppages, it covers 9 km less.

Time taken to cover 9 km = $\frac{9}{54} \times 60 = 10$ min.

7. In a covering a certain distance, the speeds of A and B are in the ratio of 3:4. A takes 30 minutes more than B to reach the destination. The time taken by A to reach the destination is?

- A. 1 hour
- B. $1\frac{1}{2}$ hour
- C. 2 hour

D. $2\frac{1}{2}$ hour

Ans: C

Explanation:

Ratio of speeds = 3 : 4

Ratio of times taken = 4 : 3

Suppose A takes $4x$ hrs and B takes $3x$ hrs to reach the destination.

Then, $4x - 3x = \frac{30}{60} \Rightarrow x = \frac{1}{2}$

Time taken by A = $4x$ hrs = $4 \times \frac{1}{2} = 2$ hrs.

8. In a covering a distance of 30 km, Abhay takes 2 hours more than Sameer. If Abhay double his speed, then he would take 1 hour less than Sammer. Abhay's speed is?

A. 5 km/hr

B. 6 km/hr

C. 6.25 km/hr

D. 7.5 km/hr

Ans: A

Explanation:

Let Abhay's speed be x km//hr.

Then, $\frac{30}{x} - \frac{30}{2x} = 3$

$x = 5$ km/hr.

9. With a uniform speed a car covers the distance in 8 hours. Had the speed been increased by 4 km/hr, the same distance could have been covered in $7\frac{1}{2}$ hours. What is the distance covered?

A. 420 km

B. 480 km

C. 640 km

D. Cannot be determined

E. None of these

Ans: B

Explanation:

Let the distance be x km. Then,

$$\frac{x}{7\frac{1}{2}} - \frac{x}{8} = 4$$

$$\frac{2x}{15} - \frac{x}{8} = 4 \Rightarrow x = 480 \text{ km.}$$

10. If a person walks at 14 km/hr instead of 10 km/hr, he would have walked 20 km more. The actual distance travelled by him is?

A. 50 km

B. 56 km

C. 70 km

D. 80 km

Ans: A

Explanation:

Let the actual distance travelled be x km. Then,

$$\frac{x}{10} = \frac{x + 20}{14}$$

$$4x - 200 \Rightarrow x = 50 \text{ km.}$$

11. In a flight of 600 km, an aircraft was slowed down due to bad weather. Its average speed for the trip was reduced by 200 km/hr and the time of flight increased by 30 minutes. The duration of the flight is?

A. 1 hour

B. 2 hour

C. 3 hour

D. 4 hour

Ans: A

Explanation:

Let the duration of the flight be x hours. Then,

$$\frac{600}{x} - \frac{600}{x + \frac{1}{2}} = 200$$

$$x(2x + 1) = 3 \quad 2x^2 + x - 3 = 0$$

$$(2x + 3)(x - 1) = 0$$

$$x = 1 \text{ hr.}$$

12. It takes eight hours for a 600 km journey, if 120 km is done by train and the rest by car. It takes 20 minutes more, if 200 km is done by train and the rest by car. The ratio of the speed of the train to that of the car is?

A. 2 : 3

B. 3 : 2

C. 3 : 4

D. 4 : 3

Ans: C

Explanation:

Let the speed of the train be x km/hr and that of the car be y km/hr.

$$\text{Then, } \frac{120}{x} + \frac{480}{y} = 8 \text{ or } \frac{1}{x} + \frac{4}{y} = \frac{1}{15} \text{ --- (i)}$$

$$\text{And, } \frac{200}{x} + \frac{400}{y} = \frac{25}{3} \text{ or } \frac{1}{x} + \frac{2}{y} = \frac{1}{24} \text{ --- (ii)}$$

Solving (i) and (ii), we get $x = 60$ and $y = 80$

$$\text{Ratio of speeds} = 60 : 80 = 3 : 4$$

13. A walks around a circular field at the rate of one round per hour while B runs around it at the rate of six rounds per hour. They start in the same direction from the same point at 7.30 a.m. They shall first cross each other at?

A. 7.42 a.m.

B. 7.48 a.m.

C. 8.10 a.m.

D. 8.30 a.m.

Ans: A

Explanation:

Since A and B move in the same direction along the circle, so they will first meet each other when there is a difference of one round between the two.

$$\text{Relative speed of A and B} = 6 - 1 = 5 \text{ rounds per hour.}$$

Time taken to complete one round at this speed = $\frac{1}{5}$ hr = 12 min.

14. A thief is noticed by a policeman from a distance of 200 m. The thief starts running and the policeman chases him. The thief and the policeman run at the rate of 10 km and 11 km per hour respectively. What is the distance between them after 6 minutes?

- A. 100 m
- B. 150 m
- C. 190 m
- D. 200 m

Ans: A

Explanation:

Relative speed of the thief and policeman = $11 - 10 = 1$ km/hr.

Distance covered in 6 minutes = $\frac{1}{60} \times 6 = \frac{1}{10}$ km = 100 m.

Distance between the thief and policeman = $200 - 100 = 100$ m.

15. A thief steals a car at 2.30 p.m. and drives it at 60 km/hr. The theft is discovered at 3 p.m. and the owner sets off in another car at 75 km/hr. When will he overtake the thief?

- A. 4.30 p.m.
- B. 4.45 p.m.
- C. 5 p.m.
- D. 5.15 p.m.

Ans: C

Explanation:

Suppose the thief is overtaken x hrs after 2.30 p.m.

Then, distance covered by the owner in $(x - \frac{1}{2})$ hrs.

$$60x = 75 \left(x - \frac{1}{2}\right) \Rightarrow x = \frac{5}{2} \text{ hrs.}$$

So, the thief is overtaken at 5 p.m.

16. The distance between two cities A and B is 330 km. A train starts from A at 8 a.m. and travels towards B at 60 km/hr. Another train starts from B at 9 a.m. and travels towards A at 75 km/hr. At what time do they meet?

- A. 10 a.m
- B. 10.30 a.m
- C. 11 a.m
- D. 11.30 a.m

Ans: C

Explanation:

Suppose they meet x hrs after 8 a.m. Then,

$$(\text{Distance moved by first in } x \text{ hrs}) + [\text{Distance moved by second in } (x - 1) \text{ hrs}] = 330$$

$$60x + 75(x - 1) = 330 \Rightarrow x = 3$$

So, they meet at $(8 + 3)$ i.e., 11 a.m.

17. The jogging track in a sports complex is 726 m in circumference. Deepak and his wife start from the same point and walk in opposite directions at 4.5 km/hr and 3.75 km/hr respectively. They will meet for the first time in?

- A. 4.9 min
- B. 5.28 min
- C. 5.5 min
- D. 6 min

Ans: B

Explanation:

Clearly, the two will meet when they are 726 m apart.

To be $(4.5 + 3.75) = 8.25$ km apart, they take 1 hour.

$$\text{To be 726 m apart, they take } \left(\frac{100}{825} \times \frac{726}{1000} \right) \text{ hrs} = \left(\frac{242}{2750} \times 60 \right) \text{ min} = 5.28 \text{ min.}$$

18. A and B walk around a circular track. They start at 8 a.m. from the same point in the opposite directions. A and B walk at a speed of 2 rounds per hour and 3 rounds per hour respectively. How many times shall they cross each other before 9.30 a.m. ?

- A. 5
- B. 6
- C. 7
- D. 8

Ans: C

Explanation:

Relative speed = $2 + 3 = 5$ rounds per hour.

So, they cross each other 5 times in an hour and 2 times in half an hour.

Hence, they cross each other 7 times before 9.30 a.m.

19. Two cars P and Q start at the same time from A and B which are 120 km apart. If the two cars travel in opposite directions, they meet after one hour and if they travel in same direction (from A towards B), then P meets Q after 6 hours. What is the speed of car P?

A. 60 km/hr

B. 70 km/hr

C. 120 km/hr

D. Data inadequate

E. None of these

Ans: B

Explanation:

Let their speed be x km/hr and y km/hr respectively.

Then, $120/(x + y) = 1 \Rightarrow x + y = 120$ --- (i)

Now, when they move in same direction:

$(\text{Distance travelled by P in 6 hrs}) - (\text{Distance travelled by Q in 6 hrs}) = 120 \text{ km}$

$6x - 6y = 120 \Rightarrow x - y = 20$ --- (ii)

Solving (i) and (ii), we get $x = 70$, $y = 50$

P's speed = 70 km/hr.

20. Two trains start from P and Q respectively and travel towards each other at a speed of 50 km/hr and 40 km/hr respectively. By the time they meet, the first train has travelled 100 km more than the second. The distance between P and Q is?

A. 500 km

B. 630 km

C. 660 km

D. 900 km

Ans: D

Explanation:

At the time of meeting, let the distance travelled by the second train be x km. Then, distance covered by the first train is $(x + 100)$ km.

$$\frac{x}{40} = \frac{x + 100}{50}$$

$$50x = 40x + 4000 \Rightarrow x = 400$$

So, distance between P and Q = $(x + x + 100)km = 900$ km.

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