

Examrace

Aptitude Logical Reasoning Time and Distance 2020 Competitive Exams Part 3

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1. What distance will be covered by a bus moving at 72 kmph in 30 seconds?

A. 250 m

B. 600 m

C. 750 m

D. 400 m

Ans: B

Explanation:

$$72 \text{ kmph} = 72 \times \frac{5}{18} = 20 \text{ mps}$$

$$D = \text{speed} \times \text{time}$$

$$= 20 \times 30 = 600 \text{ m}$$

2. In how much time will a train of length 100 m, moving at 36 kmph cross an electric pole?

A. 15 sec

B. 22 sec

C. 18 sec

D. 10 sec

Ans: D

Explanation:

Convert kmph to mps.

$$36 \text{ kmph} = 36 \times \frac{5}{18} = 10 \text{ mps}$$

The distance to be covered is equal to the length of the train.

$$\text{Required time } t = \frac{d}{s} = \frac{100}{10} = 10 \text{ sec.}$$

3. A man goes from A to B at a speed of 20 kmph and comes back to A at a speed of 30 kmph. Find his average speed for the entire journey?

- A. 20 kmph
- B. 24 kmph
- C. 50 kmph
- D. 35 kmph

Ans: B

Explanation:

Distance from A and B be 'd'

$$\text{Average Speed} = \frac{\text{total distance}}{\text{total time}}$$

$$\begin{aligned} \text{Average Speed} &= \frac{(2d)}{\left[\left(\frac{d}{20}\right) + \left(\frac{d}{30}\right)\right]} \\ &= \frac{2d}{\left[\frac{5d}{60}\right]} \implies 24 \text{ kmph} \end{aligned}$$

4. How much time will a train of length 200 m moving at a speed of 72 kmph take to cross another train of length 300 m, moving at 36 kmph in the same direction?

- A. 50 sec
- B. 25 sec
- C. 40 sec
- D. 65 sec

Ans: A

Explanation:

The distance to be covered = Sum of their lengths = 200 + 300 = 500m

Relative speed = 72 - 36 = 36 kmph

$$= 36 \times \frac{5}{18} = 10 \text{ mps}$$

$$\text{Time required} = \frac{d}{s} = \frac{500}{10} = 50 \text{ sec.}$$

5. Two trains of length 100 m and 200 m are 100 m apart. They start moving towards each other on parallel tracks, at speeds 54 kmph and 72 kmph. After how much time will the trains meet?

- A. $\frac{10}{7}$ sec
- B. $\frac{12}{7}$ sec

C. $\frac{20}{7}$ sec

D. $\frac{17}{7}$ sec

Ans: C

Explanation:

They are moving in opposite directions, relative speed is equal to the sum of their speeds.

$$\text{Relative speed} = (54 + 72) \times \frac{5}{18} = 7 \times 5 = 35 \text{ mps}$$

$$\text{The time required} = \frac{d}{s} = \frac{100}{35} = \frac{20}{7} \text{ sec.}$$

6. Two trains of length 100 m and 200 m are 100 m apart. They start moving towards each other on parallel tracks, at speeds 54 kmph and 72 kmph. In how much time will the trains cross each other?

A. $\frac{57}{7}$ sec

B. $\frac{80}{7}$ sec

C. $\frac{20}{7}$ sec

D. $\frac{60}{7}$ sec

Ans: B

Explanation:

$$\text{Relative speed} = (54 + 72) \times \frac{5}{18} = 7 \times 5 = 35 \text{ mps}$$

$$\text{The time required} = \frac{d}{s} = \frac{100+100+200}{35}$$

$$= \frac{400}{35} = \frac{80}{7} \text{ sec.}$$

7. Two trains are moving in the same direction at 72 kmph and 36 kmph. The faster train crosses a man in the slower train in 27 seconds. Find the length of the faster train?

A. 270 m

B. 250 m

C. 280 m

D. 220 m

Ans: A

Explanation:

$$\text{Relative speed} = (72 - 36) \times \frac{5}{18}$$

$$= 2 \times 5 = 10 \text{ mps}$$

$$\text{Distance covered in 27 sec} = 27 \times 10 = 270m$$

The length of the faster train=270m

8. Two trains of length 120 m and 280 m are running towards each other on parallel lines at 42 kmph and 30 kmph respectively. In what time will they be clear of each other from the moment they meet?

- A. 14 sec
- B. 21 sec
- C. 17 sec
- D. 20 sec

Ans: D

Explanation:

$$\text{Relative Speed} = (42 + 30) \times \frac{5}{18} = 4 \times 5 = 20 \text{ mps}$$

$$\text{Distance covered in passing each other} = 120 + 280 = 400m$$

$$\text{The time required} = \frac{d}{s} = \frac{400}{20} = 20 \text{ sec}$$

9. Convert the 13/36 m/s into kilometres per hour?

- A. 1.5
- B. 1.2
- C. 1.3
- D. 1.4
- E. None of these

Ans: C

Explanation:

$$\frac{13}{36} \frac{m}{s} = \frac{13}{36} \times \frac{18}{5} = \frac{13}{10} = 1.3 \text{ kmph}$$

10. If a man can cover 12 metres in one second, how many kilometres can he cover in 3 hours 45 minutes?

- A. 168

- B. 162
- C. 150
- D. 156
- E. None of these

Ans: B

Explanation:

$$12 \frac{m}{s} = 12 \times \frac{18}{5} kmph$$

$$3 \text{ hours } 45 \text{ minutes} = 3 \frac{3}{4} \text{ hours} = \frac{15}{4} \text{ hours}$$

$$\text{Distance} = \text{speed} \times \text{time}$$

$$12 \times \frac{18}{5} \times \frac{15}{4} km = 162 km$$

11. A person takes 20 minutes more to cover a certain distance by decreasing his speed by 20% . What is the time taken to cover the distance at his original speed?

- A. 1 hour 30 minutes
- B. 1 hour 15 minutes
- C. 1 hour 20 minutes
- D. 2 hours
- E. 1 hour 45 minutes

Ans: C

Explanation:

Let the distance and original speed be d km and k kmph respectively.

$$\frac{d}{0.8k} - \frac{d}{k} = \frac{20}{60} \Rightarrow \frac{5d}{4k} - \frac{d}{k} = \frac{1}{3}$$

$$\Rightarrow \frac{5d - 4d}{4k} = \frac{1}{3} \Rightarrow d = \frac{4}{3}k$$

Time taken to cover the distance at original speed.

$$= \frac{d}{k} = \frac{4}{3} \text{ hours} = 1 \text{ hour } 20 \text{ minutes.}$$

12. Kiran travels from A to B by car and returns from B to A by cycle in 7 hours. If he travels both ways by car he saves 3 hours. What is the time taken to cover both ways by cycle?

- A. 10 hours
- B. 13 hours
- C. 14 hours
- D. 12 hours
- E. None of these

Ans: A

Explanation:

Let the time taken to cover from A to B in car and cycle be x hours and y hours respectively.

$$x + y = 7 \text{ --- 1}; 2x = 4 \text{ --- 2}$$

Solving both the equations, we get $y = 5$

So, time taken to cover both ways by cycle = $2y$ hours = 10 hours.

13. A man walks at a speed of 3 km/hr and runs at a speed of 7 km/hr. How much time will the man require to cover a distance of $10\frac{1}{2}$ km, if he completes half of the distance, i.e., $(5\frac{1}{4})$ km on foot and the other half by running?

- A. $1\frac{3}{4}$ hrs
- B. $2\frac{1}{4}$ hrs
- C. 2 hrs
- D. $3\frac{1}{2}$ hrs
- E. None of these

Ans: E

Explanation:

$$\text{Required time} = \frac{(5\frac{1}{4})}{3} + \frac{(5\frac{1}{4})}{7} = 2\frac{1}{2} \text{ hours.}$$

14. Pavan travelled for 11 hours. He covered the first half of the distance at 30 kmph and remaining half of the distance at 25 kmph. Find the distance travelled by Pavan.

- A. 240 km
- B. 280 km
- C. 260 km
- D. 300 km

E. None of these.

Ans: D

Explanation:

Let the distance travelled be x km

$$\text{Total time} = \frac{\left(\frac{x}{2}\right)}{30} + \frac{\left(\frac{x}{2}\right)}{25} = 11 \Rightarrow \frac{x}{60} + \frac{x}{50} = 11 \Rightarrow \frac{5x+6x}{300} = 11 \Rightarrow x = 300\text{km}$$

15. A train covered x km at 40 kmph and another $2x$ km at 20 kmph. Find the average speed of the train in covering the entire $3x$ km.

A. 30 kmph

B. 25 kmph

C. 24 kmph

D. 28 kmph

E. None of these.

Ans: C

Explanation:

$$\text{Total time taken} = \frac{x}{40} + \frac{2x}{20} \text{ hours}$$

$$= \frac{5x}{40} = \frac{x}{8} \text{ hours}$$

$$\text{Average speed} = \frac{3x}{\left(\frac{x}{8}\right)} = 24 \text{ kmph}$$

16. Murali travelled from city A to city B at a speed of 40 kmph and from city B to city C at 60 kmph. What is the average speed of Murali from A to C given that the ratio of distances between A to B and B to C is 2 : 3?

A. 48 kmph

B. 50 kmph

C. 52 kmph

D. 56 kmph

E. None of these

Ans: B

Explanation:

Let the distances between city A to B and B to C $2x$ km and $3x$ km respectively.

Total time taken to cover from A to C

$$= \frac{2x}{40} + \frac{3x}{60} = \frac{6x+6x}{120} = \frac{12x}{120} = \frac{x}{10} \text{ Average speed} = \frac{2x+3x}{\frac{x}{10}} = 50 \text{ kmph}$$

17. A person covered one-fourth of the total distance at 26 kmph and remaining distance at 24 kmph. What is the average speed for the total distance?

A. $21\frac{2}{3}$ kmph

B. $21\frac{1}{3}$ kmph

C. $22\frac{1}{3}$ kmph

D. $22\frac{2}{3}$ kmph

E. None of these.

Ans: B

Explanation:

Let the total distance be x km

$$\text{Total time taken} = \frac{\left(\frac{x}{4}\right)}{16} + \frac{\left(\frac{3x}{4}\right)}{24} = \frac{x}{64} + \frac{x}{32} = \frac{3x}{64}$$

$$\text{Average speed} = \frac{x}{\left(\frac{3x}{64}\right)} = \frac{64}{3} \text{ kmph} = 21\left(\frac{1}{3}\right) \text{ kmph}$$

18. A man misses a bus by 40 minutes if he travels at 30 kmph. If he travels at 40 kmph, then also he misses the bus by 10 minutes. What is the minimum speed required to catch the bus on time?

A. 48 kmph

B. 45 kmph

C. 43 kmph

D. 44 kmph

E. None of these.

Ans: B

Explanation:

Let the distance to be travelled to catch the bus be x km

$$\frac{x}{30} - \frac{x}{40} = \frac{30}{60} \Rightarrow \frac{4x - 3x}{120} = \frac{1}{2} \Rightarrow x = 60 \text{ km}$$

By travelling 30 kmph time taken = $\frac{60}{30} = 2 \text{ hours}$.

By taking 2 hours, he is late by 40 min. so, he has to cover 60 km in at most speed=

$$\frac{60}{\left(\frac{4}{3}\right)} = 45 \text{ kmph}$$

19. Ramu rides his bike at an average speed of 45 km/hr and reaches his destination in four hours. Somu covers the same distance in six hours. If Ramu covered his journey at an average speed which was 9 km/hr less and Somu covered his journey at an average speed which was 10 km/hr more, then the difference in their times taken to reach the destination would be (in minutes).

- A. 36
- B. 30
- C. 40
- D. 45
- E. None of these.

Ans: B

Explanation:

Distance travelled by Ramu = $45 \times 4 = 180 \text{ km}$

Somu travelled the same distance in 6 hours.

$$\text{His speed} = \frac{180}{6} = 30 \frac{\text{km}}{\text{hr}}$$

Hence in the conditional case, Ramu's speed = $45 - 9 = 36 \text{ km/hr}$ and Somu's speed = $30 + 10 = 40 \text{ km/hr}$

Therefore travel time of Ramu and Somu would be 5 hours and 4.5 hours

Respectively.

Hence difference in the taken = 0.5 hours = 30 minutes.

20. Amar takes as much time in running 18 meters as a car takes in covering 48 meters. What will be the distance covered by Amar during the time the car covers 1.6 km?

- A. 800 m
- B. 480 m
- C. 520 m

D. 600 m

E. None of these

Ans: D

Explanation:

$$\text{Distance covered by Amar} = \frac{18}{4.8}(1.6km) = \frac{3}{8}(1600) = 600m$$

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