

Examrace

Aptitude Logical Reasoning Time and Distance 2021 Competitive Exams Part 6

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1. A person travelled a distance of 50 km in 8h. He covered a part of the distance on foot at the rate of 4 km/h and a part on a bicycle at the rate of 10 km/hr. How much distance did he travel on foot?

- A. 10 km
- B. 20 km
- C. 30 km
- D. 40 km

Ans: B

Explanation:

Let he travels by on foot be x h

Then according to the question.

$$\begin{aligned}4x + 10(8 - x) &= 50 \\ \Rightarrow 80 - 6x &= 50 \\ \Rightarrow 6x &= 30 \\ \Rightarrow X &= 5h\end{aligned}$$

Therefore, Distance travelled on the foot = $4 \times 5 = 20$ km.

2. Two cities A and B 360 km apart. A car goes from A to B with a speed of 40 km/h and returns to A with a speed of 60 km/h. What is the average speed of the car?

- A. 45 km/h
- B. 48 km/h
- C. 50 km/h
- D. 55 km/h

Ans: B

Explanation:

Distance between the cities A and B = 360 km

Therefore, Average speed =

$$\begin{aligned}
 &= \frac{(\text{Total Distance Covered})}{(\text{Total time taken})} \\
 &= \frac{360 + 360}{\frac{360}{40} + \frac{360}{60}} = \frac{720}{9 + 6} \\
 &= \frac{720}{15} = \frac{48 \text{ km}}{\text{hr}}
 \end{aligned}$$

3. In a 500m race, B starts 45 m ahead of A, But A wins the race while B is Still 35m behind. What is the ratio of the speeds of A to B Assuming that both start at the same time?

A. 25 : 21

B. 25 : 20

C. 5 : 3

D. 5 : 7

Ans: A

Explanation:

Here, Time is constant

Hence, Speed X distance

Distance covered by A = 500m

Distance covered by B = 500 – (45 + 35)

$$= 500 - (80) = 420$$

Required Ratio = 500 : 420 = 25 : 21

4. Two trains leave New Delhi at the same time. One travels towards the north at 60 km/h and the other travels towards the south at 40 km/h. After how many hours will the trains be 150 km apart?

A. $\left(\frac{3}{2}\right)$ h

B. $\left(\frac{4}{3}\right)$ h

C. $\left(\frac{3}{4}\right)$ h

D. $\left(\frac{15}{2}\right)$ h

5. Amit starts from a point A and walks to another point B and then returns from B to A by his car and thus takes a total time of 6h and 45 min, if he had driven both ways in his car, then he would have taken 2h less. How long would it take for him to walk both ways?

A. 7h 45 min

B. 8h 15 min

C. 8h 30 min

D. 8h 45 min

Ans: D

Explanation:

Let w be the time taken in one way by walking and c be the time taken in one way By car.

According to the question in first case

$$w + c = 6\text{h } 45\text{ min}$$

$$\Rightarrow 2w + 2c = 13\text{h } 30\text{ min}$$

In second case, $2c = 4\text{h } 45\text{ min}$

From equ's (i) and equ's (ii) $2w + 2c = 13\text{h } 30\text{ min}$

$$\Rightarrow 2w + 4\text{h } 45\text{ min} = 13\text{h } 30\text{ min}$$

$$\Rightarrow 2w = 13\text{h } 30\text{ min} - 4\text{h } 45\text{ min}$$

$$\Rightarrow 2w = 8\text{h } 45\text{ min}$$

Hence, if he walks both ways then time taken is 8h 45 min

6. Aryan runs at a speed of 40 m/min. Rahul follows him after an interval of 5 min and runs at a speed of 50 m/min. Rahul's dog runs at a speed of 60 m/min and starts along with Rahul. The dog reaches Aryan and then comes back to Rahul and continues to do so till Rahul reaches Aryan. What is the total distance covered by the dog?

A. 600 m

B. 750 m

C. 980 m

D. 1200 m

Ans: D

Explanation:

Let they meet at a distance of Y from start, after time t of Rahul start According to the question $40x(5 + t) = 50t$

$$\Rightarrow 200 + 40t = 50t$$

$$\Rightarrow T = \frac{200}{10} = 20 \text{ min}$$

$$\Rightarrow Y = 50 \times t = 50 \times 20 = 1000m$$

1000 m from the options it is evident that all options except 1200 m are smaller than 1000 m and dog in any case has to move more than 1000 m.

7. A student reaches his school 15 min before time by going there from his house at a speed of 5 km/h and reaches late by 9 min by going with a speed of 3 km/h. According distance between his house and school is

A. 5 km

B. 8 km

C. 3 km

D. 2 km

Ans: C

Explanation:

Let the distance between the house and the school be d.

Then according to the question $\frac{d}{3} - \frac{d}{5} = \frac{24}{60}$

$$\Rightarrow \frac{2d}{15} = \frac{24}{60}$$

$$\Rightarrow D = \frac{12}{4} = 3$$

Hence the distance between the house and the school is 3 km

8. Running at a speed of 60 km/h a train passed through a 1.5 km long tunnel in 2 min. What is the length of the train?

A. 250 m

B. 500 m

C. 1000 m

D. 1500 m

Ans: B

Explanation:

Suppose length of the train be l m

$$\text{Time} = \frac{\text{Distance}}{\text{speed}}$$

$$\Rightarrow \frac{1}{30} = \frac{l + 1500}{60000}$$

$$\text{Speed of the train} = 60 \frac{\text{km}}{\text{h}} = 60 \times 1000 = 60000 \frac{\text{m}}{\text{h}}$$

$$\text{Length of tunnel} = 1.5 \text{ km} = 1500 \text{ m}$$

$$\text{Time taken by train} = 2 \text{ min} = \left(\frac{1}{30} \right) \text{ h}$$

$$L = 500$$

Hence the length of the train = 500 m

9. A and B start from the same point and in the same direction at 7: 00 am to walk around a rectangular field $400\text{m} \times 300\text{m}$. A and B walk at the rate of 3 km/h and 2.5 km/h respectively. How many times shall they cross each other, if they continue to walk till 12 : 30 pm?

A. Not even once

B. Once

C. Twice

D. Thrice

Ans: B

Explanation:

$$\text{Total time for which A and B Travel} = 5\text{h } 30 \text{ min} = 5\frac{1}{2} \text{ h (From 7: 00 am – 12: 30 pm)}$$

$$\text{Speed of A} = 3 \text{ km/h}$$

$$\text{Therefore, Distance travelled by A in } 5\frac{1}{2} \text{ h}$$

$$= 3 \times \frac{11}{2} = 16.5 \text{ km}$$

$$\text{And the speed of } B = 2.5 \text{ km/h}$$

Therefore, Distance travelled by B in $5\frac{1}{2}h = 2.5 \times \frac{11}{2} = 13.75$ km

Therefore in $5\frac{1}{2}$ h,

The difference in distance travelled by A and B is (16.5 - 13.75 km. i.e. ... 2.75 km)

The total extra distance needs to be travelled by one in order to cross the other by at least once.

= Length of path around the field

Perimeter of the rectangle = $2(l + b) = 2(400 + 300) = 1400$ m = 1.4 km

Hence A may cross more than once they may need at least $1.4 \times 2 = 2.8$ km

the difference between themselves but the difference is 2.75 km, they can only once cross each other.

10. Two cars X and Y start from two places A and B respectively, which are 700 km apart at 9: 00 am. Both the cars run at an average speed of 60 km/h. Car X stops at 10: 00 am and again starts at 11: 00 am while the other car Y continues to run without stopping. When do the two cars cross each other?

A. 2: 40 pm

B. 3: 20 pm

C. 4: 10 pm

D. 4: 20 pm

Ans: B

Explanation:

Since the speed of X and Y are 60 km/h each and the distance between A and B is 700 km.

Distance travelled by x up to 11: 00 am is 60 km.

Since x stops at 10: 00 am and distance travelled by Y up to 11: 00 am is 120 km.

Now distance between them = $700 - 180 = 520$ km.

Let they will meet at a distance of x km from X's position.

Distance travelled by x = x km

Distance travelled by Y = $(520 - x)$ km

Therefore, $\frac{x}{60} = 520 - \frac{x}{60}$

$$\Rightarrow 2x = 520$$

$$\Rightarrow X = 260$$

$$\Rightarrow T = \frac{260}{60} = 4\frac{1}{3}$$

Thus, they will cross each other after $4\frac{1}{3}$ h after 11: 00 am i.e. at 3: 20 pm.

11. A train is moving at a speed of 180 km/hr. It's speed is

- A. 5 m/sec
- B. 30 m/sec
- C. 40 m/sec
- D. 50 m/sec

Ans: D

Explanation:

$$180 \text{ km/hr} = \frac{(180 \times \frac{5}{18}) \text{ m}}{\text{sec}} = 50 \text{ sec}$$

12. An athlete runs 200 meters race in 24 seconds. His speed is

- A. 20 km/hr
- B. 24 km/hr
- C. 28.5 km/hr
- D. 30 km/hr

Ans: D

Explanation:

$$\begin{aligned} \text{Speed} &= \frac{200 \text{ m}}{24 \text{ sec}} \\ &= \frac{(\frac{200}{24} \times \frac{18}{5}) \text{ km}}{\text{hr}} = \frac{30 \text{ km}}{\text{hr}} \end{aligned}$$

13. A man riding his bicycle covers 150 meters in 25 seconds. What is his speed in km per hour?

- A. 20 km/hr
- B. 21.6 km/hr
- C. 21.6 km/hr
- D. 25 km/hr

Ans: C

Explanation:

$$\begin{aligned} \text{Speed} &= \frac{150}{25} \text{ m/sec} = \left(\frac{150}{25} \times \frac{18}{5} \right) \text{ km/hr} \\ &= \frac{108}{5} \text{ km/hr} = 21.6 \text{ km/hr} \end{aligned}$$

14. A man completes 30 km of a journey at 6 km/hr and the remaining 40 km of the journey in 5 hours. His average speed for the whole journey is

A. $6\frac{4}{11}$ km/hr

B. 7 km/hr

C. $7\frac{1}{2}$ km/hr

D. 8 km/hr

Ans: B

Explanation:

$$\text{Total distance} = (30 + 40) \text{ km} = 70 \text{ km}$$

$$\text{Total time taken} = \left(\frac{30}{6} + 5 \right) \text{ hrs} = 10 \text{ hrs}$$

$$\text{Average speed} = \frac{70}{10} \text{ km/hr} = 7 \text{ km/hr}$$

15. A man covers half of his journey at 6 km/hr and the remaining half at 3 km/hr. His average speed is

A. 3 km/hr

B. 4 km/hr

C. 4.5 km/hr

D. 9 km/hr

Ans: B

Explanation:

$$\begin{aligned} &= \frac{\frac{2_{xy}}{x+y} \text{ km}}{\text{hr}} \\ &= \frac{2 \times 6 \times 3}{6 + 3} \text{ km/hr} \end{aligned}$$

Average speed = 4 km/hr

16. The speeds of A and B are in the ratio 3 : 4 . A takes 20 minutes more than B to reach a destination. In what time does A reach the destination?

A. $1\frac{1}{3}$ Hours

B. 2 hours

C. $1\frac{2}{3}$ Hours

D. $2\frac{2}{3}$ Hours

Ans: A

Explanation:

Let the time taken by A be x hours

$$\text{The time taken by B} = \left(x - \frac{20}{60}\right) \text{ hrs} = \left(x - \frac{1}{3}\right) \text{ hrs}$$

Ratio of speeds = Inverse ratio of time taken

$$\text{Therefore } 3 : 4 = \left(x - \frac{1}{3}\right) : x$$

$$\Rightarrow \frac{3x - 1}{3x} = \frac{3}{4}$$

$$\Rightarrow 12x - 4 = 9x$$

$$\Rightarrow 3x = 4$$

$$\Rightarrow X = \frac{4}{3} \text{ hrs.}$$

$$X = 1\frac{1}{3} \text{ hours.}$$

$$\text{Required time} = 1\frac{1}{3} \text{ hrs}$$

17. A is twice as fast as B and B is thrice as fast as C. The journey covered by C in 42 minutes will be covered by A in

A. 7 Minutes

B. 14 Minutes

C. 28 Minutes

D. 63 Minutes

Ans: A

Explanation:

Let C is speed be the x meters/min

Then B is speed = $3x$ metres/min and A's speed = $6x$ metres/min

The ratio of a speed of A and C = Ratio of times taken by C and A.

$$6x : x = 42 : y \text{ min}$$

$$\frac{6x}{x} = \frac{42}{y}$$

$$\Rightarrow y = \frac{42}{6} \text{ min}$$

= 7 minutes

18. The ratio between the speed of two trains is $7 : 8$. If the second train runs 400 km in 5 hours. The speed of the first train is

- A. 70 km/hr
- B. 200 km/hr
- C. 250 km/hr
- D. 350 km/hr

Ans: A

Explanation:

Let the speed of the first train be $7x$ km/hr

Then the speed of the second train is $8x$ km/hr

$$\text{But speed of the second train} = \frac{400}{5} \text{ km/hr} = 80 \text{ km/hr}$$

$$\Rightarrow 8x = 80$$

$$\Rightarrow x = 10$$

Hence the speed of first train is $(7 \times 10) \text{ km/hr} = 70 \text{ km/hr}$

19. Two trains approach each other at 30 km/hr and 27 km/hr from two places 342 km apart after how many hours will they meet

- A. 5 Hours
- B. 6 Hours
- C. 7 Hours

D. 12 Hours

Ans: B

Explanation:

Suppose the two trains meet after x hours, then

$$\Rightarrow 30x + 27x = 342$$

$$\Rightarrow 57x = 342$$

$$\Rightarrow X = 6$$

So, the two trains will meet after 6 hours

20. A student walks from his house at $2\frac{1}{2}$ km/hr and reaches his school late by 6 Minutes.

Next day, he increases his speed by 1 km/hr a reaches 6 minutes before school time. How far is the school from his house?

A. $\left(\frac{5}{4}\right)$ km

B. $\left(\frac{7}{4}\right)$ km

C. $\left(\frac{9}{4}\right)$ km

D. $\left(\frac{11}{4}\right)$ km

Ans: B

Explanation:

Let the required distance be x km, then

$$\Rightarrow \frac{x}{\frac{5}{2}} - \frac{x}{\frac{7}{2}} = \frac{12}{60}$$

$$\Rightarrow \frac{2x}{5} - \frac{2x}{7} = \frac{1}{5}$$

$$\Rightarrow 14x - 10x = 7$$

$$\Rightarrow 4x = 7$$

$$\Rightarrow X = \frac{7}{4} \text{ km}$$

$$\text{Required distance} = \frac{7}{4} \text{ km}$$

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