



Date : 4th Dec 2023

Quantitative Aptitude – Time Speed and Distance

English

**Q:1** Train 'A' and Train 'B' take 24 seconds to cross each other while running in opposite directions. Train 'A' is 60 metres longer than train 'B'. If the speed of train 'A' is 6 m/s and that of train 'B' is 9 m/s, then find the length of the longer train.

1. 190 metres
2. 270 metres
3. 210 metres
4. 360 metres
5. 450 metres

**Q:2** The speed of the two trains is in the ratio 9:10. When they are moving in opposite directions along the parallel tracks. If one train with greater speed takes 7 seconds and the other takes 4 seconds to cross a person then find the time taken by the train to cross each other completely.

1. 5.90 seconds
2. 6 seconds
3. 4.90 seconds
4. 5.25 seconds
5. 5.58 seconds

**Q:3** Sunil begins his journey from Kanpur to Mumbai and at the same time Sheela starts from Mumbai to Kanpur. After passing each other they complete their journeys in 4 and 16 hours respectively. What was the speed of Sheela if Sunil's speed was 8 km/hr?

1. 10 km/hr
2. 9 km/hr
3. 7 km/hr
4. 4 km/hr
5. 6 km/hr

**Q:4** Akhil begins his journey from Gurgaon to Shimla and at the same time Bobby starts from Shimla to Gurgaon. After passing each other they complete their journeys in 4 and 25 hours respectively. What was the speed of Bobby if Akhil's speed was 20 km/hr?

1. 10 km/hr
2. 8 km/hr
3. 6 km/hr
4. 12 km/hr
5. 5.22 km/hr

**Q:5** A child covers a certain distance with his

mother by bus with a speed of 30 km/hr in 40 mins. If he wants to cover the same distance in 20 mins, what should be his speed?

1. 100 km/hr
2. 125 km/hr
3. 115 km/hr
4. 210 km/hr
5. 135 km/hr

**Q:6** A bus covers a certain distance with a speed of 60 km/hr in 15 mins. If he wants to cover the same distance in 20 mins, what should be his speed?

1. 42 km/hr
2. 15 km/hr
3. 45 km/hr
4. 40 km/hr
5. 25 km/hr

**Q:7** A car met with an accident so its speed became  $\frac{6}{7}$  of his usual speed and it became late by 5 mins. Find the usual time taken by it to cover that distance.

1. 30 mins
2. 25 mins
3. 35 mins
4. 10 mins
5. 20 mins

**Q:8** Two dogs start walking towards each other from point A and point B. After crossing each other, 1st dog reached point B after 9 hours and 2nd dog reached point A after 16 hours. If the speed of the 1st dog is 36 km/hours, find the speed of the 2nd dog.

1. 22 km/hour
2. 57 km/hour
3. 47 km/hour
4. 17 km/hour
5. 27 km/hour

**Q:9** Two cars A and B are going in the same direction. Initially, car A is 725 m ahead of car B but its speed is 5 km/h less than car B. Find the time taken by car B to catch car A.

1. 10 minutes
2. 6 minutes
3. 7.3 minutes



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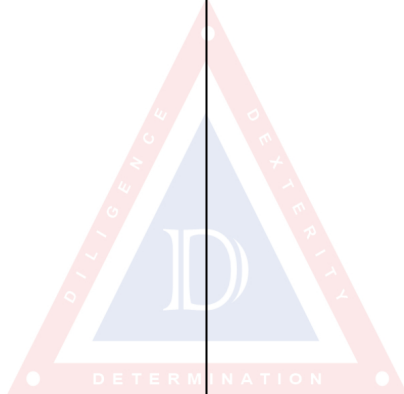
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- 4. 8.7 minutes
- 5. None of these

**Q:10** A 100 m train crosses a man traveling at 2 m/s in the opposite direction of the train in 20 seconds. In what time will the same train cross the 260 m long bridge?

- 1. 1 minute 30 second
- 2. 2 minute 10 second
- 3. 2 minute
- 4. 2 minute 12 second
- 5. 1 minute 40 second





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Answer Key

1. (3)	2. (5)	3. (4)	4. (2)	5. (5)
6. (3)	7. (1)	8. (5)	9. (4)	10. (3)

Answers and Solutions

**Q:1** The correct answer is **option 3 i.e. 210 metres**

Let the length of train 'A' be 'x' metres

So, length of train 'B' = 'x - 60' metres

Relative speed of train 'A' and train 'B' w.r.t. each other =  $9 + 6 = 15$  m/s (Since, the trains are running in opposite direction to each other)

ATQ;

$$(x - 60 + x) \div 15 = 24$$

$$\text{Or, } 2x - 60 = 15 \times 24$$

$$\text{Or, } 2x = 360 + 60$$

$$\text{So, } x = (420) = 210$$

So, length of the longer train i.e. train 'A' = 210 metres

**Q:2** The correct answer is **Option 5 i.e. 5.58 seconds.**

When the speed of two trains is in the ratio x:y.

They are moving in opposite directions on parallel tracks. The first train crosses a man in 't<sub>1</sub>' seconds whereas the second train crosses the man in 't<sub>2</sub>' seconds. Time taken by the trains to cross each other completely is given by -

$$\text{Time taken} = (t_1 \times x + t_2 \times y) / (x + y) \text{ seconds}$$

$$\text{Here, } x = 9 \text{ and } y = 10. t_1 = 4 \text{ and } t_2 = 7$$

$$\text{Thus, the time taken} = (4 \times 9 + 7 \times 10) / (9 + 10) \text{ seconds}$$

$$\Rightarrow (36 + 70) / 19 = 106 / 19 = 5.58 \text{ seconds}$$

**Q:3** The correct answer is **Option 4 i.e. 4 km/hr.**

$$\text{Sunil's speed / Sheela's speed} = (\text{Time taken by Sheela after passing Sunil})^{1/2} / (\text{Time taken by Sunil after passing Sheela})^{1/2}$$

$$= 8/x = 4/2$$

$$= x = 4 \text{ km/hr.}$$

**Q:4** The correct answer is **Option 2 i.e. 8 km/hr.**

$$\text{Akhil's speed / Bobby's speed} = (\text{Time taken by Bobby after passing Akhil})^{1/2} / (\text{Time taken by Akhil after passing Bobby})^{1/2}$$

$$= 20/x = 5/2$$

$$= x = 8 \text{ km/hr.}$$

**Q:5** The correct answer is **Option 5 i.e. 135 km/hr.**

We know that, Distance = Speed × Time

$$= 30 \times 40/60 = 45 \text{ km.}$$

Also if distance is constant, then speed is inversely proportional to the time.

$$\text{Speed to cover 15 km in 20 mins} = 45 / (40/60) = 135 \text{ km/hr.}$$

**Q:6** The correct answer is **Option 3 i.e. 45 km/hr.**

We know that, Distance = Speed × Time

$$= 60 \times 15/60 = 15 \text{ km.}$$

Also if distance is constant, then speed is inversely proportional to the time.

$$\text{Speed to cover 15 km in 20 mins} = 15 / (20/60) = 45 \text{ km/hr.}$$

**Q:7** The correct answer is **Option 1 i.e. 30 mins.**

If a person changes his speed to m/n of its usual speed and becomes late by T minutes, then the usual time taken by him is  $T / (n/m - 1)$

$$\text{Therefore the usual time} = T / (n/m - 1) = 5 / (7/6 - 1) = 30 \text{ mins.}$$

**Q:8** The correct answer is **option 5 i.e. 27 km/hour**

**Given :**

After crossing each other:

Time taken by first dog to reach point B = 9 hours

Time taken by second dog to reach point A = 16 hours

$$\text{Speed of first dog} = S_1 = 36 \text{ km/hour}$$

**Formula used :**

$$\text{Speed of first dog / Speed of second dog} = \sqrt{(\text{time taken by second dog / time taken by first dog})} \text{ --- (1)}$$

**Calculations :**

Let the speed of second dog be S<sub>2</sub>

Using equation (1), we get

$$\Rightarrow S_1 / S_2 = \sqrt{(T_2 / T_1)}$$

$$\Rightarrow 36 / S_2 = \sqrt{(16 / 9)}$$

$$\Rightarrow 36 / S_2 = 4 / 3$$

$$\Rightarrow S_2 = 9 \times 3 = 27 \text{ km/hour}$$



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**Q:9** The correct answer is **Option 4** i.e. **8.7 minutes**.

The distance between both the cars =  $d = 725 \text{ m}$   
 $= 0.725 \text{ km}$

Let the speed of car B be  $x \text{ km/hr}$ , then the speed of car A will be  $(x - 5) \text{ km/hr}$

Relative speed of car A and car B will be  $= x - x + 5 = 5 \text{ km/hr}$

Required time  $= 0.725/5 = 0.145 \text{ hr}$

$\Rightarrow 0.145 \times 60 = 8.7 \text{ minutes}$

**Q:10** The correct answer is **option 3** i.e. **2 minutes**.

Let the speed of train be  $x \text{ m/s}$

Now, if the man is running in opposite direction of train with speed  $2 \text{ m/s}$ , the relative speed will be:

$\Rightarrow (2 + x) \text{ m/s}$

It takes 20 seconds for 100 m train to cross the man.

Hence,

$\Rightarrow 20 = 100/(2 + x)$

$\Rightarrow 20x = 60$

speed of train  $= x = 3 \text{ m/s}$

Now, the length of bridge  $= 260 \text{ m}$

Total time required to cross the bridge:

$\Rightarrow (260 + 100)/3$

$\Rightarrow 360/3$

$\Rightarrow 120 \text{ seconds or } 2 \text{ minutes.}$

