Class - 07 Speed distance and Time solved question paper 2018-19

1. Q. A train pass a pole in 15 second and a platform 100 m long in 25 second. Find the speed of train and length of train?

Solution: Let the speed of train = x m/s

Distance travel by train to cross pole = Length of train , time = 15 sec

=> 15x = Length of train

Distance travel by train to cross platform = Length of train + Length of platform

= Length of train + 100,time = 25 sec

25x = 15 x + 100 => 25x – 15x = 100 => 10x = 100 => x = 100/10 = 10m/s

Length of train = 15x =15 x 10 = 150m

Do yourself: A train passes an electric pole in 10 seconds and a 130 m long platform in 20 seconds. How should I calculate the length of the train?

Q.2. A train 50 metres long passes a platform 100 metres long in 10 seconds. The speed of the train

Solution: Distance travel by train to cross platform = Length of train + Length of platform = 50 + 100 = 150m,,time = 10 sec

Speed = d/t = 150/10= 15m/s

Q.3. A train moves with a speed of 108 km/h. Find Its speed in metres per second?

Solution: Speed = 108 x (1000m/3600sec) = 30m/s

Q.4. In what time will a train 100 metres long cross an electric pole, if its speed be 144 km/hr?

Solution: Speed = 144 x (1000m/3600sec) = 40m/s

Distance travel by train to cross pole = Length of train = 100m

Time =distance / time = 100/40 = 2.5sec

Q.5. A train covers a distance of 12 km in 10 minutes. If it takes 6 seconds to pass a telegraph post, Find the length of the train ?

Solution: Time = 10min = 10 x 60 = 600sec , distance = 12km = 12000m

Speed of train = 12000m/600sec = 20m/s

Length of train = Distance travel by train to cross a telegraph post = speed x time = 20 x 6 = 120m

Q.6. A train 110 metres long is running with a speed of 60 km/h. In what time will it pass a man who is running at 6 km/h in the direction opposite to that in which the train is going?

Solution: Speed of train relative to man = (60 + 6) km/hr = 66 km/hr = 66 x (5/18) m/s = 55/3m/s

Time taken to pass the man = Distance/speed = 110 m/ (55/3)m/s = (110x3)/55 = 6 sec

Q.7.Two trains 200 m and 150 m long are running on parallel rails at the rate of 40 km/h and 45 km/h respectively. In how much time will they cross each other, if they are running in the same direction?

Solution: Relative speed of trains = (45 - 40) km/h = 5 km/h = 5 x(5/18)m/s = 25/18m/s

Total distance covered = Sum of lengths of trains = 200 + 150 = 350 m.

Time taken = distance /speed = 350 /(25/18) = (350 x 18) /5 = 252 sec = 4 min 12sec

8. A train passes 500m long bridge in 26 sec and another 360m bridge in 21 sec. If train is running at uniform speed. Find the speed of train and length of train?

Solution: we know that: Distance travel by train to cross bridge = Length of train + Length of bridge

So, Distance travel by train to cross bridge in 26 sec = Length of train + 500

Distance travel by train to cross bridge in 21 sec = Length of train + 350

Distance travel by train in 26 – 21 sec = 5ec = 150m

Speed of train = 150/5 = 30m/s= 30 x 18/5 = 108km/h

Now, Distance travel by train to cross bridge in 26 sec = Length of train + 500

30 x 26 = Length of train + 500

780 m = Length of train + 500

Length of train = 780- 500 = 380m

9. In a 1200 km journey, a man's driving speed is 60km/h for las 1/4th of the journey. If he completed his journey in 17 hours. Find his driving speed for first 3/4th of the journey?

Solution: Time taken to complete 1/4th of journey = (1200x1/4)/60 = 5hrs

Distance covered in 3/4th of journey = (1200x3/4) = 900km and Time = 17hrs – 5 hrs = 12 hrs

Speed = distance/Time 900/12 = 75km/h

10. Mukesh average driving speed of 4hrs journey was 60km/h . During the first 3hrs of journey, he drove at 55km/h. What was his actual speed for the last hour?

Solution: Distance covered in 4hr at 60km/h = 4 x 60 = 240km

Distance covered in first 3hr at 55km/h = 3 x 55 = 165km

Distance covered in last 1hr = 240 – 165 = 75km

So, his actual speed for the last hour = 75km/h

11. David's average driving speed of 5hrs journey was 55km/h . During the first 2hrs of journey, he drove at 60km/h and last 2 hrs he drove at 50km/h. What was his actual speed for the 5th hour of his journey?

Solution: Distance covered in 5hr at 60km/h = 5 x 55 = 275km

Distance covered in first 2hr at 60km/h = 2 x 60 = 120km

Distance covered in last 2hr = 2 x 50 = 100km, So, his actual speed for the last hour = 75km/h

12.	**A car leaves Delhi for Lucknow travelling an average speed of 40 km/h. Two hours later, a truck leaves the same place in Delhi for Lucknow at 60 km/h. How long will it take the truck to overtake the car?**						
	Let x be the time the truck takes to overtake the car.						
car	0 Hours	1	2	3	4	5	6
	0km	40	80	120	160	200	240
Truck	0 Hours	0	0	1	2	3	4
	0km	0	0	60	120	180	240
	The time taken by the truck to overtake Ii car is 4 hours.						

Method 2: Let x be the time the truck takes to overtake the car.

Distance travel by truck in x hrs = distance travel by car in (x + 2) hrs

=> 60 x = 40(x +2) => 60x = 40x + 80 => 20x =80 then x = 80/20 = 4 hrs

13. The speed of a boat in still water is 9 km/h and the speed of a stream is 2 km/h. Find the time taken by the boat to go:(a) 14 km upstream (b) 11 km downstream

Solution: a) The speed of the boat in upstream = (9 — 2) km/h = 7 km/h km

Time taken by the boat to go 14 km upstream = 14/7 = 2 h

So, the time taken by the boat to go 14 km upstream is 2 hours.

b) The speed of the boat downstream = (9 + 2) km/h = 11 km/h .

Time taken by the boat in downstream to go 11km = 11/11 hours = 1 hour

So, the time taken by the boat to go 11 km downstream is 1 hour.

Practice questions:Class - 07 Speed distance and Time

1. 3. The average monthly income of 6 members in a family is Rs.17000. The average monthly income of 4 of them is Rs.15250. If the monthly income of 5th person is Rs. 27000, find the monthly income of the 6th person.

Ans: 14000

2. Two trains of lengths 300 m and 250 m are moving. Each train has a speed of 85 km/h and moving in the opposite direction. How long will it take them to pass each other?

Ans: 12sec. aprox

3. Two bikers are 50 km apart. They start at the same time and drive towards each other. One biker travels at 55 km/h and another at 65 km/h. After how long will they meet?

Ans: 25min

4. The average weight of a person in a group is 60 kg. If the total weight of persons of the group is 720 kg, find the number of persons in the group.

Ans:

5. A car covers first 100 km of his journey at 50 km/h, next 50 km at 40 km/h and last 75 km in 1h15min. Find the average speed of the whole journey.

Ans: 12

6. A boy leaves his home at 8:45 a.m. and walks to school 1.25 km away. He arrives at school at 9:20 a.m. What is his average speed?

Ans: 2.14km/h

7. A train passes through a tunnel 600 m long. A guard observed that it remains in the tunnel for a minute. If the train is 250 m long, calculate the speed of the train.

Ans: 14.17m/s

8. A jogger runs at the speed of 8 km/h and takes rest for half an hour at the end of every 3 km. How long will it take the jogger to cover 12 km?

Ans: 3hrs

9. The distance between two cities is 600 km. A train leaves from one city for another at the speed of 80 km/h and another train leaves the other city for the city at the speed of 70 km/h. If both trains start simultaneously at 6 a.m., when and where will both the trains meet?

Ans: 10am,320km from first train

10. A train 250 m long passes a pole in 10 seconds and a bridge in 25 seconds. Find the length of the bridge.

Ans: 375m

11. The speed of a boat in still water is 8 km/h. If the boat covers a distance of 15.5 km downstream in 1hr 30min, find the speed of the current.

Ans: 2/3km/h

12. Riya leaves her house to go to her friend's house. She walks at 4 km/h. At the same time, her friend Siya leaves her house for Riya's house and walks at 3 km/h. If they live 21 km apart, how long will it take to meet Riya and Siya on the way?

Ans: 3hrs

13. Ajay's driving speed for a 6 hour trip was 65 km/h. During his journey, for first 4 hours, he drove 60 km/h. What was his speed for the last 2 hours of the trip?

Ans: 75 km/h