

Tender Heart High School, Sec-33B, Chandigarh

Class :→ VI

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Subject: - Mathematics

Teacher: - Ms. Sushma

Chapter - 11Speed, Time and Distance

The distance covered by a moving body in a unit of time is called its speed.

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

$$\text{Distance} = \text{Speed} \times \text{Time}$$

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

To convert a speed of km/hr into m/sec, multiply by $\frac{5}{18}$.

To convert a speed of m/sec into km/hr, multiply by $\frac{18}{5}$.

Exercise 11A

- Q1. A bus travels a distance of 186 km in 2 hours 35 minutes. What is the speed of the bus in km/hr?

Soln:→ Distance travelled by a bus = 186 km
Time taken = 2 hours 35 minutes
1 min = 60 sec

$$= \left(2 + \frac{35}{60} \right) \text{ hours}$$

$$= \frac{120 + 35}{60} = \frac{155}{60} = \frac{31}{12} \text{ hours}$$

Now, speed of the bus = $\frac{\text{Distance}}{\text{Time}}$

$$= 186 \div \frac{31}{12}$$

$$= 186 \times \frac{12}{31}$$

$$= 6 \times 12 = 72 \text{ km/h}$$

Q2. A train covers 35 km in 25 minutes. What is the speed of the train in km/hr?

Soln: Distance covered by a train = 35 km
Time taken = 25 min = $\frac{25}{60} = \frac{5}{12}$ hours

Speed of the train = $\frac{\text{Distance}}{\text{Time}}$

$$= 35 \div \frac{5}{12} = 35 \times \frac{12}{5}$$

$$= 7 \times 12 = 84 \text{ km/hr}$$

Q3. A man walks 8 km in 1 hour 20 minutes. What is the speed of the train in km/hr?

Soln:→

Distance covered by a man = 8 km

Time taken = 1 hr 20 min

$$= 1 + \frac{20}{60} = 1 + \frac{1}{3}$$

$$= \frac{3+1}{3} = \frac{4}{3} \text{ hr}$$

$$\text{Speed} = \frac{D}{T} = 8 \div \frac{4}{3} = 8 \times \frac{3}{4}$$

$$= 2 \times 3 = 6 \text{ km/hr}$$

Q4. A man cycles at 12 km per hour. How much distance does he cover in 35 minutes?

Soln:→

Speed = 12 km/h

$$\text{Time} = 35 \text{ min} = \frac{35}{60} \text{ hr} = \frac{7}{12} \text{ hr}$$

Distance = Speed x Time

$$= 12 \times \frac{7}{12} = 7 \text{ km}$$

Q5. Sajjal is going on his scooter at a speed of 24 km/hr. How much time will he take to cover 1 km 600 m?

Soln:- Speed of a scooter = 24 km/hr
 $= 24 \times \frac{5}{18}$
 $= \frac{48 \times 5}{63} = \frac{20}{3} \text{ m/sec}$

Distance covered = $1 \text{ km } 600 \text{ m}$
 $= 1 \times 1000 + 600$
 $= 1000 + 600 = 1600 \text{ m}$

Time = $\frac{D}{S} = \frac{1600 \div \frac{20}{3}}{\frac{20}{3}}$
 $= 1600 \times \frac{3}{20}$
 $= 240 \text{ sec} = \frac{240}{60} = 4 \text{ min.}$

Q8. Convert each of the following speeds into m/sec.

(i) 36 km/hr

$= 36 \times \frac{5}{18} = 2 \times 5 = 10 \text{ m/sec}$

(ii) 81 km/hr

$= 81 \times \frac{5}{18} = \frac{45}{2} = 22 \frac{1}{2} \text{ m/sec}$

Q9. Convert each of the following speeds into km/hr:

(i) $25 \text{ m/sec} = 25 \times \frac{18}{5} = 5 \times 18 = 90 \text{ km/hr}$

(ii) $7.5 \text{ m/sec} = \frac{15}{2} \times \frac{18}{5} = \frac{3 \times 5 \times 18}{10} = 27 \text{ km/hr}$

Q10. A train covers 120m in 5 seconds. What is the speed of the train in km/hr?

Soln:- Distance covered by a train = 120m
Time taken = 5 sec.
Speed = $\frac{D}{T} = \frac{120}{5} = 24$
 $= 24 \text{ m/sec}$

$$= 24 \times \frac{18}{5}$$

$$= \frac{432}{5}$$

$$= 86\frac{2}{5} \text{ km/hr}$$

Q11. A bus is moving at a speed of 84 km/hr. How much distance will it cover in 1min 45sec?

Soln:- Speed of a bus = 84 km/hr $= \frac{84 \times 5}{18} \text{ m/sec}$
 $= \frac{70}{3} \text{ m/sec}$

Time taken = 1min 45sec

$$= 1 \times 60 + 45 = 60 + 45 = 105 \text{ sec}$$

$$\text{Distance} = S \times T = \frac{70}{3} \times \frac{35}{1} = 70 \times 35$$

$$= 2450 \text{ m}$$

$$= 2 \text{ km } 450 \text{ m.}$$

Q12. Preeti is going on her moped at a speed of 24 km/hr. How much time will she take to cover 720 meters?

Soln:- Speed = $24 \text{ km/hr} = \frac{24 \times 5}{18 \times 3} = \frac{20}{3} \text{ m/sec}$

Distance = 720 m

$$\begin{aligned} \text{Time} &= \frac{D}{S} = 720 \div \frac{20}{3} \\ &= 720 \times \frac{3}{20} = \frac{72 \times 3}{2} \\ &= 36 \times 3 = 108 \text{ sec} \\ &= 108 \div 60 = 1 \text{ min } 48 \text{ sec} \end{aligned}$$

Ans.

Q13 A car, running at 45 km/hr , takes 6 hours to complete a journey. At what speed must it travel to complete the journey in 5 hours?

Soln:- Speed of a car = 45 km/hr
 Time = 6 hours
 Distance = $S \times T = 45 \times 6$
 $= 270 \text{ km}$

Now

Time = 5 hours
 Speed = $\frac{D}{T} = \frac{270}{5} = 54 \text{ km/hr}$

Q14 A car covers a certain distance in 40 minutes, if it runs at 54 km/hr . How much time will it take to cover the same distance at a speed 45 km/hr ?

Soln:- Speed = 54 km/hr
 Time = $40 \text{ min} = \frac{40}{60} = \frac{2}{3} \text{ hr}$

$$\text{Distance} = S \times T = 18 \times \frac{2}{3} \\ = 18 \times 2 = 36 \text{ km}$$

Now, Speed = 45 km/hr

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{36}{45} = \frac{12}{15}$$

$$= \frac{4}{5} \text{ hr}$$

$$= \frac{4}{5} \times 60$$

$$= 4 \times 12 = 48 \text{ minutes Ans.}$$