

Jender Heart High School, Sec.-33B chd.

Class: VII

Teacher: ^{Ms.} Deepika

Subject: Mathematics

Topic: Chapter -12: Speed, Distance and Time



Speed is the distance covered by a moving object per unit time

Formulas based on Speed:

- 1) $\text{Speed} = \frac{\text{Distance}}{\text{Time}}$
- 2) $\text{Distance} = \text{Speed} \times \text{Time}$
- 3) $\text{Time} = \frac{\text{Distance}}{\text{Speed}}$ or $\frac{\text{Distance}}{\text{Speed}}$

Unit of Speed is km/hr or m/sec. or m/min.

Conversion

$$\left\{ \begin{array}{l} 1 \text{ Km} = 1000 \text{ m} \text{ or } 100000 \text{ cm} \\ 1 \text{ hour} = 60 \text{ min. or } 3600 \text{ Sec.} \\ 1 \text{ Km/hr.} = \frac{5}{18} \text{ m/sec.} \\ 1 \text{ m/Sec.} = \frac{18}{5} \text{ Km/hr.} \end{array} \right\}$$

Points to remember :

1. In crossing a still object $\rightarrow$ train has to cover a distance equal to the length of the train.
2. In crossing a platform $\rightarrow$ train has to cover a distance equal to the sum of lengths of the train and the platform
3. Uniform speed: If equal distances in equal interval of time. (Same speed)
4. Variable speed or Non-uniform speed: Unequal distances in equal interval (different speed)

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let us start with

Exercise - 12A

questions

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

(iii) 315 km/hr.
 $= \frac{315 \times 5}{18} \text{ m/sec}$
 $= \frac{175}{2} \text{ m/sec} = 87 \frac{1}{2} \text{ m/sec}$

Soln 4. Distance = 14 Km. , Time = 8 min. , Speed = ?
 $= \frac{8}{60} \text{ hour} = \frac{2}{15} \text{ hr.}$

$$\text{Speed} = \frac{D}{T} = \frac{14}{\frac{2}{15}} = \frac{14 \times 15}{2}$$

$= 105 \text{ km/hr.}$ Ans.

Soln 9. Speed₁ = 36 km/hr.
 $= \frac{36 \times 5}{18} \text{ m/sec.}$
 $= 10 \text{ m/sec.}$

Speed₂ = 10.5 m/sec.

So, 36 km/hr. is more.

Soln 12 Time taken, with speed 45 km/hr = 50 min.
 $= \frac{50}{60} \text{ hour}$

Time Taken, with speed 1 km/hr = $\frac{50}{45} \times 45$
 $= 75 \text{ hr.}$

Time taken, with speed 30 km/hr = $\frac{75}{30} = \frac{5}{2} = 2 \frac{1}{2} \text{ hr.}$

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$$= \frac{5}{4} \text{ hours} = \frac{5}{4} \times 60 \text{ min.}$$

$$= 75 \text{ min.} \quad \text{Ans}$$

Soln 16. length of train = 150m
Speed = 60 km/hr. = 60000m/hr.

$$\text{Time} = \frac{D}{\text{Speed}} = \frac{150}{\frac{60000}{4000}} \text{ hr.}$$

$$= \frac{1}{4000} \times 3600 \text{ Sec.}$$

$$= 9 \text{ Sec.} \quad \text{Ans}$$

Soln 20. distance = 760m + 440m = 1200m
Time = 40 Sec.

$$\text{Speed} = \frac{D}{T} = \frac{1200}{40} = 30 \text{ m/Sec.}$$

$$= 30 \times \frac{18}{5} \text{ km/hr}$$

$$= 108 \text{ km/hr} \quad \text{Ans}$$

