

Exercise 14.1

A) Express the following in m/s.

1) 90 km/h

Sol- 1 km = 1000 m

1 hour = 3600 seconds

$$\text{So, } \frac{90 \times 1000}{1 \times 3600} = 25 \text{ m/s}$$

2) 36 km/h

Sol- 1 km = 1000 m

1 hour = 3600 seconds

$$\text{So, } \frac{36 \times 1000}{1 \times 3600} = 10 \text{ m/s}$$

3) 180 km/h

Sol- 1 km = 1000 m

1 hour = 3600 seconds

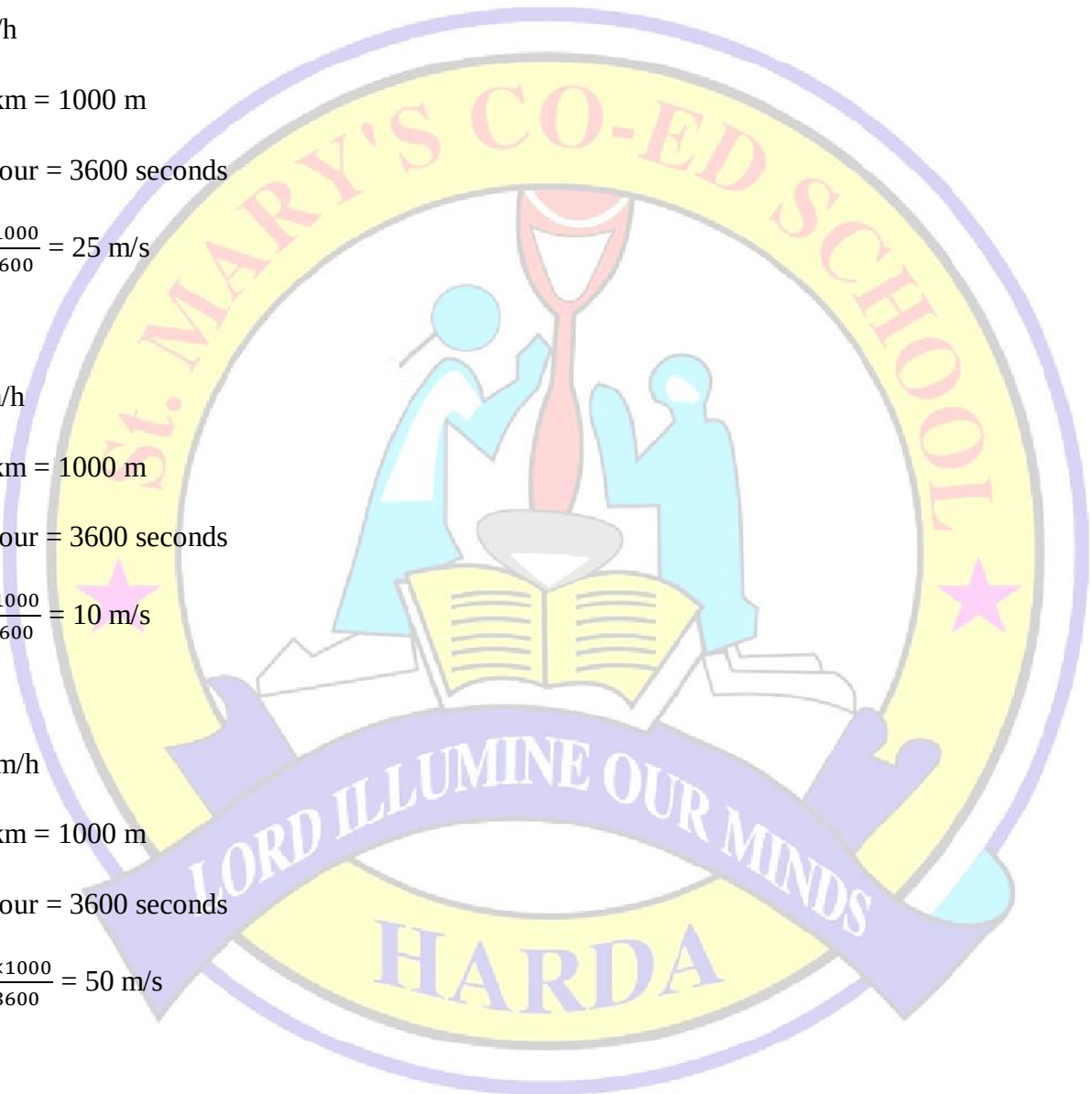
$$\text{So, } \frac{180 \times 1000}{1 \times 3600} = 50 \text{ m/s}$$

4) 72 km/h

Sol- 1 km = 1000 m

1 hour = 3600 seconds

$$\text{So, } \frac{72 \times 1000}{1 \times 3600} = 20 \text{ m/s}$$



B) Express the following in km/h.

1) 25 m/s

Sol- $1 \text{ m} = \frac{1}{1000} \text{ km}$

$$1 \text{ second} = \frac{1}{3600} \text{ hour}$$

So, $\frac{25 \times \frac{1}{1000} \text{ km}}{1 \times \frac{1}{3600} \text{ hour}} = \frac{25 \times 3600 \text{ km}}{1000 \text{ h}} = 90 \text{ km/h}$

2) 120 m/s

Sol- $1 \text{ m} = \frac{1}{1000} \text{ km}$

$$1 \text{ second} = \frac{1}{3600} \text{ hour}$$

So, $\frac{120 \times \frac{1}{1000} \text{ km}}{1 \times \frac{1}{3600} \text{ hour}} = \frac{120 \times 3600 \text{ km}}{1000 \text{ h}} = 432 \text{ km/h}$

3) 55 m/s

Sol- $1 \text{ m} = \frac{1}{1000} \text{ km}$

$$1 \text{ second} = \frac{1}{3600} \text{ hour}$$

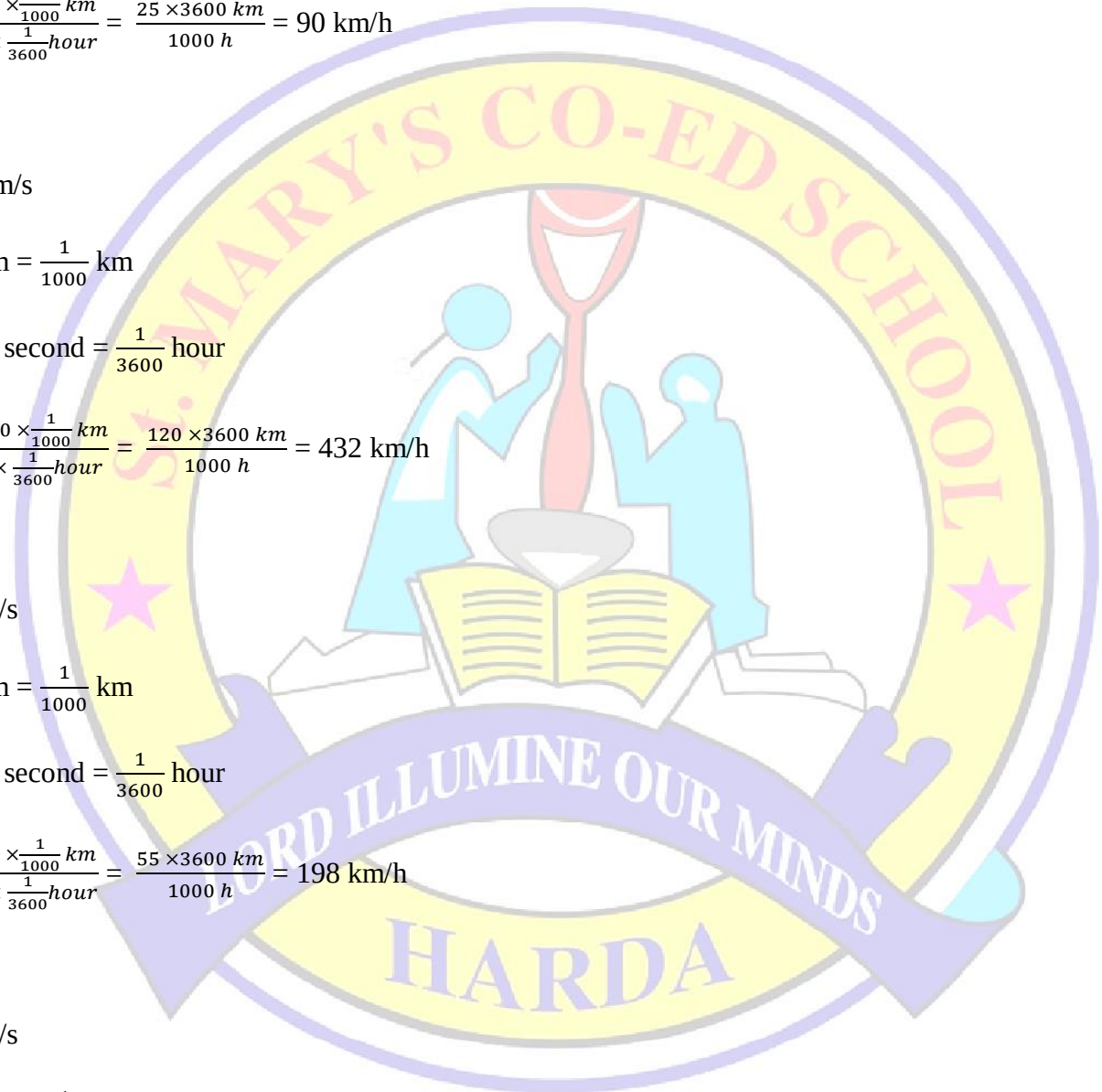
So, $\frac{55 \times \frac{1}{1000} \text{ km}}{1 \times \frac{1}{3600} \text{ hour}} = \frac{55 \times 3600 \text{ km}}{1000 \text{ h}} = 198 \text{ km/h}$

4) 80 m/s

Sol- $1 \text{ m} = \frac{1}{1000} \text{ km}$

$$1 \text{ second} = \frac{1}{3600} \text{ hour}$$

So, $\frac{80 \times \frac{1}{1000} \text{ km}}{1 \times \frac{1}{3600} \text{ hour}} = \frac{80 \times 3600 \text{ km}}{1000 \text{ h}} = 288 \text{ km/h}$



Exercise 14.2

A) Find the speed, if :

1) Distance = 75 km

Time = 1 hour

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{75 \text{ km}}{1 \text{ hr}} = 75 \text{ km /h}$$

2) Distance = 32 km

Time = 4 hours

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{32 \text{ km}}{4 \text{ hr}} = 8 \text{ km /h}$$

3) Distance = 18 m

Time = 9 seconds

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{18 \text{ m}}{9 \text{ sec}} = 2 \text{ m /s}$$

4) Distance = 374 m

Time = 34 seconds

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{374 \text{ m}}{34 \text{ sec}} = 11 \text{ m /s}$$

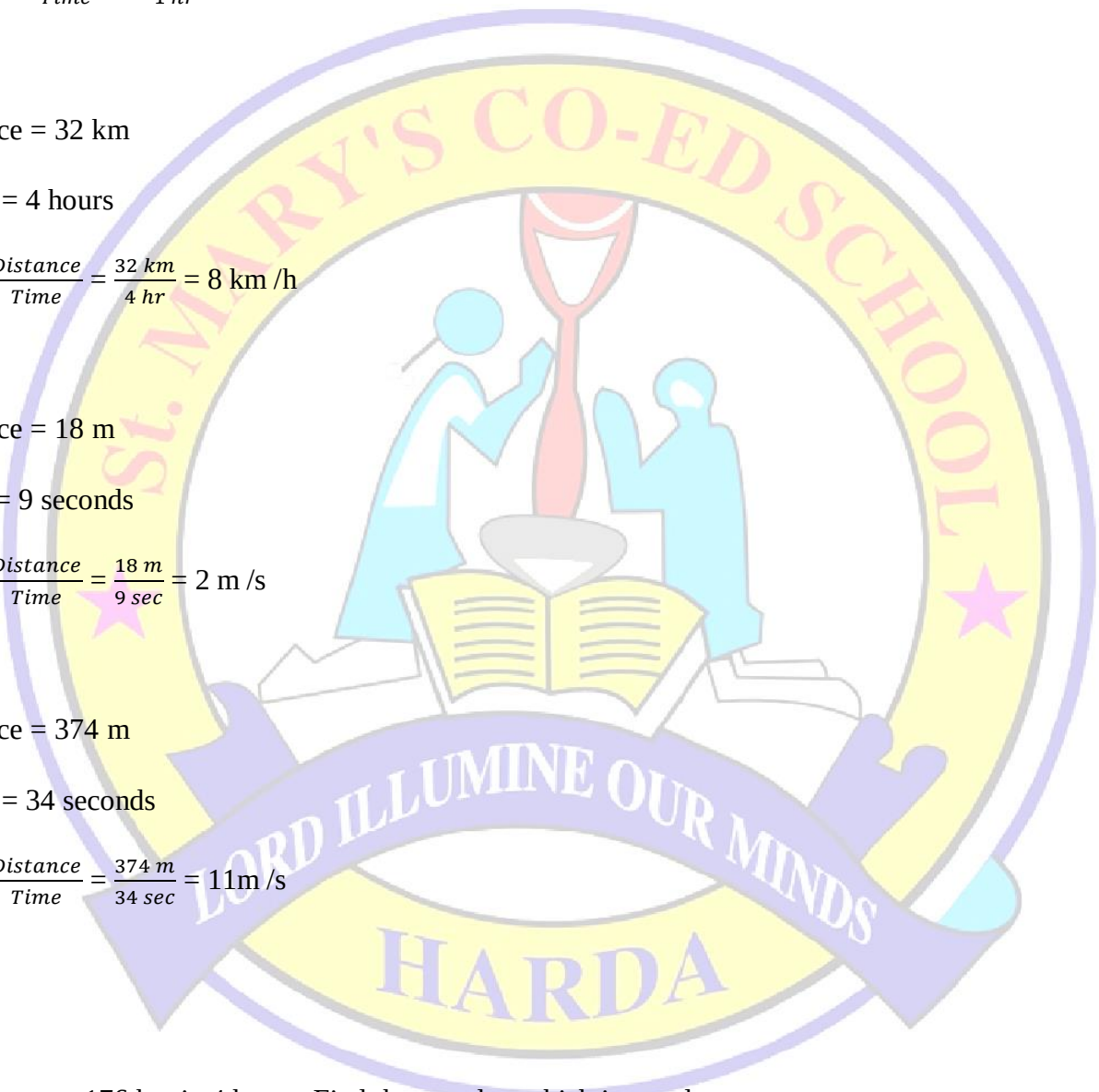
B) Solve

1) A car covers 176 km in 4 hours. Find the speed at which it travels.

Sol- Distance = 176 km

Time = 4 hours

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{176 \text{ km}}{4 \text{ hr}} = 44 \text{ km /h}$$



2) An athlete covers a distance of 300 m in 25 seconds. What is the speed at which he runs?

Sol- Distance = 300 m

Time = 25 second

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{300 \text{ m}}{25 \text{ s}} = 12 \text{ m/s}$$

3) Ramlal has to travel 24 km on his motorbike to reach his office. If he takes 2 hours to reach his office, find the speed at which he travels.

Sol- Distance = 24 km

Time = 2 hours

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{24 \text{ km}}{2 \text{ hr}} = 12 \text{ km/h}$$

Exercise 14.3

A) Find the distance in each case.

1) Speed: 35 km/h

Time: 1 hour

$$\begin{aligned} \text{Distance} &= \text{Speed} \times \text{Time} \\ &= 35 \times 1 = 35 \text{ km} \end{aligned}$$

2) Speed: 16 km/h

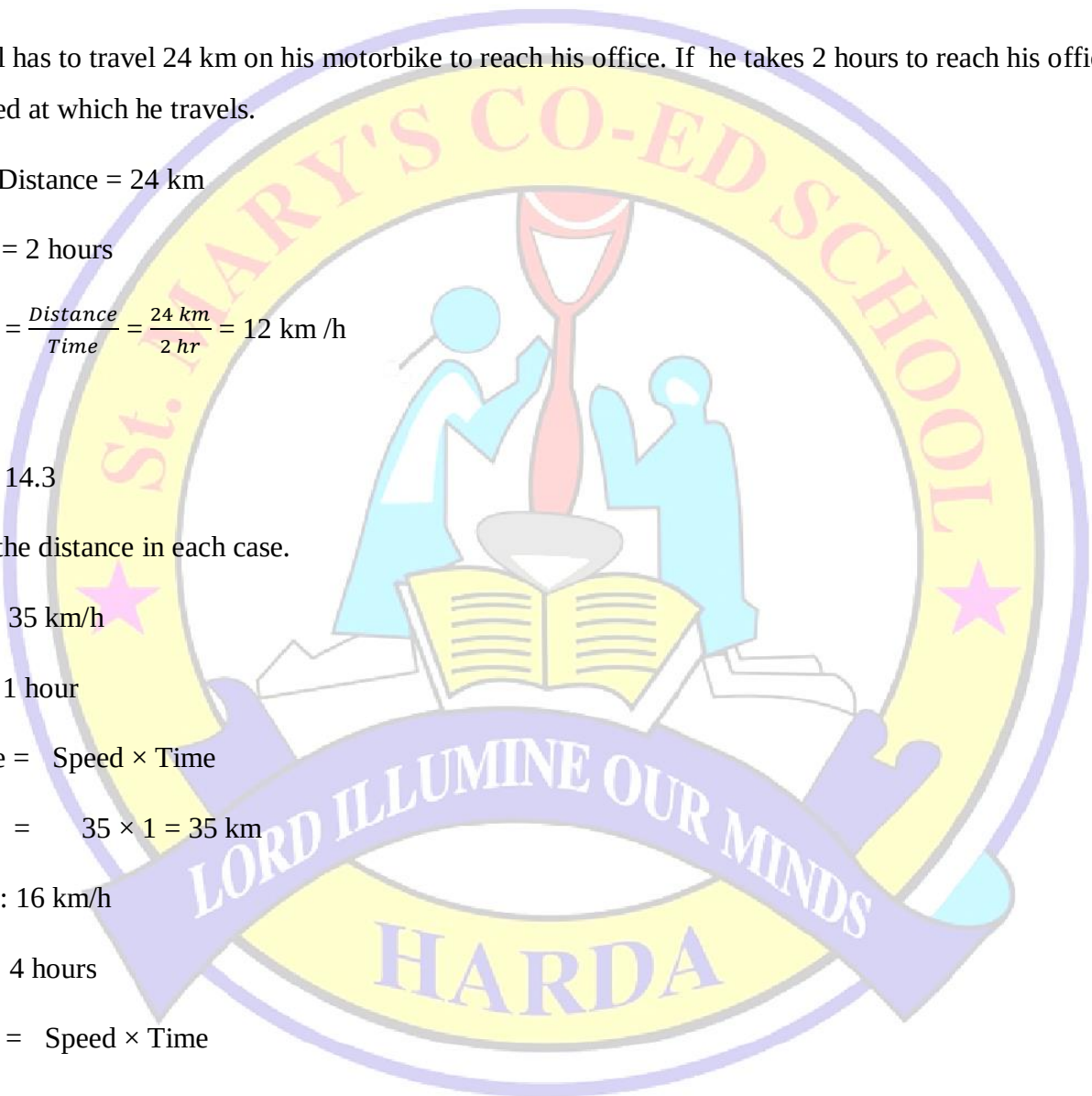
Time: 4 hours

$$\begin{aligned} \text{Distance} &= \text{Speed} \times \text{Time} \\ &= 16 \times 4 = 64 \text{ km} \end{aligned}$$

3) Speed: 24 m/s

Time: 30 seconds

$$\begin{aligned} \text{Distance} &= \text{Speed} \times \text{Time} \\ &= 24 \times 30 = 720 \text{ m} \end{aligned}$$



4) Speed: 120 k m/h

Time: 2 hours

Distance = Speed $\times$ Time

$$= 120 \times 2 = 240 \text{ m}$$

B) Find the time in each case.

1) Distance: 400 km

Speed: 100 km/h

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{400 \text{ km}}{100 \text{ hr}} = 4 \text{ km /h}$$

2) Distance: 740 km

Speed: 74 km/h

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{740 \text{ km}}{74 \text{ hr}} = 10 \text{ km /h}$$

3) Distance: 900 m

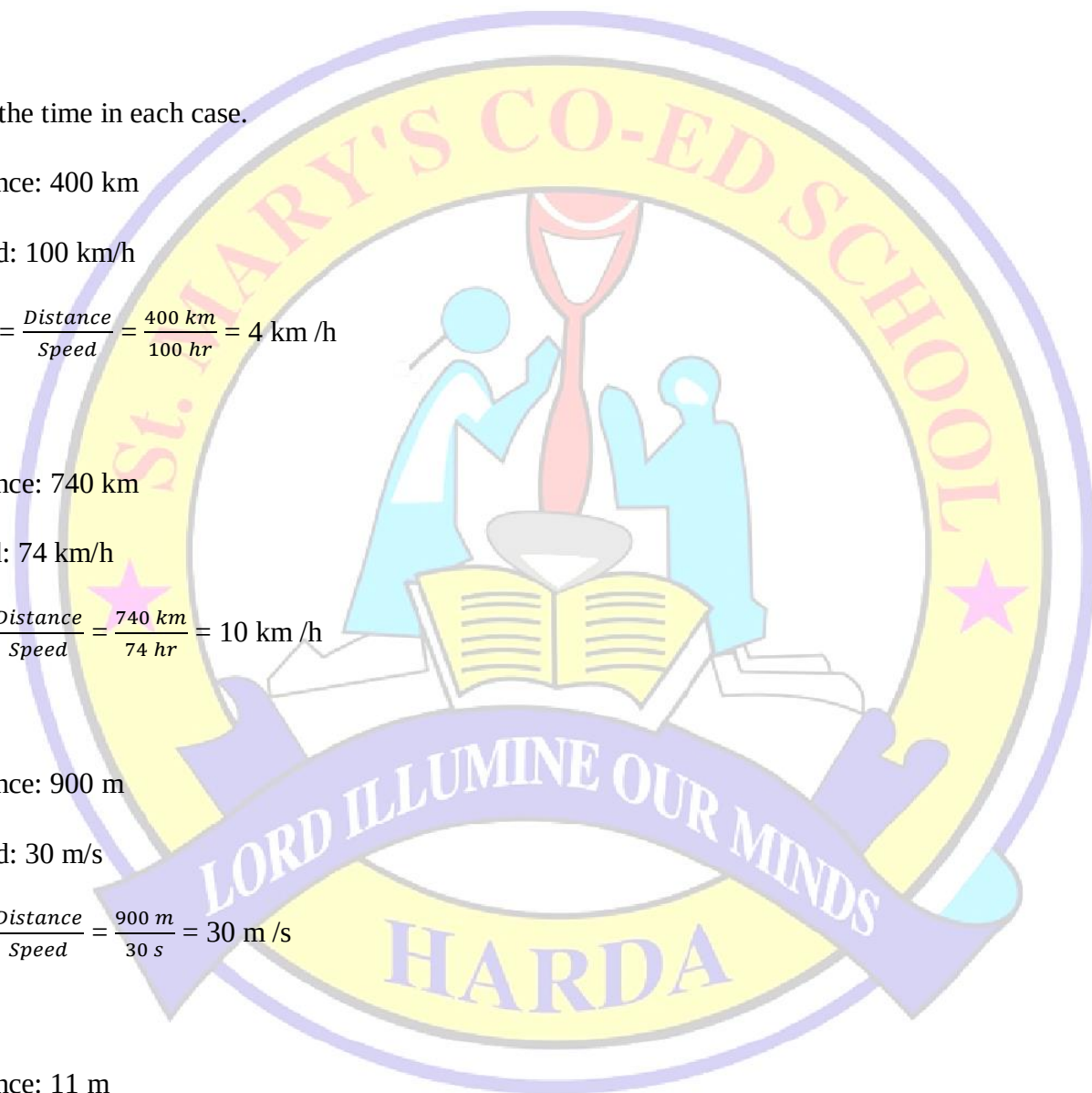
Speed: 30 m/s

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{900 \text{ m}}{30 \text{ s}} = 30 \text{ m /s}$$

4) Distance: 11 m

Speed: 11 m/s

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{11 \text{ m}}{11 \text{ s}} = 1 \text{ m /s}$$



C) Solve

1) If an antelope runs for 40 seconds at the speed of 4 m/s, how much distance will it cover in that time?

Sol- Speed: 4 m/s

Time: 40 seconds

Distance = Speed $\times$ Time

$$= 4 \times 40 = 160 \text{ m}$$

2) If Nancy runs at a speed of 2 m/s, how much distance will she cover in 15 minutes?

Sol- Speed: 2 m/s

Time: 15 m = 900 seconds

Distance = Speed $\times$ Time

$$= 2 \times 900 = 1800 \text{ m}$$

3) If an aeroplane is flying at a speed of 1500 km/h, how much time will it take to cover 3000 km?

Sol- Speed: 1500 k m/h

Distance : 3000 km

$$\text{Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{3000 \text{ km}}{1500 \text{ hr}} = 2 \text{ hrs}$$

