

① Ramish = 3 km in 30 minutes.

$$30 \text{ min} = 0.5 \text{ hr}$$

$$\therefore \text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{3}{0.5} = 6 \text{ km/hr}$$

② A Car covers 60 km in 2 hrs.

$$\text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{60}{2} = 30 \text{ km/hr}$$

③ A train travels at 50 km/hr.

$$\text{Distance} = \text{Speed} \times \text{Time} = 50 \times 3 = 150 \text{ km}$$

④ A Cyclist covers 20 km in 1 hr 30 min.

$$1 \text{ hr } 30 \text{ min} = 1.5 \text{ hrs}$$

$$\text{Speed} = \frac{20}{1.5} = 13.3 \text{ km/hr}$$

$$\text{⑤ } \text{Speed} = \frac{\text{Distance}}{\text{Time}} = \frac{10}{1} = 10 \text{ km/hr}$$

$$\begin{aligned} \text{⑥ } \text{Upstream speed} &= \text{Boat speed} - \text{Stream speed} \\ &= 15 - 5 \\ &= 10 \text{ km/hr} \end{aligned}$$

$$\text{⑦ } \text{Speed} = \frac{4}{2} = 2 \text{ km/hr}$$

$$\text{⑧ } \text{Downs peed} = \frac{24}{2} = 12 \text{ km/hr}$$

$$\text{Stream speed} = 12 - 10 = 2 \text{ km/hr}$$

$$\text{⑨ } \text{Speed} = \frac{300}{5} = 60 \text{ km/hr}$$

$$(10) \text{ Speed} = \frac{60}{3} = 20 \text{ km/hr}$$

$$(11) \text{ Time} = \frac{\text{Distance}}{\text{Speed}} = \frac{240}{60} = 4 \text{ hrs}$$

$$(12) \text{ Upstream speed} = \frac{30}{3} = 10 \text{ km/hr}$$

$$\text{Downstream speed} = \frac{80}{2} = 15 \text{ km/hr}$$

$$\text{Boat speed} = \frac{10 + 15}{2} = 12.5 \text{ km/hr}$$

$$\text{Stream speed} = \frac{15 - 10}{2} = 2.5 \text{ km/hr}$$

$$(13) \text{ SS} = 20 \text{ km/hr}, \text{ Stream} = 5 \text{ km/hr}$$

$$\text{Upstream} = 20 - 5 = 15 \text{ km/hr}$$

$$\text{downstream} = 20 + 5 = 25 \text{ km/hr}$$

$$(14) T = 120 \text{ m}, T = 9 \text{ sec}$$

$$S = \frac{D}{T} = \frac{120}{9} = 13.3 \text{ m/s}$$

$$\text{km/hr} = 13.3 \times \frac{18}{5} = 48 \text{ km/hr}$$

$$(15) 2T = 10 \text{ sec}$$

$$\text{Total distance} = 120 + 140 = 260 \text{ m}$$

$$\text{Speed} = \frac{260}{10} = 26 \text{ m/s}$$

$$54 \text{ km/hr} = 54 \times \frac{5}{18} = 15 \text{ m/s}$$

$$26 - 15 = 11 \text{ m/s} \rightarrow x = 11 \times \frac{18}{5} = 39.6 \text{ km/hr}$$

$$(16) \text{ Upstream speed} = \frac{20}{4} = 5 \text{ Km/hr}$$

$$\text{Downstream speed} = \frac{20}{3} = 6.67 \text{ Km/hr}$$

$$\text{Boat speed} = \frac{5 + 6.67}{2} = 5.83 \text{ Km/hr}$$

$$\text{Stream speed} = \frac{6.67 - 5}{2} = 0.83 \text{ Km/hr}$$

$$(17) \text{ } S = 5 \text{ Km/hr}, \text{ Stream} = 2 \text{ Km/hr.}$$

$$\text{Downstream speed} = 5 + 2 = 7 \text{ Km/hr}$$

$$\text{Time} = \frac{10}{7} = 1.43 \text{ hrs}$$

$$(18) \text{ Total distance} = 120 \text{ Km.}$$

$$\text{Total time} = 1.5 + 1 = 2.5 \text{ hrs}$$

$$\text{Avg speed} = \frac{120}{2.5} = 48 \text{ Km/hr}$$

$$(19) \text{ } DS = \frac{48}{3} = 16 \text{ Km/hr}, \text{ UPS} = \frac{48}{4} = 12 \text{ Km/hr}$$

$$\text{Boat} = \frac{16 + 12}{2} = 14 \text{ Km/hr.}$$

$$\text{Stream} = \frac{16 - 12}{2} = 2 \text{ Km/hr}$$

$$(20) \text{ Total distance} = 300 \text{ m} = 0.3 \text{ Km}$$

$$\text{Time} = 0.3 \div 60 \times 60 = 18 \text{ sec}$$

$$(21) \text{ boat} = x \left( \frac{30}{x+2} \right) + \frac{20}{x-2} = 5$$

$$\text{Boat speed} = 10 \text{ Km/hr}$$



(22)

$$\text{Total length} = 400 \text{ m}, \quad S = 100 \text{ km/hr} = 27.78 \text{ m/s}$$

$$\text{Time} = \frac{400}{27.78} = 14.4 \text{ sec}$$

(23)

$$\text{Swim } 20 \text{ km}, \quad U.S = 2 \text{ hr.}$$

$$\text{Stream} = 2 \text{ km/hr}$$

(24)

$$\text{Train length} = 20 \times 12 = 240 \text{ m}$$

$$\text{platform} = 20 \times 6 = 120 \text{ m}$$

(25)

$$\text{Boat} = 20 \text{ km/hr}$$

$$\left( \frac{40}{20-x} \right) - \left( \frac{40}{20+x} \right) = 1 \quad \text{---}$$

$$\text{Stream} = 2 \text{ km/hr}$$