

A blurred train moving through a city at sunset, with streetlights and a skyline in the background.

Train & Speed

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Previous Year Question

- A train, 150 m long, takes 30 seconds to cross a bridge 500 m long. How much time will the train take to cross a platform 370m long? **[RC-2023]**

✓ A train 240 m long passed a pole in 24 seconds. How long will it take to pass a platform 650 m long?

[BDBL (SO) -2017], [BB (AD)-2018], [Combined (SO)-2023 (2020 Based)], [Pubali Bank (JO)-2023]

- The ratio of the speeds of a train and a man is 6:1. The length of the train is 650 m and crosses a pole in 1 minute 5 seconds. In how much time will the man cross the 240m long 2 platform? **[Combined (Off-Cash)-2023 (2020 Based)]**
- A train 800 meters long is running at a speed of 78 km/hr. If it crosses a tunnel in 1 minute, then the length of the tunnel (in metres) is- **[BB (Cash) 2016]**
- A train crossed a platform in 45 seconds travelling with a speed of 36 km/h. If the length of train is 200 meters, then what will be the length (in meters) of the platform? **[Combined (SO)-2023 (2021 Based)]**
- Two trains of equal length, running in opposite direction, pass a pole in 18 and 12 seconds. The train will cross each other in- **[Combined (Cass)-2019]**
- A train takes 10 seconds to cross a pole and 20 seconds to cross a platform of length 200m. What is the length of the train? **[BB-(AD)-2021]**



100m

✓

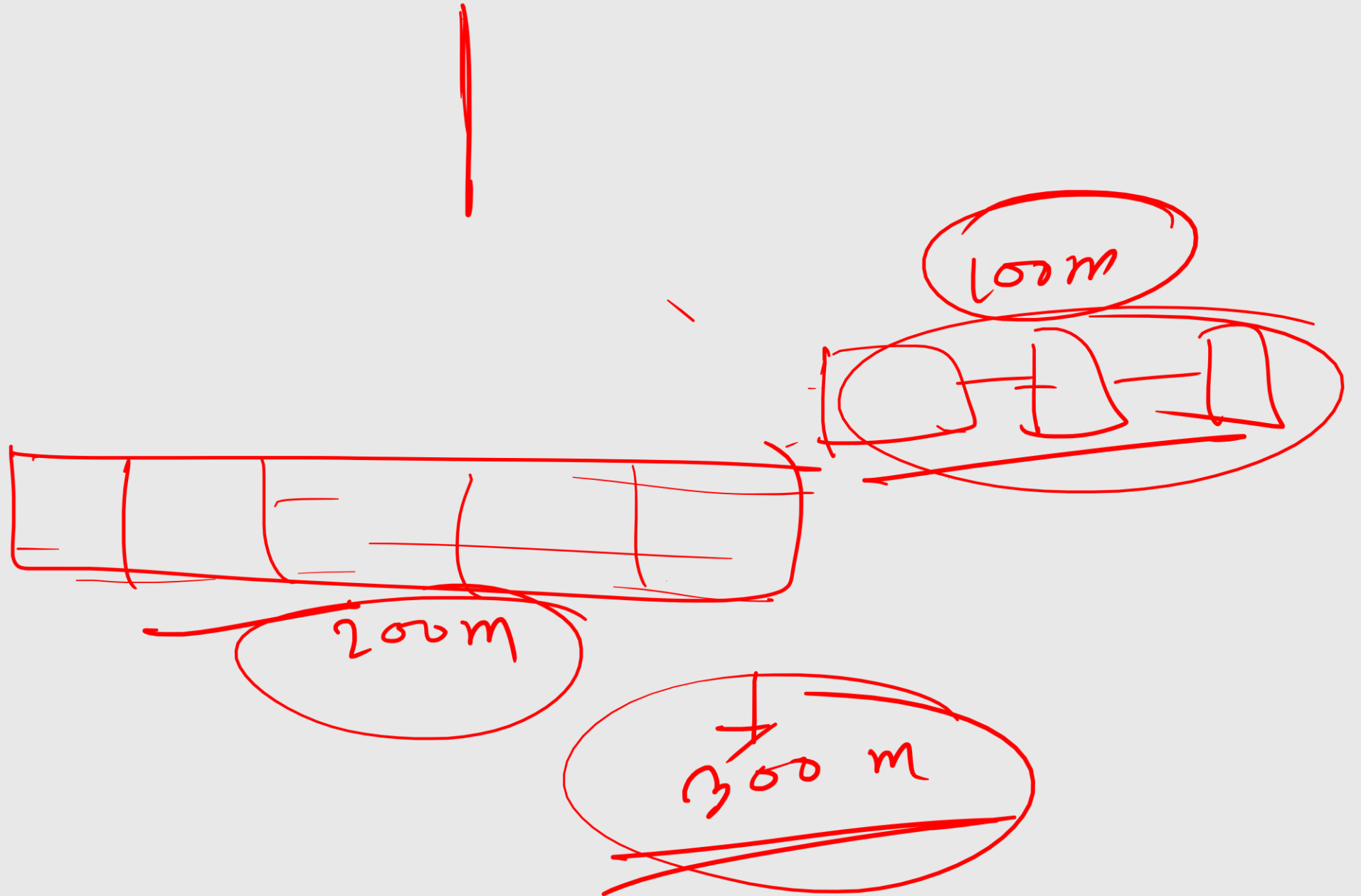
101 x 200 = 300m

Toront Bridge

100m



150m



Dipa

60s



300m

1s



$$\frac{300}{60} = 5 \text{ m}$$

$$\text{Speed} = 5 \text{ m/s} = \frac{300}{60} = \frac{\text{Distance}}{\text{Time}}$$

✓

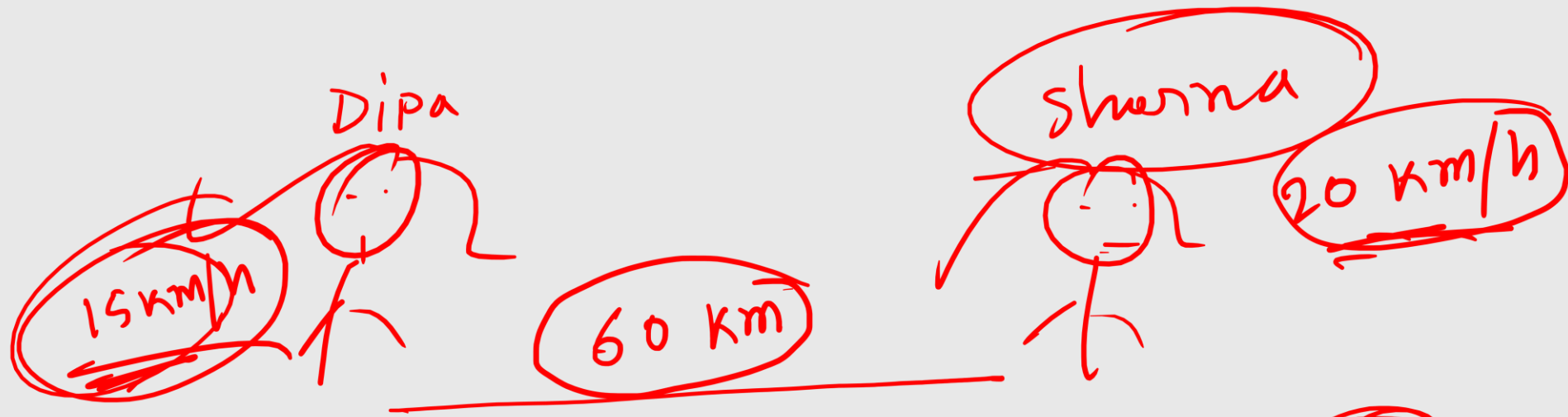
$$\text{Speed} = \frac{\text{Distance}}{\text{Time}}$$

✓

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

✓

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



$$\text{Time} = \frac{60}{15} = 4 \text{ h}$$

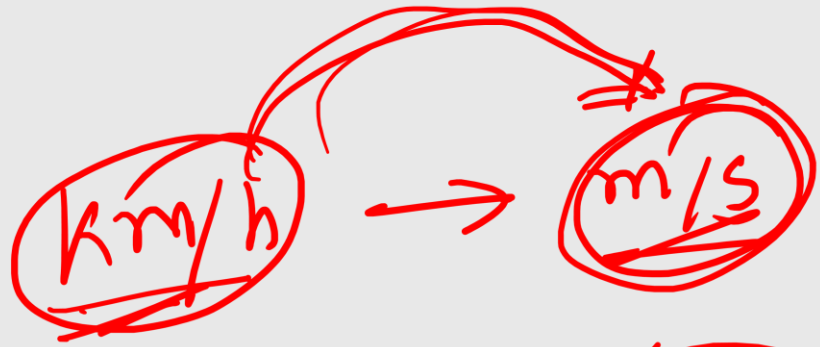
$$\frac{60}{20} = 3 \text{ h}$$

$$\text{Speed} = 15 : 20 = 3 : 4$$

$$\underline{\underline{\text{Time} = 4 : 3}}$$

$$\cancel{20 \text{ km/h}} = \frac{20 \times \cancel{1000}}{\cancel{3600} / 18} = 20 \times \frac{5}{18} \text{ m/s}$$

$$\cancel{\left(20 \times \frac{5}{18}\right) \text{ m/s}} = \left(20 \times \frac{5}{18}\right) \div \frac{5}{18} \text{ km/h}$$
$$= \left(20 \times \frac{5}{18}\right) \times \frac{18}{5}$$



$$\frac{5}{18}$$



$$\frac{18}{5}$$

Type-01

Time Related

Q1: Find the time taken by a train 120m long, running at 54 km/hr, in crossing an electric pole?

Distance = 120 m

Speed \rightarrow 54 km/h = $\frac{5}{4} \times \frac{5}{18} = 15$ m/s

Time = $\frac{\text{Distance}}{\text{speed}} = \frac{120}{15} = 8$ s

Q2: A Train 220m long is moving at 45 km/hr. The time taken by the train to cross a tunnel 260m long is- [NSI (AD)-21]

$$\text{Total distance} = 220 + 260 = \underline{480 \text{ m}}$$

$$\begin{aligned} \text{Speed} &= 45 \text{ km/h} = \frac{5}{18} \times \frac{5}{2} = \frac{25}{2} \text{ m/s} \end{aligned}$$

$$\text{Time} = \frac{480}{\frac{25}{2}} = \frac{480 \times 2}{25} = \underline{38.4 \text{ s}}$$

Q3: A train 240m long passed a pole in 24 seconds. How long will it take to pass a platform 650m long? [BDBL (SO)-17, BB (AD)-18, Comb (SO)-23, Pubali bank (JO)23]

$$\text{Total Distance} = \underline{240} + \underline{650} = \underline{890\text{m}}$$

$$\text{Speed} = \frac{240}{24} = \underline{10\text{ m/s}}$$

$$\checkmark \text{Time} = \frac{890}{10} = 89\text{ s}$$

$$\text{Time} = \frac{\text{Dist}}{\text{S}}$$

$$24\text{ s} \text{ --- } 240$$

$$89\text{ s} \text{ --- } \frac{240}{24}$$

$$\underline{10\text{m}}$$

A train 240m long passed a pole in 24 seconds.

speed = ?

$$\frac{240}{24} = 10 \text{ m/s}$$

Q4: A train, 150m long, takes 30 seconds to cross a bridge 500m long, How much time will the train take to cross a platform 370m long? [RC-23]

Distance $\rightarrow 150 + 370 = 520 \text{ m}$

$$T = \frac{D}{S}$$

30s $\rightarrow 500 + 150 = 650 \text{ m}$

Speed = $\frac{650}{30} = \frac{65}{3} \text{ m/s}$

$T = \frac{520}{65/3} = 520 \times \frac{3}{65} = 24 \text{ s}$

Q4: A train, 150m long, takes 30 seconds to cross a bridge 500m long, How much time will the train take to cross a platform 370m long? [RC-23]

$500 + 150 = 650 \text{ m}$ passed in 30s
1 m $= \frac{30}{650} \text{ s}$

$150 + 370 = 520 \text{ m}$
 $= \frac{30 \times 520}{650}$

$= 24 \text{ s}$

Q5: The ratio of the speeds of a train and a man is 6 : 1. The length of the train is 650m and cross a pole in 1 minute 5 seconds. In how much time will the man cross the 240m long platform? [Comb (Cash)-18]

Speed of the train = $\frac{650}{65} = 10 \text{ m/s}$

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

\therefore speed of the man = $\frac{10}{6} = \frac{5}{3} \text{ m/s}$

12	2
18	3

\therefore Time = $\frac{240}{\frac{5}{3}} = \frac{48}{5} \times \frac{3}{1} = 144 \text{ s}$

Train

man

6 m/s

→ 1 m/s

4 m/s

$\frac{1}{6}$ m/s

10 m/s



Type-02

$$s = vt$$

Length/Distance Related

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

Q6: A train running at the speed of 60 km/hr crosses a pole in 9 seconds. What is the length of the train? [Exim Bank -13]

The length of the train = $60 \times \frac{5}{18} \times 9$

$$= 150 \text{ m}$$

Q7: A Train 800m long is running at a speed of 78 km/hr. If it crosses a tunnel in 1 minute, then the length of the tunnel is- [BB (Cash)-16]

$$\underline{\text{Speed}} = 78 \text{ km/h} = 78 \times \frac{5}{18} \text{ m/s}$$

$$\underline{\text{Time}} = 1 \text{ minute} = \underline{\underline{60 \text{ s}}}$$

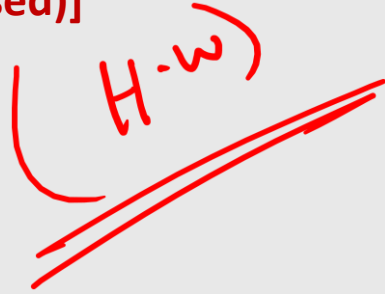
$$\underline{\text{Distance}} = 78 \times \frac{5}{18} \times 60 = \underline{\underline{1300 \text{ m}}}$$

$$\text{Tunnel} + 800 = 1300 \text{ m}$$

$$\text{tunnel} = 1300 - 800 = \underline{\underline{500 \text{ m}}}$$

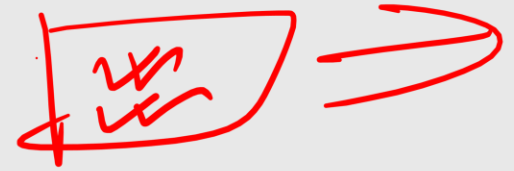
Q8: A train crossed a platform in 45 seconds travelling with a speed of 36 km/hr. If the length of the train is 200m, then what will be the length of the platform? [Comb (SO) – 23 (2021 Based)]

(H.w)





$$5 - 5 = 0 \text{ km/h}$$



Type-03

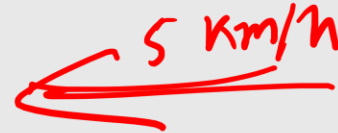


Two Train Related



$$10 \text{ km/h}$$

(Opposite Direction)



$$3 + 5 = 8 \text{ km/h}$$

Q9: Two trains 105m and 90m long, run at the speed of 45km/h and 72 km/h respectively, in opposite direction on parallel tracks. The time which they take to cross each other is- [Comb (SO) - 19]

$$\text{Total distance} = 105 + 90 = 195 \text{ m}$$

$$\text{Relative speed} = 45 + 72 = 117 \text{ km/h} = 117 \times \frac{5}{18} \text{ m/s}$$

$$2 \frac{65}{3} \text{ m/s}$$

$$\text{Time} = \frac{195}{\frac{65}{2}} = 195 \times \frac{2}{65} = 6 \text{ s}$$

Q10: Two trains of equal length, running in opposite direction, pass a pole in 18 and 12 seconds. The train will cross each other in- [Comb (Cash) - 19]

Let, the length of each train = $36x$ m

Total distance = $36x + 36x = 72x$ m

Relative speed = $\frac{36x}{18} + \frac{36x}{12} = 2x + 3x = 5x$ m/s

Time = $\frac{72x}{5x} = 14.4$ s

Q11: A train cross another train of equal length coming from the opposite direction with the speed of 108 km/hr in 3 minutes. The speed of the other train is 90 km/h. Find the length of the train? [Comb (Off) - 19]

$$\begin{aligned} \text{Relative speed} &= 108 \text{ km/h} + 90 \text{ km/h} \\ &= 198 \text{ km/h} = \frac{198}{18} \times \frac{5}{18} = \underline{\underline{55 \text{ m/s}}} \end{aligned}$$

$$\text{Time} = 3 \text{ minutes} = 3 \times 60 = \underline{\underline{180 \text{ s}}}$$

$$\text{Distance} = 55 \times 180 = \underline{\underline{9900 \text{ m}}}$$

$$\text{The length of the train} = \frac{9900}{2} = \underline{\underline{4950 \text{ m}}}$$

Q12: A 270m long train running at the speed of 120 km/h crosses another train running in opposite direction at the speed of 80 km/h in 9 seconds. What is the length of the other train? [Rupali Bank (SO)]

$$\text{Relative speed} = \frac{120 + 80}{1.8} = \frac{200}{1.8} = \frac{500}{9} \text{ m/s}$$

$$\text{Time} = 9 \text{ s}$$

$$\text{Distance} = \frac{500}{9} \times 9 \text{ m} = 500 \text{ m}$$

$$500 - 270 = 230 \text{ m}$$

Q13: A train **108m** long moving at a speed of **50 km/h** crosses a train **112m** long coming from opposite direction in 6 seconds. The speed of the second train is-

$$\text{Total distance} = 108 + 112 = 220 \text{ m}$$

$$\text{Time} = 6 \text{ s}$$

$$\text{Relative Speed} = \frac{220 \text{ m}}{6} = \frac{220}{6} \times \frac{18}{5} = 132 \text{ km/h}$$

$$\begin{aligned} \text{The speed of the 2nd train} &= 132 - 50 \\ &= 82 \text{ km/h} \end{aligned}$$

Type-04



Two Train Related

(Same Direction)



Q14: A train 125m long is running at 50 km/h. In what time will it pass a man, running at 5 km/h in the same direction in which the train is going?

$$\text{Relative speed} = 50 - 5 = 45 \text{ km/h} = 45 \times \frac{5}{18} \text{ m/s}$$

$$\text{Distance} = 125 \text{ m}$$

$$\text{Time} = \frac{125}{5 \times 45} = 125 \times \frac{2}{9 \times 45} = 10 \text{ s}$$

Q15: A train 125m long passes a man, running at 5 km/h in the same direction in which the train is going, in 10 seconds. The speed of the train is- [IFIC (MTO)-17, Comb (Cash)-21]

$$\begin{aligned} x - 5 &= 45 \\ x &= 45 + 5 \\ &= 50 \end{aligned}$$

$$\begin{aligned} \text{Speed} &= \frac{\text{dis}}{\text{time}} \\ x - 5 &= 45 \end{aligned}$$

$$\text{Distance} = 125 \text{ m}$$

$$\text{time} = 10 \text{ s}$$

$$\text{Relative Speed} = \frac{125}{10} + \frac{5}{3.6} \text{ km/h}$$

$$= 45 \text{ km/h}$$

$$45 + 5 = 50 \text{ km/h}$$

Q16: A man is running at a speed of 3 km/h in the direction of the train whose length is 500m. If the train is moving at a speed of 63 km/h then how many seconds will this train take to cross the man? [BB (Cash)-16]

500m

$(1+v)$

305

Q17: Two trains of equal length are running on parallel lines in the same direction at 46 km/h and 36 km/h. The faster train passes the slower train in 36 seconds. The length of each train is- [Pubali (SO)-17, PKB (Cash)-19]

$$\text{Relative speed} = 46 - 36 = 10 \text{ km/h} = 10 \times \frac{5}{18} \text{ m/s}$$

$$\text{Time} = 36 \text{ s}$$

$$\text{Distance} = 10 \times \frac{5}{18} \times 36 = 100 \text{ m}$$

$$\text{The length of each train} = \frac{100}{2} = 50 \text{ m}$$

Thank You