

Aptitude :: Problems on Trains[Home](#) » [Aptitude](#) » [Problems on Trains](#) » [General Questions](#) » [Page 1 of 7](#)**Exercise : Problems on Trains - General Questions**

- ☐ Problems on Trains - Formulas
- ☒ Problems on Trains - General Questions
- ☐ Problems on Trains - Data Sufficiency 1
- ☐ Problems on Trains - Data Sufficiency 2
- ☐ Problems on Trains - Data Sufficiency 3

1. A train running at the speed of 60 km/hr crosses a pole in 9 seconds. What is the length of the train?

- ☒ A 120 metres
- ☐ B 180 metres
- ☐ C 324 metres
- ☐ D 150 metres

Answer: Option **D**

Explanation:

$$\text{Speed} = \left(60 \times \frac{5}{18} \right) \text{m/sec} = \left(\frac{50}{3} \right) \text{m/sec.}$$

Length of the train = (Speed x Time).

$$\therefore \text{Length of the train} = \left(\frac{50}{3} \times 9 \right) \text{m} = 150 \text{ m.}$$



2. A train 125 m long passes a man, running at 5 km/hr in the same direction in which the train is going, in 10 seconds. The speed of the train is:

- Ⓐ 45 km/hr
- Ⓑ 50 km/hr
- Ⓒ 54 km/hr
- Ⓓ 55 km/hr

Answer: Option Ⓑ

Explanation:

$$\text{Speed of the train relative to man} = \left(\frac{125}{10} \right) \text{ m/sec}$$

$$= \left(\frac{25}{2} \right) \text{ m/sec.}$$

$$= \left(\frac{25}{2} \times \frac{18}{5} \right) \text{ km/hr}$$

$$= 45 \text{ km/hr.}$$

Let the speed of the train be x km/hr. Then, relative speed = $(x - 5)$ km/hr.

$$\therefore x - 5 = 45 \Rightarrow x = 50 \text{ km/hr.}$$



3. The length of the bridge, which a train 130 metres long and travelling at 45 km/hr can cross in 30 seconds, is:

- Ⓐ 200 m
- Ⓑ 225 m
- Ⓒ 245 m
- Ⓓ 250 m

Answer: Option Ⓒ

Explanation:

$$\text{Speed} = \left(45 \times \frac{5}{18} \right) \text{ m/sec} = \left(\frac{25}{2} \right) \text{ m/sec.}$$

Time = 30 sec.

Let the length of bridge be x metres.

$$\text{Then, } \frac{130 + x}{30} = \frac{25}{2}$$

$$\Rightarrow 2(130 + x) = 750$$

$$\Rightarrow x = 245 \text{ m.}$$

Video Explanation: https://youtu.be/M_d8WufJWKc



4. Two trains running in opposite directions cross a man standing on the platform in 27 seconds and 17 seconds respectively and they cross each other in 23 seconds. The ratio of their speeds is:

- ☐ A 1 : 3
- ☐ B 3 : 2
- ☐ C 3 : 4
- ☐ D None of these

Answer: Option **B**

Explanation:

Let the speeds of the two trains be x m/sec and y m/sec respectively.

Then, length of the first train = $27x$ metres,

and length of the second train = $17y$ metres.

$$\therefore \frac{27x + 17y}{x + y} = 23$$

$$\Rightarrow 27x + 17y = 23x + 23y$$

$$\Rightarrow 4x = 6y$$

$$\Rightarrow \frac{x}{y} = \frac{3}{2}$$



5. A train passes a station platform in 36 seconds and a man standing on the platform in 20 seconds. If the speed of the train is 54 km/hr, what is the length of the platform?

- ☐ A 120 m
- ☐ B 240 m
- ☐ C 300 m
- ☐ D None of these

Answer: Option **B**

Explanation:

$$\text{Speed} = \left(54 \times \frac{5}{18} \right) \text{m/sec} = 15 \text{ m/sec.}$$

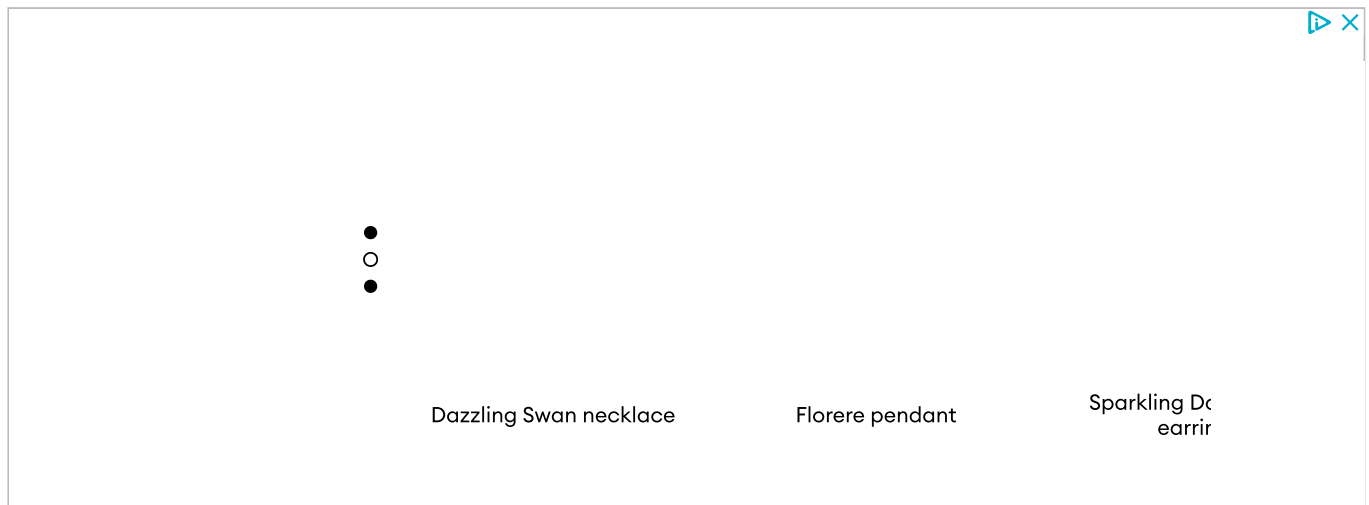
Length of the train = $(15 \times 20)\text{m} = 300 \text{ m.}$

Let the length of the platform be x metres.

$$\text{Then, } \frac{x + 300}{36} = 15$$

$$\Rightarrow x + 300 = 540$$

$$\Rightarrow x = 240 \text{ m.}$$



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- > Verbal Test

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- › Verbal
- › Nonverbal

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- › C Programming
- › C++
- › C#
- › Java

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