21- 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 : 4
- **C.** 3 : 2
- **D.** Data inadequate
- **E.** None of these

Answer & Explanation

Answer - **C** (3 : 2)

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.

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

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

$4x = 6y$

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

22- 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.**Data inadequate

- **E.**None of these

Answer & Explanation

Answer - **B** (240 m)

Explanation -

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

Length of the train = (15 x 20)m = 300 m.

Let the length of the platform be *x* metres.

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

$x + 300 = 540$

$x = 240$ m.

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

- **A.**65 sec
- **B.**89 sec
- **C.**100 sec
- **D.**150 sec
- **E.**None of these

Answer & Explanation

Answer - **B** (89 sec)

Explanation -

$$\text{Speed} = \frac{240}{24} \text{m/sec} = 10 \text{ m/sec.}$$

$$\text{Required time} = \frac{240 + 650}{10} \text{sec} = 89 \text{ sec.}$$

24- Two trains of equal length are running on parallel lines in the same direction at 46 km/hr and 36 km/hr. The faster train passes the slower train in 36 seconds. The length of each train is:

- **A.**50 m

- **B.**72 m

- **C.**80 m

- **D.**82 m

- **E.**None of these

Answer & Explanation

Answer - **A** (50 m)

Explanation - Let the length of each train be *x* metres.

Then, distance covered = 2*x* metres.

Relative speed = (46 - 36) km/hr

$$= 10 \text{ x} \frac{5}{18} \text{ m/sec}$$

$$= \frac{25}{9} \text{ m/sec}$$

$$\frac{2x}{36} = \frac{25}{9}$$

2*x* = 100

x = 50.

25- A train 360 m long is running at a speed of 45 km/hr. In what time will it pass a bridge 140 m long?

- **A.** 40 sec
- **B.** 42 sec
- **C.** 45 sec
- **D.** 48 sec
- **E.** None of these

Answer & Explanation

Answer - **A** (40 sec)

Explanation -

Formula for converting from km/hr to m/s: X km/hr $= X \times \dfrac{5}{18}$ m/s.

Therefore, Speed $= 45 \times \dfrac{5}{18}$ m/sec $= \dfrac{25}{2}$ m/sec.

Total distance to be covered = (360 + 140) m = 500 m.

Formula for finding Time $= \dfrac{\text{Distance}}{\text{Speed}}$

Required time $= \dfrac{500 \times 2}{25}$ sec $= 40$ sec.

26- Two trains are moving in opposite directions @ 60 km/hr and 90 km/hr. Their lengths are 1.10 km and 0.9 km respectively. The time taken by the slower train to cross the faster train in seconds is:

- **A.** 36 sec
- **B.** 45 sec
- **C.** 48 sec
- **D.** 49 sec
- **E.** None of these

Answer & Explanation

Answer - **C** (48 sec)

Explanation - Relative speed = (60+ 90) km/hr

$$= 150 \times \frac{5}{18} \text{ m/sec}$$

$$= \frac{125}{3} \text{ m/sec.}$$

Distance covered = (1.10 + 0.9) km = 2 km = 2000 m.

Required time = 2000 x3sec = 48 se