

Aptitude Problems on Trains

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PROBLEMS ON TRAINS:

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 meters
- B) 180 meters
- C) 324 meters
- D) 150 meters

ANSWER : Option D

Explanation:

$$\text{Speed} = (60 * 5/18) \text{ m/sec} = (50/3) \text{ m/sec.}$$

$$\text{Length of train} = (\text{Speed} * \text{Time}) = ((50/3) * 9) \text{ m} = 150 \text{ m.}$$

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 :

- A) 45 km/hr
- B) 50 km/hr
- C) 54 km/hr

D) 55 km/hr

ANSWER : Option B

EXPLANATION :

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

$$= (25/2)_{\text{m/sec.}}$$

$$= ((25/2) * (18/5))_{\text{km/hr}}$$

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

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

Therefore, $x-5 = 45 \Rightarrow x=50$ 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:

A.200 m B.225 m

C.245 m D.250 m

Answer: Option C

Explanation:

$$\text{Speed} = [45 \times (5/18)]_{\text{m/sec}} = (25/2)_{\text{m/sec.}}$$

$$\text{Time} = 30 \text{ sec.}$$

Let the length of bridge be x metres.

$$\text{Then, } [(130 + x) / 30] = (25/2)$$

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

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

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.

$$(27x + 17y) / (x + y) = 23$$

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

$$\Rightarrow 4x = 6y$$

$$\Rightarrow (x/y) = (3/2)$$

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:

$$\text{Speed} = [54 \times (5/18)] \text{ m/sec} = 15 \text{ m/sec.}$$

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

Let the length of the platform be x metres.

$$\text{Then, } [(x + 300)/36] = 15$$

$$\Rightarrow x + 300 = 540$$

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

6) 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

Answer: Option B

Explanation:

$$\text{Speed} = (240/24)_{\text{m/sec}} = 10 \text{ m/sec.}$$

$$\text{Required time} = [(240 + 650)/10] \text{ sec} = 89 \text{ sec.}$$

7) 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

Answer: Option A

Explanation:

Let the length of each train be x metres.

Then, distance covered = $2x$ metres.

$$\text{Relative speed} = (46 - 36) \text{ km/hr}$$

$$= [10 \times (5/18)] \text{ m/sec}$$

$$= (25/9) \text{ m/sec}$$

$$(2x)/36 = 25/9$$

$$\Rightarrow 2x = 100$$

$$\Rightarrow x = 50.$$

8) 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

Answer: Option A

Explanation:

Formula for converting from km/hr to m/s: $X \text{ km/hr} = [X * (5/18)] \text{ m/s}$.

Therefore, Speed $= [45 * (5/18)] \text{ m/sec} = (25/2) \text{ m/sec}$.

Total distance to be covered $= (360 + 140) \text{ m} = 500 \text{ m}$.

Formula for finding Time $= (\text{Distance}/\text{Speed})$

Required time $= [(500 * 2)/25] \text{ sec} = 40 \text{ sec}$.

9) 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 B.45
C.48 D.49

Answer: Option C

Explanation:

Relative speed $= (60 + 90) \text{ km/hr}$

$= [150 * (5/18)] \text{ m/sec}$

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

Distance covered $= (1.10 + 0.9) \text{ km} = 2 \text{ km} = 2000 \text{ m}$.

Required time $= [2000 * (3/125)] \text{ sec} = 48 \text{ sec}$.

10) A jogger running at 9 kmph alongside a railway track in 240 metres ahead of the engine of a 120 metres long train running at 45 kmph in the same direction. In how much time will the train pass the jogger?

- A.3.6 sec B.18 sec
C.36 sec D.72 sec

Answer: Option C

Explanation:

Speed of train relative to jogger = $(45 - 9) \text{ km/hr} = 36 \text{ km/hr}$.

$$= [36 \times (5/18)] \text{ m/sec}$$

$$= 10 \text{ m/sec.}$$

Distance to be covered = $(240 + 120) \text{ m} = 360 \text{ m}$.

$$\text{Time taken} = (360/10) \text{ sec} = 36 \text{ sec}$$