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8. How many seconds will a 1050 meter long train take to cross a girl walking with a speed of 4 km/hr in the direction of the moving train if the speed of the train is 58 km/hr?

A. 35 sec

B. 70 sec

C. 125 sec

D. 135 sec

9. A train 60 meter long is running with a speed of 48 kmph. In what time will it pass a man who is running at 6 kmph in the direction opposite to that in which the train is going?

A. 1 sec

B. 2 sec

C. 3 sec

D. 4 sec

10. Two trains 400 m and 350 m long are running on parallel rails at the rate of 19 kmph and 34 kmph respectively. In how much time will they cross each other? If they are running in the same direction?

A. 100 sec

B. 120 sec

C. 160 sec

D. 180 sec



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Correct Answers:

1	2	3	4	5	6	7	8	9	10
C	C	B	D	B	C	D	A	B	A

Explanations:

1. From the given equation :

Length of the train = 100 m

Length of the tunnel = 200 m

Total length = 100 + 200 = 300 m = total distance

And time taken to cross the tunnel = 21.6 sec

$$\text{Speed} = \left(\frac{100 + 200}{21.6}\right) \text{m/sec} = \left(\frac{300}{21.6} \times \frac{18}{5}\right) = 50 \text{ km/hr}$$

Hence, option C is correct.

2. Given that:

$$\text{Speed of the train} = \left(72 \times \frac{5}{18}\right) \text{m/sec} = 20 \text{ m/sec.}$$

Let the length of the train be x metres.

$$\text{Then, } \frac{x + 120}{20} = 60 \Rightarrow x + 120 = 1200 \Rightarrow x = 1080.$$

So, time taken by the train to pass an electric perch

$$= \left(1080 \times \frac{1}{20}\right) \text{sec} = 54 \text{ sec.}$$

Hence, option C is correct.

3.

$$\text{Speed of the train} = \left(108 \times \frac{5}{18}\right) = 30 \text{ m/sec.}$$

Length of the train = Distance travelled to cross the woman \times Time taken = (30 \times 30) m = 900m.

Let the length of the platform be x meters.

$$\text{Then, } \frac{(x + 900)}{40} = 30 \Rightarrow x + 900 = 1200 \Rightarrow x = 300 \text{ m.}$$

Hence, option B is correct.

4. From the information given:

$$\text{Speed of the train} = \frac{\text{Distance travelled to cross the signal}}{\text{Time taken}}$$

$$= \left(\frac{240}{16}\right) \text{m/sec} = 15 \text{ m/sec}$$

Let the length of the platform be x meters.

$$\text{Then, } \frac{x + 240}{45} = 15 \Rightarrow x + 240 = 675 \Rightarrow x = 435 \text{ m.}$$

Hence, option D is correct.

5. Let the length of the train be x meters and its speed be y m/sec.

$$\text{Then, } \frac{x}{y} = 20 \Rightarrow y = \frac{x}{20}$$

Now, as in both the cases speed is equal:

$$\text{So, } \frac{x + 300}{50} = \frac{x}{20}$$

$$\Rightarrow 2x + 600 = 5x \Leftrightarrow 3x = 600 \Rightarrow x = 200 \text{ m.}$$

Hence, option B is correct.

6. Let the length of the train be x meters and its speed by y m/sec.

$$\text{Then, } \frac{x}{y} = 9 \Rightarrow x = 9y.$$

$$\text{Now, } \frac{x + 420}{30} = y \Leftrightarrow 30y = x + 420 \Rightarrow 30y = 9y + 420.$$

$$\Rightarrow 21y = 420 \Rightarrow y = 20.$$

$$\text{Speed} = 20 \text{ m/sec} = \left(20 \times \frac{18}{5}\right) = 72 \text{ km/hr.}$$

Hence, option A is correct.

7. Let the length of the train be x meters.

Now, as in both the cases the speed of the train is same.

$$\text{So, } \frac{x + 140}{16} = \frac{x + 100}{14} \Rightarrow 14x + 1960 = 16x + 1600.$$

$$\Rightarrow 2x = 360 \Rightarrow 180 \text{ m.}$$

So, the length of the $x = 180\text{m}$.

Hence, option D is correct.

8. Speed of train relative to the girl = $(58 - 4) = 54$ km/hr

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

So, time taken to pass the girl = $\left(1050 \times \frac{1}{15}\right) \Rightarrow 70$ sec.

Hence, option B is correct.

9. Speed of train relative to man = $(48 + 6)$ km/hr = 54 km/hr.

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

So, time taken to pass the man = $\left(60 \times \frac{1}{15}\right) \text{sec} = 4$ sec.

Hence, option D is correct.

10. Relative speed = $(34 - 19) = 15$ kmph (As the trains are moving in same direction)

$$\Rightarrow \left(15 \times \frac{5}{18}\right) \text{m/sec} = \left(\frac{25}{6}\right) \text{m/sec.}$$

Total distance covered = Sum of the lengths of trains = 750 m.

So, time taken to pass the man = $\left(750 \times \frac{6}{25}\right) \text{sec} \Rightarrow 180$ sec.

Hence, option D is correct.



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