Problems on trains Questions for Bank Bank & SSC Exams – Problems on trains Quiz at Smartkeeda.

Problems on Trains Quiz 1

Directions: Kindly study the following Questions carefully and choose the right answer:

1. A 420 m long train crosses a pole in 70 seconds. What is the speed of the train?

A. 5 m/s B. 7 m/s C. 4.5 m/s D. None of these

2. A 240 m long train crosses a platform twice its length in 2 min. what is the speed of the train?

A. 8 m/s B. 4 m/s C. 6 m/s D. Can't be determined

3. A train, 120 m long, takes 6 seconds to pass a telegraph post; the speed of train is

A. 72 km/hr B. 62 km/hr C. 55 km/hr D. 85 km/hr

4. A train 150 m long passes a pole in 15 seconds and crosses another train of the same length travelling in opposite direction in 8 seconds. The speed of the second train in (km/h) is

A. 60 km/hr B. 66 km/hr C. 72 km/hr D. 99 km/hr

5. Two trains, A and B start from the stations X and Y towards each other. They take 4 hours 48 mins and 3 hours 20 mins to reach Y and X respectively after they meet. If train A is moving at 45 km/hr, then the speed of train B is

A. 60 km/hr B. 64.8 km/hr C. 54 km/hr D. 37.5 km/hr

6. A bus travels 50% swifter than a car. Both start from point P at the same time and reach point Q, which is 330 km away from P. On the way, however, the bus lost about 88 minutes while stopping at the stops. The speed of the bus is:

A. 75 kmph B. 100 kmph C. 112.5 kmph D. 125 kmph

7. A train leaves a station A at 7 am and reaches another station B at 11 am. Another train leaves B to 8 am and reaches A at 11:30 am. The two trains cross one another at

A. 8:36 AM B. 8:56 AM C. 9:00 AM D. 9:24 AM

8. Two trains of same length are running in parallel tracks in the same direction with speed 60 km/hr and 90 km/hr respectively. The latter completely crosses the former in 30 seonds. The length of each train (in metres) is

A. 125 B. 150 C. 100 D. 115

9. A train passes an electrical pole in 20 seconds and passes a platform 250 m long in 45 seconds. Find the length of the train

A. 300 m B. 200 m C. 400 m D. 250 m

10. A train, 120 m long, takes 6 seconds to pass a telegraph post; the speed of train is

A. 72 km/hr B. 62 km/hr C. 55 km/hr D. 37.5 km/hr

Correct Answers:

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

Explanations:

1. To solve this question, we can apply a short trick approach we get

Speed of train = $\frac{\text{Length of train}}{\text{Time taken in crossing the pole}}$.

$= \frac{420}{70} = 6$ m/sec

Hence, option D is correct.

2. To solve this question, we can apply a short trick approach

"When a train passes a platform or crosses a bridge it should travel the length equal to the sum of the length of train and platform or bridge both"

Speed of train = $\frac{\textbf{Length of train + Length of Platform}}{\textbf{Required time}}$

Given,

Length of train = 240 m, Crossing time of platform = $2 \times 60 = 120$ sec

Length of platform = $240 \times 2 = 480$, Speed of train = x

By the short trick approach, we get

Speed of train = $\frac{240 + 480}{120} \Rightarrow x = \frac{720}{120} = 6$ m/s.

Hence, option C is correct.

3. To solve this question, we can apply a short trick approach we get

Speed of train = $\frac{\textbf{Length of train}}{\textbf{Time taken in crossing the pole}}$.

$= \frac{120}{6} = 20$ m/sec

$= 20 \times \frac{18}{5} = 72$ kmph

Hence, option A is correct.

4. Speed of the first train = $\frac{150}{15} = 10$ m/sec

Let the speed of the second train be x m/sec

Relative speed = (10 + x)m/sec
Length of train 1 + length of train 2 = 150 + 150 = 300 mtr

In the second scenario equation will be like $\frac{300}{10 + x} = 8$

or, 300 = 80 + 8x

or, $x = \frac{220}{8} = \frac{55}{2}$ m/sec

$\therefore$ speed of the second train = $\frac{55}{2} \times \frac{18}{5} = 99$ km/hr

Hence, option D is correct.

5. Let the speed of Train A be S_A = 45 kmph and that of Train B be S_b
Then, time taken by Train A = T_A

= 4 hrs 48 min = $4 + \frac{48}{60} = \frac{24}{5}$ hrs

Time taken by Train B = T_B

= 3 hrs 20 min = $3 + \frac{20}{60} = \frac{10}{3}$ hrs

Using formula = $\frac{S_A}{S_B} = \sqrt{\frac{T_B}{T_A}}$

Note: If two trains (or bodies) start at the same time from points A and B towards each other and after crossing they take a and b sec in reaching B and A respectively, then

(A's speed) : (B's speed) = ($\sqrt{b}$: $\sqrt{a}$).

$\therefore \frac{45}{S_B} = \sqrt{\frac{10}{3} \times \frac{5}{24}} = \sqrt{\frac{25}{36}} = \frac{5}{6}$

or, $S_B = \frac{45 \times 6}{5} = 54$ kmph

Hence, option C is correct.

6. Approach I:

Let the speed of the car be x kmph.

$\therefore$ The speed of the bus = $x \times \frac{150}{100} = \frac{3x}{2}$

Now, $\frac{330}{x} - \frac{330}{\frac{3x}{2}} = \frac{88}{60}$

or, $\frac{330}{x} - \frac{220}{x} = \frac{88}{60}$

or, $\frac{330 - 220}{x} = \frac{88}{60}$

or, $\frac{110}{x} = \frac{88}{60}$

$\therefore\ x = \frac{60 \times 110}{88} = 75$

Therefore the speed of the car = 75 kmph

$\therefore$ Speed of the bus = $\frac{3x}{2} = 75 \times \frac{3}{2}$

= 112.5 kmph

Approach II:

Product of speeds = $\frac{\text{Distance} \times \text{Difference in speeds}}{\text{difference in time}}$

Let speed of car be 2x.

$\therefore$ Speed of the bus be = 3x

$3x \times 2x = \dfrac{330 \times x}{\frac{88}{60}}$

$\Rightarrow\ 3x \times 2x = \frac{330 \times x \times 60}{88}$

$\Rightarrow x = \frac{330 \times 10}{88} = \frac{75}{2}$

$\therefore$ Speed of bus = $\frac{75}{2} \times 3 = 112.5$ km/h

Hence, option C is correct.

7. Kindly refer to the video or go through the explanation given below :

Let the distance between the stations A & B be 4 kms.

$\therefore$ Speed A $\rightarrow$ B = $\frac{4}{4} = 1$ km/hr

& Speed B → A = $\frac{4}{7/2} = \frac{8}{7}$ km/hr

Suppose they meet x hours after 8 am.

Distance covered by both the trains to meet each other = Distance covered by them from 8 am

$(1 + \frac{8}{7}) \times x = 3$ kms (∵ Train A has already covered 1 km from 7 am to 8 am)

$\Rightarrow \frac{15}{7}x = 3$

∴ $x = \frac{7}{5}$hr = 1 hr 24 mins

∴ They will meet at 9 : 24 AM. (After adding 1 hr 24 mins to 8 am.)

Hence, option D is correct.

8. When two trains cross each other, they cover distance equal to the sum of their lengths with relative speed.

Let's take length of each train = x, total length of both trains = 2x, Crossing time = 30 sec.

Relative speed = 90 – 60 = 30 km/hr

$= \frac{30 \times 5}{18} = \frac{25}{3}$ m/sec.

∴ Total length = Time × Relative speed

$\Rightarrow 2x = \frac{30 \times 25}{3} \Rightarrow \frac{10 \times 25}{2} = 125$ m.

Hence, option A is correct.

9. To solve this question we can apply a shot trick approach

Length of the train

$$= \frac{\textbf{Length of the platform}}{\textbf{Difference in time}} \times \textbf{(Time taken to cross a man)}$$

By the short trick approach, we get

Train length = $\frac{250}{45 - 20} \times 20 = 200$ m

Traditional method:

Let the length of the train be x

∴ $\frac{x}{20} = \frac{x + 250}{45}$

$\Rightarrow 5x = 1000 \Rightarrow x = 200$ m

Hence, option B is correct.

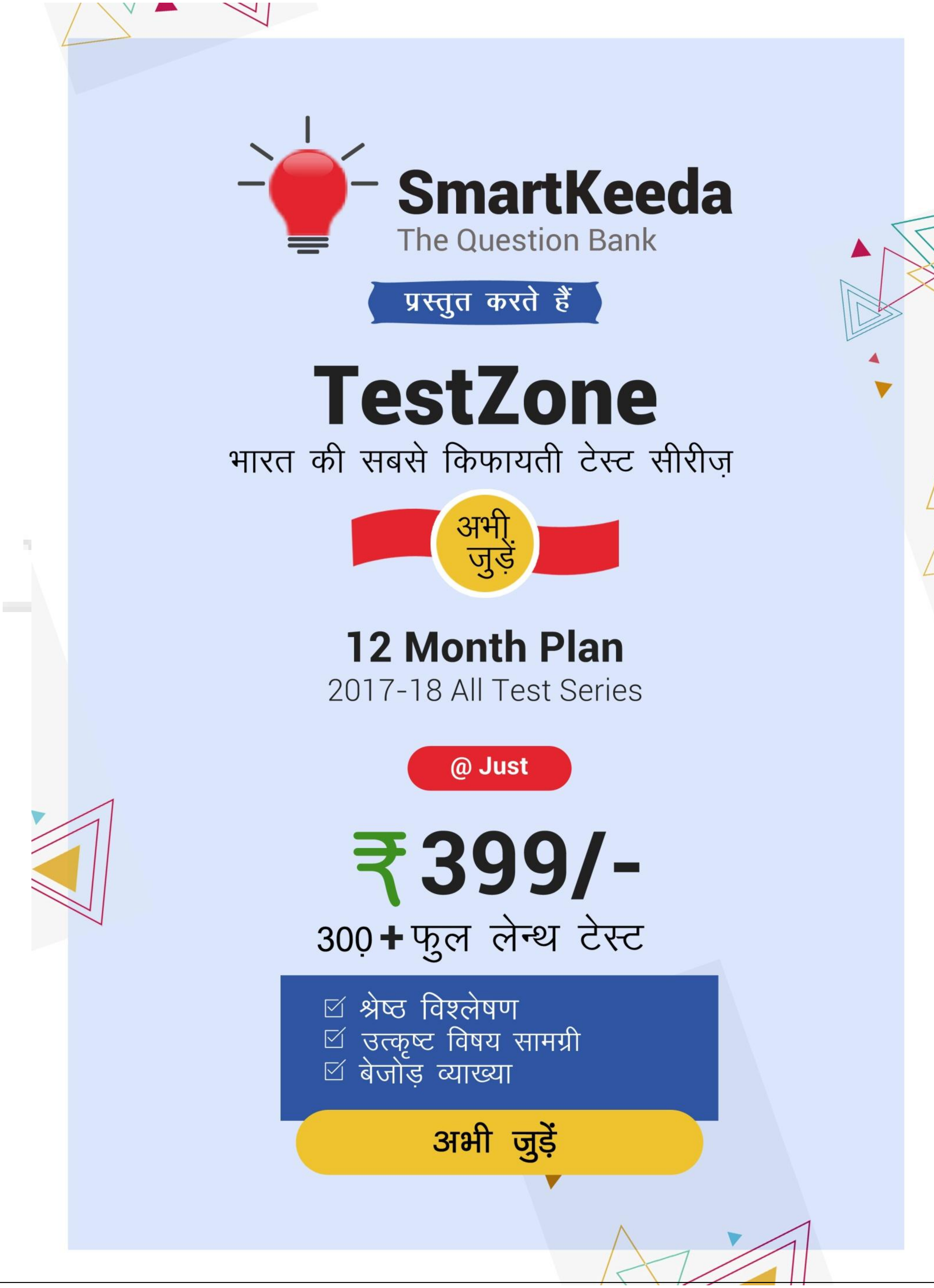
10. To solve this question, we can apply a short trick approach we get

Speed of train $= \dfrac{\textbf{Length of train}}{\textbf{Time taken in crossing the pole}}$.

$= \dfrac{120}{6} = 20$ m/sec

$= 20 \times \dfrac{18}{5} = 72$ kmph

Hence, option A is correct.



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