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

Problems on Trains Quiz 6

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

1. First train with length 200 m and speed 72 kmph is crossed by a second train running at 86.4 kmph in the same direction in 110 seconds. The first train would cross a platform 150% longer than the second train in how many seconds?

- A. 30 B. 25 C. 40 D. 15 E. None of these

2. A train running at some speed crosses an electric pole in 20 seconds. After a few hours its speed is changed and now it crosses another electric pole in 15 seconds. By what percent the speed of the train changed?

- A. 30.30% increased B. 30.30% decreased C. 33.33% decreased D. 33.33% increased E. None of these.

3. A train crosses a platform 100 meter longer than its own length in 16 seconds while it crosses a pole in 5 seconds when running with 20% more speed than what it had while crossing the platform. Length of the train in meter is:

- A. 150 B. 120 C. 180 D. 200 E. None of these

4. Train-A has length 180 meter and crosses a platform of thrice its length in 36 seconds. In what time Train-A would cross train-B whose length is $33\frac{1}{3}\%$ more than Train-A and it runs with a speed of 63 kmph in the same direction?

- A. 142 seconds B. 152 seconds C. 168 seconds D. 172 seconds E. None of these



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5. Ratio of length of train-A and train-B is 4 : 5 and their speed in the ratio 5 : 4 respectively. The difference between their length is 80 meters and they cross each other in 16 seconds when running in opposite direction. In how many minutes they will cross each other when running in same direction?

- A. 24 minutes B. 24 seconds C. 2.4 minutes D. Data insufficient E. 2 minutes

6. Train-A of length 200 metre is running at 99 kmph and crosses train-B in 16 seconds when train-B is stationary. When train-B is running in same direction of Train- A, Train-A overtakes it in 22 seconds. What is speed of train-B?

- A. 18 kmph B. 27 kmph C. Data is insufficient D. 36 kmph E. None of these

7. Train A whose length is 180 m crosses train B of length 240 m in 84 sec which is running at 15 m/s in same direction as A. Train C will cross train A in how many seconds if its length is average of the length of A and B and speed is equal to 81 kmph and it travels in opposite direction with respect to train A?

- A. 93/16 B. 193/7 C. 92/7 D. 93/17 E. 93/14

8. A train crosses a 160 m long platform in 20 seconds. If the length of the train is 50% more than the platform, then in how many seconds it would cross an electric pole?

- A. 10 B. 12 C. 15 D. 18 E. 16

9. Train A has length 25% more than train B, whose length is 180 meter. Train A is running parallel to and in same direction as B at a speed of 81 kmph and crosses B in 81 seconds. Find the speed of train B.

- A. 45 kmph B. 54 kmph C. 60 kmph D. 63 kmph E. 72 kmph

10. Speed of train B is 81 kmph and that of A is 22.22% less than B. B crosses A while running in same direction in 70 seconds. Average length of train A, B and C is 190 m. Find the length of train C.

- A. 180 m B. 170 m C. 190 m D. 220 m E. 570 m



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Correct Answers:

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

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Explanations:

1. Speed of first train = 72 kmph = 20 m/s

Speed of second train = 86.4 kmph = 24 m/s

Let the length of the second train be y metres.

$$110 = \frac{200 + y}{24 - 20}$$

$$4 \times 110 = 200 + y$$

$$y = 240$$

Length of the platform = $240 + 150\%$ of $240 = 240 + 360 = 600$ metre

Time to cross the platform by the first train

$$= \frac{600 + 200}{20} = 40 \text{ seconds}$$

Hence, option C is correct.

2. Let the length of the train be L and its speed initially was ' u ' m/s.

$$\text{Thus, } \frac{L}{u} = 20 \text{ ----(i)}$$

After a few hours its speed is changed, let it be ' v ' m/s.

$$\text{Thus, } \frac{L}{v} = 15 \text{ ----(ii)}$$

From (i) and (ii), we get

$$u : v = 3 : 4$$

Let $u = 3y$ and $v = 4y$.

Then

$$\frac{(4y - 3y)}{3y} \times 100 = 33.33\%$$

Hence, option D is correct.

3. Let the length of the train be y meter and the speed while crossing the platform is v m/s.

Then, time to cross

$$= \frac{(\text{length of the train} + \text{length of the platform})}{\text{speed}}$$

$$= \frac{(y + y + 100)}{v}$$

$$16 = \frac{(2y + 100)}{v}$$

$$2y + 100 = 16v \text{ ---(i)}$$

When it crosses the pole its speed is 20% more, so

$$5 = \frac{y}{(v + 20\% \text{ of } v)} = \frac{y}{1.2v}$$

$$v = \frac{y}{6} \text{ ----(ii)}$$

Eliminate v from (ii) in (i), we get

$$2y + 100 = 16 \left(\frac{y}{6}\right)$$

$$y = 150$$

Hence, option A is correct.



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4. Length of train-A is 180 meter, thus length of the platform would be $3 \times 180 = 540$ meter.

Let the speed of the Train-A be v m/s.

The train crosses it in 36 seconds, thus

$$\frac{(540 + 180)}{v} = 36$$

$$v = \frac{720}{36} = 20 \text{ m/s}$$

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

It crosses another train running with 63 kmph, thus the effective speed with which both the train would cross each would be $72 - 63 = 9$ kmph

$$= \frac{9 \times 5}{18} = 2.5 \text{ m/s}$$

Length of another train

$$= 33\frac{1}{3} \% \text{ of } 180 + 180$$

$$= 60 + 180 = 240 \text{ meter.}$$

Length to cross = $180 + 240 = 420$ meter

$$\text{Time to cross} = \frac{420}{2.5} = 168 \text{ seconds}$$

Hence, option C is correct.

5. Let the length of train-A is $4y$ meter and that of train-B is $5y$ meter, and the speed of train-A is $5v$ m/s and that of train-B be $4v$ m/s.

We have $5y - 4y = y = 80$

Length of train-A = $4y = 320$ m

Length of train-B = $5y = 400$ m

While crossing, the effective length would be $320 + 400 = 720$ meters, and relative speed = $5v + 4v = 9v$.

$$\text{Time to cross} = 16 = \frac{720}{9v} = \frac{80}{v}$$

$$v = 5$$

Speed of train-A = $5v = 25$ m/s

Speed of train-B = $4v = 20$ m/s

time when they will cross each other when running in same direction

$$= \frac{\text{sum of length}}{\text{difference of speed}} = \frac{720}{5}$$

$$= 144 \text{ sec} = 2.4 \text{ min}$$

Hence, option C is correct.



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6.

$$\text{Speed of train - A is } 99 \times \frac{5}{18} = 27.5 \text{ m/s}$$

Let the length of train-B is y metres, then time to cross train-B by train-A

$$= \frac{\text{length of train - A} + \text{length of train - B}}{\text{speed of train - A}}$$

$$16 = \frac{200 + y}{27.5}$$

$$16 \times 27.5 = 200 + y$$

$$y = 240$$

Thus, the length of train-B is 240 metres.

Now, when train-B is running in the same direction of Train-A, train-A crosses it in 22 seconds. It took a few seconds more than when train-B was stopped. Means, train-B is running in same direction as train-A, therefore time to overtake train-B by train-A

$$= \frac{(\text{length of train-A} + \text{length of train-B})}{(\text{speed of train-A} - \text{speed of train-B})}$$

$$22 = \frac{200 + 240}{(27.5 - \text{speed of train-B})}$$

$$27.5 - \text{speed of train-B} = \frac{440}{22} = 20$$

$$\text{speed of train-B} = 7.5 \text{ m/s}$$

$$\text{speed of train-B} = 7.5 \times \frac{18}{5} = 27 \text{ kmph.}$$

Hence, option B is correct.

7. Let the speed of train A is v m/s, then

$$84 = (240+180)/(v - 15)$$

$$84 = \frac{240 + 180}{v - 15}$$

$$v = 20$$

$$\text{Length of train C} = \frac{240 + 180}{2} = 210 \text{ m}$$

$$\text{Speed of train C} = 81 \text{ kmph} = 22.5 \text{ m/s}$$

$$\text{Time} = \frac{210 + 180}{22.5 + 20} = 9\frac{3}{17} \text{ seconds}$$

Hence, option D is correct.

8. Length of the train = $160 + 50\%$ of $160 = 240$ m

$$\text{Speed of the train} = \frac{(160 + 240)}{20} = 20 \text{ m/s}$$

$$\text{Time to cross the electric pole} = \frac{240}{20} = 12 \text{ seconds}$$

Hence, option B is correct.

9.

$$\text{Length of train A} = 180 + 25\% \text{ of } 180 = 225 \text{ m}$$

$$\text{Speed of A} = 81 \text{ kmph} = 22.5 \text{ m/s}$$

$$\text{Let, speed of B} = u \text{ m/s}$$

Then,

$$\frac{225 + 180}{22.5 - u} = 81$$

$$22.5 - u = 5$$

$$u = 17.5$$

$$\text{speed of B} = 17.5 \text{ m/s} = 63 \text{ kmph}$$

Hence, option D is correct.

10. Speed of train B = 81 kmph = 22.5 m/s

Speed of train A = 17.5 m/s

Time to cross train A by B

$$= \frac{\text{length of A + B}}{\text{difference of speed of A and B}}$$

$$70 = \frac{\text{length of A + B}}{22.5 - 17.5}$$

Length of A + B = $70 \times 5 = 350$ m

Average length of A, B and C

$$= \frac{[(\text{length of A + B}) + \text{length of C}]}{3}$$

$$190 = \frac{350 + \text{length of C}}{3}$$

Length of C = 220 m

Hence, option D is correct.



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