MATHS

BOOKS - S CHAND IIT JEE FOUNDATION

DISTANCE, TIME AND SPEED

Solved Examples

1. A thief seeing a policeman from a distance of 200 metres, starts running with a speed of

8 km/hr. The policeman gives chase immediately with a speed of 9 km/hr and the thief is caught. What is the distance run by the thief?

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2. In covering a distance of 30 km Abhay takes 2 hours more than Sameer. If Abhay doubles his speed, then he would take 1 hour loess than Sameer. Abhays speed is $5\,kmph$ b. $6\,kmph$ c. $6.\,25\,kmph$ d. $7.\,5\,kmph$

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3. I started o my bicycle at 7 a.m. to reach a certain place . after going a certain distance, my bicycle went out of order consequently, I rested for 35 minutes and came back to my house walking all the way. I reached my hours eat 1 p.m. if my cycling speed is 10 kmph and my walking speed is 1 kmph then on my bicycle I covered a distance of $4\frac{61}{66}km$ b. $13\frac{4}{9}km$ c. $14\frac{3}{8}km$ d. $1\frac{10}{21}km$

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4. In a race of 200 m, B can give a start of 10 m to A and C can give a start of 20 m to B . The start that C can give to A in the same race is

(a) 27 m (b) 29 m (c) 30 m (d) 25 m

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5. A cyclist moves non-stop from A to B, a distance of 14 km, at a certain average speed. If his average speed reduces by 1 km per hour,

he takes 20 minutes more to cover the same distance. The original average speed of the cyclist is

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6. The ratio between the rates of walking of A and B is 2 : 3. If the time taken by B to cover a certain distance is 48 minutes, the time taken (in minutes) by A to cover the distance is :

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7. A train X starts from Meerut at 4 p.m. and reaches Ghaziabad at 5 p.m. while another train Y starts from Ghaziabad at 4 p.m. and reaches Meerut at 5.30 p.m. The two trains will cross each other at $4.\ 36\ p\dot{m}.$ b. $4.\ 42\ p\dot{m}.$ c. $4.\ 48\ p\dot{m}.$ d. $4.\ 50\ p\dot{m}.$

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8. A and B walk from X to Y, a distance of 27 km at 5 km/hr and 7 km/hr respectively. B reaches

Y and immediately turns back meeting A to Z. What is the distance from X to Z?

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9. A man travels from A to B at a speed of x km/hr. He then rests at B for x hours. He then travels from B to C at a speed of 2x km/hr and rests for 2x hours. He moves further to D at a speed twice as that between B and C. He thus reaches D in 16 hours. If the distance A-B, B-C

and C-D are all equal to 12 km, then what could be the time for which he rested at B?

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10. A man travels three-fifths of a distance AB at a speed of 3a, and the remaining at a speed of 2b. If he goes from B to A and returns at a speed of 5c in the same time, then

A. $\frac{1}{a}+\frac{1}{b}=\frac{1}{c}$

B. $a+b=c$

C. $3a + 2b = 5c$

D. $\frac{1}{a} + \frac{1}{b} = \frac{2}{c}$

Answer: A::B::C

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11. If a train, with a speed of 60 km/hr, crosses a pole in 30 seconds, the length of the train (in metres) is :

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12. Two trains 140 m and 160 m long run at the speed of 60 km/hr and 40 km/hr respectively in opposite directions on parallel tracks What is the time (in seconds) which they take to cross each other?

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13. Two trains travel in the same direction at 50 km/hr and 32 km/hr respectively. A man in the slower train observes that the faster train

passes him completely in 15 seconds. What is the length of the faster train in metres?

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14. A train 110 m long passes a man running at a speed of 6km/hr in the direction opposite to the train in 6 seconds. What is the speed of the train?

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15. A train with 90 km/hr crosses a bridge in, 36 seconds. Another train 100 metres shorter crosses the same bridge at 45 km/hr. What is the time taken by the second train to cross the bridge? $61\,seconds$ b. $62\,seconds$ c. $63\,seconds$ d. $64\,seconds$

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16. A train 108 m long moving at a speed of 50 km/hr crosses a train 112 m long coming from

opposite direction in 6 seconds. The speed of the second train in $48\ km/hr$ b. $54\ km/hr$ c. $66\ km/hr$ d. $82\ km/hr$

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17. A train overtakes two persons walking along a railway track. The first one walks at 4.5 km/hr. The other one walks at 5.4 km/hr. The train needs 8.4 and 8.5 seconds respectively to overtake them. What is the speed of the train

if both the persons are walking in the same direction as the train?

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18. As man sitting in a which is travelling at 0 kmph observes that a goods train, travelling in opposite direction, takes 9 seconds to pass him. If the goods train is 280 m long find the its speed.

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19. A man rows upstream 13 km and downstream 28 km talking 5 hrs each time. What is the velocity in (km/hr) of the current?

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20. In one hour, a boat goes 11 km along the stream and 5 km against the stream. The speed of the boat in still water (in km/hr) is a. 8 b. 3 c. 9 d. 5

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21. The speed of a boat in still water is 15 km/hr. It can go 30 km upstream and return downstream to the original point in 4 hours 30 minutes. Find the speed of the stream.

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22. A boat takes 4 hours for travelling downstream from point A to point B and coming back to point A upstream. If the velocity of the stream is 2 km/hr and the

speed of the boat in still water is 4 km/hr, what is the distance between A and B?

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23. A boat goes 20 km downstream in one hour and the same distance upstream in two hours. What is the speed of the boat in still water?

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24. A man rows to a place 48 km distant and back in 14 hours. He finds that he can row 4 km with the stream in the same time as 3 km against the stream. The rate of the stream is :

$1\ km/hr$ b. $1.8\ km/hr$ c. $1.5\ km/hr$ d. $3.5\ km/hr$

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25. A boat goes 6 km in an hour in still water. It takes thrice as much time in covering the

same distance against the stream. What is the speed of the stream?

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Section A Question Bank 21 A

1. A person wants to travel a distance of 50 km by his bicycle. He travels with a speed of 12.5 km/hr. After every 12.5 km, he takes a rest of 20 minutes. How much time will he take to complete the whole distance?

A. 4 hrs 20 min

B. 5 hrs 20 min

C. 5 hrs

D. 6 hrs

Answer: C

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2. Two cars start at the same time from one point and move along two roads at right angles to each other. Their speeds are 36

km/hr and 48 km/hr respectively. After 15 seconds, the distance between them will be

A. 400 m

B. 150 m

C. 300 m

D. 250 m

Answer: D

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3. In a race of 800 m, A can beat B by 40 m. In a race of 500 m, B can beat C by 5 m. In a race of 200 m, A will beat C by

A. 11.9 m

B. 1.19 m

C. 12.7 m

D. 1.27 m

Answer: A

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4. A constable follows a thief who is 200 m ahead of the constable. If the constable and the thief runs at the speeds of 8 km/hr and 7 km/hr respectively, the constable would catch the thief in

A. 10 min

B. 12 min

C. 15 min

D. 20 min

Answer: B

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5. Two buses travel to a place at 45 km/hr and 60 km/hr respectively. If the second bus takes $5\frac{1}{2}$ hrs less than the first for the journey, the length of the journey is

A. 900 km

B. 945 km

C. 990 km

D. 1350 km

Answer: C

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6. A cyclist covering a distance of 40 km would have reached 1 hour earlier, if he had run at an increased speed of 2 km/hr. His speed in (km/hr) was

A. 6

B. 8

C. 10

D. 12

Answer: B

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7. Ram travels from P to Q at 10 km/hr and returns at 15 km/hr. Shyam travels from P to Q and returns at 12.5 km/hr. If he takes 12 minutes less than Ram, then what is the distance between P and Q?

A. 60 km

B. 45 km

C. 36 km

D. 30 km

Answer: D

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8. A student reached his school late by 20 minutes by travelling at a speed of 9 km/hr. Had he travelled at the speed of 12 km/hr, he would have reached his school 20 minutes

early. Find the distance between his house and the school?

A. 12 km

B. 6 km

C. 3 km

D. 24 km

Answer: D

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9. An aircraft was to take off from a certain airport at 8 a.m., but it was delayed by 30 min. To make up for the lost time, it was to increase its speed by 250 km/hour from the normal speed to reach its destination 1500 km on time. What was the normal speed of the aircraft?

A. 650 km/hr

B. 750 km/hr

C. 850 km/hr

D. 1000 km/hr

Answer: B

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10. Robert is travelling on his cycle and has calculate to reach point A at 2 P.M. if he travels at 10 kmph; he will reach there at 12 noon if he travels at 15 kmph. At what speed must he travel to reach A at 1 P.M.? $8\ kmph$ b. $11\ kmph$ c. $12\ kmph$ d. $14\ kmph$

A. 8 km/hr

B. 11 km/hr

C. 12 km/hr

D. 14 km/hr

Answer: C

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11. A is faster than B. A and B each walk 24 km. the sum of their speeds is 7 km /hr and the sum of times taken by them is 14 hours. Then

As speed is equal to $3km/hr$ b. $4\ km/hr$ c. $5\ km/hr$ d. $7\ km/hr$

A. 3 km/hr

B. 4 km/hr

C. 5 km/hr

D. 7 km/hr

Answer: B

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12. A car travels the first one third of a certain distant with a speed of 10 km/hr, the next one third distant with a speed of 20 km/hr and the last one third distance with a speed of 60 km/hr. The average speed of the car for the whole journey is $18\,km/hr$ b. $24\,km/hr$ c. $30km/hr$ d. $36\,km/hr$

A. 18 km/hr

B. 24 km/hr

C. 30 km/hr

D. 36 km/hr

Answer: A

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13. A motor car starts with a speed of 70 km/hr with its speed increasing every two hours by 10 km/hr. In how many hours will it cover 345 kms?

A. $2\frac{1}{4}$ hrs

B. 4 hrs 5 min

C. $4\frac{1}{2}$ hrs

D. 3 hrs

Answer: C

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14. A train can travel 0% faster than a car,. Both start from point A at the same time and reach point B 75 kms away from A at the same time. One the way, however, the train lost

about 12.5 minutes while stopping at the stations. The speed of the car is $100\ kmph$ b. $120\ kmph$ c. $110\ kmph$ d. $130\ kmph$

A. 100 km/hr

B. 110 km/hr

C. 120 km/hr

D. 130 km/hr

Answer: C

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15. Shyam went from Delhi to Shimla via Chandigarh by car. The distance from Delhi to Chandigarh is $\frac{3}{4}$ times the distance from Chandigarh to Shimla. The average speed from Delhi to Chandigarh was one and a half times that from Chandigarh to Shimla. If the average speed for the entire journey was 49 km/hr, what was the average speed from Chandigarh to Shimla?

A. 39.2 km/hr

B. 63 km/hr

C. 42 km/hr

D. 35 km/hr

Answer: C

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16. A and B walk around a circular track. They start at 8 a.m. from the same point in the opposite directions. A and B walk at a speed of 2 rounds per hour and 3 rounds per hour

respectively. How many times shall they cross each other before 9.30 am.? 5 b. 6 c. 7 d. 8

A. 5

B. 6

C. 7

D. 8

Answer: C

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17. A man covered a certain distance at some speed Had he moved 3 kmph faster, he would have taken 40 minutes less. If he had moved 2 kmph slower; he would have taken 40 minutes more. The distance (in km) is 35 b. 40 c. $36\frac{2}{3}$ d. $37\frac{1}{2}$

A. 35

B. $36\frac{2}{3}$

C. $37\frac{1}{2}$

D. 40

Answer: D

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18. A and B are 25 km apart. If they travel in opposite directions, they meet after one hour. If they travel in the same direction, they meet after 5 hours. If A travels faster than B, then the speed of A is

A. 10 km/hr

B. 12.5 km/hr

C. 15 km/hr

D. 20 km/hr

Answer: C

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19. A small aeroplane can travel at 320 km/hr in still air. The wind is blowing at a constant speed of 40 km/hr. The total time for a journey against the wind is 135 minutes. What will be the time, in minutes for the return journey

with the wind? (Ignore take off and landing times for the aeroplane.)

A. 94.5

B. 105

C. 108.125

D. 120

Answer: B

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20. A man reduces his speed to two-third to walk a distance and consequently becomes late by 1 hour. With his usual speed, he covers the same distance in

A. $\frac{1}{4}$ hour

B. $\frac{1}{2}$ hour

C. 2 hours

D. $1\frac{1}{2}$ hours

Answer: C

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21. If I walk at 3 km/hr, I miss a train by 2 minutes. If, however, I walk at 4 km/hr, then I reach the station 2 minutes before the arrival of the train. How far do I walk to reach the station?

A. $\frac{3}{4}$ km

B. $\frac{4}{5}$ km

C. $\frac{5}{4}$ km

D. 1 km

Answer: B

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22. A car driver, driving in a fog, passes a pedestrian who was walking at the rate of 2 km/hr in the same direction. The pedestrian could see the car for 6 minutes and it was visible to him upto a distance of 0.6 km. What was the speed of the car?

A. 15 km/hr

B. 30 km/hr

C. 20 km/hr

D. 8 km/hr

Answer: D

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23. A train increases Its normal speed by 12.5% and reaches its destination 20 minutes earlier. What is the actual time taken by the train in

the journey? $145\, m \in$ b. $180\, m \in$ c. $160\, m \in$ d. $220\, m \in$

A. 220 min

B. 180 min

C. 145 min

D. 160 min

Answer: B

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24. A bike travels a distance of 200 km at a constant speed, If the speed of the bike is increased by 5 km/hr, the journey would have taken 2 hours less. What is the speed of the bike?

A. 30 km/hr

B. 25 km/hr

C. 20 km/hr

D. 15 km/hr

Answer: C

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25. Two persons P and Q start at the same time from city A to city B, 60 km away. P travels 4 km/hr slower than Q. Q reaches city B and at once turns back meeting P, 12 km from city B. What is the speed of P?

A. 8 km/hr

B. 12 km/hr

C. 16 km/hr

D. 20 km/hr

Answer: A

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26. A starts from a place P to go to a place Q. At the same time B starts from Q to P. If after meeting each other A and B took 4 and 9 hours more respectively to reach their destinations, the ratio of their speeds is

A. $3:2$

B. $5:2$

C. $9:4$

D. $9:13$

Answer: A

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27. In covering a certain distance, the speeds of A and B are in the ratio of 3:4. A takes 30 minutes more than B to reach the destination.

The time taken by A to reach the destination is

$1\ hour$ b. $2\ hours$ c. $1\frac{1}{2} hours$ d. $2\frac{1}{2} hours$

A. 1 hour

B. $1\frac{1}{2}$ hours

C. 2 hours

D. $2\frac{1}{2}$ hours

Answer: C

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28. A and B run a kilometre and A wins by 25 sec. A and C run a kilometre and A wins by 275m. When B and C run the same distance, B wins by 30 sec. The time taken by A to run a kilometre is

A. 2 min 25 sec

B. 2 min 50 sec

C. 3 min 20 sec

D. 3 min 30 sec

Answer: A

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29. A hare sees a dog 200 m away from her and scuds off in the opposite direction at a speed of 24 km/hr. Two minutes later, the dog perceives her and gives chase at a speed of 32 km/hr. How soon will the dog overtake the hare and what is the distance from the spot from where the hare took flight?

A. 8 min 2 km

B. $7\frac{1}{2}$ min, 2 km

C. $7\frac{1}{2}$ min, 3 km

D. $7\frac{1}{2}$ min, 1 km

Answer: C

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30. A, B and C start from the same place and travel the same directions at speeds of 30, 40 and 60 km/hr respectively. B starts two hours after A. If B and C overtake A at the same instant, how many hours after A did C start.

A. 3

B. 3.5

C. 4

D. 4.5

Answer: C

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Section B Question Bank 21 B

1. In what time will a train 100 metres long with a speed of 50 km/hour cross a pillar?

A. 7 seconds

B. 72 seconds

C. 7.2 seconds

D. 70 seconds

Answer: C

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2. Two trains 160 m and 140 m long are running in opposite directions on parallel rails, the first at 77 km/hr and the other at 67 km/hr. How long will they take to cross each other?

A. 7 seconds

B. $7\frac{1}{2}$ seconds

C. 6 seconds

D. 10 seconds

Answer: B

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3. How much time does a train 50 m long moving at 68 km/hr take to pass another train 75 m long moving at 50 km/hr in the same direction?

A. 5 seconds

B. 10 seconds

C. 20 seconds

D. 25 seconds

Answer: D

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4. A person standing on a railway platform noticed that a train took 21 seconds to completely pass through the platform which was 84 m long and it took 9 seconds in passing him. Find the speed of the train in km/hr.

A. 25.2 km/hr

B. 32.4 km/hr

C. 50.4 km/hr

D. 75.6 km/hr

Answer: A

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5. A moving train 66 metres long overtakes another train of 88 metres long, moving in the same direction in 0.168 minutes. If the second

train is moving at 30 km/hr, at what speed is the first train moving?

A. 85 km/hr

B. 50 km/hr

C. 55 km/hr

D. 25 km/hr

Answer: A

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6. A train of length 150 m takes 10 sec to pass over another train 100 m long coming from opposite direction. If the speed of the first train be 30 km/hr, the speed of the second train is

A. 54 km/hr

B. 60 km/hr

C. 72 km/hr

D. 36 km/hr

Answer: B

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7. A train is running at a speed of 45 km/hr and a man is walking at a speed of 5 km/hr in the opposite direction. If the train crosses the man in 18 seconds, then its length is

A. 200 m

B. 220 m

C. 180 m

D. 250 m

Answer: A

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8. Two trains of equal length stake 10 seconds and 15 seconds respectively to cross a telegraph post. If the length of each train be 120 metres, in what time (in seconds) will they cross each other travelling in opposite direction? 10 b. 12 c. 15 d. 20

A. 16

B. 15

C. 12

D. 10

Answer: C

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9. A train passes two bridges of lengths 800 m and 400 m in 100 seconds and 60 seconds respectively. The length of the train is:

A. 80 m

B. 90 m

C. 200 m

D. 150 m

Answer: C

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10. A man standing on a platform finds that a train takes 3 seconds to pass him and another train of the same length moving in the

opposite direction takes 4 seconds. The time taken by the trains to pass each other will be $2\frac{3}{7}seconds$ b. $3\frac{3}{7}seconds$ c. $4\frac{3}{7}seconds$ d. $5\frac{3}{7}seconds$

A. $2\frac{3}{7}$ seconds

B. $3\frac{3}{7}$ seconds

C. $4\frac{3}{7}$ seconds

D. $5\frac{3}{7}$ seconds

Answer: B

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11. Two trains travel in the same direction at 60 km/hr and 96 km/hr. If the faster train passes a man in the slower train in 20 seconds, then the length of the faster train is

A. 100 m

B. 125 m

C. 150 m

D. 200 m

Answer: D

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12. Two trains each 100 m long, moving in opposite directions, cross each other in 8 seconds. If one is moving twice as fast the other, then the speed of the faster train is $30\ km/hr$ b. $45\ km/hr$ c. $6\ km/hr$ d. $75\ km/hr$

A. 30 km/hr

B. 45 km/hr

C. 60 Km/hr

D. 75 km/hr

Answer: C

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13. If a train takes 1.5 seconds to cross a-telegraph post and 1.75 seconds to overtake a cyclist racing along a road parallel to the track at 10 m/s, then the length of the train is

A. 135 metres

B. 125 metres

C. 115 metres

D. 105 metres

Answer: D

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14. A train passes two persons walking in the same direction at a speed of 3km/hour and 5km/hour respectively in 10 seconds and 11 seconds respectively. The speed of the train is

A. 28 km/hr

B. 27 km/hr

C. 25 km/hr

D. 24 km/hr

Answer: C

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15. Two trains are running at 40 km/hr and 20 km/hr respectively in the same direction. Fast train completely passes a man sitting in the

slower train in 5 seconds. What is the length of the fast train?

A. 23 m

B. $23\frac{2}{9}m$

C. 27 m

D. $27\frac{7}{9}m$

Answer: D

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16. 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: $1:3$ b. $3:2$ c. $3:4$ d. none of these

A. $1:3$

B. $3:2$

C. $3:4$

D. $1:2$

Answer: B

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17. Two trains 130 m and 110 m long are going in the same direction. The faster train takes one minute to pass the other completely. If they are moving in opposite directions, they pass each other completely in 3 seconds. Find the speed of each train?

A. 38 m/s, 36 m/s

B. 42 m/s, 38 m/s

C. 36 m/s, 42 m/s

D. 40 m/s, 36 m/s

Answer: B

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18. A train 75 m long overtook a person who was walking at the rate of 6 km/ hr in the same direction and passed him in $7\frac{1}{2}$ seconds. Subsequently, it overtook a second person and

passed him in $6\frac{3}{4}$ seconds. At what rate vas the second person travelling? $1\ km/hr$ b. $2\ km/hr$ c. $5\ km/hr$ d. $4\ km/hr$

A. 4 km/hr

B. 1 km/hr

C. 2 km/hr

D. 5 km/hr

Answer: C

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19. A train travelling at 36 km/hr passes in 12 seconds another train half its length, travelling in the opposite direction at 54 km/hr. If it also passes a railway platform in $1\frac{1}{2}$ minutes, what is the length of the platform?

A. 800 m

B. 700 m

C. 900 m

D. 1000 m

Answer: B

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20. Train A leaves Ludhiana for Delhi at 11 a.m. running at the speed of 60 km/hr. Train B leaves Ludhiana for Delhi by the same route at 2 p.m. on the same day, running at the speed of 72 km/hr. At what time will the two trains meet each other? 2 a.m. on the next day 5 a.m. on the next day 5 p.m. on the next day None of these

A. 5 am on the next day

B. 2 am on the next day

C. 5 pm on the next day

D. 2 pm on the next day

Answer: A

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21. Two men are running in the same direction with a speed of 6 km/hr and $7\frac{1}{2}$ km/hr. A train running in the same direction crosses them in

5 sec and $5\frac{1}{2}$ sec respectively. The length and the speed of the train are

A. 22.92 m (approx) and 22 km/hr

B. 22 m (approx) and 22.5 km/hr

C. 22.90 m (approx) and 20.5 km/hr

D. 22.92 m (approx) and 22.5 km/hr

Answer: D

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22. Paschini Express left Delhi for Mumbai at 14.30 hrs travelling at a speed of 60 kmph and August Kranti Express left Delhi for Mumbai on the same day at 16.30 hrs travelling at a speed of 80 kmph. How far away from Delhi will the two trains meet (excluding stoppages)? $120\,km$ b. $360\,km$ c. $480\,km$ d. $500\,km$

A. 200 km

B. 220 km

C. 240 km

D. 280 km

Answer: C

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23. A train passes two persons walking in the same directions at a speed 5 km/hr and 7 km/hr respectively in 10 sec and 11 sec respectively. Find the speed of the train.

A. 22 km/hr

B. 40 km/hr

C. 33 km/hr

D. 35 km/hr

Answer: C

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24. Two trains are 2 km apart and their lengths are 200 m and 300 m. They are approaching towards each other with a speed of 20 m/s

and 30 m/s respectively. After how much time will they cross each other.

A. 50 seconds

B. 100 seconds

C. $\frac{25}{3}$ seconds

D. 150 seconds

Answer: A

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25. Two trains pass each other on parallel lines. Each train is 100 m long. When they are going in the same direction, the faster one takes 60 seconds to pass the other completely. If they are going in opposite directions, they pass each other completely in 10 seconds. Find the speed of the slower train in km/ hr.

A. 30 km/hr

B. 42 km/hr

C. 48 km/hr

D. 60 km/hr

Answer: A

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Section C Question Bank 21 C

1. A boat moves downstream at the rate of 1 km in 6 min and upstream at the rate of 1 km in 10 min. The speed of the current (in km/hr) is

A. 1

B. 1.5

C. 2

D. 2.5

Answer: C

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2. A boat goes 40 km upstream in 8 hours and 36 km downstream in 6 hours. The speed of the boat in still water is

A. 6.5 km/hr

B. 5.5 km/hr

C. 6 km/hr

D. 5 km/hr

Answer: B

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3. A man can row at 5 kmph in still water. If the velocity of current is 1 kmph and it takes him 1 hour to row to a place and come back, how far

is the place? $2.4km$ b. $2.5\ km$ c.$3\ km$ d. $3.6\ km$

A. 2.5 km

B. 3 km

C. 2.4 km

D. 3.6 km

Answer: C

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4. A boat covers a distance of 14 km in 4 hours along the flow. What is the speed of the boat in still water, if the speed of the flow of water is 2 km/h?

A. 2 km/hr

B. 3 km/hr

C. 2.5 km/hr

D. 1.5 km/hr

Answer: D

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5. A river is running at 2 km/hr. It took a man twice as long to row up as to row down the river. The rate (in km/hr) of the man in still water is

A. 8

B. 10

C. 4

D. 6

Answer: D

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6. If a man goes 18/ km downstream in 4 hours and returns against the stream in 12 hours then the speed of the stream is km/hr is a. 1 b. 3 c. 1.5 d. 1.75

A. 1

B. 1.5

C. 2

D. 1.75

Answer: B

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7. A boat covers a certain distance downstream in 8 hours and comes back upstream in 10 hours. If the speed of the current be 1 km/hr, the distance (in km) of the one way journey is

A. 60

B. 70

C. 80

D. 90

Answer: C

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8. A motorboat in still water travels at a speed of 36 km/hr. It goes 56 km upstream in 1 hour 45 minutes. The time taken by it to cover the same distance down the stream will be

$1\,hour\,24\,m \in utes$ b. $2\,hour\,21\,m \in utes$ c. $2\,hour\,2\,m \in utes$ d. $3\,hours$

A. 2 hours 25 min

B. 3 hours

C. 1 hour 24 min

D. 2 hours 21 min

Answer: C

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9. A steamer goes downstream from one port to another in 4 hours. It covers the same distance upstream in 5 hours. If the speed of stream is 2 km/ hr, the distance between the two ports is

A. 50 km

B. 60 km

C. 70 km

D. 80 km

Answer: D

Watch Video Solution

10. The speed of a motor-boat is that of the current of water as 36:5. The boat goes along with the current in 5 hours 10 minutes. It will come back in

A. 5 hrs 50 min

B. 6 hrs

C. 6 hrs 50 min

D. 12 hrs 10 min

Answer: C

Watch Video Solution

11. A man can row at 5 km/hr in still water . If the river is running at 1km/hr it takes him 75 minutes to row to a place and back How far is the place ?

A. 2.5 km

B. 3 km

C. 4 km

D. 5 km

Answer: B

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12. A man can row $\frac{3}{4}$ if a km against the stream in $11\frac{1}{4}$ minutes and returns in $7\frac{1}{2}$ minutes. Find the speed of the man in still water. $3\,km/hr$ b. $4\,km/hr$ c. $5\,km/hr$ d. $6\,km/hr$

A. 4 km/hr

B. 3 km/hr

C. 5 km/hr

D. 6 km/hr

Answer: C

Watch Video Solution

13. Twice the speed of a boat downstream is equal to thrice the speed upstream. The ratio of its speed in still water to its speed in current is

A. $1:5$

B. $1:3$

C. $5:1$

D. $2:3$

Answer: C

Watch Video Solution

14. A boat man goes 2 km against eh current of the stream in 1 hour and goes 1 km along the current in 10 minutes. How long will it take

to go 5 km in stationary water? a. 40 minutes b. 1 hour c. 1 hr 15 min d. 1 hr 30 min

A. 1 hour

B. $1\frac{1}{2}$ hour

C. 1 hour 15 min

D. 40 min

Answer: C

Watch Video Solution

15. A boat running upstream takes 8 hours 48 minutes to cover a certain distance, while it takes 4 hours to cover the same distance running downstream. What is the ratio between the speed of the boat and speed of the water current respectively ? $2:1$ b. $3:2$ c. $8:3$ d. cannot be determined e. none of these

A. $2:1$

B. $3:1$

C. $8:3$

D. $4:3$

Answer: C

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16. A boatman row to a place 45 km distant and back in 20 hours. He finds that he can row 12 km with the stream in the same time as 4 km against the stream. Find the speed of the stream.

A. 3 km/hr

B. 2.5 km/hr

C. 4 km/hr

D. 3.5 km/hr

Answer: A

Watch Video Solution

17. A boat takes 90 minutes less to travel 36 miles downstream than to travel the same distance upstream. If the speed of the boat in

still water is 10 mph; the speed of the stream is : $2mph$ b. $3\ mph$ c. $4\ mph$ d. $2.\ 5mph$

A. 4 km/hr

B. 3 km/hr

C. 2.5 km/hr

D. 2 km/hr

Answer: D

Watch Video Solution

18. A boat goes 24 km upstream and 28 km downstream in 6 hours. It goes 30 km upstream and 21 km down-stream in 6 hours and 30 minutes. The speed of the boat in still water is

A. 10 km/hr

B. 4 km/hr

C. 14 km/hr

D. 6 km/hr

Answer: B

Watch Video Solution

19. At his usual rowing rate, Rahul can travel 12 miles downstream in a certain river in 6 hours less than it takes him to travel the same distance upstream. But if he could double his usual rowing rate for his 24-mile round trip, the downstream 12 miles would then take only one hour less than the upstream 12 miles. What is the speed of the current in miles per hours? $1\frac{1}{3}$ b. $1\frac{2}{3}$ c. $2\frac{1}{3}$ d. $2\frac{2}{3}$

A. $1\frac{1}{3}$

B. $1\frac{2}{3}$

C. $2\frac{1}{3}$

D. $2\frac{2}{3}$

Answer: D

Watch Video Solution

20. A boat takes 11 hours for travelling downstream from point A to point B and coming back to point C midway between A and

B. If the velocity of the stream be 3 km/hr and the speed of the boat in still water be 12 km/hr, what is the distance between A and B?

A. 100 km

B. 90 km

C. 110 km

D. 120 km

Answer: B

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Self Assessment Sheet 21

1. A student walks from his house at a speed of $2\frac{1}{2}$ km per hour and reaches his school 6 minutes late. The next day he increases his speed by 1 km per hour and reaches 6 minutes before school time. How far is the school from his house? $1\frac{1}{4}km$ b. $1\frac{3}{4}km$ c. $2\frac{1}{4}km$ d. $2\frac{3}{4}km$

A. 2.5 km

B. 3 km

C. 1.75 km

D. 1 km

Answer: C

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2. Distance between two points A and B is 110 km. A motor-cycle rider starts from A towards B at 7 am at a speed of 20 km/hr. Another motor-cycle rider starts from B towards A at 8

am at a speed of 25 km/hr. Find when will they cross each other.

A. 11 am

B. 9:30 am

C. 8:30 am

D. 10 am

Answer: D

Watch Video Solution

3. A train leaves the station 1 hour before the scheduled time. The driver decreases its speed by 50 km/hr. At the next station 300 km away, the train reached on time. Find the original speed of the train.

A. 100 km/hr

B. 150 km/hr

C. 125 km/hr

D. 200 km/hr

Answer: B

Watch Video Solution

4. A train of length 150 m takes 10 s to cross another train 100 m long coming from opposite direction. If the speed of the first train is 30 km/hr, what is the speed of the second train?

A. 72 km/hr

B. 60 km/hr

C. 54 km/hr

D. 48 km/hr

Answer: B

 Watch Video Solution

5. Two trains of equal length are running on parallel line's 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 $50\ m$ b. $72\ m$ c. $80\ m$ d. $82\ m$

A. 50 m

B. 72 m

C. 80 m

D. 82 m

Answer: A

Watch Video Solution

6. Two men are running in the same direction with a speed of 6 km/hr and $7\frac{1}{2}$ km/hr. A train running in the same direction crosses them in

5 sec and $5\frac{1}{2}$ sec respectively. The length and the speed of the train are

A. 33 km/hr

B. 40 km/hr

C. 22 km/hr

D. 35 km/hr

Answer: A

Watch Video Solution

7. A man can row $\frac{3}{4}$ if a km against the stream in $11\frac{1}{4}$ minutes and returns in $7\frac{1}{2}$ minutes. Find the speed of the man in still water. $3\ km/hr$ b. $4\ km/hr$ c. $5\ km/hr$ d. $6\ km/hr$

A. 2 km/hr

B. 3 km/hr

C. 4 km/hr

D. 5 km/hr

Answer: D

Watch Video Solution

Watch video solution

8. A boat running upstream takes 8 hours 48 minutes to cover a certain distance, while it takes 4 hours to cover the same distance running downstream. What is the ratio between the speed of the boat and speed of the water current respectively ? $2:1$ b. $3:2$ c. $8:3$ d. cannot be determined e. none of these

A. $2:1$

B. $3:1$

C. $8:3$

D. Cannot be determined

Answer: C

Watch Video Solution

9. A boat covers 24 km upstream and 36 km downstream in 6 hours while it covers 36 km upstream and 24 km downstream in $6\frac{1}{2}$ hours. The velocity of the current is $1\,km/hr$ b. $1.5\,km/hr$ c. $2\,km/hr$ d. $2.\,km/hr$

A. 1 km/hr

B. 2 km/hr

C. 1.5 km/hr

D. 2.5 km/hr

Answer: B

Watch Video Solution

10. The average speed of a tram is 20% less on the return journey than on the onward journey. The train halts for half an hour at the

destination station before starting on the return journey. If the total time taken for the to and fro journey is 23 hours, covering a distance of 1000 km, the speed of the train on the return journey is $40\ km/hr$ b. $50\ km/hr$ c. $55\ km/hr$ d. $60\ km/hr$

A. 60 km/hr

B. 40 km/hr

C. 50 km/hr

D. 55 km/hr

Answer: B

Watch Video Solution

Unit Test 3

1. If an amount of Rs. 1,50,000 is shared among A, B and C in the ratio of 2 : 3 : 5, then A receives the same amount as he would receive if another sum of money is shared between A, B and C in the ratio of 5 : 3 : 2. The ratio of Z 1,50,000 to the second The amount of money is $2:3$ b. $3:2$ c. $5:2$ d. $5:3$

A. $2:3$

B. $3:2$

C. $5:3$

D. $5:2$

Answer: D

Watch Video Solution

2. Two vessels contain mixture of milk and water in the ratio of $1:3$ and $3:5$ to be mixed to get a new mixture in which the ratio of milk

to water is $1:2$. In what ratio should quantities of mixtures be taken from vessels.

A. $2:1$

B. $10:7$

C. $20:7$

D. $1:2$

Answer: C

Watch Video Solution

3. A man's income is increased by Rs. 1200 and at from the same time, the rate of tax to be paid is reduced 12% to 10%. He now pays the same amount of tax as before. What is his increased income if 20% of his income is exempted from tax in both cases? $Rs.4500$ b. $Rs.6300$ c. $Rs.6500$ d. $Rs.7200$

A. Rs. 6300

B. Rs. 7200

C. Rs. 4500

D. Rs. 6500

Answer: B

 Watch Video Solution

4. In an institute 60% of the students are boys and the rest are girls. Further 15% of the boys and 7.5% of the girls are getting a fee waiver. If the number of those getting a fee waiver is 90, find the total number of students getting 50% concessions if it is given that

50% of those not getting a fee waiver are eligible to get half fee concession?

A. 360

B. 280

C. 320

D. 330

Answer: D

Watch Video Solution

5. Jai sells a shirt at a profit of 25 per cent. Had he bought it at 25 per cent less and sold it for Rs. 25 less, he still would have gained 25 per cent. The cost price of the shirt is:

A. Rs. 50

B. Rs. 75

C. Rs. 80

D. Rs. 100

Answer: C

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Watch Video Solution

6. A person buys two watches for Rs. 1,000. He sells one at a loss of 5% and the other at 20% gain and on the whole he gains Rs. 50. Find the cost price of each watch.

A. Rs. 150

B. Rs. 90

C. Rs. 75

D. Rs. 100

Answer: B

Watch Video Solution

7. A dealer buys an article listed at Rs. 100 and gets successive discounts of 10% and 20%. He spends 10% of the cost price on transportation. At what price should he sell the article to earn a profit of 15% ?

A. Rs. 910.80

B. Rs. 900.50

C. Rs. 910.50

D. Rs. 980.50

Answer: A

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8. A manufacturer marks his goods at 40% above the cost price. He allows a discount of 10% for cash customers and 5% to credit customers. $\frac{3}{5}$ of the goods are sold for cash and the rest on credit. What is the percentage

of profit when all the goods are sold and amount realised?

A. Rs. 350

B. Rs. 720

C. Rs. 360

D. Rs. 460

Answer: C

 Watch Video Solution

9. The average of four consecutive even numbers is one-fourth of the sum of these numbers. What is the difference between the first and last number?

A. 4

B. 6

C. 2

D. 8

Answer: B

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Watch Video Solution

10. The average weight of 3 men A, B and C is 84 kg. Another man D joins the group and the average now becomes 80 kg. If another man E, whose weight is 3 kg more than that of D, replaces A, then the average weight of B, C, D and E becomes 79 kg. The weight of A is (a) 70 kg (b) 72 kg (c) 75 kg (d) 80 kg

A. 65 kg

B. 70 kg

C. 75 kg

D. 80 kg

Answer: C

Watch Video Solution

11. A person invested some amount at the rate of 12% simple interest and a certain amount at the rate of 10% simple interest. He received yearly interest of Rs 130. But if he had interchanged the amounts invested, he would

have received Rs 4 more as interest. How much did he invest at 12% simple interest? (a) Rs 400 (b) Rs 500 (c) Rs 700 (d) Rs 800

A. Rs. 500 @ 12%, Rs. 700 @ 10%

B. Rs. 700% @ 12%, Rs. 500 @ 10%

C. Rs. 700 @ 12%, Rs. 700 @ 10%

D. Rs. 500 @ 12%, Rs. 500 @ 10%

Answer: A

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12. Shubhaiaxmi took a loan of Rs 18000 from Surya Finance to purchase a TV set. If the company charges compound interest at 12% per annum during the first year and $12\frac{1}{2}\%$ per annum during the second year, how much will she have to pay after 2 years?

A. Rs. 7830

B. Rs. 4410

C. Rs. 1210

D. Rs. 6620

Answer: C

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13. Sanju puts equal amount of money one at 10% per annum compound interest payable half yearly and the second at a certain rate per cent per annum compound interest payable yearly. If he gets equal amounts after 3 years, what is the value of the second rate per cent?

A. $10\frac{1}{4}\%$

B. 10%

C. $9\frac{1}{2}\%$

D. $8\frac{1}{4}\%$

Answer: A

Watch Video Solution

14. A machine depreciates in value each year at the rate of 10% of its previous value. However, every second year there is some maintenance work so that in that particular year,

depreciation is only 5% of its previous value. If at the end of the fourth year, the value of the machine stands at Rs. 1,46,205, then find the value of the machine at the start at the first year?

A. Rs. 1,90,000

B. Rs. 2,00,000

C. Rs. 1,95,000

D. Rs. 2,10,000

Answer: B

Watch Video Solution

15. A, B and C can do a piece of work in 36, 54 and days respectively. They started the work but A left days before the completion of the work while B 12 days before the completion. The number of days for which C worked is 4 b. 8 c. 12 d. 24

A. 4

B. 8

C. 12

D. 24

Answer: D

Watch Video Solution

16. A certain number of men, twice as many women and thrice as many boys earn in 6 days Rs. 5100. A woman earns one and a half times as a boy and a man as much as a woman and a boy together per day. How many women were there, if a boy earned Rs. 25 daily.

A. 4

B. 7

C. 12

D. 36

Answer: B

 Watch Video Solution

17. Two taps P and Q can fill an empty tank in 15 hours and 30 hours respectively. Both taps were opened at 4 a.m. and after some time,

tap Q was closed. It was found that the tank was full at 4 p.m. At what time was the tap Q shut ?

A. 12 min

B. 15 min

C. 30 min

D. 20 min

Answer: C

Watch Video Solution

18. From a light-house an observer two ships A and B. Ship A proceeding towards north at a speed $20\sqrt{2}km/h$ and ship B proceeding towards north-east at a speed of $20km/h$. Find in which direction and at what speed the ship B would appear to move to an observer standing on the deck of the ship A.

A. 4 pm

B. 4.30 pm

C. 3 pm

D. 2.30 pm

Answer: A

Watch Video Solution

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

A. 3 seconds

B. $4\frac{4}{5}$ seconds

C. $5\frac{3}{5}$ seconds

D. 6 seconds

Answer: C

Watch Video Solution

20. A man rows a boat upstream a certain distance and then returns back to the same place. If the time taken by him in going upstream is twice the time taken in rowing downstream, find the ratio of the speed of the

boat in still water and the speed of the stream.

A. $2:1$

B. $3:2$

C. $5:3$

D. $3:1$

Answer: D

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