



# DEFENCE MANIA

## EDUTECH PVT. LTD

### Speed, Time & Distance

1. A boat has a speed of 20 km/h in calm water. If the boat covers a distance of 20 km in the opposite direction of the stream in 4 hours, find the speed of the stream.  
(A) 20 km/h (B) 15 km/h  
(C) 25 km/h (D) 30 km/h
2. The speed of a boat is 12 km/hr in still water. If the boat covers a distance of 38 km in the opposite direction of the stream of water in 4 hours, then the speed of the stream is in km/hr?  
(A) 3 (B) 2.5  
(C) 3.17 (D) 6.5
3. In still waters, it takes a total of 15 hours for a boat to reach its destination and return to its starting point from there. The same journey requires 16 hours if the river flows. The difference between the speed of the boat and the river is 15 km/h. Find the speed of river flow.  
(A) 10 km/h (B) 6 km/h  
(C) 4 km/h (D) 5 km/h
4. A rider takes 16 hours to run 100 km against the stream, while it takes only 10 hours to travel the same distance to the stream. What is the speed of the stream?  
(A) 6.625 km/h (B) 1.875 km/h  
(C) 6.25 km/h (D) 8.125 km/h
5. The speed of a boat in still water is 20 km/hr. The boat travels 364 kilometers downstream and then travels in the reverse direction to its starting point. The journey takes a total of 40 hours. What is the speed of the stream?  
(A) 10 km/h (B) 8 km/h  
(C) 4 km/h (D) 6 km/h
6. A person swims 4 km opposite the stream and 16 km in the direction of the stream in every 5 hours. What is the speed of the stream?  
(A) 2.2 km/h (B) 3.2 km/h  
(C) 1.2 km/h (D) 1.5 km/h
7. A swimmer swimming in still water at a speed of 9 km/h finds that the time he takes to travel a certain distance in the direction of the stream is half the time he takes to cover the same distance in the opposite direction. Find the speed of water.  
(A) 10 km/h (B) 3 km/h  
(C) 5 km/h (D) 8 km/h
8. The sailor takes 12 hours to cover a distance of 75 km opposite the stream while it takes only 7.5 hours to cover that distance in the direction of the stream. What is the speed of the stream?  
(A) 6.625 km/h  
(B) 6.25 km/h  
(C) 8.125 km/h  
(D) 1.875 km/h
9. A boat covers a distance of 35 km in the direction of the stream in 5 hours and returns in 7 hours. Find the speed of the boat in still water.  
(A) 6 km/h (B) 5.5 km/h  
(C) 10.5 km/h (D) 7.5 km/h
10. A man's speed in still water is  $28/3$  km/h. In the opposite direction of the stream he takes three times the time taken in the same direction of the stream. What is the speed of the stream?  
(A)  $16/3$  km/h (B)  $20/3$  km/h  
(C) 6 km/h (D)  $14/3$  km/h
11. A boat, which has a speed of 15 km/h in still water, goes 30 km in the direction of the stream and returns in the opposite direction of the stream in 4.5 hours. Find the speed of the stream.  
(A) 4 km/h (B) 5 km/h  
(C) 10 km/h (D) 6 km/h
12. It takes 8 hours for a rider to cover a distance of 60 km upstream of a river while it takes 5 hours to cover the same distance downstream. What will be the speed of the rider in still water?  
(A) 9.25 km/h (B) 9.80 km/h  
(C) 9.75 km/h (D) 9.5 km/h
13. Arjuna takes 5 hours to swim 40 km in the opposite direction of the stream, while he only takes 2 hours to swim 24 km in the direction of the stream. Find out his speed in still water.  
(A) 12 km/hr (B) 10 km/hr  
(C) 9 km/hr (D) 15 km/hr

14. A sailor covers a distance of 2 km in the opposite direction of the stream in 1 hour and a distance of 1 km in the direction of the stream in 10 minutes. Find the speed of the boat in still water.  
(A) 4 km/h (B) 2.5 km/h  
(C) 3 km/h (D) 4.5 km/h
15. If the time taken in the opposite direction of the current =  $n \times$  the time taken in the direction of the stream and the speed in still water is 'x' and the speed of stream is 'y', find the value of x: y.  
(A)  $n/2$  (B)  $(n+1)/(n-1)$   
(C)  $(n-1)/(n+1)$  (D)  $n/(n-1)$
16. Suresh covers a distance of 34 kilometers in a direction of a river in 4 hours 15 minutes by a luxury boat and 19 kilometers in the opposite direction of a river in 3 hours 10 minutes. What is the speed of river flow at present?  
(A) 3 km/h (B) 2 km/h  
(C) 1 km/h (D) 5 km/h
17. Ramu can ride a boat in still water at a speed of 9 km/h. It takes twice the time to go in the opposite direction of the stream than it goes in the direction of the stream. Find the speed of the stream.  
(A) 16 km/h (B) 8 km/h  
(C) 3 km/h (D) 9 km/h
18. A man can ride a boat at a speed of 4 km/h. He found that the time taken to move in the opposite direction of the stream is double the time it takes to go in the direction of the stream. Find the speed of the stream (in km/h).  
(A) 1.5 (B) 1.3  
(C) 2 (D) 1
19. The speed of a boat is 40 km/h in the opposite direction of the stream and 55 km/h in still water. What will be the speed of the boat in the direction of the stream of the river?  
(A) 75 km/h (B) 70 km/h  
(C) 60 km/h (D) 65 km/h
20. A person travels a distance of 16 km in two hours in the direction of the stream. If he travels half the distance in the opposite direction of the stream at the same time, find the speed of the stream.  
(A) 4 km/hr (B) 2 km/hr  
(C) 3 km/hr (D) 1 km/hr
21. A boat goes in the opposite direction of the stream from city P to city Q and in the direction of the stream returns from city Q to city P. If the speed of the boat in still water is 35 km/h and the speed of the stream is 5 km/h, what is the average speed of the boat in the entire journey?  
(A) 36.28 km/h (B) 34.28 km/h  
(C) 35 km/h (D) 33.33 km/h
22. A boat moves from city x to city y against the stream and returns from city y to city x in the direction of the stream. If the boat has 40 km/h in still water and the speed of the stream is 10 km/h, what is the average speed of the boat in the entire journey?  
(A) 36.5 km/h (B) 34.5 km/h  
(C) 37.5 km/h (D) 33.33 km/h
23. The speed of a boat in still water is 11 km/h. If the boat travels 19 km in the opposite direction of the stream in 2 hours. Find the speed of the stream.  
(A) 20.5 (B) 11.5  
(C) 1.5 (D) 3
24. The speed of a boat in still water is 12 km/h, and the speed of the stream is 3 km/h. A person goes 135 km in the unfavorable direction of the stream by boat and returns to the starting point, in the direction of stream. Find the time taken to cover the entire journey in hours.  
(A) 24 (B) 48  
(C) 36 (D) 30
25. If the speed of the boat in still water is x km/h and the speed of the stream is y km/h and the time taken to reach a place and return from there is 't' hour, find the distance traveled in one direction.  
(A)  $\left[\left(\frac{x^2+y^2}{2xy}\right)t\right]$  km (B)  $\left[\frac{t(x^2-y^2)}{2x}\right]$  km  
(C)  $\left[\frac{t(x^2+y^2)}{2x}\right]$  km (D)  $\left[\frac{t(x^2-y^2)}{xy}\right]$  km
26. A train departs from a station at a speed. From the same station, in the direction of first train, after two hours a second train departs at a speed of 70 km/h and after five hours equivalent of first train. Find speed of the first train in km/h.  
(A) 50 Km/h (B) 40 Km/h  
(C) 55 Km/h (D) 45 Km/h
27. A 250 m long goods train has a speed of 33 km/hr. A 200 m long, parallel train running at a speed of 60 km/hr in the same direction of the goods train, which chases the goods train and overtakes it after some time. In how much time (in minutes) did the mail train completely overtake the goods train?  
(A) 1 minut (B) 1.5 minut  
(C) 3 minut (D) 2 minut
28. Two trains 110 km/hr and 90 km/hr are traveling in the same direction respectively. The fast train crosses a man in a slow train in 18 seconds. What is length of the car?  
(A) 200 m (B) 250 m  
(C) 100 m (D) 150 m
29. Two trains of length 152.5 m and 157.5 m coming from opposite directions cross each other in 9.3 seconds. Then what will be the combined speed of both trains per hour?  
(A) 120 Km/h (B) 125 Km/h  
(C) 130 Km/h (D) 115 Km/h
30. Two trains 132 m and 108 m are running in opposite direction at speeds of 32 km/h and 40 km/h respectively. How long will they take to cross each other after meeting?

- (A) 12 sec. (B) 20 sec.  
(C) 15 sec. (D) 32 sec.
31. When two trains are running in opposite direction at the speed of 40 km/hr and 32 km/hr respectively, So fast moving train crosses the person sitting on slow moving train in 15 seconds. What is length of the fast train?  
(A) 200 m (B) 300 m  
(C) 120 m (D) 100 m
32. Two trains, one 153 m long and the other 127 m long, came from opposite directions and crossed each other in 7.2 seconds. How many km/h will the combined speed of two trains be?  
(A) 70 Km/h (B) 140 Km/h  
(C) 105 Km/h (D) 280 Km/h
33. Distance between two stations is 380 km. From these stations, two trains run simultaneously on parallel tracks to cross each other. One of them has a speed of 7 km/h more than the other. If distance between two trains is 126 km after 2 hours from beginning, then what is the speed of each train?  
(A) 75 Km/h, 82 Km/h (B) 55 Km/h, 62 Km/h  
(C) 58 Km/h, 65 Km/h (D) 67 Km/h, 60 Km/h
34. Two trains, one of which is 210 m in length and the other of 250 m, running on parallel tracks at speeds of 130 km/hr and 110 km/hr respectively. If they are running in opposite directions, then how long will it take for them to cross each other completely?  
(A) 6.9 sec (B) 6.3 sec  
(C) 6.6 sec (D) 6.1 sec
35. Two trains coming from opposite directions, one 144.5 meters long and the other 165.5 meters long, cross each other in 9.3 seconds. What will be the combined speed of two trains every hour?  
(A) 120 km (B) 130 km  
(C) 115 km (D) 125 km
36. A 350 meter long train is running at a speed of 54 km/h. In what time will the train cross the person running at a speed of 9 km/h in opposite direction of the train?  
(A) 20 sec (B) 6 sec  
(C) 12 sec (D) 15.6 sec
37. A train leaves 5 am from Patna and reaches Bhopal at 9 am. Second train leaves from 6.30 am Bhopal and reaches Patna at 10 am, What time do both trains meet?  
(A) 7: 55 pm. (B) 7: 55 am.  
(C) 7: 40 am. (D) 7: 40 pm.
38. Distance between two stations, Delhi and Amritsar is 450 km. A train leaves Delhi at 4 : 00 pm and runs towards Amritsar at an average speed of 60 km/h. Second train runs from Amritsar at 3:20 pm and runs towards Delhi at an average speed of 80 km/hr. How far and at what time will both trains get from Delhi?
- (A) 170 km, 4 : 50 pm. (B) 110 km, 6 : 50 pm.  
(C) 150 km, 6 : 50 pm. (D) 170 km, 6 : 50 pm.
39. At 8 am, a train starts its journey from station A to station B at a speed of 40 km/h. After one hour another train starts from station B towards station A at a speed of 50 km/h. If both stations are 220 km away, then at what time will they cross each other?  
(A) 10: 30 am (B) 11: 00 am  
(C) 10: 00 am (D) 11: 30 am
40. A train completes a journey in 8 hours, The first half of the journey is completed at a speed of 45 km/hr and the second half at 55 km/hr. What is total distance traveled?  
(A) 395 km (B) 296 km  
(C) 396 km (D) 391 km
41. A train crosses a 155 m long platform in 16 s and a 195 m long platform in 18 s. What is average speed of the train?  
(A) 66 km/h (B) 72 km/h  
(C) 75 km/h (D) 69 km/h
42. Prithvi is going to Delhi by Rajdhani Express, which is running 6 minutes late. The driver increased his speed to 4 km/h. At the next station, train arrived on time, 36 km away. What is original speed of the train?  
(A) 20 km/hr (B) 36 km/hr  
(C) 30 km/hr (D) 26 km/hr
43. After the accident, a train runs at  $\frac{4}{5}$  of its speed. Due to which that arrives 30 minutes late. Find original time of journey ahead of accident area.  
(A) 120 minut (B) 90 minut  
(C) 150 minut (D) 60 minut
44. A train runs at a speed of 72 km/h. What is the total distance covered by it in 15 seconds?  
(A) 150 meter (B) 300 meter  
(C) 200 meter (D) 100 meter
45. A bullet train completes its journey in 12 hours without stopping. If it travels 30 km/h faster then it will complete the journey in 10 hours 40 minutes, what was speed of the train when it took 12 hours to complete the journey?  
(A) 320 Km/h (B) 180 Km/h  
(C) 320 Km/h (D) 240 Km/h
46. A train is running at a speed of 160 km/h and has a length of 180 m. Find the time taken by train to cross a pillar.  
(A) 4.05 sec (B) 5 sec  
(C) 8.2 sec (D) 10 sec
47. A 110 m long train is running at a speed of 60 km/h. In what time will it cross the person who is running in the opposite direction of train at a speed of 6 km/h?  
(A) 5 sec (B) 6 sec  
(C) 10 sec (D) 7 sec



48. A train 120 meters long crosses a platform 100 meters long in 10 seconds. Find its speed-  
(A) 79.2 Km/h (B) 80 Km/h  
(C) 72 Km/h (D) 100 Km/h
49. A train running at a speed of 78 km/h crosses a 455 m long platform in 27 seconds. What is length of the train?  
(A) 110 m (B) 130 m  
(C) 120 m (D) 100 m
50. A train running at a speed of 36 km/h crosses a platform in 80 seconds. The same train takes 24 seconds to cross a person moving at speed of 18 km/h in the opposite direction. Find length of the platform -  
(A) 120 meter (B) 440 meter  
(C) 300 meter (D) 240 meter
51. An athlete runs a distance of 500m in 25s. The average speed of an athlete is \_\_\_\_\_.  
(A)  $20ms^{-2}$  (B)  $20ms^{-1}$   
(C)  $20ms^1$  (D)  $20ms^2$
52. An object travels 25m in 3s and then 15m in 2s. What is the average speed of the object?  
(A)  $6.67s^{-1}$  (B)  $6.67ms^{-1}$   
(C)  $8.0ms^{-1}$  (D) 8.0m
53. The object travels 14m in 4s and then another 16m in 2s. What is the average speed of the object?  
(A)  $6.17ms^{-1}$  (B)  $5.0s^{-1}$   
(C)  $5.0ms^{-1}$  (D) 5.0m
54. An object travels 18m in 6s and then 18m in 4s again. What is the average speed of an object?  
(A)  $2.1ms^{-1}$  (B)  $2.6ms^{-1}$   
(C)  $3.6ms^{-1}$  (D)  $3.1ms^{-1}$
55. A person reaches his office in 2 hours from his home. He covers  $\frac{1}{4}$  of the total distance by cycling at a speed of 15 km/hr,  $\frac{1}{2}$  of the total distance by bus with a speed of 30 km/hr and the rest by walking at a speed of 5 km/hr. What is the average speed of this person?  
(A) 15 km/hr (B) 12 km/hr  
(C) 10 km/hr (D) 14 km/hr
56. A cyclist covers the first three kilometers at an average speed of 8 km/h, the other two kilometers at 3 km/h and the last two kilometers at 2 km/h. What is the approximate average speed (in km/h) of the entire journey?  
(A) 2.4 (B) 3.43  
(C) 3.8 (D) 3
57. An object covers a distance of 24 m in the first 6 seconds and a distance of 16 m in the second 4 seconds. What is the average speed of an object?  
(A)  $4ms^{-1}$  (B)  $6ms^{-1}$   
(C)  $8ms^{-1}$  (D)  $10ms^{-1}$
58. Aditi runs on a circular path of 800 m and reaches the starting point in 50 s. Calculate the average velocity.  
(A)  $0ms^{-1}$  (B)  $8.5ms^{-1}$   
(C)  $16ms^{-1}$  (D)  $10ms^{-1}$
59. An object travels 25 meters in 8 seconds and then 29 meters in 10 seconds. What is the average speed of the object?  
(A)  $3ms^{-1}$  (B)  $3ms^1$   
(C)  $4ms^1$  (D)  $4ms^{-1}$
60. The car's odometer states 3,000 km at the start of the journey and 3,400 km at the end of the journey. If the journey takes 8 hours, find the average speed of the car (in  $ms^{-1}$ ).  
(A)  $13.9ms^{-1}$  (B)  $15.9ms^{-1}$   
(C)  $14.9ms^{-1}$  (D) 12.9ms
61. The odometer of a bus displays 3000 km at the beginning of a journey and 3600 km at the end of the journey. If the journey took a total of 8 hours, then the average speed of the bus is .....  
(A)  $75kmh^{-2}$  (B)  $75kmh^2$   
(C)  $75kmh^{-1}$  (D)  $75kmh^1$
62. An object covers a distance of 20 m in 6 s and then 30 m in 4 s. What is the average speed of the object?  
(A)  $5ms^1$  (B)  $6ms^{-1}$   
(C)  $5ms^{-1}$  (D)  $6ms^1$
63. The total distance between the two stations is 390 km. A train completes 182 km of this distance at 56 km/hr and 108 km at 72 km/hr. The remaining distance is completed by train in  $1\frac{1}{4}$  hours. Find the average speed of the train during the entire journey.  
(A) 65 km/hr (B) 75 km/hr  
(C) 60 km/hr (D) 70 km/hr
64. Mary takes 30 minutes to take a round of a rectangular garden. It takes 45 minutes for Silla to take a round of the same garden. One day at 9 am, both of them started walking in the same direction from the same point. At what time will the two meet again at the starting point?  
(A) 10: 45 am (B) 10: 00 am  
(C) 11: 00 am (D) 10: 30 am
65. A car covers a certain distance at a speed of 50 km/h in 8 hours. How much should its speed increase to cover the same distance in 5 hours?  
(A) 50 km/hr (B) 40 km/hr  
(C) 30 km/hr (D) 80 km/hr
66. The speed of 14 meters per second is the same as .....  
(A) 46.6 km/hr (B) 50.4 km/hr  
(C) 70 km/hr (D) 28 km/hr
67. Two buses from a house run at a speed of 25 km/h at a 15 minute interval. How much more speed (km/h) will a woman coming from the opposite side of the house have to walk so that the both the bus can cross her at an interval of 10 minutes?  
(A) 12 (B) 12.25  
(C) 12.5 (D) 12.75

68. Prithvi is going to Delhi by Rajdhani Express which is delayed by six minutes. The driver increases its speed by 4 Km/hr. By doing this, the train arrives on time at the next station which is 36 km away. Find the actual speed of the train?  
(A) 20 km/hr (B) 26 km/hr  
(C) 36 km/hr (D) 30 km/hr
69. Mark had to travel 260 km in 4.5 hours using a train traveling at a speed of 70 km/h or a bus traveling at a speed of 48 km/h, or using both these modes of transport. Find the travel time by his bus.  
(A) 2 hr (B) 1 hr  
(C) 1 hr 30 minut (D) 2 hr 30 minut
70. Raima covered some distance at a speed of 7 km/h on foot and some distance at a speed of 12 km/h on a bicycle, he covered a distance of 64 km in 7 hours. How many hours did he travel on a bicycle?  
(A) 2 (B) 3  
(C) 5 (D) 4
71. Rahi had to travel 360 Km in 8 hours. During the journey, he traveled at an average speed of 60 km/hr, but took two breaks in between, with the longer break doubling the short time brake. For how many minutes was the short break taken?  
(A) 30 (B) 45  
(C) 40 (D) 35
72. Nidhi takes 3 hours 45 minutes to walk from one place and cycle back to the same place. It takes 4 hours and 20 minutes to walk. So how much time will it take by bicycle?  
(A) 3 hr 10 minut (B) 3 hr 35 minut  
(C) 3 hr 45 minut (D) 3 hr 15 minut
73. Hema takes 9 hours 55 minutes to walk a certain distance and return by bicycle. She takes 12 hours 30 minutes to go there and return by walking both side. How long does it take to go by bicycle and return by bicycle?  
(A) 7 hour 20 min (B) 7 hour 15 min  
(C) 7 hour 35 min (D) 7 hour 45 min
74. Two horses cover the same distance at speeds of 10 km/hr and 15 km/hr respectively. If the first horse takes 12 minutes more than the second, then the distance covered was-  
(A) 8 km (B) 6 km  
(C) 4 km (D) 2 km
75. Apoorva covers equal distances at different speeds of 10 km/h, 20 km/h and 6 km/h and takes a total of 19 minutes to complete the journey. Find out total distance traveled by her.  
(A) 3 (B) 1  
(C) 2 (D) 4
76. Azhar can complete a journey in 10 hours. He covers half the journey at a speed of 21 km/h and the rest travels at a speed of 24 km/h. How many km is the total distance traveled?
- (A) 234 (B) 225  
(C) 224 (D) 232
77. Sindhu travels  $20\frac{2}{3}$  km by  $7\frac{3}{4}$  hours. So how many km per hour did she travel?  
(A)  $\frac{2}{3}km$  (B)  $3\frac{2}{3}km$   
(C)  $4km$  (D)  $2\frac{2}{3}km$
78. The average speed of a car on a certain distance road is 50 km/h. On a particular day, the average speed was  $\frac{1}{10}$  less than the normal average speed, so time taken was 18 minutes more to finish the journey. What is the distance of the road in kilometers?  
(A) 135 (B) 120  
(C) 125 (D) 140
79. One cart covers the first 10 km at a speed of 4 km/h and the other 10 km at a speed of 2 km/h. Find the average speed of that cart in km/h.  
(A) 2.67 km/hr (B) 3.33 km/hr  
(C) 2 km/hr (D) 5.54 km/hr
80. An object travels 24m in 3s and 15m in 2s. What is the average speed of the object?  
(A)  $6.67ms^{-1}$  (B)  $7.8ms^{-1}$   
(C)  $7.8s^{-1}$  (D)  $8.0m$
81. An object travels 23m in 3s and then 15m in 2s. What is the average speed of the object?  
(A)  $7.6ms^{-1}$  (B)  $7.6s^{-1}$   
(C)  $7.6m$  (D)  $8.0ms^{-1}$
82. Kiran swims from one end to the other in a 90 m long pool and then swims back the same straight path, covering a distance of 360 m in twice. Find the average velocity of kiran –  
(A)  $0ms^{-1}$  (B)  $3ms^{-1}$   
(C)  $5ms^{-1}$  (D)  $4ms^{-1}$
83. An object travels 10 m in 4s and then 14 m in 2 s. What is the average speed of the object?  
(A)  $4s^{-1}$  (B)  $4m$   
(C)  $4.5ms^{-1}$  (D)  $4ms^{-1}$
84. A bus covers some distance at a certain speed. If a person covers one third of that distance in three times of time taken by bus, then the the ratio of speed of the person to the speed of the bus is:  
(A) 1: 3 (B) 3: 1  
(C) 1: 9 (D) 9: 1
85. Krishna covered a distance of 90 km with a bicycle. If he had covered this distance at 3 km/h less than his speed, it would have taken 5 hours more to reach the destination. What was Krishna's actual speed in kilometers per hour?  
(A) 7.5 (B) 9  
(C) 18 (D) 15
86. Peter is from Town A and Pal is from Town B. They start their journey at the same time on the same path towards each other's town. They meet at one place on the way and continue their journey. After meeting Paul, Peter arrives at the

- destination in 13.5 hours while Paul arrives in Peter's town in 6 hours. If Peter travels at a speed of 30 km/hr, what will Paul's speed be in km/h?
- (A) 42.5 (B) 40  
(C) 45 (D) 47.5
87. The distance between the two places can be completed in  $3\frac{1}{2}$  hours at a speed of 62 kilometers per hour. If the speed is increased by 8 kilometers per hour, how much time will be saved?
- (A) 24 minut (B) 20 minut  
(C) 30 minut (D) 15 minut
88. Raj covers a certain distance at a speed of 51 kilometers per hour in  $2\frac{1}{3}$  hours. How long will it take Kiran to cover the same distance at a speed of 68 kilometers per hour?
- (A)  $1\frac{2}{3}$  hr (B)  $1\frac{3}{4}$  hr  
(C) 2 hr (D)  $1\frac{1}{2}$  hr
89. A car can cover a distance of 350 km in 4 hours. If its speed is reduced by  $12\frac{1}{2}$  kilometers per hour, then how much time will the car take to cover a distance of 450 kilometers?
- (A) 7 hr (B) 4 hr  
(C) 5 hr (D) 6 hr
90. Jai travels from his home to school at a speed of 10 kilometers per hour, then reaches 5 minutes late. If he increases his speed by 3 kilometers per hour, he reaches school 4 minutes early. What is the distance between his home and school?
- (A) 2 km (B) 6.5 km  
(C) 4.8 km (D) 2.5 km
91. A mini van is going in the same direction in which two people are going at the speed of 4.8 kmph and 6 kmph. The mini van crosses both in 4.5 seconds and 9 seconds respectively. How long is the mini van?
- (A) 3.5 meter (B) 3 meter  
(C) 4 meter (D) 2 meter
92. The 150 m long train runs at a speed of 54 km/h and crosses a platform in 42 s. What will be the length of the platform?
- (A) 540 m (B) 630 m  
(C) 780 m (D) 480 m
93. The radius of a wheel is 0.35 m, it rotates 450 in a minute. Its speed (in km/h) is:
- (A) 59.40 (B) 59.04  
(C) 48.05 (D) 56.40
94. Two cars start traveling from the same house at a speed of 20 km/h at an interval of 10 minutes. With what speed does a woman come in the opposite direction towards the house if she gets cars within an interval of 8 minutes.
- (A) 5 (B) 6  
(C) 7 (D) 4
95. Car A has a speed of 80 km/h. It covers a certain distance in 6 hours and B covers 60 km less than car A in that time. What is the speed of car B?
- (A) 50 km/hr (B) 70 km/hr  
(C) 60 km/hr (D) 55 km/hr
96. The speed ratio of the two buses is 11: 9. If the second bus covers a distance of 270 km in 15 hours, what is the speed of the first bus?
- (A) 23 km/hr (B) 11 km/hr  
(C) 2 km/hr (D) 22 km/hr
97. Two cycles from a house ran at a speed of 24 km/h with a 15-minute interval. How much more speed (km/h) will a woman coming from the opposite side of the house have to walk so that she can get a cycle at an interval of 10 minutes?
- (A) 13 (B) 11  
(C) 12 (D) 14
98. The two jeeps run from a house at a speed of 20 km/h at an interval of 10 minutes. How much speed (km/h) will a woman coming from the opposite direction of the house have to walk so that she can meet the second jeep at an interval of 6 minutes?
- (A) 13 (B)  $13\frac{2}{3}$   
(C)  $13\frac{1}{3}$  (D) 13.5
99. Two mini buses run from one house at a speed of 22 km/h at 10 minute intervals. How much more speed (km/h) will a person coming from the opposite direction of the house have to walk so that he can cross both buses at an interval of 6 minutes?
- (A) 14 (B)  $14\frac{1}{3}$   
(C)  $14\frac{2}{3}$  (D) 14.5
100. The two bicycles start simultaneously from a house at an interval of 10 minutes and run at a speed of 6 km/hr. What should be the speed (km/hr) of a woman coming from the opposite direction so that she crosses both the cycles at an interval of 8 minutes?
- (A) 1.7 (B) 1.6  
(C) 1.5 (D) 1.4



**Speed, Time & Distance (Solution)****1. Ans.(B)**

Boat speed in still water(a) = 20 km/hr  
 Speed of boat against stream

$$= \frac{20}{4} = 5 \text{ km/hr}$$

Let the speed of the stream be b km/hr. then,  
 According to question –

Speed of boat against stream = (a – b) km/hr

So,  $5 = 20 - b$

$$b = 20 - 5$$

$$b = 15$$

hence the speed of the stream = 15 km/hr

**2. Ans.(B)**

let speed of the stream = x km/hr,

Boat speed in still water = 12 km/hr

Then speed opposite the stream

= (12 – x) km/hr

opposite speed of stream

$$= \frac{38}{4} = 9.5 \text{ km/hr}$$

so,

$$9.5 = 12 - x$$

$$\text{then } x = 12 - 9.5$$

$$x = 2.5$$

hence, speed of stream = 2.5 km/hr

**3. Ans.(D)**

Let the distance between the two places  
 = D km

speed of boat = (15 + x) km/hr

and speed of stream = x km/hr

According to question –

Time taken to get and come from boat in still water  
 = 15 hr

$$\frac{2D}{x + 15} = 15 \dots (i)$$

and the time it took to come and go when the  
 water flowed = 16 hr

$$\frac{D}{x + 15 + x} + \frac{D}{x + 15 - x} = 16$$

$$\frac{D}{15 + 2x} + \frac{D}{15} = 16 \dots (ii)$$

On solving eq. (i) and (ii)

$$D = 150 \text{ km}$$

$$\text{and } x = 5 \text{ km/h}$$

**4. Ans.(B)**

let speed of boat = x km/h

and the speed of stream = y km/h

According to question –

$$x - y = \frac{100}{16} = \frac{25}{4} \dots (i)$$

$$x + y = \frac{100}{10} = 10 \dots (ii)$$

On solving eq. (i) and (ii)

$$x = 8.125$$

$$y = 1.875$$

hence speed of stream = 1.875 km/h

**5. Ans.(D)**

let speed of stream = x km/hr

speed in direction of stream = (20 + x) km/hr

against speed of stream = (20 – x) km/hr

According to question –

$$\frac{364}{20 + x} + \frac{364}{20 - x} = 40$$

$$\frac{20 - x + 20 + x}{(20 - x)(20 + x)} = \frac{40}{364}$$

$$(20 - x)(20 + x) = 364$$

$$400 - x^2 = 364$$

$$36 - x^2 = 0$$

$$x^2 = 36$$

$$x = \pm 6$$

hence speed of stream = 6 km/h

**6. Ans.(C)**

speed in direction of stream (a) =  $\frac{16}{5} \text{ km/h}$

speed in opposite direction of the stream (b) =  $\frac{4}{5} \text{ km/h}$

speed of stream

$$= \frac{a - b}{2} = \frac{\frac{16}{5} - \frac{4}{5}}{2}$$

$$= \frac{\frac{12}{5}}{2} = \frac{12}{10} = 1.2 \text{ km/h}$$

**7. Ans.(B)**

Let the speed of water be x km/hr and the distance  
 traveled by the swimmer is D km.

And the time taken to cover the distance D km in  
 the direction against the stream = t hr

According to question –

$$D = (9 - x) \times t \dots (i)$$

$$D = (9 + x) \times \frac{t}{2} \dots (ii)$$

from eq. (i) and (ii) –

$$\Rightarrow (9 - x)t = (9 + x) \frac{t}{2}$$

$$18 - 2x = 9 + x$$

$$3x = 9, x = 3 \text{ km/hr}$$

**8. Ans.(D)**

Let speed of boat = x km/hr

speed of stream = y km/hr

total distance = 75 km

in opposite direction of stream,

$$\frac{75}{x - y} = 12$$

$$x - y = \frac{75}{12} = 6.25 \dots (i)$$

in the direction of stream,

$$\frac{75}{x + y} = 7.5$$

$$x + y = 10 \dots (ii)$$

Adding eq. (i) and eq. (ii),

$$2x = 16.25$$

$$x = 8.125$$

hence from eq. (i) –

$$x - y = 6.25$$

$$8.125 - y = 6.25$$

$$y = 8.125 - 6.25$$

$$y = 1.875 \text{ km/hr}$$

**9. Ans.(A)**

speed of boat in direction of stream

$$= \frac{35}{5} = 7 \text{ km/hr}$$

speed of boat in opposite direction of stream =

$$\frac{35}{7} = 5 \text{ km/hr}$$

hence speed of boat in still water

$$= \frac{7+5}{2} = 6 \text{ km/hr}$$

10. **Ans.(D)**

let speed of stream = R km/h

speed of man in still water = (28/3) km/h

According to question –

Time taken in opposite direction of stream = 3 × time taken in direction of stream

$$\frac{x}{\frac{28}{3} - R} = 3 \times \frac{x}{\frac{28}{3} + R}$$

$$\frac{28}{3} + R = 3 \times \frac{28}{3} - 3R$$

$$4R = 28 - \frac{28}{3}$$

$$4R = \frac{56}{3}$$

$$R = \frac{14}{3} \text{ km/h}$$

11. **Ans.(B)**

let speed of stream = x km/hr

speed of boat in direction of stream

= (15 + x) km/hr

speed of boat in opposite direction of stream = (15 - x) km/hr

According to question –

$$\frac{30}{(15+x)} + \frac{30}{(15-x)} = 4.5$$

$$\frac{450 - 30x + 30x + 450}{(15+x)(15-x)} = 4.5$$

$$\frac{900}{225 - x^2} = 4.5$$

$$\frac{225 - x^2}{200} = 1$$

$$200 = 225 - x^2$$

$$x^2 = 25$$

$$x = 5 \text{ km/hr}$$

12. **Ans.(C)**

$$\text{Speed in upward direction} = \frac{60}{8} = \frac{7.5 \text{ km}}{\text{hr}}$$

Speed in downward direction

$$= \frac{60}{5} = 12 \text{ km/hr}$$

$$\text{Speed in still water} = \frac{12+7.5}{2} = 9.75 \text{ km/hr}$$

13. **Ans.(B)**

speed of Arjun in direction of stream

$$= \frac{40}{5} = 8 \text{ km/hr}$$

speed of Arjun in opposite direction of stream =

$$\frac{24}{2} = 12 \text{ km/hr}$$

∴ Arjun's speed in still water

$$= \frac{12+8}{2} = 10 \text{ km/hr}$$

14. **Ans.(A)**

speed of boat = B km/hr

speed of stream = R km/hr

let speed of boat in opposite direction of stream = (B - R) km/hr

speed of boat in direction of stream = (B + R) km/hr

According to question –

$$B - R = \frac{2}{1} \dots \dots (i)$$

$$B + R = \frac{1}{\frac{10}{60}} = 6 \dots \dots (ii)$$

Adding eq. (i) and eq. (ii)

$$2B = 8$$

$$B = 4$$

hence the speed of the boat in still water is 4 km/h.

**Ans.(B)**

Let the speed of boat and stream be x km/h and y km/h respectively.

According to question –

$$\frac{D}{(x-y)} = n \times \frac{D}{(x+y)}$$

$$\frac{x+y}{x-y} = n$$

$$x+y = n(x-y)$$

$$x+y = nx - ny$$

$$y(n+1) = x(n-1)$$

$$\frac{x}{y} = \frac{n+1}{n-1}$$

15.

**Ans.(C)**

Let the speed of the luxury boat be x km/h and the speed of the stream is y km/h

$$x+y = \frac{34}{4\frac{15}{60}} = \frac{34 \times 4}{17}$$

$$x+y = 8 \dots \dots (i)$$

$$x-y = \frac{19}{3\frac{10}{60}} = \frac{19 \times 6}{19}$$

$$\Rightarrow x-y = 6 \dots \dots (ii)$$

from eq. (i) – (ii),

$$2y = 2 \Rightarrow y = 1$$

Hence the speed of flow of the river is 1 km/h.

16.

**Ans.(C)**

Speed of boat in still water = 9 km/hr

speed of stream = x km/hr

and distance = d km

speed of boat in direction of stream = (9 + x) km/hr

speed of boat in opposite direction of stream = (9 - x) km/hr

$$\text{time} = \frac{\text{distance}}{\text{speed}}$$

$$\Rightarrow \frac{d}{9+x} \times 2 = \frac{d}{9-x}$$

$$\Rightarrow 18 - 2x = 9 + x$$

$$= 3x = 9$$

$$x = 3$$

hence speed of stream = 3 km/hr

17.

**Ans.(B)**

let speed of stream = x km/hr

speed of boat in direction of stream = (4 + x) km/hr

speed of boat in opposite direction of stream = (4 - x) km/hr

$$\text{time} = \frac{\text{distance}}{\text{speed}}$$



$$\frac{d}{4-x} = \frac{2d}{4+x}$$

$$4+x = 8-2x$$

$$3x = 4$$

$$x = 1.3 \text{ km/hr}$$

19.

**Ans.(B)**

let speed of boat in direction of stream =  $x$  km/hr  
 speed of boat in still water =  $1/2$  (speed in direction of stream + speed in opposite direction of stream)

$$55 = \frac{1}{2}(x + 40)$$

$$110 = x + 40$$

$$x = 110 - 40$$

$$x = 70$$

hence speed of boat in direction of stream  
 = 70 km/hr

20.

**Ans.(B)**

Let the speed of the stream be  $x$  km/h and the  
 speed of the person  $y$  km/h

speed of person in direction of stream

$$= (x + y) \text{ km/h}$$

speed in opposite direction of stream

$$= (y - x) \text{ km/h}$$

According to question –

$$x + y = \frac{16}{2} \Rightarrow x + y = 8 \dots \dots (i)$$

$$y - x = \frac{8}{2} \Rightarrow y - x = 4 \dots \dots (ii)$$

Subtracting (ii) from eq. (i)

$$2x = 4 \Rightarrow x = 2 \text{ km/h}$$

21.

**Ans.(B)**

speed in opposite direction of stream =  $35 - 5 = 30$   
 km/hr

speed in direction of stream =  $35 + 5$   
 = 40 km/hr

$$\text{Average speed of boat} = \frac{2ab}{a+b}$$

$$= \frac{2 \times 40 \times 30}{40 + 30}$$

$$= \frac{2 \times 40 \times 30}{70} = 34.28 \text{ km/hr}$$

22.

**Ans.(C)**

speed of boat in direction of stream

$$= B + R = 40 + 10 = 50 \text{ km/hr}$$

speed of boat in opposite direction of stream =  $B - R = 40 - 10 = 30 \text{ km/hr}$

$\therefore$  Average boat speed over the entire journey =

$$\frac{2ab}{a+b}$$

$$= \frac{2 \times 50 \times 30}{50 + 30}$$

$$= \frac{2 \times 1500}{80}$$

$$= 37.5 \text{ km/hr}$$

23.

**Ans.(C)**

Speed of boat in still water = 11 km/hr

Distance traveled by boat in 2 hours in opposite  
 direction of stream = 19 km

speed of boat in opposite direction of stream =  $\frac{19}{2}$   
 km/hr

$$\text{speed of stream} = 11 - \frac{19}{2}$$

$$= \frac{22-19}{2} = \frac{3}{2} = 1.5 \text{ km/hr}$$

24.

**Ans.(A)**

Let the total time taken is  $t$  hours.

$$t = \frac{d}{B+R} + \frac{d}{B-R} \quad (B \rightarrow \text{boat}, R \rightarrow \text{stream})$$

$$t = \frac{135}{12+3} + \frac{135}{12-3}$$

$$t = \frac{135}{15} + \frac{135}{9}$$

$$t = 9 + 15$$

$$t = 24 \text{ hr}$$

25.

**Ans.(B)**

let total distance =  $d$  km

speed in direction of stream =  $(x + y)$  km/h

speed in opposite direction of stream =  $(x - y)$   
 km/h

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

$$= \frac{d}{\text{time}}$$

$$= \frac{d}{x+y} + \frac{d}{x-y}$$

$$= \frac{dx - dy + dx + dy}{(x-y)(x+y)}$$

$$d \times \frac{x^2 - y^2}{2dx} = \frac{(x^2 - y^2)}{2x}$$

Distance traveled in one direction of stream  
 = speed  $\times$  time

$$= \left[ \frac{(x^2 - y^2)}{2x} \right] t$$

$$= \left[ \frac{t(x^2 - y^2)}{2x} \right] \text{ km}$$

26.

**Ans.(A)**

Let the speed of first train =  $x$  km/hr

speed of second train = 70 km/hr

Distance covered by second train in 5 hours  
 =  $70 \times 5 = 350$  km

The first train started running 2 hours before the  
 second train.

$\therefore$  Distance covered by first train in 7 hours  
 = 350 km

Hence the speed of the first train

$$= \frac{350}{7} = 50 \text{ km/hr}$$

27.

**Ans.(A)**

speed of freight train = 33 km/h

Speed of mail train = 60 km/hr

$$\therefore (60 - 33) \times \frac{5}{18} = \frac{250 + 200}{T}$$

$$27 \times \frac{5}{18} = \frac{450}{T}$$

$$\frac{9 \times 5}{6} = \frac{450}{T}$$

$$\frac{45}{6} = \frac{450}{T}$$

$$T = 60 \text{ sec}$$

$$= 1 \text{ minute}$$

28.

**Ans.(C)**

Relative speed of car =  $(110 - 90) \text{ km/hr} = 20 \text{ km/hr}$

$$= 20 \times \frac{5}{18} \text{ m/sec}$$

time = 18 sec

Distance = Speed  $\times$  Time

$$= 20 \times \frac{5}{18} \times 18 = 100 \text{ m}$$

Hence the length of fast running car = 100 m

29. **Ans.(A)**  
 Length of both trains =  $152.5 + 157.5 = 310$  m  
 time = 9.3 sec  

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

$$\text{speed} = \frac{310}{9.3} = \frac{100}{3} \text{ m/sec}$$
 On changing to km/h =  $\frac{100}{3} \times \frac{18}{5}$   
 = 120 km/hr

30. **Ans.(A)**  
 Total length of train =  $132 + 108 = 240$  m  
 total speed of train =  $32 + 40 = 72 \times \frac{5}{18}$   
 = 20 m/s  
 hence time =  $\frac{\text{distance}}{\text{speed}}$   
 time =  $\frac{240}{20} = 12 \text{ sec}$

31. **Ans.(B)**  
 speed of first train = 40 km/hr  
 speed of second train = 32 km/hr  
 The speed of the train of a person sitting on a slow train = 32 km/hr  
 On the opposite side,  
 Composite speed =  $40 + 32 = 72$  km/hr  
 =  $72 \times \frac{5}{18} = 20 \text{ m/s}$   
 Hence length of train =  $20 \times 15 = 300$  m

32. **Ans.(B)**  
 Total distance covered =  $153 + 127 = 280$  m  
 Time taken by trains in which they cross each other = 7.2 sec  

$$(\text{speed}) = \frac{(\text{distance})}{(\text{time})} = \frac{280}{7.2} = \frac{2800}{72} \text{ m/sec}$$
 But asked in speed km/hour, then –  
 =  $\frac{2800}{72} \times \frac{18}{5} = 140 \text{ km/hr}$

33. **Ans.(D)**  
 Let the speed of first train be  $x$  km/h.  
 $\therefore$  Speed of second train =  $(x + 7)$  km/hr  
 Distance covered by both trains in 2 hours =  $380 - 126 = 254$   
 $\Rightarrow 2x + 2(x + 7) = 254$   
 $\Rightarrow 2x + 2x + 14 = 254$   
 $\Rightarrow 4x = 240$   
 $\Rightarrow x = 60 \text{ km/hr}$   
 Hence the speed of first train =  $x = 60 \text{ km/hr}$   
 speed of second train =  $(x + 7) \text{ km/hr}$   
 =  $(60 + 7) = 67 \text{ km/hr}$

34. **Ans.(A)**  
 Sum of length of both trains =  $210 + 250 = 460$  m  
 If both runs in opposite direction, then the sum of their run =  $130 + 110 = 240 \text{ km/hr}$   
 or  $240 \times \frac{5}{18} \text{ m/s} = \frac{200}{3} \text{ m/s}$   
 Time taken to cross each other =  $\frac{\text{distance}}{\text{speed}}$   
 =  $\frac{460}{\frac{200}{3}} \times 3$   
 =  $2.3 \times 3$   
 = 6.9 sec

35. **Ans.(A)**

Distance = Length of first train + Length of second train =  $144.5 + 165.5 = 310.0$  m  
 time = 9.3 sec

$$\text{Desired speed} = \frac{\text{distance}}{\text{time}} = \frac{310}{9.3} = \frac{100}{3} \text{ m/sec}$$

$$\text{On converting to km / hr} = \frac{100}{3} \times \frac{18}{5} = 120 \text{ km}$$

36. **Ans.(A)**  
 Note – 1. When the train and the person run in the same direction, the speed of the train relative to the person = Speed of train – speed of person  
 2. When the train and the person run in the opposite direction, the speed of the train relative to the person = Speed of train + speed of person  
 According to question –  
 speed in the opposite direction =  $(54 + 9) \text{ km/hr}$   
 =  $\left[ 63 \times \frac{5}{18} \right] = \frac{35}{2} \text{ m/sec}$   
 Time taken to cover a distance of 350 m at a speed of  $35/2 \text{ m/s} = \frac{350}{\frac{35}{2}} = \frac{350 \times 2}{35} = 20 \text{ sec}$

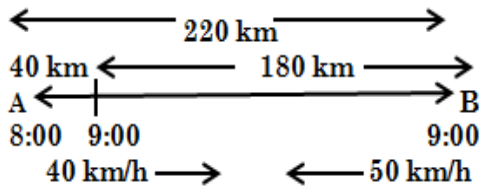
37. **Ans.(C)**  
 let total distance =  $x$  km  
 Speed of train, running from Patna =  $\frac{x}{4} \text{ km/h}$   
 Distance covered in 1:30 hours =  $\frac{x}{4} \times \frac{3}{2}$   
 =  $\frac{3x}{8} \text{ km}$   
 Remaining distance =  $x - \frac{3x}{8} = \frac{5x}{8} \text{ km}$   
 To cover the remaining distance –  

$$\text{Relative speed} = \frac{2x}{7} + \frac{x}{4} = \frac{15x}{28} \text{ km/hr}$$

$$\text{Time to meet} = \frac{\frac{5x}{8}}{\frac{15x}{28}} = \frac{5 \times 28}{15 \times 8} = \frac{7}{6} \text{ hr}$$

- So visit time = 6:30 + 1:10 = 7:40 am
38. **Ans.(D)**  
 Difference in running time of both trains =  $(4:00 - 3:20) = 40 \text{ minute} = \frac{2}{3} \text{ hr}$   
 Let the distance traveled by the first train at a speed of 60 km/h in  $\left(t - \frac{2}{3}\right)$  hours  $60 \times \left(t - \frac{2}{3}\right) = 60 \times \left(\frac{3t-2}{3}\right) = (60t - 40) \text{ km}$   
 Distance covered by second train at a speed of 80 km/h in  $t$  hours = 80 km  
 $\Rightarrow 80t + 60t - 40 = 450$   
 $140t = 490$   
 $t = \frac{490}{140} = \frac{7}{2} \text{ hr} = 3 \text{ hr } 30 \text{ minute}$   
 Hence, the time of arrival of both trains = 3:20 + 3:30 = 6:50 pm  
 Distance covered by the first train between (6:50 – 4:00) pm =  $60 \times 2 \text{ hr } 50 \text{ minute}$   
 =  $60 \times 2 \frac{50}{60}$   
 =  $60 \times \frac{17}{6}$   
 = 170 km  
 Therefore, both trains will be meet at a distance of 170 km at 6:50 pm.

39. **Ans.(B)**



Relative speed =  $40 + 50 = 90$  km/hr

The time taken for both trains to meet =  $\frac{180}{90} = 2$  hr

$\therefore$  Both will cross each other =  
(9 : 00 + 2 : 00) AM = 11 : 00 AM

40. **Ans.(C)**

$$\text{Average speed} = \frac{2a \cdot b}{a + b}$$

$$= \frac{2 \times 45 \times 55}{45 + 55}$$

$$= 49.5 \text{ km/hr}$$

Total time taken = 8 hr

Total distance = time  $\times$  speed

$$= 8 \times 49.5$$

$$= 396 \text{ km}$$

41. **Ans.(B)**

Let the length of the train be  $l$  meter and speed of train =  $x$  m/sec

$$l + 155 = x \times 16 \dots (i)$$

$$l + 195 = x \times 18 \dots (ii)$$

from eq. (i)  $\div$  eq. (ii) -

$$\frac{l + 155}{l + 195} = \frac{16x}{18x}$$

$$\frac{l + 155}{l + 195} = \frac{8}{9}$$

$$\frac{l + 155}{l + 195} = \frac{8}{9}$$

$$\frac{l + 155}{l + 195} = \frac{8}{9}$$

$$9l + 1395 = 8l + 1560$$

$$l = 165 \text{ m}$$

from eq. (i),

$$x = \frac{l + 155}{16} = \frac{165 + 155}{16} = 20 \text{ m/sec}$$

$$= 20 \times \frac{18}{5} = 72 \text{ km/hr}$$

42. **Ans.(B)**

According to question -

Let the original speed of the train is  $x$  km/h.

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

$$\frac{36}{x} - \frac{36}{x + 4} = \frac{6}{60}$$

$$36 \left( \frac{x + 4 - x}{x^2 + 4x} \right) = \frac{1}{10}$$

$$x^2 + 4x - 1440 = 0$$

$$x^2 + 40x - 36x - 1440 = 0$$

$$x(x + 40) - 36(x + 40) = 0$$

$$(x + 40)(x - 36) = 0$$

$$x - 36 = 0 \Rightarrow x = 36 \text{ km/h}$$

43. **Ans.(A)**

Let the speed of the train be  $x$  km/hr.

and the correct time taken by him is  $t$  hour.

According to question -

$$xt = \frac{4x}{5} \left( t + \frac{30}{60} \right)$$

$$t = \frac{4t}{5} + \frac{2}{5}$$

$$\frac{t}{5} = \frac{2}{5}$$

$$t = 2 \text{ hours or 120 minutes}$$

44. **Ans.(B)**

speed of train = 72 km/hr

$$= 72 \times \frac{5}{18} \text{ m/sec} = 20 \text{ m/sec}$$

$$\therefore \text{Distance covered in 15 seconds} = 20 \times 15 = 300 \text{ m}$$

45. **Ans.(D)**

Let the speed of the train be  $x$  km/h.

According to question -

$$(x + 30) \times \left( 10 + \frac{40}{60} \right) = x \times 12$$

$$(x + 30) \times \frac{32}{3} = 12x$$

$$32x + 960 = 36x$$

$$\Rightarrow 4x = 960$$

$$x = \frac{960}{4} = 240 \text{ km/hr}$$

46. **Ans.(A)**

$$\text{speed of train} = 160 \text{ km/h} = 160 \times \frac{5}{18}$$

$$\text{Intended time} = \frac{\text{Train length}}{\text{train speed}}$$

$$= \frac{180}{160 \times \frac{5}{18}} = \frac{180 \times 18}{160 \times 5} = 4.05$$

47. **Ans.(B)**

Relative speed =  $(60 + 6)$  km/hr

$$66 \times \frac{5}{18} = \frac{55}{3} \text{ m/s}$$

$$\text{time} = \frac{110 \text{ m}}{\frac{55}{3} \text{ m/s}}$$

$$= \frac{110 \times 3}{55} = 6 \text{ sec}$$

48. **Ans.(A)**

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

$$\text{speed} = \frac{\text{Train length} + \text{Platform length}}{\text{time}}$$

$$= \frac{120 + 100}{\frac{10}{22 \times 18}}$$

$$= \frac{22 \times 18}{5}$$

$$= \frac{396}{5} = 79.2 \text{ km/hr}$$

49. **Ans.(B)**

Let the length of the train is  $x$  m.

$$\therefore \text{time} = \frac{\text{distance}}{\text{speed}}$$

$$\therefore 27 = \frac{455 + x}{78 \times \frac{5}{18}}$$

$$585 = 455 + x$$

$$x = 130 \text{ m}$$

50. **Ans.(B)**

Let the length of the train =  $x$  m

length of the platform =  $y$  m

According to question -

$$\frac{36 \times 5}{18} = \frac{x + y}{80}$$

$$x + y = 800 \text{ m} \dots (i)$$

$$\text{Relative speed} = 36 + 18 = 54 \text{ k./hr}$$

Second condition -

$$\frac{54 \times 5}{18} = \frac{x}{24}$$

$$15 \times 24 = x$$

$$x = 360 \text{ m}$$

$$\text{length of the platform (y)}$$

$$= 800 - x = 800 - 360 = 440 \text{ m}$$



51. **Ans.(B)**

distance = 500m, time = 25s

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

$$\text{speed} = \frac{500}{25} = 20\text{m/sec} = 20\text{ms}^{-1}$$

52. **Ans.(C)**

$$\text{Average speed} = \frac{\text{total distance}}{\text{total time}}$$

$$= \frac{25 + 15}{3 + 2} = \frac{40}{5} = 8\text{m/s} = 8\text{ms}^{-1}$$

53. **Ans.(C)**

$$\therefore \text{Average speed} = \frac{\text{total distance}}{\text{total time taken}}$$

$$\therefore \text{Average speed} = \frac{(14 + 16)\text{m}}{(4 + 2)\text{s}}$$

$$= \frac{30}{6}\text{m/s}$$

$$= 5\text{m/s}$$

54. **Ans.(C)**

$$\text{average speed} = \frac{18\text{m} + 18\text{m}}{6\text{s} + 4\text{s}}$$

$$= \frac{36}{10}\text{m/s}$$

$$= 3.6\text{ms}^{-1}$$

55. **Ans.(B)**

Let total distance = x km

By question –

$$\frac{x}{4 \times 15} + \frac{x}{2 \times 30} + \frac{x}{4 \times 5} = 2$$

$$\frac{x + x + 3x}{60} = 2$$

$$5x = 120$$

$$x = 24\text{km}$$

$$\text{Average speed} = \frac{\text{total distance}}{\text{total time}} = \frac{24\text{km}}{2\text{h}}$$

$$= 12\text{km/h}$$

56. **Ans.(B)**

$$\text{Average speed} = \frac{\text{total distance}}{\text{total time}} = \frac{7}{\frac{3}{8} + \frac{2}{3} + \frac{2}{2}} = \frac{7 \times 24}{49}$$

$$\frac{168}{49} = 3.428$$

$$= 3.43\text{ km/hr}$$

57. **Ans.(A)**

Total distance traveled by the object,

$$(S) = 24 + 16 = 40\text{ m.}$$

And total time taken,

$$(t) = 6 + 4 = 10\text{ s.}$$

Average speed of object (V) ?

$$\text{Average speed} = \frac{\text{total distance}}{\text{total time}}$$

$$= \frac{40}{10} = 4\text{ m.sec}^{-1}$$

Thus, the average speed of the object is 4 m.sec<sup>-1</sup>.58. **Ans.(A)**

$$\text{speed} = \frac{\text{Displacement}}{\text{time}}$$

Displacement in a circle on the circumference of the circle

$$= \frac{0}{50} = 0\text{ms}^{-1}$$

59. **Ans.(A)**

$$\text{Average speed} = \frac{\text{total distance}}{\text{total time}}$$

$$= \frac{(25 + 29)\text{m}}{(10 + 8)\text{sec}}$$

$$= \frac{54\text{m}}{18\text{sec}} = 3\text{m/sec}$$

60. **Ans.(A)**

Total distance traveled by car = 3400 – 3000

$$= 400\text{ km}$$

Time taken for travel = 8 hr

$$\text{Average speed} = \frac{\text{total distance}}{\text{total time}} = \frac{400}{8} = 50\text{km/h}$$

$$= 50 \times \frac{5}{18}\text{ m/s}$$

$$= \frac{250}{18} = 13.9\text{m/s}$$

61. **Ans.(C)**

Total distance traveled by bus = 3600 – 3000 = 600 km

$$\therefore \text{Average speed} = \frac{\text{total distance}}{\text{total time}}$$

$$= \frac{600}{8} = 75\text{km/h}$$

62. **Ans.(C)**

$$\text{Average speed (v)} = \frac{\text{Total distance covered (D)}}{\text{total time (t)}}$$

$$\text{total distance (D)} = D_1 + D_2 = 20 + 30 = 50\text{m}$$

$$\text{total time (t)} = t_1 + t_2 = 6 + 4 = 10\text{Sec.}$$

$$v = \frac{D}{t}$$

$$v = \frac{50}{10}$$

$$v = 5\text{m/s}$$

63. **Ans.(A)**

Total distance = 390 km

First distance traveled by train = 182 km speed = 56 km/hr

Second distance traveled by train = 108 km speed = 72 km/hr

$$\text{Remaining distance} = 390 - (182 + 108) = 100\text{ km}$$

$$\text{time} = \frac{5}{4}\text{ hr}$$

formula –

$$\text{Average speed} = \frac{\text{total distance}}{\text{total time}}$$

$$= \frac{390}{\frac{182}{56} + \frac{108}{72} + \frac{5}{4}}$$

$$= \frac{390}{\frac{13}{4} + \frac{6}{4} + \frac{5}{4}}$$

$$= \frac{390 \times 4}{13 + 6 + 5}$$

$$= \frac{1560}{24} = 65\text{km/hr}$$

64. **Ans.(D)**

Mary took time to take a round of the rectangular garden = 30 minute

Silla took time to complete one round of the garden = 45 minute

Time to start walking = 9 : 00 AM

Again, meeting time at the starting point together = L.C.M. of 9:00AM + 30 and 45

$$= 9:00\text{AM} + 90\text{ minute}$$

$$= 9:00\text{AM} + \frac{90}{60}\text{ hr}$$

$$= 10:30\text{AM}$$

65. **Ans.(C)**

Let the distance = x km

According to question –

$$\text{speed} = \frac{\text{distance}}{\text{time}}$$

$$50 = \frac{x}{8}$$

$$\boxed{x = 400\text{ km}}$$

400 km distance covered in 5 hours –

$$\text{speed} = \frac{400}{5} = 80\text{km/h}$$

then,

$$\text{Speed increase} = 80 - 50 = 30\text{km/h}$$

66. **Ans.(B)**  
The speed of 14 meters per second is the same as 50.4 km/h.  
1 m./sec =  $18/5$  km/hr  
14 m./sec =  $\frac{18}{5} \times 14 = 50.4$  km/hr

67. **Ans.(C)**  
bus speed = 25 km/hr  
let woman's speed = x  
Distance = D  
Time = 15 minute =  $\frac{15}{60} = \frac{1}{4}$  hr  
Then time after woman's speed = 10 minute  
=  $\frac{10}{60} = \frac{1}{6}$  hr  
Then relative speed (S) =  $\frac{D}{T}$   
 $\Rightarrow D = S \times T$   
 $D = 25 \times \frac{1}{4}$   
 $\therefore D = \frac{25}{4}$  .....(i)  
 $D = \frac{25+x}{6}$  .....(ii)  
From eq. (i) and eq. (ii) –  
 $\frac{25+x}{6} = \frac{25}{4}$   
 $25 + x = \frac{150}{4}$   
 $x = \frac{150}{4} - 25$   
 $x = \frac{150-100}{4}$   
 $x = \frac{50}{4}$

68. **Ans.(C)**  
let train speed = x km/h  
Distance between two stations = 36 Km.  
According to question –  
 $\frac{36}{x+4} = \frac{36}{x} - \frac{6}{60}$  (time = distance/speed)  
 $\Rightarrow 36 \left( \frac{1}{x} - \frac{1}{x+4} \right) = \frac{1}{10}$   
 $\Rightarrow 36 \left( \frac{x+4-x}{x(4+x)} \right) = \frac{1}{10}$   
 $\Rightarrow 36 \times 4 \times 10 = x^2 + 4x$   
 $\Rightarrow x^2 + 4x - 1440 = 0$   
 $\Rightarrow x^2 + 40x - 36x - 1440 = 0$   
 $\Rightarrow x(x+40) - 36(x+40) = 0$   
 $\Rightarrow (x+40)(x-36) = 0$   
 $\therefore x = 36 \text{ Km/h}$

69. **Ans.(D)**  
Let time taken by bus = t  
Time taken by train = (4.5 – t)  
According to question –  
 $260 = 48 \times t + 70 \times (4.5 - t)$   
 $260 = 48t + (70 \times 4.5 - 70t)$   
 $260 = 48t + 315 - 70t$   
 $22t = 55$   
or  $t = 2.5$   
 $t = 2 \text{ hr } 30 \text{ minute}$

70. **Ans.(B)**  
Let Raima cover  $x_1$  distance from bicycle in t hours.  
so the distance traveled by bicycle ( $x_1$ )  
=  $12 \times t$   
And walking distance ( $x_2$ ) =  $7(7 - t)$   
then,  $x_1 + x_2 = 64$  km  
 $12t + 49 - 7t = 64$   
 $5t = 64 - 49$

$$5t = 15$$

$$t = 3 \text{ hr}$$

71. **Ans.(C)**  
Let the short break was taken for x minutes during the journey.  
Time taken while taking both breaks =  $x + 2x = 3x$  minute

$$\text{Actual speed of traveler} = \frac{360}{8} = 45 \text{ km/hr}$$

$$\text{and average speed} = 60 \text{ km/hr}$$

According to question –

$$\frac{360}{45} - \frac{360}{60} = \frac{3x}{60}$$

$$\frac{60-45}{45 \times 60} = \frac{3x}{360 \times 60}$$

$$15 = \frac{3x}{8}$$

$$3x = 120 \text{ minutes}$$

$$x = 40 \text{ minutes}$$

Hence the time taken during the short break  $x = 40$  minute

72. **Ans.(A)**  
Walking time on one side by Nidhi + Time to cycle to the other side = 3 hr 45 minute

$$\Rightarrow 3 + \frac{45}{60} = 3 + \frac{3}{4} = \frac{15}{4}$$

The time it took him to walk both ways

$$= 4 \text{ hours } 20 \text{ minute} = 4 + \frac{20}{60} = \frac{13}{3}$$

The time it took him to walk 1 way

$$= \frac{13}{3} \times \frac{1}{2} = \frac{13}{6}$$

$$\text{The time it took him to cycle 1 way} = \frac{15}{4} - \frac{13}{6}$$

$$= \frac{45-26}{12} = \frac{19}{12} \text{ hour}$$

$$\text{Time taken by bicycle} = \frac{19}{12} \times 2 = \frac{19}{6}$$

$$\frac{1}{6} \times 60 = 3$$

73. **Ans.(A)**  
The time taken to travel and reach a certain distance by foot and bicycle = 9 hours 55 min.  
And the total time taken for walking both side = 12 hr 30 min.

Time taken for walking only = 6 hours 15 min.

$$\text{So, Time taken to cycling both side} = (9.55 - 6.15) \times 2 = 7 \text{ hour } 20 \text{ min.}$$

74. **Ans.(B)**  
The speed of both the horses is 10 km/hr and 15 km/hr respectively.

Let the distance be x km

$$\text{time} = \frac{\text{distance}}{\text{speed}}$$

$$\text{time taken from 1st horse} = \frac{\text{distance}}{\text{speed}} = \frac{x}{10}$$

$$\text{Time taken by another horse} = \frac{x}{15}$$

According to question,

$$\frac{x}{10} - \frac{x}{15} = \frac{12}{60}$$

$$\frac{3x-2x}{30} = \frac{12}{60}$$

$$\frac{x}{30} = \frac{12}{60}$$

$$x = 6 \text{ km}$$

75. **Ans.(A)**  
Let total distance 3 Dkm  
time = 19 minute

$\therefore$  According to question,

$$\frac{19}{60} = \frac{D}{10} + \frac{D}{20} + \frac{D}{6} \quad [\text{time} = \frac{\text{distance}}{\text{speed}}]$$

$$\frac{19}{60} = \frac{6D + 3D + 10D}{60}$$

$$19D = 19$$

$$D = 1\text{ km}$$

$$\text{hence total distance} = 3D = 3 \times 1 = 3\text{ km}$$

76. **Ans.(C)**

Let the total distance covered by Azhar = x km

By question

$$\frac{x/2}{21} + \frac{x/2}{24} = 10 \left[ \because \text{time} = \frac{\text{distance}}{\text{speed}} \right]$$

$$\Rightarrow \frac{x}{21} + \frac{x}{24} = 20$$

$$\Rightarrow \frac{x}{7} + \frac{x}{8} = 20 \times 3 = 60$$

$$\Rightarrow \frac{8x + 7x}{56} = 60$$

$$\Rightarrow 15x = 60 \times 56$$

$$x = \frac{60 \times 56}{15} = 4 \times 56, x = 224\text{ km}$$

77. **Ans.(D)**

$$\text{Distance covered by Sindhu} = 20\frac{2}{3}\text{ km} = \frac{62}{3}\text{ km}$$

$$\text{and time} = 7\frac{3}{4}\text{ hr} = \frac{31}{4}\text{ hr}$$

$$\text{formula - speed} = \frac{\text{distance}}{\text{time}}$$

$$\therefore \text{speed} = \frac{\frac{62}{3}}{\frac{31}{4}} \Rightarrow = \frac{62}{3} \times \frac{4}{31} = \frac{8}{3}\text{ km/hr}$$

$$= 2\frac{2}{3}\text{ km/h}$$

78. **Ans.(A)**

First position -

let road distance = x km

Normal average speed of the car 50 km / h

$$\text{time} = \frac{x}{50}\text{ h}$$

Second position

Special day average speed

$$= 50 - 50 \times \frac{1}{10}$$

$$= 45\text{ km/h}$$

$$\text{thus, time} = \frac{x}{45}\text{ hr}$$

now according to question -

$$\frac{x}{45} - \frac{x}{50} = \frac{18}{60}$$

$$20x - 18x = 18 \times 15$$

$$2x = 18 \times 15$$

$$x = 9 \times 15$$

$$\text{Hence distance of the road} = 135\text{ km}$$

79. **Ans.(A)**

When one travels a fixed distance at a speed of x km/h and an equal distance at a speed of y km/h, then,

Average speed throughout the journey =

$$\frac{2xy}{(x+y)}\text{ km/h}$$

$$= \frac{2 \times 4 \times 2}{4+2}\text{ km/h}$$

$$= \frac{8}{3} = 2.67\text{ km/h}$$

80. **Ans.(B)**

$$\text{Average speed} = \frac{\text{total distance}}{\text{total time}}$$

$$= \frac{(24+15)}{(3+2)} = \frac{39}{5} = 7.8\text{ m/sec}$$

$$= 7.8\text{ ms}^{-1}$$

81. **Ans.(A)**

$$\text{Average speed} = \frac{\text{total distance}}{\text{total time}}$$

$$= \frac{23+15}{3+2} = \frac{38}{5} = 7.6\text{ ms}^{-1}$$

82. **Ans.(A)**

Since Kiran is coming back from where she walks. So, its displacement will be zero.

Therefore the average velocity = 0 m/s

83. **Ans.(D)**

Total distance traveled by the object = 10m + 14m = 24m

And total time to cover that distance 4 sec + 2 sec = 6 sec

Average speed of object = ?

$$\text{Average speed} = \frac{\text{Total distance covered}}{\text{Total time taken}}$$

$$= \frac{d_1 + d_2}{t_1 + t_2}$$

$$= \frac{(10+14)\text{m}}{(4+2)\text{sec}}$$

$$= \frac{24}{6} = 4\text{ ms}^{-1}$$

Thus, the average speed of the object is  $4\text{ ms}^{-1}$ .

84. **Ans.(C)**

Let the bus d distance is covered in t time.

$$\text{speed of bus} = \frac{d}{t}$$

By question -

$$\text{speed of person} = \frac{d/3}{3t} = \frac{d}{9t}$$

$$\text{Intended ratio} = \frac{d}{9t} : \frac{d}{t} = 1:9$$

85. **Ans.(B)**

Let actual speed = x

According to question -

$$\frac{90}{(x-3)} - \frac{90}{x} = 5$$

$$\Rightarrow \frac{90[x-x+3]}{x^2-3x} = 5$$

$$\Rightarrow \frac{18 \times 3}{x^2-3x} = 1$$

$$\Rightarrow 54 = x^2 - 3x$$

$$\Rightarrow x^2 - 3x - 54 = 0$$

$$\Rightarrow x^2 - 9x + 6x - 54 = 0$$

$$\Rightarrow x(x-9) + 6(x-9) = 0$$

$$\Rightarrow (x-9)(x+6) = 0, x = -6(\text{Invalid}) x$$

$$= 9\text{ Valid}$$

hence actual speed = 9 km/hr

86. **Ans.(C)**

let if Paul's speed is x km/h -

$$\text{then} - \frac{405}{x} = \frac{6x}{30}$$

$$\Rightarrow 6x^2 = 405 \times 30$$

$$\Rightarrow x^2 = 2025\text{ km/hr or } x = 45\text{ km/hr}$$

87. **Ans.(A)**

Distance = Speed x Time

$$= 62 \times \frac{7}{2}$$

$$= 31 \times 7 = 217\text{ km}$$

Time taken to increase 8 km/h speed

$$\frac{217}{(62+8)} = \frac{217}{70} = \frac{31}{10} = 3\frac{1}{10}$$

$$\text{Remaining time} = 3\frac{1}{2} - 3\frac{1}{10}$$

$$= \frac{7}{2} - \frac{31}{10} = \frac{35-31}{10} = \frac{4}{10} = \frac{2}{5}\text{ hr}$$

$$= \left(\frac{2}{5} \times 60\right)\text{ minute}$$

$$= 24\text{ minute}$$

88. **Ans.(B)**

Total distance covered by Rajan

$$= 51 \times \frac{7}{3} = 119\text{ km}$$

Time taken by Kiran to cover a distance of 119 km



$$= \frac{119}{68} \text{ hr}$$

$$= \frac{7}{4} = 1\frac{3}{4} \text{ hr}$$

89. **Ans.(D)**

initial speed of the car =  $\frac{350}{4} = 87.5 \text{ km/hr}$   
 speed of car  $12\frac{1}{2} = 12.5 \text{ km/hr}$  on reducing  
 $= 87.5 - 12.5 = 75 \text{ km/hr}$   
 Hence the time taken by the car to cover 450 km =  
 $\frac{450}{75} = 6 \text{ hr}$

90. **Ans.(B)**

let distance traveled = d  
 $\therefore d = vt$   
 According to question –  
 $d = 10 \times \left(t + \frac{5}{60}\right) \dots\dots\dots(i)$   
 and,  $d = 13 \times \left(t - \frac{4}{60}\right) \dots\dots(ii)$   
 from eq. (i) and (ii)  
 $10 \times \left(t + \frac{5}{60}\right) = 13 \times \left(t - \frac{4}{60}\right)$   
 $10t + \frac{50}{60} = 13t - \frac{52}{60}$   
 $\frac{50}{60} + \frac{52}{60} = 13t - 10t$   
 $\frac{102}{60} = 3t$   
 $t = \frac{34}{60}$

Putting the value of t in equation (i)

$$d = 10 \times \left(\frac{34}{60} + \frac{5}{60}\right)$$

$$d = 10 \times \frac{39}{60} \Rightarrow d = 6.5 \text{ km}$$

91. **Ans.(B)**

Let the length of the van be a meter and the speed of the van is x km/h.

According to question –

$$\frac{a}{(x-4.8) \times \frac{5}{18}} = 4.5$$

$$\frac{18a}{5} = 4.5x - 21.6$$

$$\frac{a}{(x-6) \times \frac{5}{18}} = 9$$

$$\frac{18a}{5} = 9x - 54 \dots\dots\dots(i)$$

From eq. (i) and (ii)

$x = 7.2 \text{ meter/sec. eq.(ii)}$

$$\frac{18a}{5} = 9 \times 7.2 - 54$$

$$\Rightarrow \frac{18a}{5} = 10.8 \Rightarrow a = \frac{10.8 \times 5}{18} = 3 \text{ meter}$$

92. **Ans.(D)**

let platform length = x meter

speed =  $\frac{\text{distance}}{\text{time}}$

$$54 \times \frac{5}{18} = \frac{150 + x}{42}$$

$$\Rightarrow x + 150 = 3 \times 5 \times 42$$

$$\Rightarrow x + 150 = 630$$

$$\Rightarrow x = 630 - 150$$

$$x = 480$$

Hence the length of platform = 480 m

93. **Ans.(A)**

circumference of wheel =  $2\pi r = 2 \times \frac{22}{7} \times .35$   
 $= 2.2 \text{ meter}$

$$\text{speed} = \frac{450 \times 2.2}{60} = \frac{450 \times 22}{60 \times 10} \times \frac{18}{5} \text{ km/hr}$$

$$= \frac{594}{10} = 59.4 \text{ km/hr}$$

94. **Ans.(A)**

Let the speed of the woman be x km / h and the distance of the woman from the house is l km and woman get first car on t time.

then –

$$x \times t + 20t = l \dots\dots\dots(i)$$

$$\text{and } \left(t + \frac{8}{60}\right)x + \left(t + \frac{8-10}{60}\right) \times 20 = l$$

$$xt + \frac{8x}{60} + 20t - \frac{20 \times 2}{60} = xt + 20t$$

$$\frac{8x}{60} = \frac{40}{60}$$

$$x = 5 \text{ km/hr}$$

95. **Ans.(B)**

Distance traveled by car A

$$= 80 \times 6 = 480 \text{ km}$$

Distance traveled by car B = 480 - 60 = 420 km

$$\therefore \text{speed of car B} = \frac{420}{6} = 70 \text{ km/hr}$$

96. **Ans.(D)**

The speeds of the two buses are 11x and 9x respectively.

$$\text{speed of second bus} = \frac{270}{15} = 18 \text{ km/h}$$

$$\Rightarrow 9x = 18 \text{ km/h}$$

$$\Rightarrow x = 18/9$$

$$\Rightarrow x = 2 \text{ km/h}$$

Hence speed of first bus = 11x = 11 × 2 = 22 km/h

97. **Ans.(C)**

Distance covered by cycle in 15 minutes =  $24 \times \frac{15}{60} = 6 \text{ km}$

$$\text{Hence speed of woman} = \frac{6}{\frac{10}{60}} = \frac{6 \times 60}{10}$$

$$= 36 \text{ km/hr}$$

$$\therefore \text{Intended speed} = 36 - 24 = 12 \text{ km/hr}$$

98. **Ans.(C)**

Let speed of woman = x km/hr

According to question –

$$x \times \frac{6}{60} = 20 \times \frac{4}{60}$$

$$x = \frac{40}{3} = 13\frac{1}{3} \text{ km/h}$$

99. **Ans.(C)**

Let speed of person = x km/hr.

According to question –

$$22 + x = \frac{22 \times 10}{6}$$

$$22 + x = \frac{220}{6}$$

$$x = \frac{110}{3} - 22$$

$$x = \frac{110 - 66}{3} = \frac{44}{3}$$

$$x = 14\frac{2}{3} \text{ km/h}$$

100. **Ans.(C)**

Distance covered by bicycle in 10 minutes

$$= 6 \times \frac{10}{60} = 1 \text{ km}$$

Let speed of woman = x km/hr

Then relative speed (6 + x) km/hr.

$$6 + x = \frac{1}{8} = \frac{60}{8} \Rightarrow x = \frac{60}{8} - 6$$

$$x = \frac{60 - 48}{8} = \frac{12}{8}$$

$$x = \frac{3}{2} = 1.5 \text{ km/h}$$