

16. Problems on Trains

- To convert speed from kmph to m/sec, multiply it with $(5/18)$.
- To convert speed from m/sec to kmph, multiply it with $(18/5)$.
- If two bodies move in the same direction, the relative speed is equal to the difference of the speeds of the two bodies. If two bodies move in opposite direction, the relative speed is equal to the sum of the speeds of the two bodies.
- If two objects travel in the same direction with speeds of s_1 and s_2 , then relative speed = $s_1 - s_2$
- If two objects travel in the opposite direction with speeds of s_1 and s_2 , then relative speed = $s_1 + s_2$

Exercise

1. Two men Ajay and Bijoy start from a point X on a scooter at a speed of 30 km/hr and 50 km/hr respectively. How many kilometers apart will they be after 4 hours if they move in the same direction?
(1) 320 (2) 80 (3) 300 (4) 100
2. Two men Akash and Prakash start from a point X on a scooter at a speed of 30 km/hr and 50 km/hr respectively. How many kilometers apart will they be after 4 hours if they move in the opposite direction?
(1) 320 (2) 80 (3) 300 (4) 100
3. At 11:00 am, Two women Sita and Gita start from two opposite points X and Y which are 32000 m apart, on a scooter at a speed of 30 km/hr and 50 km/hr respectively. When do they meet?
(1) 11:30 (2) 11:18 (3) 12:00 (4) 11:24
4. A train, 450 m long is moving at 72 kmph. How long does it take
(a) to cross a pole?
(b) to cross a bridge of 150 m long?
(c) to cross a scooterist moving in the same direction at 36 kmph?
(d) to cross a scooterist moving in opposite direction at 18 kmph?
(e) to cross another train, 300 m long, moving at 36 kmph in opposite direction?
(f) to cross another train, 350 m long moving at 36 kmph in same direction
5. A train traveling at a speed of 60 km/hr passes a pole in 9 seconds. What time will the train take to cross a tunnel, 300 metres long? (in seconds)
(1) 18 (2) 24 (3) 30 (4) 27
6. A train, 450 metres long, crosses a platform, 2550 metres long, in 3 minutes. Find the speed of the train in kmph. (in kmph)
(1) 50 (2) 45 (3) 54 (4) 60
7. A train, 100 metres in length, crosses an electric pole in 10 seconds. Another train of same length crosses a bridge, 125 metres long, in 15 seconds. What is the difference of distances covered by the two trains in two and half hours? (in km)
(1) 45 (2) 54 (3) 72 (4) 60
8. A train leaves Bangalore at 5:15 a.m. traveling at 60 km/hr. Another super-fast express train leaves Bangalore one hour late traveling at a speed of 75 km/hr. When and at what distance from Bangalore will they meet?
(1) 9:15 a.m.; 300 km (2) 10:15 a.m.; 375 km (3) 9:15 a.m.; 375 km (4) 10:15 a.m.; 300 km
9. Train A traveling at a speed of 30 km/hr overtakes train B in 72 seconds. If train B travels in the opposite direction it takes just 24 seconds for train A to cross train B. Find the speed of train B, if the trains are of equal length. (in kmph)
(1) 15 (2) 18 (3) 20 (4) 25

10. A train A starts from Bangalore at 7 a.m. and reaches Mumbai at 2 p.m. Another train B starts from Mumbai at 9 a.m. and reaches Bangalore at 4 p.m. When do the two trains meet?
 (1) 9:30am (2) 10:30am (3) 11:30am (4) 12:30pm
11. A train leaves point A at 9:00 a.m. and reaches point B at 3:00 p.m. Another train leaves point B at 11:00 a.m. and reaches point A at 5:00 p.m. At what time do the two trains meet?
 (1) 12:00 p.m. (2) 1:00 p.m. (3) 1:30 p.m. (4) 2:00 p.m.
12. A train A starts from Hyderabad at 12 pm. and reaches Chennai at 2:30 p.m. Another train B starts from Chennai at 12:15 pm. and reaches Hyderabad at 2:15 p.m. When do the two trains meet?
 (1) 1:30 pm (2) 1:15 pm (3) 1:20 pm (4) 1:00 pm
13. Rajesh started to his office at 10.00 a.m. and drove away at a speed of 75 kmph. He forgot his mobile at home. His father Suresh noticed this at 10.20 a.m. and he immediately started chasing Rajesh at 95 kmph. When Suresh do catches Rajesh?
 (1) 11:00am (2) 11:35am (3) 11:30am (4) 11:15am
14. Two trains move in the same direction at 50 kmph and 32 kmph respectively. A man in the slower train observes the 15 seconds elapse before the faster train completely passes by him. What is the length of faster train (in m)?
 (1) 75 (2) 100 (3) 150 (4) 270
15. A car traveling at 60 km/hr overtook a cyclist, cycling in the same direction at 10 km/hr at 5: 00 p.m. At 5:30 p.m. the car met another cyclist traveling in the opposite direction at 15 km/hr. When will the two cyclists meet each other?
 (1) 6 pm (2) 6:15 pm (3) 6:30 pm (4) 6:45 pm
16. Two trains 315 m and 185 m long take 10 seconds to cross each other when moving in opposite directions. They take 50 seconds to cross each other when moving in the same direction at the same respective speeds. Find the speed of the faster train (in m/s).
 (1) 35 (2) 30 (3) 25 (4) 20
17. A robber steals a Maruthi car at 2.30 pm and drives at 60 kmph. The theft is discovered at 3 p.m. and the owner sits in Police jeep running at 75 kmph. When will he catch the thief?
 (1) 4.30 pm (2) 5.15 pm (3) 5 pm (4) 5.30 pm
18. In the above question, at what distance from the location of robbery the thief will be caught?
 (1) 120 km (2) 100 km (3) 130 km (4) 150 km
19. If a train 110m long passes a signal pole in 3 seconds. Then the time taken by it to cross a railway platform 165m long is :
 (1) 6 secs (2) 9 secs (3) 7.5 secs (4) 5 secs
20. There are two stations A and B separated by a distance of 200 km. Two trains X and Y starting at the same time from A and B respectively going in opposite directions. They cross each other at 110 km from station A. What is the ratio of the speeds of the trains X and Y respectively?
 (1) 9:11 (2) 11:9 (3) 10:9 (4) 9:10
21. Train P leaves Hyderabad at 6.00am. And reaches Vijayawada at 10.00am. Train Q leaves Vijayawada at 7.00am. And reaches Hyderabad at 1.00pm. At what time do the trains meet?
 (1) 8.48 a.m. (2) 8.12 a.m. (3) 8.42 a.m. (4) 9.00 a.m.
22. A train running at 52kmph takes 36 seconds to pass a platform. Next it takes 24 seconds to pass a man walking at 10 kmph in the same direction. Find the length of the train and that of the platform?
 (1) 280 m; 140 m (2) 280 m; 340 m (3) 280 m; 240 m (4) 240 m; 220 m
23. Two trains running in the same direction at 40 kmph and 22 kmph completely pass one another in 60 seconds. If the length of the first train is 125 meters, then the length of second train is?
 (1) 125 m (2) 150 m (3) 175 m (4) 225 m
24. Two trains 220 meters and 380 meters in length respectively are running in opposite direction. One at the rate of 35 kmph and other at 25 kmph. In what time they will cross each other?

- (1) 36 seconds (2) 30 seconds (3) 60 seconds (4) None

25. A train 100 meter in length in length passes a milestone in 10 seconds and another train of the same length travelling in opposite direction in 8 seconds. The speed of the second train is _____
 (1) 36 kmph (2) 48 kmph (3) 54 kmph (4) 60 kmph
26. Two trains A and B start from station X and Y towards Y and X respectively. After passing each other they take 4 hours 48 minutes and 4 hours 2 minutes to reach Y and X respectively. If train A is moving at 132 km/hr, then the speed of train B is?
 (1) 121 km/hr (2) 144 km/hr (3) 156 km/hr (4) 120 km/hr
27. A train P start from Mumbai at 3:30 pm reached Pune at 4:30 pm. An another train Q starts from Pune at 3:30 pm and reaches Mumbai at 5:00 pm. At what time, two trains will cross each other?
 (1) 4:06 pm (2) 3:56 pm (3) 4 pm (4) 4:15 pm
28. A train travelling at 36 kmph completely crosses another train having 75% of its length and travelling in the opposite direction at 54 kmph, in 14 seconds, If it also passes a railway platform in $1\frac{1}{4}$ minutes, the length of the platform is _____
 (1) 450 m (2) 500 m (3) 400 m (4) 550 m
29. A train crosses a pole and a bridge of length 280 meters in 6 seconds and 20 seconds respectively. At what speed the train is running?
 (1) 90 km/hr (2) 36 km/hr (3) 54 km/hr (4) 72 km/hr
30. A man sitting in a train which is running at a speed of 100 km/hr saw a goods train which is running in opposite direction towards him. The goods train crosses the man in 8 seconds. If the length of goods train is 300 meters, find its speed.
 (1) 45 Km/hr (2) 50 km/hr (3) 35 Km/hr (4) 60 Km/hr

Problems on Trains											
1	2	6	4	11	2	16	2	21	1	26	2
2	1	7	1	12	2	17	3	22	3	27	1
3	4	8	4	13	2	18	4	23	3	28	4
4		9	1	14	1	19	3	24	1	29	4
5	4	10	3	15	3	20	2	25	3	30	3