

Motion in Straight Line



Multiple Choice Questions (MCQs) on Relative Velocity

- Two cars, A and B, are moving in the same direction with velocities of 50 km/h and 30 km/h respectively. What is the relative velocity of car A with respect to car B?**
 - a) 20 km/h
 - b) 80 km/h
 - c) 30 km/h
 - d) 50 km/h
- Two trains, X and Y, are moving towards each other on parallel tracks with velocities of 60 km/h and 40 km/h respectively. What is the relative velocity of train X with respect to train Y?**
 - a) 100 km/h
 - b) 20 km/h
 - c) 60 km/h
 - d) 40 km/h
- A car is moving north at 60 km/h and another car is moving south at 40 km/h. What is the relative velocity of the north-moving car with respect to the south-moving car?**
 - a) 100 km/h
 - b) 20 km/h
 - c) 60 km/h
 - d) 40 km/h
- Two cyclists are moving in opposite directions along a straight road. Cyclist A has a velocity of 15 km/h and cyclist B has a velocity of 10 km/h. What is the relative velocity of cyclist A with respect to cyclist B?**
 - a) 5 km/h
 - b) 25 km/h
 - c) 15 km/h
 - d) 10 km/h
- A boat is moving upstream in a river at 5 m/s while the river flows downstream at 2 m/s. What is the relative velocity of the boat with respect to the riverbank?**
 - a) 3 m/s
 - b) 7 m/s
 - c) 5 m/s
 - d) 2 m/s
- A plane is flying east at 300 km/h while the wind is blowing west at 50 km/h. What is the ground speed of the plane?**
 - a) 250 km/h
 - b) 350 km/h
 - c) 300 km/h
 - d) 50 km/h
- A swimmer can swim in still water at 4 m/s. If he swims directly across a river flowing at 3 m/s, what is his resultant velocity relative to the riverbank?**

- a) 1 m/s
 - b) 5 m/s
 - c) 7 m/s
 - d) 4 m/s
8. **Two ships are sailing in the same direction, ship A at 20 km/h and ship B at 30 km/h. What is the relative velocity of ship B with respect to ship A?**
- a) 10 km/h
 - b) 50 km/h
 - c) 20 km/h
 - d) 30 km/h
9. **A car travels east at 60 km/h and another car travels north at 80 km/h. What is the magnitude of the relative velocity of the first car with respect to the second car?**
- a) 100 km/h
 - b) 140 km/h
 - c) 60 km/h
 - d) 80 km/h
10. **If two objects move in the same direction with equal velocities, what is their relative velocity?**
- a) 0 km/h
 - b) Equal to their individual velocities
 - c) Double their individual velocities
 - d) Cannot be determined
11. **A bird is flying north at 10 m/s while a wind is blowing east at 5 m/s. What is the bird's velocity relative to the ground?**
- a) 5 m/s northeast
 - b) 15 m/s northeast
 - c) 10 m/s northeast
 - d) 11.18 m/s northeast
12. **A man walks at 3 m/s on a moving walkway moving at 2 m/s in the same direction. What is his speed relative to the ground?**
- a) 1 m/s
 - b) 5 m/s
 - c) 3 m/s
 - d) 2 m/s
13. **Two cars, C and D, are moving towards each other with speeds of 40 km/h and 50 km/h respectively. What is the relative speed of car C with respect to car D?**
- a) 10 km/h
 - b) 90 km/h
 - c) 50 km/h
 - d) 40 km/h
14. **A cyclist travels north at 12 km/h while another cyclist travels east at 16 km/h. What is the magnitude of the relative velocity of the first cyclist with respect to the second cyclist?**
- a) 4 km/h
 - b) 28 km/h
 - c) 20 km/h
 - d) 30 km/h
15. **A boat crosses a river with a velocity of 5 m/s relative to the water while the river flows at 3 m/s. What is the boat's resultant velocity relative to the ground?**
- a) 2 m/s

- b) 8 m/s
 - c) 5.83 m/s
 - d) 3 m/s
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Answer Key

1. a) 20 km/h
2. a) 100 km/h
3. a) 100 km/h
4. b) 25 km/h
5. a) 3 m/s
6. a) 250 km/h
7. b) 5 m/s
8. a) 10 km/h
9. a) 100 km/h
10. a) 0 km/h
11. d) 11.18 m/s northeast
12. b) 5 m/s
13. b) 90 km/h
14. c) 20 km/h
15. c) 5.83 m/s