

Motion: Position and Velocity

1. Describe why frame of reference is important and give two examples of how a choice of frame of reference can give two different results for the same object in motion.
2. Suppose you are in a car traveling 60 km/h East; relative to you, what is the velocity of the following cars (velocities given are relative to an observer on the side of the road)
 - a. A bus is driving 35 km/h [E].
 - b. A minivan is driving 50 km/h [E].
 - c. A truck is driving 85 km/h [W].
 - d. A police car is driving 100 km/h [W].
3. Define distance and displacement. In what situation are their magnitudes the same? Different?
4. What is the difference between speed and velocity?
5. In what situation are the magnitudes of speed and velocity the same? Different?
6. Give an example when an object's average velocity is zero but its average speed is not zero.