

Distance & Displacement

Name: _____

Date: _____

1. Consider a child who walks 3.4 m down a hallway and then turns around to come back to where he started. Find both the child's distance and displacement.

Distance = 6.8 m Displacement = 0 m

2. A passenger train travels at 120 km/h between Chicago and Detroit. A woman gets up from her seat and walks to the back of her train car at a speed of 1.2 km/h.

- a) When describing the speed of the train, what is the reference frame?

The ground outside the train is the reference frame.

- b) When describing the speed of the woman, what is the reference frame?

The floor of the train is the reference frame.

- c) Consider the woman's speed. What would her speed be if we used the ground outside the train as a reference frame?

118.8 km/h

3. Imagine you are driving east and your friend is standing at a bus stop. Considering reference frames, which of the following statements is true?

- A) In your frame of reference you would be moving, but in your friend's reference frame you are at rest.

- B) In your frame of reference, your friend is moving west. In your friend's frame of reference, he will be at rest.

- C) In your frame of reference, your friend is moving east. In your friend's frame of reference he will be at rest.

4. A car drives 75 km south and then turns around and drives 45 km north. Calculate both the displacement and the distance traveled.

Displacement = 30 km south Distance = 120 km

5. A child rolled a toy car forward 145 cm and then backward 185 cm. Calculate both the distance and displacement of the toy car.

Displacement = -40 cm Distance = 330 cm

6. John drove 56.883 m and then turned around and drove 76.234 m in the opposite direction. Calculate both John's distance and displacement.

Displacement = -19.351 m Distance = 133.117 m