

## Distance vs. Displacement

### Lesson Notes

**Distance** Amount of ground that is covered  
A scalar quantity (magnitude ONLY)

**Displacement** Overall change in position; how far out of place an object moves  
A vector quantity (magnitude AND direction)

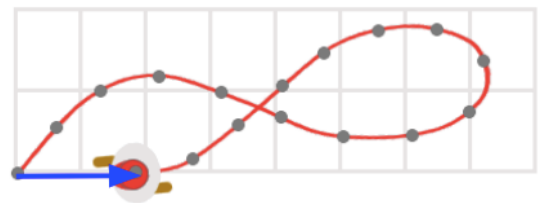
**Example 1:** Rhee Verse walks 6 m east, then 4 m west. What is the distance traveled? What is the displacement?

How do distance and displacement compare when there is no direction change?

How do distance and displacement compare when there is a direction change?

**Example 2:** A person walks 7 m to the right, changes directions, and walks 4 m to the left. What is the distance? What is the displacement?

The value (magnitude) of distance is path dependent. The value for displacement is path-independent.



What is the displacement for a round-trip motion?

**Your Turn:** Kent Decide walks 2 m east, 8 m west, and 4 m east. What is the distance? What is the displacement?