

# Journal Prompt: Vectors in Motion

Two drivers report the same distance travelled but disagree on their displacement. Something in that disagreement matters.

**Explain why distance and displacement can differ for the same trip, using a specific example from your own commute, a sport, or a video game. Compare and contrast these two quantities as scalar and vector measures ([Outcome](#)), and state which one alone cannot tell you an object's direction of travel.**

## Where to start:

- Define displacement and velocity in your own words before comparing them to distance and speed ([Outcome](#)).
- Sketch or describe a path that starts and ends at the same point. What is the displacement? What is the distance?
- Why does a vector quantity require both magnitude and direction to be meaningful?
- Could two objects have the same displacement but different distances travelled? Give an example.

## Stretch:

Describe a situation involving one object moving relative to another, such as walking on a moving bus. Explain how the relative displacement and relative velocity differ from what a stationary observer would measure ([Outcome](#)).