

Introduction to Motion

Choosing a Frame of Reference

Say three different people observe the same train at the same instant. One measures its speed as 60 mph, another 0 mph, and the last says 120 mph. Is it possible that all three are right? Explain.

Example 1

Fiona walks briskly with her luggage through an airport terminal at 4 mph. There is a moving conveyor belt on the ground that moves at 1.5 mph. She gets on the moving belt and continues walking at her same pace.

- a) How fast is she moving relative to the ground?
- b) How fast is she moving relative to a person walking behind her at the same speed?
- c) How fast is she moving relative to a person walking in the other direction (on the ground) at 3 mph?

Distance vs. Displacement

Distance: _____

Displacement: _____

Example 2

Conor drives 8 miles north and then 6 miles south.

- a) What distance does he drive?
- b) What is his displacement?

Example 3

Shea leaves her house and jogs 5 miles, then 3 miles, then 2 miles, and then she rests.

- a) What is the total distance that Shea ran?
- b) How far is Shea from her house?

Scalar vs. Vector

Scalar: _____

Vector: _____

