

# Relative Motion Worksheet

Name \_\_\_\_\_

Motion is a change in position over time compared to a fixed reference point. To determine relative motion, you need to know:

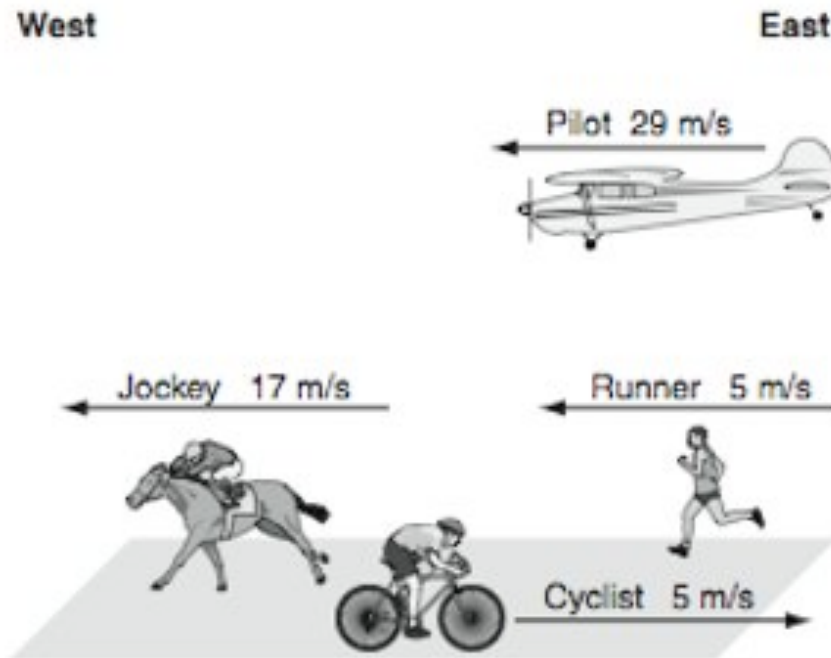
- 1) The objects being compared
- 2) Their direction
- 3) Their speeds compared to a FIXED REFERENCE POINT (usually the ground)

Example: If a runner is moving at 5 m/s west (compared to the ground), and a cyclist is moving at 5 m/s east (compared to the ground), what is the motion of the runner compared to the cyclist?

- 1) The runner and the cyclist
- 2) Runner going west, cyclist going east
- 3) The runner is going 5 m/s west, cyclist is going 5 m/s east.

The cyclist is going to the east, so the runner going west makes him go farther and farther from the cyclist. Overall, the runner goes at 10 m/s west COMPARED TO THE CYCLIST.

**5 m/s + 5 m/s = 10 m/s And the runner is going towards the west.**



Practice Problems:

1. What is the jockey's motion compared to the runner?

2. What is the cyclist's motion compared to the jockey?

3. What is the pilot's motion compared to the cyclist?

4. What is the Jockey's motion compared to the pilot?

5. What is the Runner's motion compared to the pilot?

6. What is the jockey's motion compared to the runner?

