Ch 3 - Page 105 - Practice Problems F – Relative Velocity

1. A passenger at the rear of a train traveling at 15 m/s relative to Earth throws a baseball with a speed of 15 m/s in the direction opposite the motion of the train. What is the velocity of the baseball relative to Earth as it leaves the thrower’s hand?
2. A spy runs from the front to the back of an aircraft carrier to a velocity of 3.5 m/s. If the aircraft is moving forward at 18.0 m/s, how fast does the spy appear to be running when viewed by an observer on a nearby stationary submarine?
3. A ferry is crossing a river. If the ferry is headed due north with a speed of 2.5 m/s relative to the water and the river’s velocity is 3.0 m/s to the east, what will the boat’s velocity relative to Earth be? (Hint: Remember to include the direction in describing the velocity)
4. A pet-store supply truck moves at 25.0 m/s north along a highway. Inside, a dog moves at 1.75 m/s at an angle of 35.0° east of north. What is the velocity of the dog relative to the road?