

Name: _____

Date: _____

Section C D F

Relative Velocity I

1. If you are walking at constant velocity of 5 km/h and a car passed you by at the speed of 20 km/h from behind, what is the car's velocity from your viewpoint?

2. How long, in seconds, does it take an automobile traveling 55.0 km/h to become even with a car that is traveling in another lane at 40.0 km/h if the cars' front bumpers are initially 126 m apart?

3. A plane can travel with a speed of 80 mph with respect to the air. Determine the resultant velocity of the plane (magnitude only) if it encounters a
 - a. 10 mph headwind
 - b. 10 mph tailwind
 - c. 10 mph crosswind
 - d. 60 mph crosswind

4. A motor boat traveling 4 m/s, East encounters a current traveling 3.0 m/s, North.
 - a. What is the resultant velocity of the motor boat?
 - b. If the width of the river is 80 meters wide, then how much time does it take the boat to travel shore to shore?
 - c. What distance downstream does the boat reach the opposite shore?
5. A swimmer can swim at a speed of 9.5 m/s. If a river has a downstream current of 3.75 m/s:
 - a. What direction must he swim to swim directly across the river?
 - b. What would his resultant velocity be relative to the bank?