

5. A rock is thrown with a velocity of 23.5 m/s at an angle of 22.5° to the horizontal. Find the horizontal and vertical velocity components.
6. A boat is rowed east across the river with a constant speed of 5.0 mi/h. If the current is 1.5 mi/h to the south, what direction must the boat row to get straight across? What is the speed that it makes good?
7. A car drives straight off a cliff that is 52.5 m tall. The car travels a horizontal distance of 122 m. Find: (a) how much time it will take for the car to hit the lake below and (b) the horizontal speed of the car.
8. A girl is told to "take a hike" by a sarcastic person, so she decides to do just that. Off she goes. She walks north for a while and then walks east for 1 hour and 15 minutes. During the whole time she walked at a constant speed of 2.50 m/s. Anyway. She ends up a distance of 25.2 km from her starting point (as the proverbial crow flies). (a) So how far north did she walk? (b) What is her direction from where she started?

9. The driver of a car slams on the brakes as a truck approaches the car head-on while slowing uniformly with acceleration -5.6 m/s^2 . The driver of the car is frozen with horror for 4.2 s while the truck makes skid marks 62.4 m long. With what speed does the truck strike the car?

10. A rock is dropped from a 100.0 m tower. (a) How long does it take the rock to fall the first 50.0 m ?
(b) The second 50.0 m ?