

Homework (LE 1)

Problem P1 (modified from Bedford and Fowler)

A skydiver is falling vertically at 90 ft/s when his parachute opens. The skydiver and his parachute weigh 220 lb. When the parachute opens the magnitude of the upward force is $0.3 v^2$. Determine:

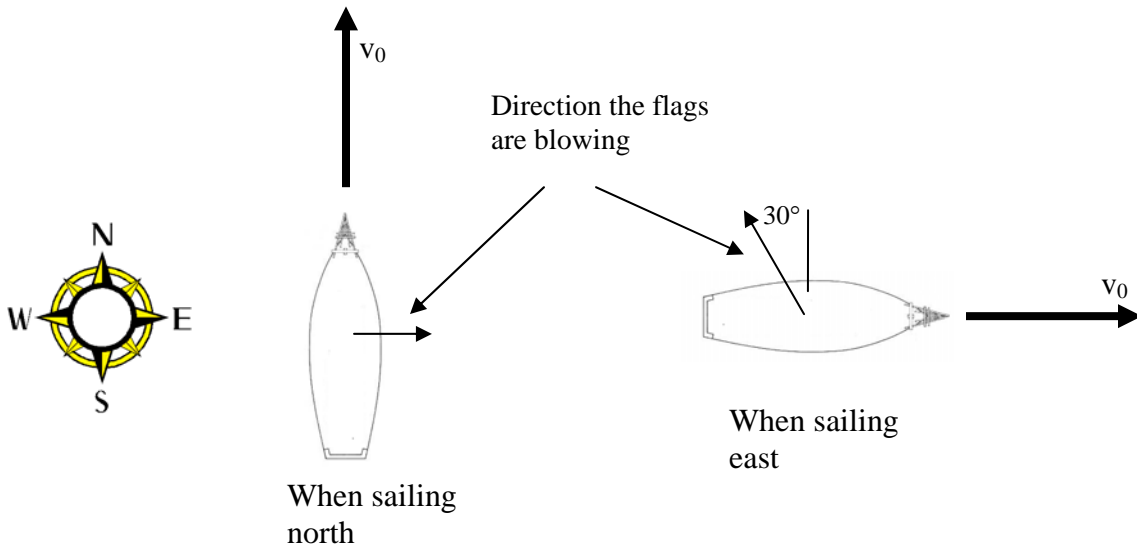
- The magnitude of his acceleration when the parachute first opens
- The magnitude of his velocity after he has descended 100 ft from the point where his parachute opens.



Problem P2 (modified from Bedford and Fowler)

Relative to the earth a pirate ship sails north at a velocity v_0 and then sails east at the same velocity. The velocity of the wind is uniform and constant. The flag on the boat points in the direction of the velocity of the wind relative to the boat. What are the magnitude and direction of the wind's velocity relative to the earth?

Hint: The magnitude of the relative velocities in the two cases are unknown.



Problem P3 (modified from Beer and Johnston)

The conveyor belt A moves with a constant velocity and discharges sand onto belt B as shown. Knowing the velocity of the belt at B is 8 ft/s and the velocity of the belt at A is 6 ft/s, determine the velocity of the sand relative to the belt B as it lands on belt B.

