

Due date: Wed Feb 4 10:59:59 pm 2015 (EST)

A river flows due east at 1.49 m/s. A boat crosses the river from the south shore to the north shore by maintaining a constant velocity of 11.5 m/s due north relative to the water. What is the velocity of the boat relative to shore?

You are correct. Your receipt no. is 156-5791

If the river is 283 m wide, how far downstream has the boat moved by the time it reaches the north shore?

You are correct. Your receipt no. is 156-2171

A swimmer heads directly across a river, swimming at her maximum speed of 1.10 m/s relative to the water. She arrives at a point 56.0 m downstream from the point directly across the river, 78.0 m wide.

What is the speed of the river current?

You are correct. Your receipt no. is 156-5672

What is the swimmer's speed relative to the shore?

You are correct. Your receipt no. is 156-5527

In what direction (as an angle relative to a direct line across the river) *should* the swimmer aim instead, so that she arrives at the point directly opposite her starting point?

You are correct. Your receipt no. is 156-9123

Initially, a particle is moving at 5.46 m/s at an angle of 37.7° above the horizontal. Three seconds later, its velocity is 6.14 m/s at an angle of 56.0° below the horizontal. What was the particle's average acceleration during these 3.00 seconds in the x-direction (enter first) and the y-direction?

You are correct. Your receipt no. is 156-9351

A particle leaves the origin with an initial velocity of 4.20 m/s in the x direction, and moves with constant acceleration $a_x = -3.00 \text{ m/s}^2$ and $a_y = 3.90 \text{ m/s}^2$.

How far does the particle move in the x direction before turning around?

You are correct. Your receipt no. is 156-3162

What is the particle's velocity at this time? Enter the x component first, followed by the y component.

You are correct. Your receipt no. is 156-1510

Stones are thrown horizontally, with the same initial velocity, from the tops of two different buildings, A and B. The stone from building A lands 6 times as far from the base of the building as does the stone from building B. What is the ratio of building A's height to building B's height?

- A. 1/36
- B. None of these choices.
- C. 6
- D. $\sqrt{6}$
- E. 36
- F. 1/6

You are correct. Your receipt no. is 156-3711

A place kicker must kick a football from a point 34.0 m (= 37.2 yd) from the goal, and the ball must clear the crossbar, which is 3.05 m high. When kicked, the ball leaves the ground with a speed of 19.1 m/s at an angle of 47.0° to the horizontal. By how much does the ball clear the crossbar (if in fact it does)? Enter positive values if the ball clears and negative values if it falls below the crossbar.

Incorrect.

Tries 8/8

What is the vertical velocity of the ball at the time it reaches the crossbar? Enter positive values if it is still rising and negative values if it is falling.

Incorrect.

Tries 8/8

You are in a hot air balloon (yes, another balloon problem!) rising from the ground at a constant velocity of 2.00 m/s upward. To celebrate the takeoff, you open a bottle of champagne, expelling the cork with a horizontal velocity of 5.00 m/s relative to the balloon. When opened, the bottle is 4.00 m above the ground.

What is the initial speed of the cork, as seen by your friend on the ground?

You are correct. Your receipt no. is 156-680

What is the initial direction of the cork as seen by your friend? Give your answer as an angle relative to the horizontal.

You are correct. Your receipt no. is 156-2651

Determine the maximum height of the cork above the ground.

You are correct. Your receipt no. is 156-2260

How long does the cork remain in the air?

You are correct. Your receipt no. is 156-4283
