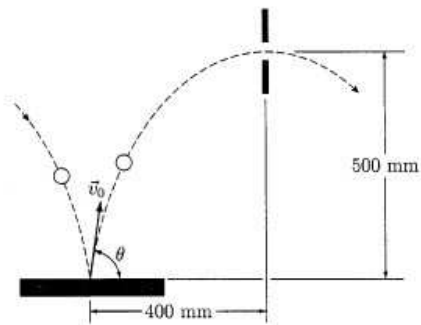


Physics 195 Practice Quiz 1a

Here are some practice problems for you to try. Answers are given at the bottom.

1. Jessica can throw a ball a maximum horizontal distance of 32.5 meters on a level field. How far can she throw the same ball vertically upward? Assume that her muscles give the ball the same speed in each case. Ignore the height of her hand above the ground.

2. To pass inspection, small ball bearings must bounce through an opening of limited size at the *top* of their trajectory when rebounding from a heavy plate as shown below. (a) Calculate the angle  $\theta$  made by the velocity  $\vec{v}_0$  with the horizontal. (b) Calculate the *velocity* of the balls as they pass through the opening. {Clarification of diagram: vertical = 500 mm, and horizontal = 400 mm.}



3. Joe drops a stone from a height  $h$ . During the last second of its fall, it traverses a distance of 38.0 meters. What was  $h$ ?

4. The range of a soccer ball kicked horizontally from a cliff is equal to the height of the cliff. What is the direction of the velocity vector when this projectile strikes the ground?

Answers: 1. 16.25m, 2a.  $68.2^\circ$ , b.  $1.25\text{m/s}$   $\square$ , 3. 93.8m 4.  $63.4^\circ$  below the forward horizontal.