

A ball was kicked upward from level ground at a speed of 12.0 m/s and an angle of 67 degrees above horizontal. A building that is 4.0 meters high (4.0 meters above the point where the ball is kicked) is 2.0 meters away (in front of) the place where the ball was kicked. The building has a vertical wall facing the place where the ball was kicked and a horizontal flat roof. Neglect air resistance and let  $g = 9.8 \text{ m/s}^2$ .

a) Does the ball make it to the roof of the building or does it hit the near side of the building?

b) If the ball hits the near side of the building, how high above the ground does it hit?  
If the ball lands on the roof, how far from the nearest edge of the roof does it land?