

### Answer on Question #73434 - Physics / Other

Suppose a goalkeeper can give the ball a speed of  $v_0 = 25$  m/s. What is the maximum horizontal distance the ball could go in meters?

**Solution:**

The horizontal distance

$$L = \frac{v_0^2 \sin 2\theta}{g}$$

If  $\theta = \frac{\pi}{4}$  the distance would be maximum, so

$$L_{\max} = \frac{v_0^2}{g} = \frac{25^2}{9.8} = 67.8 \text{ m}$$

**Answer:** 67.8 m

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