Answer on Question #70651-Physics-Other

A baseball player leads off the game and hits a long home run. The ball leaves the bat at an angle of 30.0o from the horizontal with a velocity of 42.0 m/s. How far will it travel in the air?

Solution

Assume that there is no air resistance. Thus, we can apply equations of projectile's motion to this model.

The range of projectile is given by the formula:

$$R = \frac{v^2 \sin(2\theta)}{g}$$

$$R = \frac{(42.0)^2 \sin 2(30)}{9.81} = 156 \, m.$$

Answer: 156 m.

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