

Physics Problem Solving Sheet

Problem

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Useful Description

Picture & Given Information:



$\Delta y =$

$v_{iy} =$

$v_{fy} =$

$a = -9.8 \frac{m}{s^2}$

$\Delta x =$

$v_x =$

$$v_i = 1700 \frac{m}{s} @ 55^\circ \text{ N of E}$$

Question:

a) Range?
b) time?

Target Quantity:

a) Δx
b) Δt

Physics Approach

Physics Concepts and/or Principles:

x : const vel
 y : const acc.

Specific Application of Physics

Assumptions/Constraints:

negl. air res.

Specific Equations:

$$\Delta x = \frac{v_i^2 \sin(2\theta)}{g}$$

$$t_{tot} = \frac{2v_{iy}}{g}$$

Mathematical Procedures

Employ specific equations to solve for target quantity.

a) $\Delta x = \frac{(1700 \frac{m}{s})^2 \sin(2 \times 55^\circ)}{9.8 \frac{m}{s^2}} = 277,000 m$

b)

$$v_{iy} = 1700 \frac{m}{s} \sin 55^\circ = 1393 \frac{m}{s}$$

$$t_{tot} = \frac{2(1393 \frac{m}{s})}{9.8 \frac{m}{s^2}} = 284 s$$

Check units & calculate