

Proposed Problem

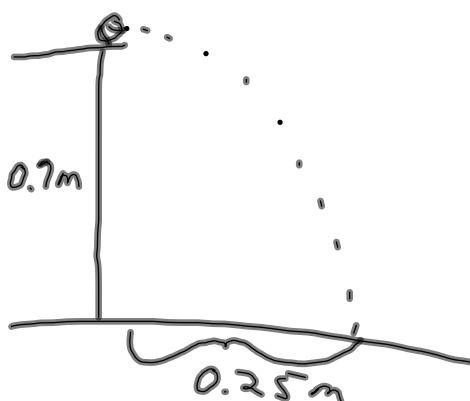
pg 99  
Practice D #1

- Create Useful description - sketch, graphs, define quantities, define problem
- Physics Approach - list physics concepts that would apply to this problem
- Specific Application of Physics - use the concepts to model mathematically model the problem
- Mathematical Procedures - use the equations to solve the problem

Aug 5-9:52 AM

**Physics Problem Solving Sheet**Useful Description

Picture &amp; Given Information:



Const acc. Y	Const vel. X
$y = -0.7\text{m}$	$\Delta x = 0.25\text{m}$
$v_{i,y} = 0\text{m/s}$	$v_x = ?$
$v_{f,y} =$	
$a_y = -9.8\text{m/s}^2$	
$\Delta t =$	

Question:

what is the horizontal velocity of the ball?

Target Quantity:  $v_x$ 

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**Physics Problem Solving Sheet (cont.)**Physics Approach

Physics Concepts and/or Principles:

proj. launched horiz  
 $\therefore x$ : const. vel.  
 $y$ : const. acc.

Specific Application of Physics

Assumptions/ Constraints:

ignore friction +  
 air res.

Specific Equations:

$$v_x = \frac{\Delta x}{t}$$

$$\Delta y = \frac{1}{2} a t^2 + v_{iy} t$$

Mathematical Procedures

Employ specific equations to solve for target quantity.

$$v_x = \frac{\Delta x}{\Delta t} = \frac{0.25 \text{ m}}{\sqrt{\frac{2 \Delta y}{-9.8 \frac{\text{m}}{\text{s}^2}}}} = \frac{0.25 \text{ m}}{\sqrt{\frac{2(-0.7 \text{ m})}{-9.8 \frac{\text{m}}{\text{s}^2}}}} = 0.66 \frac{\text{m}}{\text{s}}$$

$\Delta y = \frac{1}{2} a t^2 + v_{iy} t$   
 $t = \sqrt{\frac{2 \Delta y}{a}}$

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