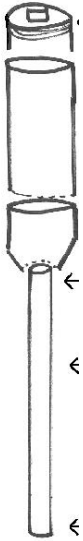


PENNYWORTH PROJECTILE PRACTICE PROBLEMS (PPPP)

INSTRUCTIONS: For each of the following problems, please

- Draw a picture to show each situation
- List the given information including **units and variables**
- Identify the equation(s) you will use **in variable form**
- Solve the problem and make sure you use the correct units



1. Alfred aims his potato gun horizontally at a target 90.0 meters away. He lines the bull's eye up in the sights. The potato leaves the gun with a horizontal velocity of $200. \text{ m/s}$.
 - a. How much time does it take the potato to reach the target?
 - b. Does Alfred hit the bull's eye (assuming the left-right aim is good)? If not, by how much does he miss?
2. Bruce is out in an open flat grassy field. He holds the potato gun 1.25 meters off of the ground and fires it horizontally. The potato leaves the gun with a velocity of $300. \text{ m/s}$.
 - a. How far will the bullet travel horizontally before hitting the ground?
 - b. After 0.25 seconds of falling, what are the horizontal and vertical components of its velocity?
3. Richard is sitting on the flat ground with his potato gun. He aims it at 30° from the horizontal and fires the potato with a velocity of $300. \text{ m/s}$.
 - a. What are the horizontal and vertical components of the velocity just as it is fired?
 - b. What are the horizontal and vertical components of the velocity at the top of its path?
 - c. How much time does it take to reach the top of its path?
 - d. How much time does it stay in the air?
 - e. How far away from Richard does the potato hit the ground?
4. Gordon is sitting on top of a 200. meter high cliff with his potato gun. He fires it at 40° from the horizontal with a velocity of $300. \text{ m/s}$.
 - a. What are the horizontal and vertical components of its velocity when it is fired?
 - b. How much time does it take to reach its peak height?
 - c. How much time does it take to reach the ground?
 - d. What is its vertical component just before it hits the ground?
 - e. How far (horizontally) away from the cliff does the potato hit the ground?