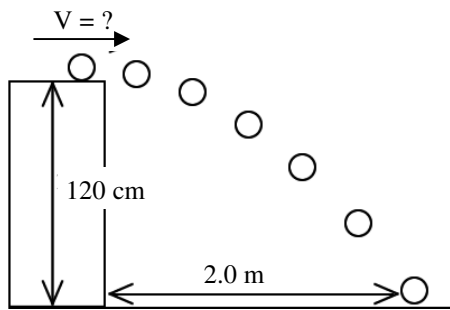


2012 PreAP Two Dimensions 13

These next problems are beyond the basic projectile motion problems. Though they are more challenging, the basics of projectile motion have not changed: a_y still equals -9.8 m/s^2 , etc. Put in what you know. Solve for what you can and the answers will eventually reveal themselves. Fight with this. Only answers are given. So no work: no credit.

1. A projectile is shot horizontally from the top of a 120 cm tall table. It lands 2.0 m away. Calculate how fast it was shot?



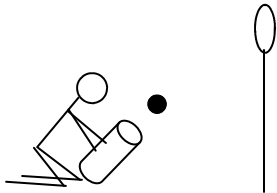
- A. Since the units for acceleration are METERS/ s^2 , you have to work in meters. So, change 120 cm to:
 B. * Put in all the information you know in both directions. Solve for what you can and then use that information to find the velocity it was shot.

y-direction:

x-direction:

2. Let's use Slim Jim and the hoop, again. This time Jim shoots at 3.5 m/s at an angle of 55° .

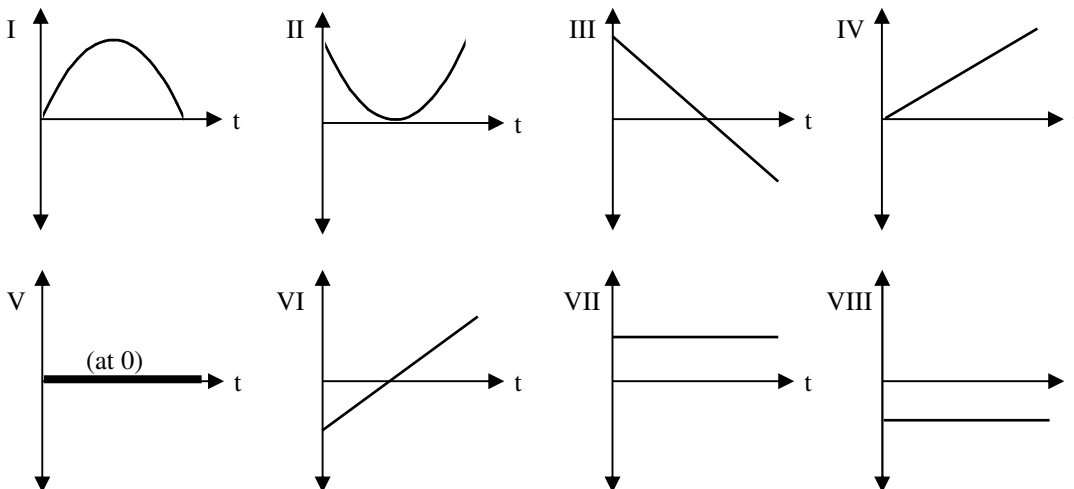
- A. * Calculate how far away the ball lands.



- B. * So, obviously the hoop is half way, so what is the distance from Jim to the hoop in the x-direction (the x-coordinate of the hoop).
 C. * The y-coordinate of the hoop is the highest point in the y-direction. So, calculate the highest point of the projectile.

- D. So, if the launch point is (0,0), what are the x, y coordinates of the hoop?

3. A projectile is launched from the ground to the ground. Which of the graphs would portray:



- A. ____ a_y (y dir acceleration).
 B. ____ The horizontal position.
 C. ____ a_x (x acceleration)
 D. ____ Vertical position.
 E. ____ V_y (vertical velocity)
 F. ____ V_x (horizontal velocity)

1B) 4.0 m/s

2A) 1.18 m

2B) 0.59 m

2C) 0.43 m