## **Pre-Lab Practice: Projectile Motion**

Review the Textbook:

- PHYS 1401: Serway & Vuille: Sec. 3.3-3.4.
- PHYS 2425: Serway & Jewett: Sec. 4.1-4.3.
- <u>https://www.webassign.net/question\_assets/ncsucalcphysmechl3/percent\_error/m\_anual.html</u>

## A ball is fired horizontally from a launcher that is 2.42 m above the floor. The experimental range of the shot was measured to be 1.68 m.

- 1. What was the total time of the flight? (0.70 s)
- 2. What was the initial speed of the ball? (2.40 m/s)
- If the theoretical range for the same shot was predicted to be 2.72 m, calculate the % Error. Use the theoretical range as the reference value. (38%)

## A ball is fired from a launcher with an initial speed is 7.00 m/s at a 30° angle from the horizontal. The point of firing is 2.42 m above the floor.

- 4. What is the horizontal component of the ball's initial velocity? (6.06 m/s)
- 5. What is the vertical component of the ball's initial velocity? (3.5 m/s)
- 6. What was the total time of the flight? (1.145 s)
- 7. What is the predicted range of the shot? (6.94 m)
- How much time did it take a ball to reach to the top point of the trajectory? (Hint: what is so special about the vertical component of the velocity at that point?) (0.3571 s)
- 9. What was the maximum height of the trajectory? (3.044m)