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.

1. A ball is fired horizontally from a launcher that is 2.42 m above the floor. The range of the shot is 4.35 m. What was the initial speed of the ball?
   (6.19 m/s)

2. The experimental range for shot is 1.68 m and the theoretical range for the same shot is 4.73 m. What is the percent error between these two ranges? Use the theoretical range as the reference value.
   (64.5%)

A ball is fired from a launcher 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.

3. What is the horizontal component of the ball’s initial velocity?
   (6.06 m/s)

4. What is the vertical component of the ball’s initial velocity?
   (3.5 m/s)

5. How much time does 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)

6. What was the total time of the flight??
   (1.145 s)

7. What is the predicted range of the shot?
   (6.94 m)