

Ball Toss Problems

1. Jan throws a ball straight up in the air with an initial velocity of 10 m/s.
 - a. How long will it take the ball to reach its highest point?
 - b. How long will it take the ball to go up and come back down to Jan's hand?
 - c. What is the maximum height reached by the ball?
 - d. What is the velocity of the ball when it gets back to her hand?

2. Your friend, Cindy, is playing soccer, and you see her kick the ball straight up in the air. It takes 2.5 seconds for the ball to reach its highest point.
 - a. What is the maximum height reached by the ball?
 - b. What was the initial velocity of the ball?
 - c. What is the total time the ball is in the air?
 - d. What is the velocity of the ball just it reaches the ground again?

3. Greg is playing golf and he accidentally hits the golf ball straight up in the air with an initial velocity of 35 m/s.
 - a. How long does it take the ball to reach its highest point?
 - b. What is the maximum height reached by the ball?
 - c. After only 1.5 seconds, what is the velocity of the ball?
 - d. What is the acceleration of the ball at its highest point?

4. Bobby has a tennis ball that he throws straight up. The tennis ball reaches a maximum height of 20 meters above its release point.
 - a. How long did it take the ball to reach this maximum height?
 - b. What was the initial velocity of the ball?
 - c. What is the velocity of the ball at its highest point?

Answers:

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| 1) a. $t=1\text{ s}$ | b. $t=2\text{ s}$ | c. $h=5\text{ m}$ | d. $v=-10\text{ m/s}$ |
| 2) a. $h=31.25\text{ m}$ | b. $v_i=25\text{ m/s}$ | c. $t=5\text{ s}$ | d. $v_f=-25\text{ m/s}$ |
| 3) a. $t=3.5\text{ s}$ | b. $h=61.25\text{ m}$ | c. $v=20\text{ m/s}$ | d. $a=-10\text{ m/s}^2$ (just gravity!) |
| 4) a. $t=2\text{ s}$ | b. $v_i=20\text{ m/s}$ | c. $v=0\text{ m/s}$ | |