You throw a ball directly upwards with a speed of 10 m/s. When the ball is at exactly **half** of its peak height, it strikes a passing bird that is flying parallel to the ground.

1. **(4 pts)** What is the speed of the ball when it hits the bird?
2. **(4 pts)** How long does it take for the ball to fall back down to your position?
3. **(1 pt)** Explain why *tup* ≠ *tdown*