

Week 20 Upward Throws

Wkt 1: Up & Down

Name: _____

**Right-click (cntrl-click) the link for the up & down video at mrmont.com
Choose "download linked file".**

When you watch it, you can use the arrow keys to go frame by frame.

1. Count the number of frames the ball takes to get to the top, once it clearly leaves my hand. Count the number of frames it takes to come back down to that height again. How do they compare?
2. In general, what would you predict about the time it takes a projectile to go up compared to the time to come down (assuming drag is not a big issue)?
3. From the blurriness of the ball, what do you think is happening to the ball's speed on the way up?
4. From the blurriness of the ball, what do you think is happening to the ball's speed on the way down?
5. From the blurriness of the ball, how does the ball's speed at launch compare to the speed it has when it gets back down to the original launch height?
6. If you throw straight upward, what is true of the ball's speed at the instant it reaches the very top?
Hint #1: If it is slowing down on the way up, what speed will it hit before it can begin to speed back up the other way?
Hint #2: Going upward it has a positive velocity. Coming down it has a negative velocity. What number do you have to pass through to get from positive to negative numbers?