

Do Now

- Take out your notebook, a pencil and your calculator.
- Write down (in words) how you would solve this problem: A marble is launched from ground level at a given velocity. It reaches a height of 32m. How long does it take to hit the ground?

Today

- Solving vertical 1-D kinematics problems with:
 - Positions not equal to zero.
 - Objects thrown up or down with an initial velocity not zero.

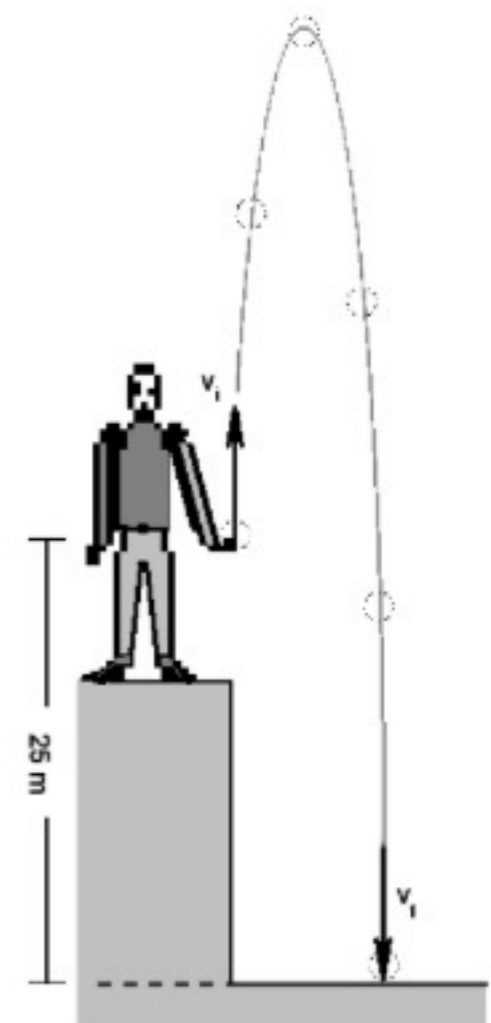
Considerations

- When making your pictures, label Y_i and Y_f . $\Delta y = Y_f - Y_i$.
- If it changes direction, you should label your positions A, B & C. Where?
- Always ask yourself: “does this answer make sense?” Why?

Word, words, numbers

- A ball is throw downward with a speed of 4m/s.
- A pickle is thrown in the air. How long is it in the air?
- At what time is it at _____ m?

A teacher finds a student texting in class. He decides to throw the phone from the top of a 25m building, straight up in the air with a velocity of 17m/s. How long does it take the phone to hit the ground? What is the velocity upon impact?




Boaz Almog:

The levitating superconductor

TEDGlobal 2012 · 10:25 · Filmed Jun 2012

Subtitles available in 27 languages

 [View interactive transcript](#)



**Boaz Almog: The levitating superconductor.
No gravity!! Think of the applications!!!!**

Make Your Own

- Create a vertical 1-D kinematics problem and solve for 2 unknowns.
- The launch or landing should be at different levels.
- Solve it and switch with the other lab group at your bench. Don't show them your solution.
- You may be asked to share your problem with the class.
- This is an academic environment. No one should be injured or insulted in the problems.

Presentations

- Present the problem that you were asked to solve.
- Explain (in words) the method that allowed you to get the answer.
- Is it the same way that the authors solved the problem?

A 1.8m quarterback is sacked and the ball goes straight into the air with a velocity of 5m/s. At what times is the ball 4m off the ground? There are a few ways to solve this.

Tonight

- Finish the Free Fall WS.
- I will collect it and we can will review on Friday.
- Tomorrow: Lab-Buggy and Fan Cart.

- A marble is launched from ground level at a velocity of 37m/s . How long does it take to hit the ground?

Quadratic

- The quadratic equation yields two answers.
- Only one makes sense.
- You cannot have negative time. You broke the physics.

A potato is shot from a cannon 1.5m off the ground with an initial velocity of 75m/s. At what height has the speed of the ball been halved?