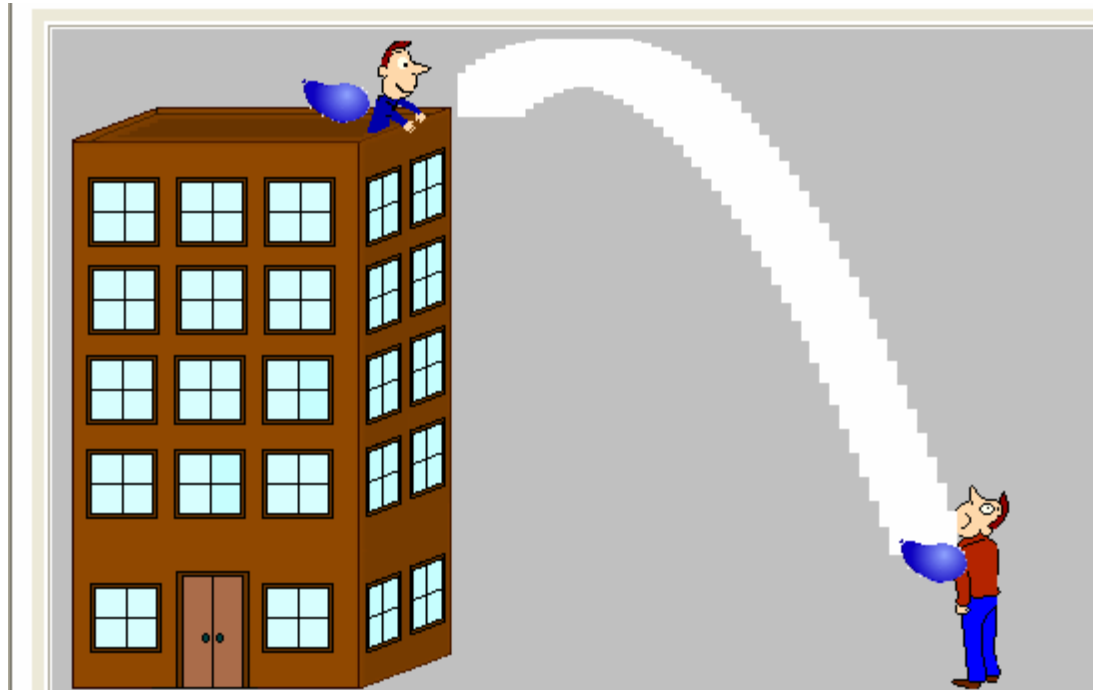


Engineering Problem
Solving
ENG1100 – Session 10b

**Math Model
Calculations**

Math Model Example

- Go to <http://library.thinkquest.org/2779/Balloon.html>
- What variables do we have?



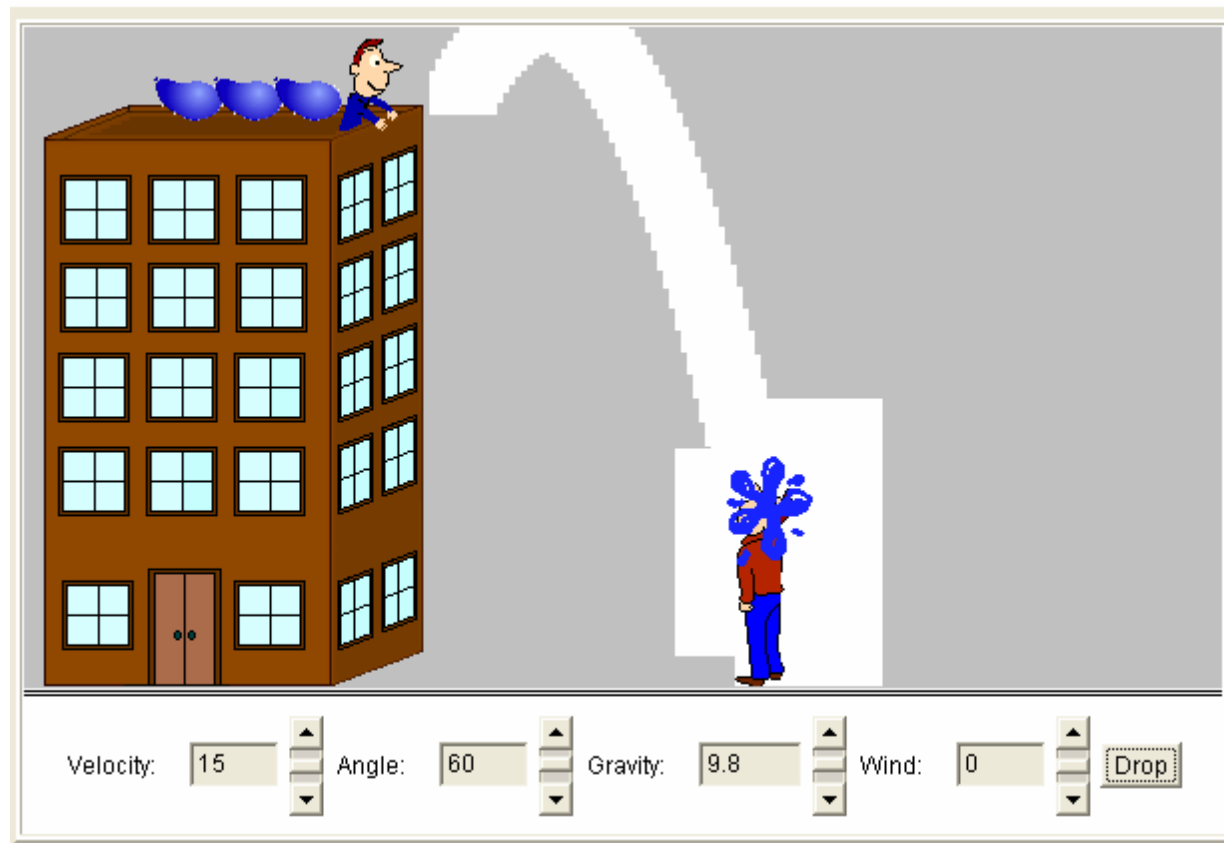
Math Model Example

- Play a few rounds...
- What happens when you change:

Velocity?

Angle?

Windspeed?



Your math model...

- Develop a spreadsheet macro to:
 - Model snowball height and distance for entire launch
 - Predict – force and angle required for range of test weights (0.5 to 1.0 lbs in increments of 0.05 lbs)
- Target distance is 55 meters (~180 feet)
- Target area will be a 3 meter x 3 meter box centered at 55 meters

So what do we know? – Theoretical Equations & Data

Motion Equations

- Velocity $\mathbf{v} = \mathbf{v}_o + \mathbf{a}t$
- Position $\mathbf{x} = \mathbf{x}_o + \mathbf{v}_o t + 1/2 \mathbf{a}t^2$

Force Data from elasticity analysis

Elasticity Analysis Data

