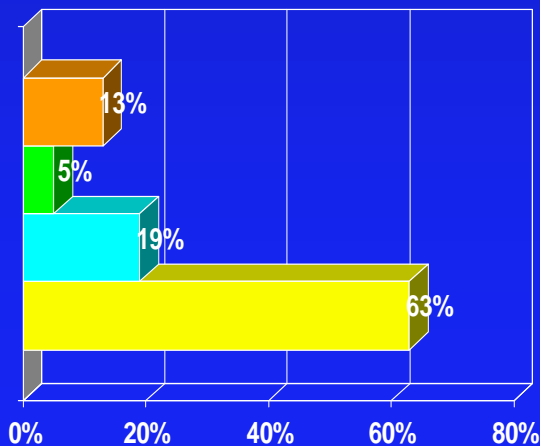
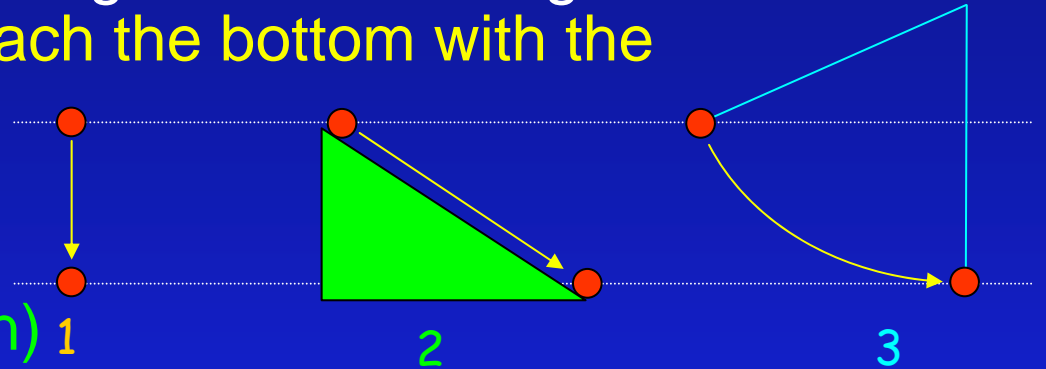


# Lecture 10, Preflight 2

Imagine that you are comparing three different ways of having a ball move down through the same height. In which case does the ball reach the bottom with the highest speed?

1. Dropping
2. Slide on ramp (no friction) 1
3. Swinging down
4. All the same ← correct



Conservation of Energy ( $W_{nc}=0$ )

$$\Sigma W_{nc} = \Delta K + \Delta U$$

$$K_{\text{initial}} + U_{\text{initial}} = K_{\text{final}} + U_{\text{final}}$$

$$0 + mgh = \frac{1}{2} m v_{\text{final}}^2 + 0$$

$$v_{\text{final}} = \text{sqrt}(2 g h)$$