Kinematic Equations for Constant Acceleration

$$v = v_0 + at$$

$$x = x_0 + v_0 t + \frac{1}{2}at^2$$

$$v^2 = v_0^2 + 2a(x - x_0)$$

$$\overline{v} = \frac{v + v_0}{2}$$

These are presented by the professor as

$$v_f = v_0 + at$$

$$\Delta x = v_0 t + \frac{1}{2}at^2$$

$$v_f^2 = v_0^2 + 2a\Delta x$$

Acceleration of gravity at surface of Earth

$$g = 9.8\frac{m}{s^2}$$

$$g = 32\frac{ft}{s^2}$$

when something is acting under the influence of gravity, the acceleration is increasing in a negative direction. Thus,

$$a = 9.8\frac{m}{s^2}$$

"How far has an object dropped?" is asking for displacement $\rightarrow \Delta x$

"How high does it go up?" Solve for Δx where $v = 0\frac{m}{s}$

"How long is it in the air?" solve for t with the