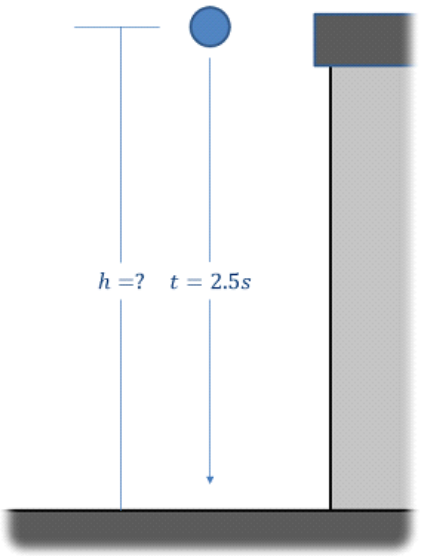
Problem 4:

An object is released from rest at the top of a tall building of unknown height. Using a precision stopwatch, you note that it takes 2.5 seconds for the object to hit the ground. Assuming the standard rate of acceleration of 32.2 ft/s^2 and negligible air resistance, what is the estimated height of the building in feet?



$$y(t) = \frac{1}{2}at^2 + \cancel{v_0 t}^{0} + y_0$$

$$0 = \frac{1}{2}(-32.2)(2.5)^2 + y_0$$

$$\frac{1}{2}(32.2)(2.5)^2 = y_0$$

$$\boxed{y_0 = 100.6 \text{ ft}}$$