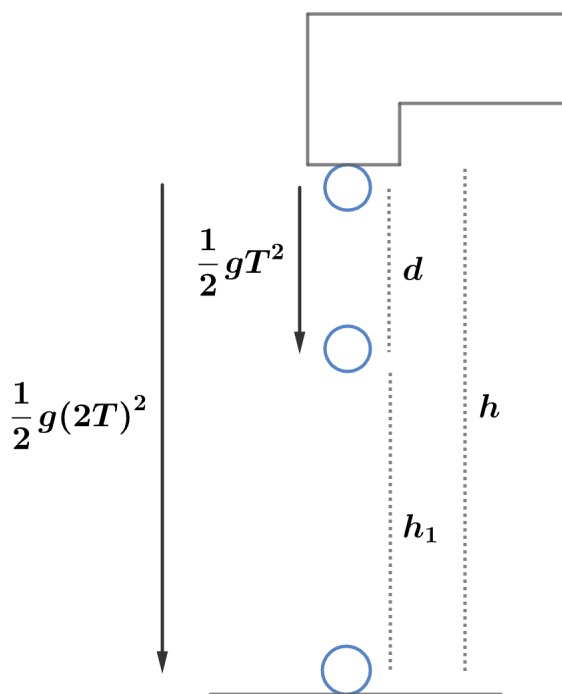# 2012 F=ma Exam: Problem 1

## Kevin S. Huang



Let $T$ be the time between when drops are released from the faucet. We are given that a drop takes time $2T$ to fall to the sink so

$$h = \frac{1}{2}g(2T)^2$$

The drop in the air has fallen for time $T$ so it is located a distance $d$ below the faucet with

$$d = \frac{1}{2}gT^2 = \frac{h}{4}$$

Thus, it is at height

$$h_1 = h - d = \frac{3h}{4} = \frac{3(10\,\text{cm})}{4} = 7.5\,\text{cm}$$

so the answer is $\boxed{D}$.