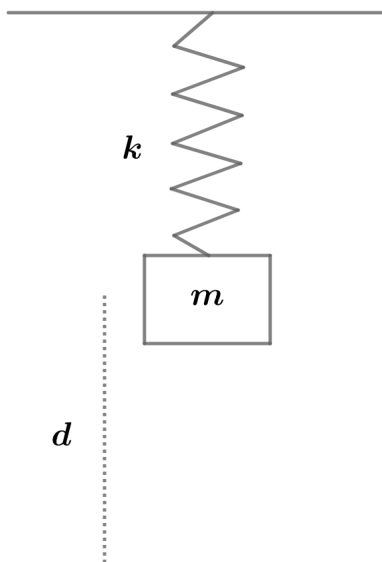# 2019A F=ma Exam: Problem 4

Kevin S. Huang

Conserving energy when the mass is released, we have

$$\frac{1}{2}kd^2 = mgd$$

$$\frac{m}{k} = \frac{d}{2g}$$

Recall the period of a spring-mass system is given by

$$T = 2\pi\sqrt{\frac{m}{k}} = 2\pi\sqrt{\frac{d}{2g}}$$

We have $d = 0.05\,\text{m}$ so

$$T = 2\pi\sqrt{\frac{0.05\,\text{m}}{2(10\,\text{m/s}^2)}} = 0.31\,\text{s}$$

and the answer is $\boxed{\text{C}}$.