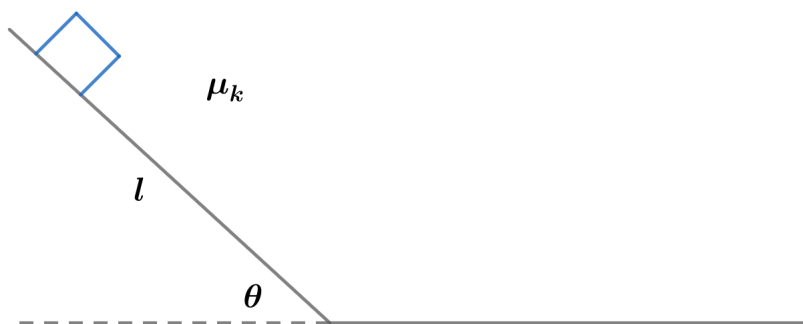# 2019B F=ma Exam: Problem 1

Kevin S. Huang

We first check if the block will move:

$$\tan \theta = \frac{\sqrt{3}}{3} > 0.15 = \mu_s$$

so the block will slide. The energy dissipated by friction then is

$$E = F_f l = \mu_k mgl \cos \theta = (0.1)(10\,\text{kg})(10\,\text{m/s}^2)(10\,\text{m}) \cos \frac{\pi}{6} = 87\,\text{J}$$

since the horizontal surface is frictionless so the answer is $\boxed{\text{B}}$.