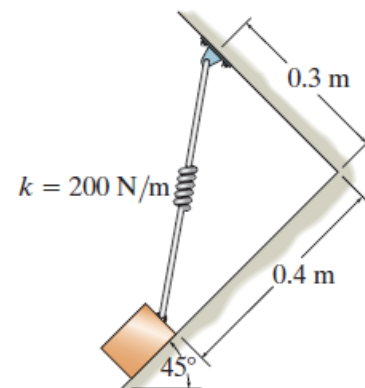


Quiz – 3 - SOLUTION

Problem: The block has a mass of 5 kg and rests on the smooth plane. Determine the unstretched length of the spring.



Solution:

Equation of equilibrium in direction parallel to inclined plane:

$$W \sin 45^\circ - F_s \left(\frac{0.3}{0.5} \right) = 0 \rightarrow F_s = \frac{(5)(9.81) \left(\frac{1}{\sqrt{2}} \right)}{0.8} = 43.35 \text{ N} = k\Delta l = (200)\Delta l \rightarrow \Delta l = 0.216 \text{ m}$$

$$\Delta l = l - l_0 \rightarrow l_0 = 0.5 - 0.216 = 0.284$$