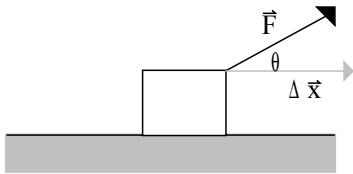


Chapter 6 Problem 45 †



Given

$$\Delta x = 23 \text{ m}$$

$$F = 120 \text{ N}$$

$$W = 2500 \text{ J}$$

Solution

Find the angle between the direction of the rope and horizontal.

From the definition of work

$$W = F\Delta x \cos \theta$$

$$\theta = \cos^{-1} \left(\frac{W}{F\Delta x} \right) = \cos^{-1} \left(\frac{2500 \text{ J}}{(120 \text{ N})(23 \text{ m})} \right)$$

$$\theta = 25.1^\circ$$

†Problem from Essential University Physics, Wolfson