

Answer on Question #48989, Physics, Mechanics | Kinematics | Dynamics

Let us use Work-Energy theorem in order to find the length of the inclined plane. Initially, body had to potential energy, but after being raised it attained energy $U = m g h$, where h is the height above the ground. The change in energy is equal to the work done to move the box s meters, which is the length of the plane. Hence, $m g h - 0 = F \cdot s$, from where

$$s = \frac{m g h}{F} = \frac{100 \text{ kg} \cdot 9.81 \frac{\text{m}}{\text{s}^2} \cdot 5 \text{ m}}{250 \text{ N}} = 19.62 \text{ m} .$$