
Worksheet 9: Work

Objective

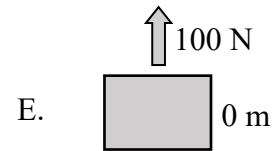
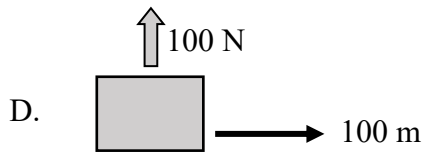
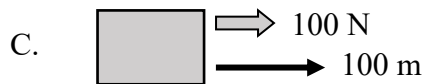
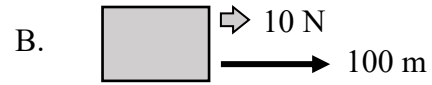
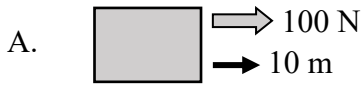
- Evaluate the work done by a force.

Summary

$dW = \vec{F} \cdot d\vec{s}$, where \vec{F} is applied force and \vec{s} is the path traversed by the object acted on by \vec{F} .

Problems

1. Rank the following scenarios from least work done to most work done.



2. A luggage handler at the Laramie Airport pulls a 20-kg suitcase from rest up a ramp inclined at 25° above the horizontal with a force of 140 N parallel to the ramp. The coefficient of kinetic friction between the ramp and the box is $\mu_k = 0.30$. The suitcase travels 3.80 m along the ramp. Find

- the work done on the suitcase by the handler
- the work done on the suitcase by gravity
- the work done on the suitcase by the normal force

- d. the work done on the suitcase by friction

 - e. the total work done on the suitcase

 - f. the final speed of the suitcase
3. A spring, when relaxed, has a length of 40.0 cm. When it stretched under a tension of 1.50 N, its length is 45.0 cm.
- a. What is the spring constant of the spring?

 - b. What would be the length of the spring under tension of 4.50 N?

 - c. What tension would make the spring 50.0 cm long?