Phys 11: Work and Potential Energy Quiz

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Phys 11

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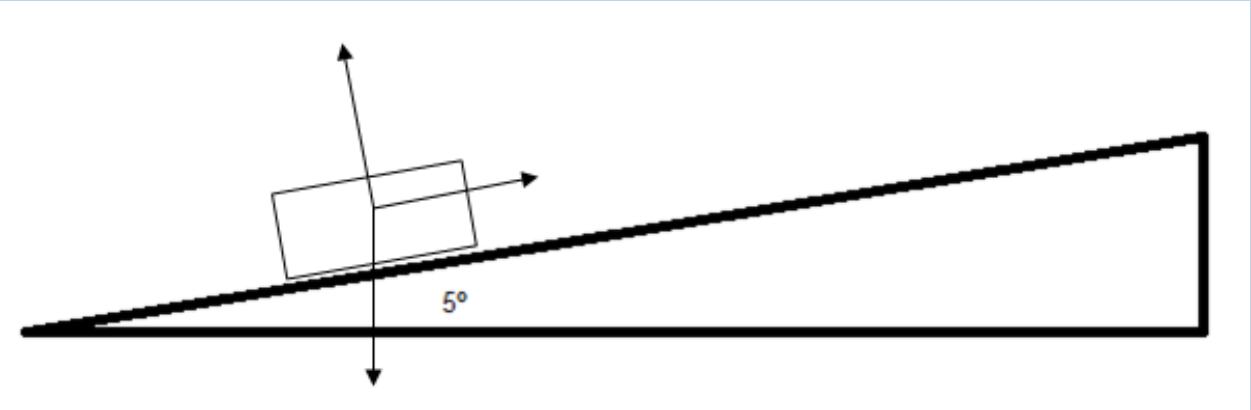
Conservation of Momentum Lab quiz

1. A 5 kg box is being pushed up a frictionless ramp which is inclined 5° to the ground. If the box is pushed 10 m up the ramp at a constant velocity, how much work is being done on the box?

Work Quiz Solutions

What is the Work



Known:

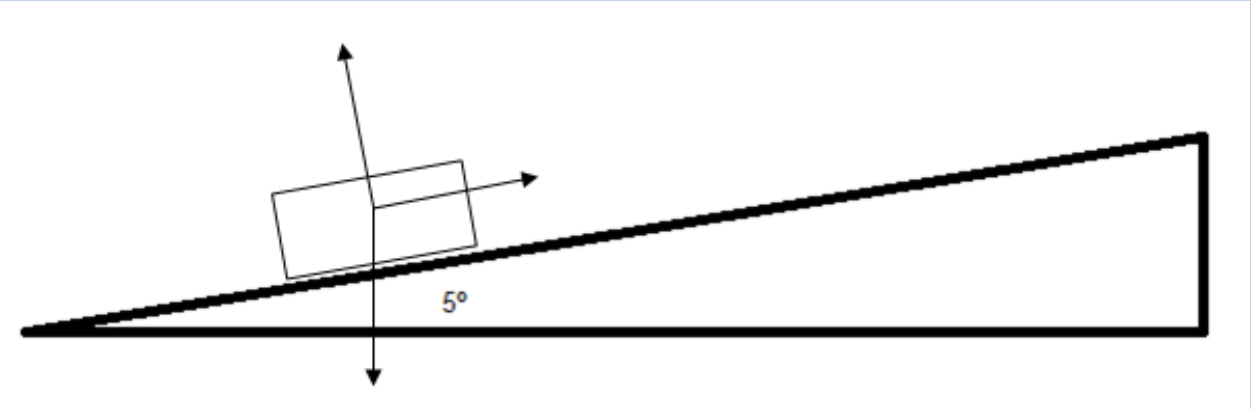
$m = 5$ kg, $\theta = 5°$, d=10m

The simplest way to solve this is to use change in potential energy. First we must find out what the change in height is.

$$\begin{aligned}\Delta h &= d \sin\theta \\ &= 10\text{m} \sin(5°) \\ &= 0.872\text{m}\end{aligned}$$

Work Quiz Solutions

What is the Work



The work is then

$$
\begin{aligned}
W &= mg\Delta h \\
&= (5\text{kg})(9.81\text{m/s}^2 \\
&= 40\text{J}
\end{aligned}
$$

True or False

- Superman applies a force on a truck to prevent it from moving down a hill. This is an example of work being done.
- Work is a time-based quantity; it is dependent upon how fast a force displaces an object.
- A force acts upon an object at a 90-degree angle to the direction that it is moving. This force is doing negative work upon the object.