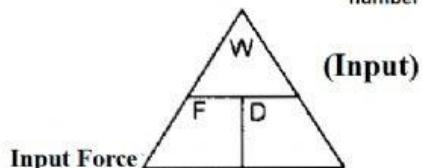


Calculating Work

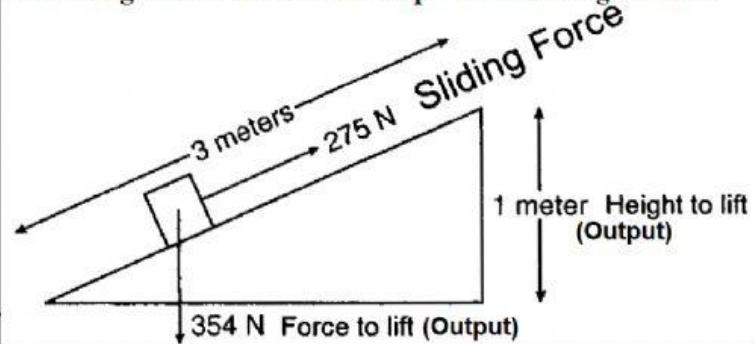
INPUT

What is the sliding force _____
number only

What is the sliding distance _____
number only



1. A box weighing 354 N is pushed up an inclined plane that is 3m long. A force of 275 N is required including friction.

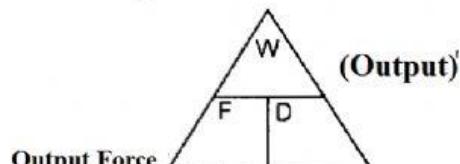


What is the work done to slide the box? _____ J Input Work

Output

What is the lifting force _____
number only

What is the lifting distance _____
number only



How much work is done if the box is lifted 1 m instead? _____ J Output work

Which method of lifting the box requires more work? sliding lifting

Which method of lifting the box would be easier? (required less force) sliding lifting

formula

$$\text{Efficiency} = \left(\frac{\text{Output work}}{\text{Input Work}} \right) \cdot 100$$

plug in the numbers

$$\text{Efficiency} = \left(\frac{\text{Output work}}{\text{Input Work}} \right) \cdot 100 = \frac{\text{Output work}}{\text{Input Work}} \cdot 100 \%$$

round to nearest whole number

formula

$$MA = \frac{\text{Output Force}}{\text{Input Force}}$$

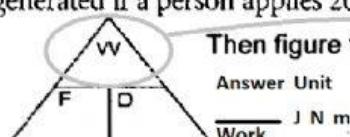
plug in the numbers

$$\text{Actual Mechanical Advantage} = \frac{\text{Output Force}}{\text{Input Force}} = \frac{\text{Output Force}}{\text{Input Force}}$$

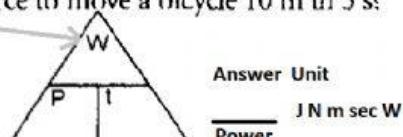
round to 1 decimal

2. How much power is generated if a person applies 200 N of force to move a bicycle 10 m in 5 s?

First figure the work



Then figure the power



3. A 700-watt gasoline engine and a 300-watt electric motor both do 3 J of work. Which machine can do the work faster? gasoline electric

4. In the English system, the unit of power is the horsepower. It is based on the amount of work the average horse can do. (1 horsepower = 746 watts).

If a car engine is rated at 125 horsepower, how many watts of power does it produce? _____
number only

If a lawnmower engine is rated at 4 horsepower, how many watts of power is that? _____
number only