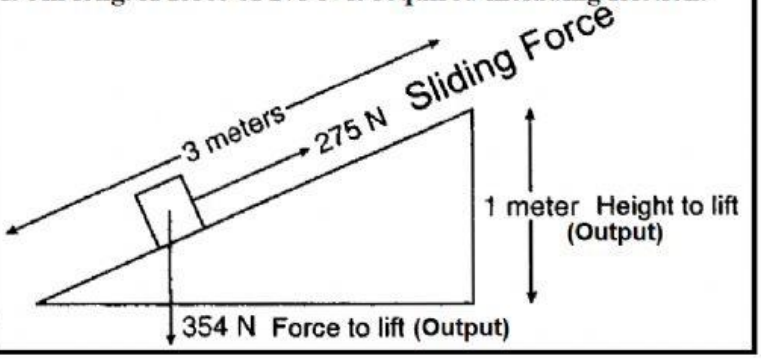
Calculating Work

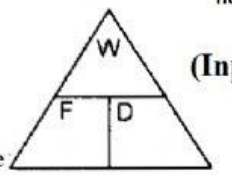
1. A box weighing 354 N is pushed up an inclined plane that is 3m long. A force of 275 N is required including friction.



INPUT

What is the sliding force _____ number only

What is the sliding distance _____ number only



(Input)

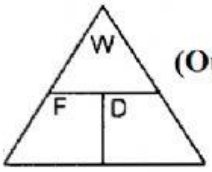
Input Force

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



(Output)

Output Force

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

$$\text{Efficiency} = \left(\frac{\quad}{\quad}\right) \cdot 100 = \quad\%$$

round to nearest whole number

formula

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

plug in the numbers

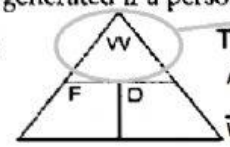
$$\text{Actual Mechanical Advantage} = \frac{\quad}{\quad} =$$

round to 1 decimal

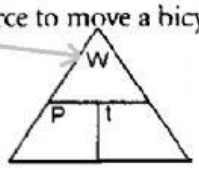
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2. How much power is generated if a person applies 200 N of force to move a bicycle 10 m in 5 s?

First figure the work



Then figure the power



Answer Unit

____ J N m
Work

Answer Unit

____ J N m sec W
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**