



Determination of the efficiency of an inclined plane

Purpose of work: To make

sure by experience that the useful work performed using a simple mechanism (inclined plane) is less than full.

Devices and materials:

Theoretical part:

In this work, you must make sure that useful work is always less spent. The ratio of the useful work A_{floor} to the expended A_z , expressed as a percentage, is denoted by η and is called the coefficient of performance (efficiency): $\eta = \frac{A_{\text{floor}}}{A_z} \cdot 100\%$. The efficiency of any real mechanism is less than 100%, since it is impossible to completely exclude the effect of the friction force, in addition, the mechanisms themselves have their own mass

On the board

Same as in 006

Work progress

1. From the picture on the board with,select the workplace for the experiment.
2. Start the simulation.
3. Determine the weight of the bar P using a dynamometer andenter the result in the table.
4. Place the dynamometer block on the board andmove it upward at a constant speed.

5. Measure the pulling force F , the path s that the bar traveled, and the height h . Record the results in the table.

6. Make a formula for calculating the useful work

$$A_p = P \cdot h$$

7. Make a formula to calculate the work expended

$$A_s = F \cdot s$$

8. Collect the formula for calculating the efficiency of an inclined plane, the result will also be reflected in the table.

$$\eta = \frac{A_p}{A_s} \cdot 100\%$$

9. Repeat the experiment 3 times, changing the height of the inclined plane. Enter the measurement results in the Table:

No. of experiment	h (m)	P (N)	A_p (J)	S (m)	F (N)	A_s (J)	η
1.		
2.		
3.		

10. Make a conclusion

A. Useful work is always less expended, therefore the efficiency is less than 100 %.

IN. Useful work is always more expended, so the efficiency is less than 100 %.

C. The efficiency can be more than 100% if the useful work is equal to the expended one.