

Simple machines → Inclined plane

A plane is a flat surface. Incline is a slope. An inclined plane is a flat surface where one end is higher than another.

An inclined plane helps people move loads. A load is whatever needs to be lifted. It takes the same amount of work to lift the load up as to push it up the inclined plane.

By using an inclined plane, the work is spread over a longer time and longer distance and this is what makes it easier.

Work is measured in Newtons.

Question

How does the angle of an inclined plane effect the amount of work needed to move an object? In other words, if a ramp is shorter, the load must be pushed up a steeper surface. If the ramp is longer, it is not as steep. Think of walking up Two Mile Hill compared to walking up a longer street that only gradually rises.

Hypothesis

I think:

Materials

- 6 books (thicker they are, better it is)
- Rubber band (sometimes we buy vegetables that are tied with it)
- 1 hard cover book or a board to be placed in an angle
- Bag of rice (or sugar, or pasta- make sure they are secured and nothing will fall out)
- Ruler

Procedure

Tie a rubber band to a bag of rice (or pasta, or sugar- in this paper it will be described as rice).

Holding the end of your rubber band, lift the bag of rice attached. Using the ruler, measure the length of your rubber band.

Stack 4 thick books into one pile. Take the hard cover book, or your board, and place one end on top of your book pile and the other end on the floor (this way you will build an inclined plane- a simple machine).

Place your bag of rice at the bottom of your board, or hard cover book. Grab the rubber band attached to it at the same spot as earlier. On the board, or hard cover book, slide your bag of rice up by pulling the rubber band. When you get to the top, measure the length of your rubber band. Take notes.

Stack 6 or more books on one pile and repeat the same experiment. Measure the length of your rubber band when you get to the top of your inclined plane.

Experiment results

	Length of the rubber band
No inclined plane	
Pile with 4 books (flat angle)	
Pile with 6 books (medium angle)	
(bonus) Pile with more than 6 books (steep angle)	

Conclusion

A longer rubber band indicates more work.

My hypothesis was:

I learned: