



## Curiosity Guide #502

### Simple Machines: Wedge

Accompanies Curious Crew, Season 5, Episode 2 (#502)

#### Penetrating Wedge

Investigation #4

#### Description

The simple wedge wins again!

#### Materials

- A 4 x 4 piece of wood, cut to about 8 inches
- A triangular piece of wood
- A triangular piece of wood cut in a sharper taper
- Weights. Metal washers work well.
- Digital scale
- Pan
- Flour or sand

#### Procedure

- 1) Fill the pan 2 inches deep with flour or sand.
- 2) Place the 4 x 4 block vertically in the flour. Place the equivalent of 1000 grams of weights on the block.
- 3) Place the triangular block point down on the flour. Carefully balance the triangle while adding the equivalent of 500 grams on it.
- 4) Hold the triangular block still so the block settles, and then remove the weights.
- 5) Place the tapered block point down into the flour and add 400 grams of weight to the block. Let the block settle and remove the weights.
- 6) Predict what will happen before removing the blocks from the flour.
- 7) What did you notice?

## My Results

### Explanation

The tapered block goes deeper into the flour even though there was less weight added. The tapered block acts like a wedge, a simple machine that provides a mechanical advantage to make work easier. Wedges are often used to separate, hold, or lift objects. In this case, less force was needed to separate the flour particles because of the wedge shape of the block. The more the block is tapered, or the sharper the block is, the less force required to move the block deeper into the flour.

**Good to know:** Wedges have been used for a really long time. In fact, the wedge was the first tool early humans made. Those first wedges were made of a stone like flint and were shaped into knives, axes, or arrow tips using striking rocks to flake off different parts of the flint. Sticks, too, also could be carved into good wedges, especially when early people wanted to dig furrows in the ground to plant seeds. It's funny, but when you think of today's farmers and gardeners, they are still making use of wedges. Wedges sure are useful tools, and we still use them every day!

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