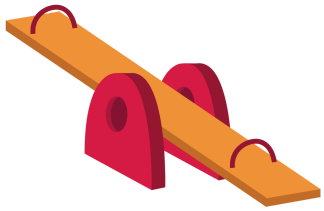
DR. CHRISTOPHER'S
LEVERS EXPDERIMENT INSTRUCTIONS

Background Information

Levers are considered one of the oldest simple machines. A **simple machine** makes work easier. A **lever** is basically a board, stick, or some long object, and a fulcrum which creates a point about which the lever pivots.



A teeter-totter or a seesaw is an example of a lever. From the image above, you can imagine the lever being the board you sit on and the fulcrum in this case is in the middle. The lever pivots or rotates about this point.

Watch the Video on Youtube

STEM greenhouse

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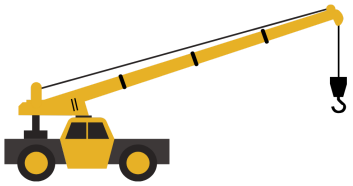
Lever Machine Experiment

Supplies Needed

- (2) Pieces of Balsa Wood
- A binder clip
- Cups
- Tape
- Ruler
- Sand
- Pen / Pencil
- Scoop
- STEM greenhouse Data Chart

Build A Lever

1. First, start by using the **shorter piece of balsa wood** to make our first lever. Balsa wood is very lightweight and not very strong so it's important to be careful with it.
2. With the **ruler**, measure 2 inches from one end of the piece of wood and mark (**pencil/pen**) that measurement with a line.
3. Take **two cups** and **tape** them to the ends of the balsa wood.
4. Tape the **binder clip** on the line that we measured before.



Testing the Lever

1. Add **one level scoop of sand** in the **cup** at the end farthest from the fulcrum.
2. Add one scoop to the other cup. (*Notice: even though the weight is the same, one side stays down.)*
3. Add another scoop. (*Notice: the one scoop on this side is still holding it up.)*
4. Continue adding scoops to the same side. (*In my video, you will see that the one scoop could hold up 5 scoops, which is 5 times the weight on the other side! This is why it is a simple machine. It made something like lifting something heavy, much easier. In fact, in physics, the heavy end would be called the* ***load end.*** *This is where we put something that we want to lift.*

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5. Repeat this process for the 12-inch lever. This longer lever could lift 10 times the weight on the end. This tells us that the longer the lever, the more weight we can lift. (*In construction, we see huge cranes being used. These cranes have long arms that act as levers to lift heavy things).*

Catapult Challenge

Supplies Needed

- Paint Stir Stick

Goal: Create a machine that will make a ping pong ball fly across the room

1. Use the **paint stir stick** to make your lever. This is a little stronger than balsa wood. Use the other supplies that you used earlier to create your ping pong flying machine. You may want to cut the cup, but it is up to you. Experiment and see how far you can get your ball to go.

Share your findings with me on Youtube!