Praxis “Making Science Fun”

Levers

How much force is required to lift a load?

Materials:

- One 30 cm ruler (the lever).
- One hexagonal pencil (the fulcrum).
- 10 large washers (the weights).
- 2 pennies.
- 2 stickers.

Procedure: (Remember to be sure to have your parent’s permission and they have the time to watch and help as you do your experiment.)

1. Label one sticker "L" for load and stick it at the end of the lever (ruler).
2. Label the other sticker "F" for force and stick it at the other end.
3. Put the fulcrum (pencil) in the middle of the lever at the 15 cm mark.
4. Put a load of one weight (washer) at the end of the lever marked "L". Put the load as close as possible to the end of the lever. Be careful that the fulcrum stays in place.
5. Apply a force by putting weights on the "F" end of the lever. Keep them as close as possible to the end and be careful that the fulcrum stays in place. Add enough weights to lift the load. If the load starts to lift, but then drops back, try adding 1 or 2 pennies to the force. The pennies are also weights and help to make up for the fact that we can't put the weights and fulcrum in exactly the right places.
6. Record the number of weights you need to lift the load. Don’t record any pennies you used.
7. Repeat steps 4 to 6 using two weights, then three.
8. Predict how much force is required to lift a load of five weights. Try it.

What's happening?

When the fulcrum of a lever is in the middle the load and the force required to lift it are equal.

Extension:

This experiment demonstrates the nature of levers, force and load, lever and fulcrum. Try repeating this experiment again but move the fulcrum to the 10 cm location. Why are the results different?

This experimental activity was one of many based on our “Building Things: Simple Machines” Learning Kit. Our teaching kits are loaned out FREE to provide classroom teachers and parents of home schooled children an opportunity to explore Science in interesting ways. Please consider volunteering to speak to a class about any one of our Science learning kits described on our website. We would be most appreciative to hear from you.

Lorne Cooper, Regional Executive Director

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