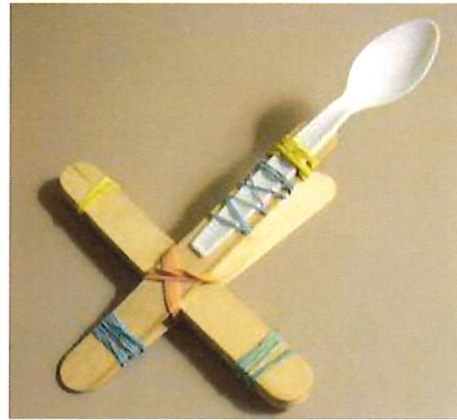


Catapult

How far can you make a pompom fly?!

<https://www.youtube.com/watch?v=slyTjOjGz9Q>

(Search: "Easy DIY Catapult for Kids")



Supplies

1. 7 Tongue Depressors or popsicle sticks
2. 7 Rubber Bands
3. Pompom balls
4. Plastic spoon
5. Optional: watercolor paints and paintbrush

What to do:

1. Paint 7 popsicle sticks (or tongue depressors) and let dry.
2. Prepare fulcrum: Stack five painted **popsicle sticks or tongue depressors** and wrap a **rubber band** around each end of the stack.
3. Prepare "Flinger": Stack two **popsicle sticks** and wrap a rubber band around one end.
4. Pull the two **popsicle sticks** slightly apart and place the larger stack of **sticks** (the fulcrum) in between the two, pushing it down toward the rubber banded end of the two sticks (the flinger).
5. Wrap a rubber band around the entire flinger and fulcrum where they meet and then wrap another around the other way making an "X" .
6. Place the plastic spoon on top of the flinger and wrap two rubberbands around it to hold it in place.
7. Hold down the short end of the flinger, place pompom in bowl of spoon, press down on spoon and let go.

You have probably heard of **Newton's Three Law of Motion**:

1. Inertia: An object at rest stays at rest and an object in motion stays in motion with the same speed and in the same direction unless acted upon by an unbalanced force.
2. When an external force acts on a body, it produces an acceleration (change in velocity) of the body in the direction of the force.
3. Every action has an equal and opposite reaction.

Without touching the catapult, nothing happens. The pompom is not going to launch itself without you applying force.

When you pull back the spoon and let go, you overcome the pompom's inertia and fling the pompom into the air. The force of the spoon exerted on the pompom produces acceleration upward and makes the pompom fly into the air. The action of letting go of the spoon causes the reaction of the pompom getting launched.

Because of gravity and air friction, the pompom was pulled down to the ground instead of flying in the air forever. Then when the pompom hits the ground, it rolls until the friction of the floor eventually stops it.

Try different objects: Do heavier objects go farther? How about flatter objects?