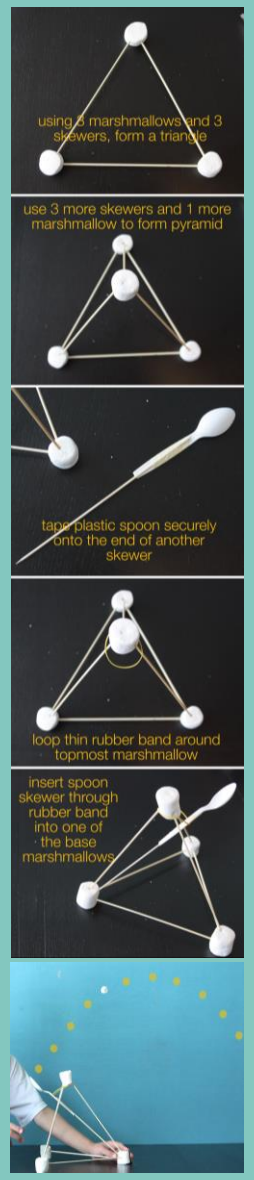
Marshmallow Catapult

Materials

- 5 marshmallows
- Masking tape
- 1 rubber band
- 1 plastic teaspoon
- 7 bamboo skewers

Procedure

1. Create a triangular base of your catapult using three marshmallows and three skewers. Each marshmallow will be the corners of the triangle, with the skewers forming the sides. Pierce the skewers into the marshmallows to hold it all together.
2. Now use three more skewers and one marshmallow to create a pyramid on top of the triangular base. Pierce a skewer into each corner marshmallow and bring all three to a point, using a marshmallow at the point to hold it all together.
3. You may want to reinforce the point with a second rubber band wound around the three skewers to hold them together, in addition to the marshmallow.
4. Now make the catapult mechanism. Tape the spoon to the final skewer.
5. Place the rubber band over the point of the pyramid. Thread the skewer/spoon catapult through the rubber band and pierce the end into one of the corner marshmallows.
6. Put a marshmallow onto the bowl of the spoon, bend it back against the rubber band and let it go. Your marshmallow should fly through the air. Keep your eye on it if you want to eat it!
7. Kids can play with their marshmallow launchers immediately after construction, but they'll need to be fairly gentle so they don't tear the marshmallows. Being gentle can be difficult for kids, so we recommend you construct the catapults one day, then let them sit out overnight so the marshmallows will stiffen up and become much stronger, allowing for rougher play and stronger launching.



What Do You Learn?

The first law of thermodynamics!

"Energy can neither be created nor destroyed – only transferred"

- When the catapult is sitting on a table at rest, it's in an energy-neutral state. You use chemical energy (which we get from the food we eat – including marshmallows, incidentally) to depress the arm.
- Once the levered section is down, it's under tension, with energy stored in the compressed bulldog clip. As soon as you let go of the end, the potential energy converts into kinetic energy, swinging the arm until it hits the crossbar, at which point the payload is propelled forward.
- The marshmallow will travel in an arc at the same speed the arm moved, until other forces counteract it. The velocity of the sweet and how far it will travel are both determined by how much energy you put in, i.e., how far you pull back the arm.

Explore Further:

- What happens if you shorten the length of the spoon-skewer combo? Why do you think that is?
- How does changing the length of the rubber band affect how the marshmallow flies?

All science experiments should be conducted with adult supervision.