

"To Make the Best Better"

4-H Youth Development



Discipline: All
Age Level: 8-11
Time: 30 minutes

Next Generation Science Standard : Predicting, Analyzing, and Interpreting data

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String Has Energy?

Objective/Success Indicators: Members begin to understand the relationship between potential and kinetic energy.

Assessment Question: Which type of string has the most potential energy?

Supplies:

Mini marshmallows or pom pons

Variety of string like materials suitable for a slingshot: rubberbands, elastic thread, yarn, tubing, cording, string, leather shoe laces, etc. (Cut everything to the same size, 5-8 inches in length.)

Pencil and paper to record data

Lesson Outline:

1. Place members into teams of two.

2. Explain the difference between potential and kinetic energy

Kinetic energy is the energy of motion. **Potential energy** is the energy an object has because of its position. A raised weight, coiled spring or charged battery has potential energy. There is energy there that is just not being released so it has potential.

3. Ask each team to test the provided materials for best potential energy.

4. Explain that testing involves shooting a marshmallow with a hand slingshot and recording the type of material used and distance traveled. Member will predict effectiveness of string before shot.

5. Record distances as:

O for no distance

L for just a little

M for medium

A for long way away

Decide what these distances mean before you start.

6. Collect the prediction and discuss the results. Which type of string has the most potential energy?

Caution members to shoot the projectile and not their teammates' fingers or each other.



...To Make the Best Better.

HINT: This is a good time to teach firing range commands.



Look at your data to see which strings performed the best and which strings performed poorly. How are the strings that worked best alike? How are the strings that didn't work well alike? Which type of string has the most potential energy? Did the size of the marshmallow matter? Map the flow of the energy. What type of string is used on an archery bow? Where is the potential energy in the bow? Map the flow of energy when shooting an arrow, and then explain how potential and kinetic energy are used in archery.

Background Information:

A slingshot is a small hand-powered projectile tool. These simple slingshots we are making today are powered by the elasticity of the material that is stretched between your hands. When you pull back on the material, potential energy is stored. When you let go, the potential energy is turned into kinetic energy with the flying marshmallow.