



Rubber band “archery”

About:

Real archery wouldn't be appropriate inside, so here is an alternative using a rubber band shooting at a target, while learning physics.

Objective:

To use Social Emotional Development and NGSS informed practices to learn about Newton's 1st and 3rd Laws while target practicing

Age: 12-18

Expected time: 45 min

Activity

Materials – Paper, markets, tape, rubber band

- On the paper, draw a target & hang up
- On the floor tape distances to shoot from. These can be as close or as far as you'd like
- Set up your rubber band for shooting.
 - Pull the rubber band between your pointer finger and thumb
 - With your other hand's index finger, pull the rubber band so you're making a triangle
 - Drop your original pointer finger, so you're now holding the rubber band between two hands, with your index finger and thumb (make sure the rubber band doesn't go below your first knuckle.
 - Is this confusing? Check out this link for pictures: <https://www.wikihow.com/Turn-Your-Hand-Into-a-Rubber-Band-Gun> (Making a two handed gun)
- Aim and shoot by lowering your thumb
- How did you do? Make adjustments to your shooting style until you hit the bullseye!

Here are some things to think about:

- Figure out your dominant eye, and use this for aiming:
<https://www.allaboutvision.com/resources/dominant-eye-test.htm>
- This activity is using Newton's Laws
 1. An object in motion will remain in motion until an object at rest will remain at rest unless acted upon by a force.
 - What force causes the rubber band to stop? What if you shoot from really far away? Is it always the target that stops the rubber band?
 3. For every action there is an equal and opposite reaction
 - What's the action that's causing the rubber band to fly?
 - What if that action changes a little? How does pulling hard or pulling lightly on the rubber band effect the equal and opposite reaction?

Wrap UP

- How could we make this more fun? More challenging?
- What law of motion is most obvious in this activity?
- Explain Newton's 1st and 3rd laws using the rubber band
- The rubber band flies by transferring energy. How is the energy transferred?