Popsicle Stick Catapults
Create a small & simple catapult to launch a craft pom or cotton ball, explore transfer of energy & motion, plus even experiment with trajectory.

Suitable for: Preschool – Middle School

Materials:
- Popsicle Sticks or Tongue Depressors
- Plastic Spoon
- Rubber Bands
- Craft Pom or Cotton Ball
- Paint (optional)

Vocabulary:
- Catapult
- Force
- Motion
- Energy
- Potential Energy
- Angle
- Inertia
- Action
- Reaction
- Launch
- Kinetic Energy
- Tension
- Release
- Distance
- Path
- Trajectory
- Transfer
- Gravity

Directions:
1. Stack 4 popsicle sticks & use rubberbands around the ends of your stacks to bundle them.
2. Take 2 more popsicle sticks stacked & bundle with a rubber band on only one end.
3. Pull the 2 sticks slightly apart & place the larger bundle in between, perpendicular or forming a plus sign or cross as you look from above.
4. Rubberband the stack of popsicle sticks to the upper popsicle stick, criss-crossing the band to form an X, securing it from either side.
5. Use a rubberband to attach a spoon to the top of the upper popsicle stick.
6. Place a craft pom or cotton ball onto the spoon.
7. Hold the catapult steady with one hand & use the other to pull the spoon down, releasing when you are ready to launch.

The Science Behind the Experiment:
Catapults have been used throughout history, transferring energy to launch objects through the air to hit a desired target some distance from the catapult. Modeling after the medieval weapon, this catapult model uses the same basic scientific principles from Newton’s Laws of Motion, requiring a force to be applied to overcome the inertia (tendency to stay as is) of the object — pulling down on the spoon—which adds tension to the rubberband as it stretches, gaining potential (or stored) energy that is then transferred to the pom as kinetic energy when the spoon is released.

Make it Awesome:
Is bigger better? If you used regular popsicle sticks, try making one with larger tongue depressors. Vary the thickness of the bundle in between adding or removing a stick to see the difference.

Extensions:
1. What happens when you barely pull down on the spoon, compared to when you pull it back farther. Does the distance the pom flies vary?
2. What happens if you use a smaller or larger object? Lighter or heavier?
3. Grab a ruler or tape measure to collect data taking measurements for the distance traveled.
4. Do a little research on the history of catapults.

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