UNIT: CATAPULT

BUILD IT!

Your Mission:

You’re an engineer on a launch team! Your goal is to build a working catapult using simple materials and smart design. Follow the build steps, test your launcher, and see how accurately and far your catapult can fire. Can you hit the target while staying within your building limits?

GOAL: Design and build a working catapult that can launch a soft object toward a target using only the materials provided.

Materials:

* 7 craft sticks or popsicle sticks
* 4 rubber bands
* 1 plastic spoon
* Cotton balls or pom-poms (projectiles)
* Measuring tape or ruler
* Target (paper cup or printed bullseye)
* (Optional) masking tape, clipboard, or tray

STUDENT DIRECTIONS:

**Step 1: Build the base of your catapult.**

1. Stack 5 popsicle sticks neatly on top of each other.
2. Wrap 1 rubber band tightly around each end to hold them together.
   * This is your base block.

**Step 2: Add the launch arms.**1. Take the remaining 2 sticks and stack them together.  
2. Gently pull the two sticks apart in the middle to form a V-shape and slide them between the 5-stick base, making a cross shape.

* It should look like the top 2 sticks are “biting” through the middle of the base.

**Step 3: Add the launching spoon.  
1.** Use a rubber band to attach the plastic spoon securely to the top stick of the V (the launching arm).

* Make sure the spoon bowl is facing upward and sticks out over the end.

**Step 4: Secure the structure.  
1.** Use the last rubber band to secure the 2 V-sticks to the base block.

* Wrap it around the intersection where the V-sticks meet the base to keep the whole thing tight and sturdy.

**Step 5: Test for stability.  
1.** Press down lightly on the spoon to see how far it goes and make sure the base doesn’t fall apart.

* If it’s wobbly, add more rubber bands or ask for a tray/clipboard to tape it down.

**Sketch Your Catapult Design Below:**

(Draw and label each part of your catapult: base sticks, V-sticks, spoon, rubber bands, etc.)  
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Standards Alignment

NGSS: 3-5-ETS1-1 STEL**:** STEL 1B, STEL 2B, STEL 4B, STEL 5A, STEL 8A, CCSS: CCSS.MATH.CONTENT 3.MD.B.4, CCSS.MATH.CONTENT. 3.G.A.1, CCSS.MATH.CONTENT. 4.MD.A.1, CCSS.MATH.CONTENT. 5.MD.B.2