UNIT: JCI BUILDING SYSTEMS

aim for the target!

Your Mission:

You’re a launch specialist on a precision challenge! Your task is to hit a target exactly 100 cm away using your catapult. Test your aim, make adjustments, and see which changes help you get closer to the bullseye. Ready, aim, launch!

GOAL: Test how changing force or angle affects the accuracy of a launched object.

Materials:

* Your built catapult
* 3 cotton balls or pom-poms
* 1 paper cup or printed target
* Measuring tape
* Ruler (optional for measuring angle)
* Data table and pencil

STUDENT DIRECTIONS:

**Step 1: Set up your target.**

* Use a measuring tape to place the paper cup or printed target exactly 100 cm (1 meter) away from your catapult.
* Mark the spot where your catapult will stay. Do not move it during testing.

**Step 2: Get ready for Trial #1.**

* Use your default setup—don’t change anything yet.
* Pull back your catapult and launch the cotton ball toward the target.
* Record in the chart if you hit or missed.
* If you missed, take a note of what might have gone wrong.

**Step 3: Adjust and try again!**

* Trial #2: Change one thing—either the angle of launch or how far you pull back the spoon.
* Launch again and record the result.
* Write down what you changed to improve your aim.

**Step 4: One last adjustment.**

* Trial #3: Try again and adjust a different variable if needed (maybe use more force or lower the spoon angle).
* Launch, observe, and record your result in the table.

**Record Your Results Below:**

| **Try #** | **Did You Hit the Target?** | **What Did You Change?** |
| --- | --- | --- |
| 1 | ☐ Yes  ☐ No | (default settings) |
| 2 | ☐ Yes  ☐ No | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |
| 3 | ☐ Yes  ☐ No | \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ |

**Wrap-Up Question:**

→ What helped improve your accuracy the most?
→ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
→ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Standards Alignment

NGSS: **3-PS2-2**, **4-PS3-4** STEL**:** STEL 1B, STEL 2B, STEL 4B, STEL 5A, STEL 7B, CCSS: CCSS.MATH.CONTENT.3.MD.A.1, CCSS.MATH.CONTENT.3.MD.B.4, CCSS.MATH.CONTENT.4.MD.A.1,