UNIT: JCI BUILDING SYSTEMS

FORCE & MOTION FUN

Your Mission:

You’re testing how force affects motion! Use your catapult to launch cotton balls using low, medium, and high force. Measure how far each one travels and observe how the motion changes. Get ready to launch, measure, and learn!

GOAL: Explore how different amounts of force change the distance and motion of a launched object.

Materials:

* Your completed catapult
* Cotton balls or pom-poms (projectiles)
* Measuring tape or ruler (marked in centimeters)
* Data table (provided on your worksheet or in your notebook)
* Pencil or pen

STUDENT DIRECTIONS:

**Step 1: Set up your launch area.**

* Use the measuring tape to create a clear path where you will launch the cotton ball.
* Place your catapult at the “0 cm” starting line.

**Step 2: Load your projectile.**

* Place one cotton ball in the spoon of your catapult.

**Step 3: Test with LOW force.**

* Gently pull the spoon back just a little bit—this is a small or low force.
* Let go and watch where the cotton ball lands.
* Use the measuring tape to measure how far it flew (from the front of the catapult to the landing spot).
* Write the distance in centimeters in the data table.
* Write an observation (e.g., "It barely moved," or "It rolled a short distance").

**Step 4: Test with MEDIUM force.**

* Pull the spoon back about halfway—this is medium force.
* Launch, measure, and record your results and observation.

**Step 5: Test with HIGH force.**

* Pull the spoon all the way back, as far as it can go without breaking.
* Launch, measure, and record the final distance and your observations.

**Record Your Results Below:**

| **Pull Force** | **Distance (cm)** | **Observation** |
| --- | --- | --- |
| Low |  |  |
| Medium |  |  |
| High |  |  |

**Reflection Question:**

→ What did you notice about how the force changed the motion of the cotton ball?  
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Standards Alignment

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