



Activity: Our Solar System

Focus: STE(A)M

Materials: Inflatable Solar System (or cut-outs), Table of Planets handout, Calculator, Tape Measure, Masking Tape, & Marker

Grade Range: 5th & 6th

Time: 40-45 minutes

Synopsis: Students will create their own catapult using popsicle sticks, rubber bands, and a small cup. Mentors be sure to join and ask students questions about their catapults each step of the way! Once the catapults are built, mentors will ask students a variety of questions regarding the activity and then relate this back to STE(A)M.

Instructions:

1. Begin the lesson by introducing the concept of scaling. ***Definition: "Any scale is called an engineer's scale and is a tool for measuring distances and transferring measurements at a fixed ratio of length."*** You can also bring an engineering drawing or an action figure/model for reference as well to help the students understand.
2. Then mentors will share that we are going to use this concept of scaling to figure out the relative distances each planet in the solar system to the sun. Explain that an astronomical unit (au) is the unit in which we measure the distance our planet Earth from the Sun.
3. Now, call on a few student volunteers to name the planets. Introduce the mnemonic MVEMJSUNP: "My Very Educated Mother Just Served Us Nine Pizzas" (if Pluto included) OR "My Very Educated Mother Just Served Us Noodles" (without Pluto).
4. Next, have students break into individual groups of 4. Mentors will handout the planet table sheet provided and explain how many feet are associated with an au. This is $490806662401.57 \text{ ft} = 1 \text{ au}$. Write this on the board if need be for students to use as reference.
5. Mentors will then tell students that they can begin calculating the distances for each planet. Make sure to go around and help students if they look confused.
6. Once this part of the activity is completed, mentors will go down the list of planets with the entire class and compare all the answers from the groups.
7. After the answers are shared and you have figured out the correct distances from each, have a few student volunteers stand up. Have them measure off the distances using a tape measure on the floor, mentors be sure to help with this. When each distance is measure, make sure to mark the location using masking tape and a marker, indicating which planet it represents.
8. Choose 8 volunteers (9 if you are including Pluto) and hand each student an inflatable planet. Tell each students to stand where their assigned planet is labeled.
9. After this demonstration, reconvene back in the classroom and ask the students their thoughts about the solar system and what they learned.