MYSTERY PLANET ACTIVITY – Can YOU Guess A Planet’s Identity Based On Its Magnetic Field?

35 minutes

Materials:
6 styrofoam hemispheres, with magnets embedded
6 Orbit templates
Butcher paper
6 Scotch tapes
30+ Mini compasses
30+ Golf pencils
Colored pencils
Markers
Prepared sample butcher paper

Instructions:

3 minutes **Introduction:** Pass out butcher paper, 3’ x 3’ squares per table/lab group. Pass out golf pencils (1 per student), mini compasses (1 per student), scotch tape (1 per table), hemisphere (1 per table) and orbit templates (1 per table).

5 minutes **Preparation:** Tape the butcher paper to the table. Mark the center of the butcher paper, and using the orbit templates, draw 3 orbits in pencil around the center of the butcher paper. Tape the hemisphere over the center of the butcher paper.

10 minutes **Collecting Data:** Starting with the first, or lowest orbit, make a dot somewhere along the orbit and place your compass “satellite” on that dot. Note which way the arrow is pointing by drawing the arrow on the butcher paper, over the dot on the orbit. Continue to go all around the orbit, charting direction arrows all around the hemisphere. Continue with the other two upper orbits.

* Adults walk around and help groups draw their arrows.

2 minutes **Sharing Data:** Walk around and observe other groups’ orbits and arrows. Look for similarities to your mystery planet, and differences.

5 minutes **Interpreting the Data:** As a large group, discuss how you can interpret the data
from the different orbits and arrows. How can you tell which planet has a large dipole magnetic field like Earth, or smaller crustal magnetic loops like Mars? Come up with criteria that will allow each group to make a hypothesis which mystery planet they have.

* Show prepared butcher paper sample with potential loop
* Pass out colored pencils and markers at this time

5 minutes **Hypothesis:** Using colored pencils, sketch hypothesized magnetic loops on the butcher paper.

* You can discuss how scientists use a variety of resources to test their hypotheses

5 minutes **Test and Confirm Findings:** Using your mini compass, trace your hypothesized magnetic loops to see if your hypothesis is correct. Adjust sketch if needed. Confirm findings by drawing in your magnetic loops in marker. Identify your mystery planet.