Probing the Unknown

Student Guide 2
Magnetic Forces of the Unknown

Purpose:
Scientists use probes to detect forces for the characterization of objects. In this activity, you will identify forces using a magnet probe on your observation box. Afterwards, you’ll continue analyzing the structure of the object you cannot see.

Materials
One set of materials per group of 2-3 students:
- Your original observation box or
- Observation box: Small shallow cardboard box (approximately 3×3×2) such as a jewelry box
- Random objects of different shapes that fit into the box and are attracted to or repel magnets
- Crayons or colored pencils
- Student Guide 2 (one for each student)
- Pen or pencil
- Small but strong magnet

Procedure
Using your Magnet Probe and Creating a Scan
1. Turn the box upside down with the cover facing down. Put the magnet on the top left square. Do you feel an attraction or repulsion with the magnet? On your Scan Paper or in the space below, shade in the square if you felt an attraction.
2. How will you record the difference between an attraction, repulsion, and no attraction? You may want to try out the magnet all over the bottom of the box before deciding how you want to record your data.

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Make a key:
3. Now, you are going to **slowly** drag the magnet along the bottom of the box. Continue moving around the box until you determined if the magnet is attracted to or is repelled at each square. Do this systematically; you do not want to miss any squares that show a magnetic attraction or repulsion. **Record** your results on the Scan Paper or in the space provided below.

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**TEACHER CHECK:** Have your teacher check your work.

**Teacher’s initials** ____________

**Proceed.**
Analyzing your Data
4. Look at your scan. Describe your object based upon your scan. Do you see any pattern to the magnetic attraction of the magnet and the object inside the box? If this is the same object as in Lesson 1, you may add to the description of your object on Student Guide 1.

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Analyze your Measuring
5. Is there any way you could have improved your magnet probe or improve how you recorded the force you felt?

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