UNIT: Measurement

Magnetic Mystery!

GOAL:

Test different materials to see if they are magnetic, and then design a creative tool, gadget, or solution that uses magnets to solve a problem!

Materials:

* Magnets (bar or disc magnets work well)
* A tray of test items:
	+ Paper clip
	+ Coin
	+ Aluminum foil
	+ String
	+ Eraser
	+ Metal key
	+ LEGO brick
* Magnet Test Chart
* Paper & pencil (for sketching or design brainstorming)

STUDENT DIRECTIONS:

#### **Step 1: Test the Items**

1. Pick up the **magnet** and gently touch it to each item.
2. **Does the item stick to the magnet?** Try both sides!
3. Write **“Yes”** if the item is magnetic and **“No”** if it isn’t.

Use a chart like this:

|  |  |
| --- | --- |
| **Test Item** | **Magnetic? (Yes/No)** |
| Paper Clip |  |
| Coin |  |
| Foil |  |
| String |  |
| Eraser |  |
| Key |  |
| LEGO Brick |  |

#### **Step 2: Think Like an Inventor!**

#### Now that you know which items are magnetic, try solving a design challenge:

* **Design Task:** Can you **create or imagine something useful that uses a magnet** to make life easier, safer, or more fun? (Think: secret locker, magnetic toy, cabinet lock, a trapdoor, floating train, etc.)

**Step 3: Sketch or Describe Your Idea**

On the back of your worksheet or below, **draw a simple design** that uses a magnet to solve a problem. Label the parts and describe what it does.

* **Design Name:** \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* **What problem does it solve?**
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* **Sketch your idea here (or describe it if you prefer):**
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**Reflection Questions:**

* Why do some materials stick to magnets but others don’t? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
* What was the most surprising material that did (or didn’t) stick?

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* How could you improve or test your magnet-powered design further?

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Standards Alignment

NGSS: 3-PS2-4 STEL: STEL 1A, STEL 3A, STEL 4A, STEL 8A, STEL 11A CCSS: CCSS.MATH.CONTENT.2.MD.D.10, CCSS.MATH.PRACTICE.MP2, CCSS.MATH.PRACTICE.MP5, CCSS.MATH.PRACTICE.MP6