



## SfS Away from the Classroom!

SCIENCE  
FROM SCIENTISTS

### E08: Build a Magnet Detector (Recommended for Grades 3-5)

Please use the following resources to learn about Building a Magnet Detector

Watch this Video: <https://youtu.be/s236Q1nuWXg>

#### Answer these questions:

- What types of materials tend to be magnetic?
- Does the size of the magnet affect how strong its force is?
- Each magnet has a North side and a South side. Which sides attract to each other and which repel?

**Activity:** Build a Magnet Detector!

**\*Note:** you will need a parent or sibling to help setup magnets for you to detect

#### Materials:

<u>Get as many of these items as you can:</u> <ul style="list-style-type: none"><li>• 3 paper clips</li><li>• 2 safety pins</li><li>• 2 pipe cleaners</li><li>• 2 pencils (or other long stick, like chopsticks)</li><li>• sm. piece of aluminum foil</li></ul>	<ul style="list-style-type: none"><li>• 2 nickels</li><li>• 2 pennies</li><li>• 1 rubber band</li><li>• 2 nails</li><li>• tape</li><li>• string</li></ul>	<u>Must haves:</u> <ul style="list-style-type: none"><li>• 4-8 refrigerator magnets</li><li>• large piece of thin cardboard (like an empty cereal box, fully opened and laid flat)</li><li>• marker</li><li>• ruler</li></ul>
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#### Prep:

1. Ask your parent or sibling to tape the magnets to the back of the cardboard in random locations. **Make sure they don't let you see where the magnets are placed!**
  - a. If the magnets have plastic coatings, make sure the exposed part of the magnet is in contact with the cardboard.
2. Have them lay the cardboard down on the table with the hidden magnets underneath. You shouldn't be able to tell where they are.

**Goal:** Using the gathered materials, construct a device that will help you detect where the magnets are hidden without looking! **You must keep your hands at least 15cm above the cardboard - only your detector can touch (use the ruler to measure 15cm)**

#### Steps:

1. Choose 3-5 of the materials (not including the marker or ruler) to build your magnet detector. Keep in mind the 15cm rule.
2. Test your detector by gently moving it around on the cardboard until you think you've found a magnet.
3. Use the marker to lightly mark an "X" on spots where you think there's a magnet.
4. After you think you've detected all magnets flip the cardboard over to see how accurate you were!
5. **Optional:** have your parent(s) rearrange the magnets and try different materials to build your detector. Compare them - which detector worked better? Why?



## **Make observations & use Claims, Evidence, and Reasoning!**

1. **Claim:** Not all the materials were good at detecting magnets.

- **Evidence:**

- **Reasoning:**

2. **Claim:** The cardboard didn't block the magnetism.

- **Evidence:**

- **Reasoning:**