

Project FOCUS
Best Lessons
FIRST GRADE

Title of Lesson: Exploring Characteristics of Magnets

Theme: Physical Science

Unit Number: 3 **Unit Title:** Magnets

Performance Standard(s) Covered (enter code):

S1P2b & S1P2c

S1CS6b

S1CS7b

Enduring Standards (objectives of activity):

Habits of Mind

- Asks questions
- Uses numbers to quantify
- Works in a group
- Uses tools to measure and view
- Looks at how parts of things are needed
- Describes and compares using physical attributes
- Observes using senses
- Draws and describes observations

Content (key terms and topics covered):

Concepts: Magnets pull through different substances (solids & liquids).

Different magnets have different strengths.

Items with iron are attracted to magnets.

Key Terms: magnet, attract (pull), iron, magnetic, non-magnetic

Learning Activity (description in steps)

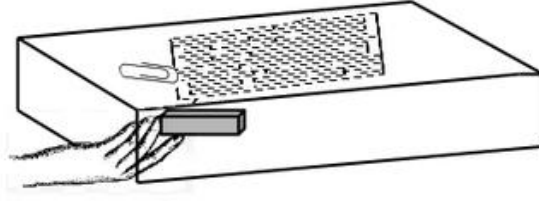
Abstract (limit 100 characters): Students work in groups and rotate between lab stations to explore characteristics of magnets.

Details: (Students should already know some basics about magnets before this lesson.)

Set-up each station beforehand, do a quick review with the class about what they already know, then explain the directions for each station and the behavioral expectations. Have students in groups of 4 rotate between stations, spending about 5-7 min at each one. Both you and the classroom teacher should facilitate (mainly stations 2 &4).

Station 1: Concept: Magnets can pull through some solid materials - paper & cardboard/wood & plastic.

* Print out a maze(s) and tape it to one side of an empty cereal box(es). Students can put their hand in the cereal box, and holding a magnet, try to guide a paper clip through the maze. (If you have some really strong magnets, you can just print out the mazes and have the kids move the paper clip through their desks).



- *Put a bunch of paper clips in an empty milk jug. Have students use a magnet to get the paperclips out of the jug while keeping the jug upright.
- *Have students at this station take turns working with the milk jug and the mazes.

Station 2: Concept: Predicting strengths of different magnets (bigger magnets are not always stronger).

- *Place a box of paperclips and 3-4 magnets of different shape/size and strengths at this station.
- *Have the students work together to test the strength of each magnet by seeing how many paper clips each magnet attracts.
- *Have them draw a picture of each magnet in their science notebooks (or on a piece of paper) and record the number of paper clips each magnet attracted, next to its picture.

Station 3: Concept: Magnets can pull through water.

- *Set up a bucket/tub with about 2-3 inches of water (depending on the strength of your magnet), and place paperclips (or other small magnetic items) at the bottom.
- *Have students try to collect all the items without getting their hands or their magnets wet.
- *This lab doesn't take as much time as the others, so you can have the kids draw pictures of what they saw if they finish early.

Station 4: Concept: Predicting what is attracted to magnets, separating them, and recording data in a chart.

- *Have a bag of different common household items (some magnetic, some not magnetic).
- *Have students draw this chart in their science notebooks:

| Picture of Item | Prediction (Yes/No) | Result (Yes/No) |
|-----------------|---------------------|-----------------|
|-----------------|---------------------|-----------------|

- *Let students take turns picking an item out of the bag, drawing a picture of the item and making a prediction about whether or not it will be attracted to a magnet. Then have them test their prediction, separate the items into one of two piles (attract & does not attract), and record the result.

Station 5: Concept: Coins are made from different metals. Some metals attract and some do not.

- *Some European coins (and other country's coins) are magnetic, while U.S coins are not.
- *Have a Ziploc bag containing a mixture of some coins that are magnetic and some that aren't.
- *Have students test each coin with a magnet to see if it is attracted, and then sort the coins into two piles.

Materials Needed (type and quantity):

- * Small magnets (1 per student is best)
- * 1 box of paper clips (for mainly station 2, but also 1 & 3)
- * 3 different kid's mazes printed out & some tape
- * 3 empty cereal boxes (unless you have really strong magnets that can work through desks)
- * 1 empty milk jug
- * 3 extra magnets of different size & strength
- * 1 medium/large bucket or tub

- * 1 bag of different common household items (3-5 magnetic, 3-5 non-magnetic)
- * 1 small Ziploc bag of coins (some magnetic, some not - European coins vs. U.S. coins work well)
- *ALSO*Optional but helpful: A sign at each station with the Station #, pictorial directions, and also a main question or concept that you want students to answer or think about at that station.

Notes and Tips (general changes, alternative methods, cautions):

If you have time, you might want to split up this lesson into two separate days so that they can spend more time at each station. Station 3 (involving the water) can get messy, so depending on the normal behavior of your class, you might not want to do this station/ or you should save it for a different day. If working with strong magnets, make sure the students don't get their hands caught, or bring them near electronics.

Sources/References:

- 1) <http://www.dolvinpta.org/ACORNS/Boxes/Magnets.pdf>
- 2) <http://www.need.org/needpdf/Exploring%20Magnets.pdf>