

Lesson 12 Unit 4 Magnets

Objective

Students will classify objects based upon attraction to magnetic forces. (P)

Materials

- * Magnet wand
- * Various objects – some magnetic, others not.
- * Workbook page 12

Preparation

Gather objects such as paper clips, nails, toothpicks, paper, aluminum foil, coins, plastic items. Make sure there are some metallic objects that are not magnetic (foil, coins).

Teaching

Students will work with the magnetic wand. Give students instruction on how to take care of magnets. Magnets should not be dropped or tapped against hard surfaces. This can make them lose their magnetic property. Magnets should also be kept away from computers, video and audio tape, televisions, and other things sensitive to magnetic forces.

Ask: **What do you know about magnets?**

I have some objects here. I want you to sort them into two groups. Decide which objects will be attracted to a magnet. That will be the first group. Put the objects you think won't be attracted to the magnet in the second group.

Have students test their guesses with the magnet wand. **Were your groups correct?** If students missed any guesses, ask them to think of reasons why.

Next, try to pick up the objects with the handle end of the magnet wand. It won't pick up the objects, of course. Ask students if they know why. How is one end different from the other? Students may hold the magnet wand up to a light source and notice the rectangular dark magnet inside. They may also note that the magnetic end is heavier.

Inside the end of the magnet wand is the magnet. The plastic part is not magnetic.

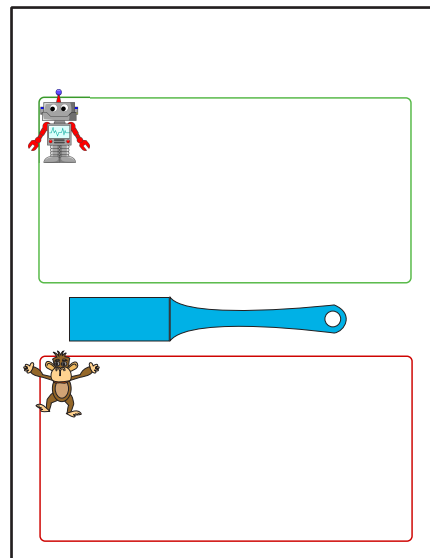
Check to see if children can group the metal objects. Ask if all the metal objects are attracted to the magnet. **Magnets are only attracted to objects that contain a kind of metal called iron. Lots of metal things are made of steel. Steel is made from iron.**

Have students go on a magnetic scavenger hunt. They should find objects around the room that the magnet is attracted to. Some objects might have magnetic parts and parts that are not magnetic.

Workbook page: Draw pictures of things that are attracted to magnets in the box with the robot. Draw pictures of things that are not attracted to the magnet in the box with the chimpanzee.

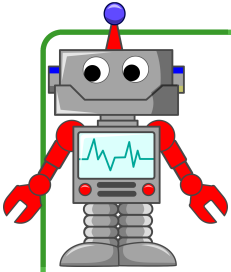
Conclusion

What kinds of things are attracted to magnets?

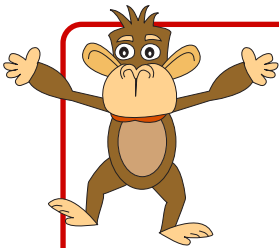
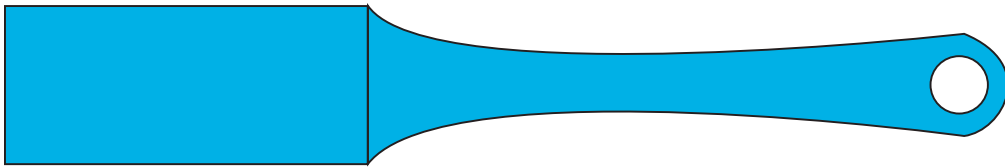


Name _____

In the top box with the robot draw things that are attracted to magnets.
In the bottom box with the chimp, draw things that are not attracted to magnets.



A large, empty rectangular box with a green border, intended for drawing items attracted to magnets.



A large, empty rectangular box with a red border, intended for drawing items not attracted to magnets.

Objective

Students will learn about magnetic force. (P)

Materials

- * Magnetic wand
- * Paper clips
- * Short piece of string or thread
- * Fishing Fun game board and Fishing Fun Fish cutouts (Resource Pack card stock)
- * Cardboard box for the Fishing Fun game board or flat piece of cardboard.
- * Dice (optional)

Preparation

Tie thread or string to one paper clip. Cut out Fishing Fun Fish (or students can do this before playing).

Teaching

Say: **Do you believe my hand is a magnet? I can make a paper clip stick to my hand, just like it can stick to the magnet. Pass the magnet wand so it will pick up a paper clip. Now, my hand will pick up the paper clip in the same way.**

Use the paper clip with the thread. Pick up the end of the string with one hand. Slip the thread through outstretched fingers on the other hand. Pull the thread to make it look like the paper clip jumped to the hand.

Is my hand a magnet? (No) **Then how did the paper clip stick to my hand? (You pulled the string or thread.) How was the magnet able to pick up the paper clip without a string?**

Magnets have something invisible around them called a magnetic force. That force pulls iron objects to it just like the string.

Put a piece of paper up to the magnet. Ask: **Do you think the magnetic forces can go through this piece of paper? How could we find out?** Have students experiment to find an answer to the questions. Give students a magnetic wand, paper clip, and a piece of paper.

Conclusion

What makes some things move when they come close to magnets?
(magnetic forces)

Fishing Fun Game options:

Place the game board in the bottom of a cardboard box or on a flat piece of cardboard. Put a paper clip on each fish. Randomly place the six fish on the game board away from the hook. Players will move the fish by using a magnet, such as the magnet wand under the game board and cardboard.

Dice Roll Game: Roll a dice and try to move the fish with that number to the hook without catching any other fish. If a player successfully catches the fish the player gets a point. If any other fish is caught, the player does not get a point. First player to get 5 points wins.

Fish in Order Game: Try to catch all six fish in order from 1 to 6 and then drag them to the hook until at least one fish is on the hook.

Flying Fish Game: Use the magnet over the game board instead of under it. Roll the dice and try to pick up the fish with the matching number, but only that fish. Make the fish fly to the magnet.

Fishing Fun Game Board



Fishing Fun Fish cutouts





Fishing Fun Fish Lesson 13



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Lesson 14

Objective

Students will learn about magnetic force. (P)

Materials

- * Magnetic wand
- * Magnets of other shapes
- * Paper clips
- * Paper, cardboard, other items
- * Cup of water
- * Magnetic strip
- * Construction paper, other craft materials

Preparation

Students will discover how well magnetic forces work through other objects. Use a piece of paper, cardboard, thin and thick books (or several thin books)

Students will make a refrigerator magnet at the end of the lesson. Cut a small piece of the magnetic strip for each student. The construction paper will be used for the magnet. You may want to add other craft materials, like glitter or pom-poms.

Teaching

Put a piece of paper up to the magnet. Ask: **Do you think the magnetic forces can go through this piece of paper? How could we find out?** Have students experiment to find an answer to the questions. Give students a magnetic wand, paper clip, and a piece of paper.

Students should discover that a paper clip will still be attracted to the magnet through the paper. Students should then experiment with cardboard or books. Place a paper clip on top of the cardboard or book. Move the magnet underneath it to see if the paper clip will move. Have students try thicker books or more than one book. Students should continue until the magnetic forces are too weak to move the paper clips. They will discover that the magnet can still move the paper clip through over an inch of paper.

Have student see if the magnet will work through their clothes or other non-magnetic materials.

Pick up the cup of water. **Do you think the magnetic forces can pass through the water?** Ask students if they can think of a way to find out. Possible ways to experiment would be to drop a paper clip in the water and see if the magnet can pick it up either from inside or outside the cup.

Make the refrigerator magnet. **Today we saw how magnetic forces can pass through paper. People use magnets on refrigerators to hold papers or pictures up. Today we'll make our own refrigerator magnets.**

Students should create their own designs on a small piece of construction paper and/or other craft materials. Magnet strips are usually available with a peel off back. The adhesive side will hold the students artwork. If the strip does not have adhesive, glue the artwork to the strip.

Conclusion

Will magnetic forces pass through paper? Will magnetic forces pass through water?

Evaluation for Unit 4

Students should be able to classify objects as magnetic or not magnetic using a magnet.

Students should be able to name at least two common items that are attracted to magnets.

Students should be able to understand that magnetic forces can pass through paper, water, and other materials.

Learning Centers

Create a magnet learning center with assorted magnets and steel objects (such as paper clips, bolts, screws, etc.) to allow children creative playtime with magnets.