FIRST GRADE
MAGNETS

TOTAL TIME: 45-60 Minutes

STATION 1

Background – Magnets have been in use for thousands of years. The first know magnets were a type of rock called lodestones that were used by the ancient Greeks. In fact, the word magnet comes from Magnesia, an area in ancient Greece where many lodestones were found. The ancient Chinese also knew of magnets. It is believed they used compasses as early as 2500 B.C. These first compasses consisted of a magnetized needle floating in a bowl of water. Today, magnets are used in a variety of ways. For example, doorbells, telephones, televisions, computers and credit cards all rely on the power of magnetism. Without magnets, many modern devices would not exist.

Activity 1 – Let's Go Fishing

Materials:

- Magnet Wands
- Orange piece of paper
- Blue piece of paper
- Paper clip
- Spoon
- Metal key
- Eraser
- Crayon
- Penny
- Nickel
- Dime
- Aluminum foil ball
- Brass fastener
- Foreign coin
- Battery

1. Magnets are attracted to some items and to others. By "fishing" for different items, we can learn which types of items attract magnets and which types do not. We can formulate a hypothesis beforehand and then test our hypothesis and record our results.
2. Lay the items on the table. Ask the children to predict which objects(s) a magnet will pick up. Place these objects into two groups. Placed items believed to be magnetic on the orange ("Yes") sheet of paper. Then place items not thought to be magnetic on the blue ("No") sheet of paper.
3. Hand each child a magnet wand. Taking turns, let the children touch an item to see if their hypotheses were correct.
4. Place the magnetic objects on the orange paper and the non-magnetic items on the blue sheet of paper.
5. Compare what was predicted to what actually happened.
6. Ask the students why they believe some objects were picked up while others were not. Why did the magnet not pick up every metal object? (Magnets only attract objects that contain iron and steel. Foreign coins are made of steel but American coins are not).

Activity 2 – What part of a bar magnet is the strongest?

Materials:

- Magnet bars
- Plastic container
- Steel shapes

1. Ask the children: what part of a bar magnet is the strongest? Ask them to tell you their predictions.
2. Fill the bottom of the container with steel shapes.
3. Hold a bar magnet in the middle.
4. Lower the magnet into the container.
5. Look to see where the steel shapes are attracted to the magnet.
6. Conclusion: A magnet's force is strongest at the poles.

Activity 3 – Play with Magnets

Materials:

- Gyro Wheel
- Magnet Sculpture
- Bag of magnets

1. Play with the Gyro Wheel.
2. Create Magnet Sculptures.
3. Play with the bag of magnets.

STATION 2: THE STRENGTH OF THE FORCE OF MAGNETS

Activity 1:

Materials:

- 5 magnets of different sizes labeled A – E.
- Paperclips

1. Some magnets are stronger than others. The largest magnet is not necessarily the strongest. In this experiment we can hypothesize which magnet is the strongest and then test our hypothesis by seeing which magnet can hold the longest chain of paper clips.
2. Predict how many paper clips (in a string of clips) your magnet can pick up. Write your prediction down.
3. Make sure none of the paper clips are touching.
4. Touch one paper clip with your magnet. Move the magnet upward to pick up the paper clip.
5. As this paper clip hangs below the magnet, move the magnet and allow the hanging paper clip to touch another paper clip on the table.
6. Slowly lift the magnet to see if the next paper clip is actually attracted to the paper clip hanging from the magnet. Move the magnet to make sure both paper clips are actually stuck to the magnet.
7. Repeat this procedure to pick up as many paper clips as possible.
8. Which magnet did you think would be the strongest? Which magnet actually was the strongest? Is the largest magnet always the strongest?

Activity 2 – Can Magnetic Forces Travel Through Objects such as Plastic, Glass, Water, and Skin?:

Materials:

- Magnetic Faces
- Vase with water

- Magnetic discs
- Ruler
- Paper clips
- Paper Maze
- Singing Magnets

1. By experimenting in fun ways with magnets, the children will learn that the magnetic force field can extend through some objects. Give each child a different object to experiment and then rotate the objects to every child.
    a. Paper – Use the small disc magnets on the paper maze to move the magnets around the maze.
    b. Plastic – Decorate the magnet face.
    c. Water - Fill a vase with water. Drop 5 paper clips into the water. Ask the children to retrieve the paper clips with the magnets without getting their hands wet.
    d. Table - Let the children use a magnet under the table to move marbles on top of the table.*
    e. Wood – Let the children make the paper clip climb up the ruler without touching it.
    f. Ears, Nose, Hands! *
2. Throw the magnets up in the air and make them sing!*

*use the singing magnets for these activities as they are the strongest magnets we have.

STATION 3: OPPOSITES ATTRACT

Materials:

- Colored magnet wands.
- Magnet with strings tied around the center.
- Magnets bars with N/S poles labeled.
- Train with train tracks.
- Floating Magnet Rings.
- Dancing magnets.

Background

1. All magnets have a North pole and a South pole. Opposites attract - The north pole of one magnet will be attracted (pulled toward) to the south pole of another magnet. Like poles repel (push away) from each other – the north pole of one magnet will be repelled by the north pole of the second magnet. This experiment will allow the children to see the results of this attraction and repulsion and teach the concept of poles.
2. Notice that each end of the magnets has either a letter "N" or a letter "S." These are called North and South Poles of the magnet.

Activity 1 - Feel the Magnetic Force

1. Give each child a colored magnet wand. Tell them we are actually going to feel a magnetic force.
2. Ask: Are both ends of a magnet the same? What happens when North came close to North? South to South? North to South? Can you feel the force?
3. Hold one string and magnet in each hand. The magnet should hang level – if not, adjust the string's location in the middle of the magnet.
4. Make sure the N (north) ends on each magnet face each other.
5. Slowly move the magnets close together. Observe what happens when the two ends with the same letter (N-N or S-S) come close together. Next, observe what happens when the two opposite ends (N-S) come close together.
6. Conclusion: Opposites attract and like poles repel.

Activity 2:

- Take turns pushing the trains around the train track without touching the trains.

Activity 3:

- Floating Magnet Rings – Give each child a pencil and 6 circle magnets. Ask the children to slowly place the magnets through the pencil. Opposite poles will attract (bang together). Like poles will repel (making it look like the magnets are floating in air!)

Activity 4:

- Make the magnets dance without even touching them!

Activity 5:

- Look for other magnets around the classroom. How many can you find?