

Lesson Plan

Teacher's Name: Jennifer E. Litts

Subject: Science

Date: March 12, 2009

SOL(s): K.1 The student will conduct investigations in which

- a) basic properties of objects are identified by direct observation;
- b) observations are made from multiple positions to achieve different perspectives;
- c) objects are described both pictorially and verbally;
- g) a question is developed from one or more observations;
- j) unusual or unexpected results in an activity are recognized.

K.3 The student will investigate and understand that magnets have an effect on some materials, make some things move without touching them, and have useful applications.

Key concepts include:

attraction/nonattraction, push/pull, attract/repel, and metal/nonmetal

Objective(s):

Students will verbally describe attributes of magnets after investigating in a magnets circus and completing a science packet.

Materials Needed: Station #1 Magnet Chains: 3 small bar magnets, baggies of smooth metal pieces; Station #2 Magnets in Water: one short, long clear plastic tub, one tall, narrow clear plastic tub, magnet balls, 5 magnet wands; Station #3 Repelling Magnets: labeled magnet wands; and Station #4 Distance between Magnets: 2 large bar magnets, and large pieces of Styrofoam plates. Additionally, floating magnet, group station sheets and directions (see attached), dry erase board, markers, job stickers

Statement of Objective:

Today we will be having a magnet circus. In our circus, we will have four different areas in which you will be working as scientists to investigate magnets. You will learn about different things magnets can and cannot do. You will work with your team to describe what you see at each station, and at the end we will share our knowledge with all of our friends in the class.

Introduction: (build background, make connections):

1. Assemble the students on the floor and tell them that you have a special kind of magnet to share with them. Pull out the floating magnet and hold it parallel

to the floor. Tell the students that there are magnets inside and ask them what they think will happen when you flip the cylinder up.

2. After students make predictions, flip over the floating magnet. Ask students to describe what they see.
3. Ask students to describe what they have learned about magnets. Focus them to review these words: attract, non-attraction, metal, and non-metal.

Input: (Step-by-Step Procedure, Questions)

1. Tell students that we will be working in teams of 4 (and one group of 5). Each group will be at one station at a time. Break the students into their pre-assigned groups and have them sit together for directions.
2. Tell students that there are four stations and each group will have 5 minutes at each station. There will be a timer that rings after 5 minutes and then students must **stop** what they are doing and move to the next station. This means that a group at Station #3 will move to Station #4, and so on.
3. Tell students that each person on the team will have a job. Quickly give each student their assigned job sticker. “Directions” (book symbol) will read directions, “Writer” (pencil symbol) will write or draw team answers, “Asker” (question mark symbol) will be responsible for asking Ms. Litts if they need help, and “Manager” (hand symbol) will be responsible for putting the materials back when the group is done with the station.
4. Tell students that each group will have a packet to fill out which goes with each station. They need to work quickly on their worksheets.

Station Descriptions:

Station #1 Magnet Chains: 3 small bar magnets, baggies of smooth metal pieces

At this station, students will use bar magnets to try to pick up as many pieces of metal in a chain as they can. Objectives of the station –

1. Discover that there is a limit to how much metal the magnet will hold.
2. Discover that metal is attracted to the magnet most strongly when it is close to the magnet and gets much weaker as you move farther away.

Station #2 Magnets in Water: one short, long clear plastic tub, one tall, narrow clear plastic tub, magnet balls, 5 magnet wands

At this station, students will use magnet wands on the outside of the tubs of water to attract magnetic balls. They will try to connect all the magnet balls together, move them around the container or try to lift them up as high as possible. Objectives of the station-

1. Discover that magnets can attract things through water.
2. Discover that magnets can attract objects through a container side.
3. Discover that magnets can attract objects off the bottom of a container.

Station #3 Repelling Magnets: labeled magnet wands

At this station, students will reexamine the floating magnets. They will also try to push together magnets that have the same polarization. They will also flip the magnets around and put together opposite poles. Objectives of this station:

1. Discover that magnets attract each other when opposite poles touch.
2. Discover that magnets **repel** each other when like poles touch.

Station #4 Distance Between Magnets: 2 large bar magnets, and large pieces of Styrofoam plates

At this station, groups will work together to place pieces of Styrofoam between two large magnets. They will keep adding pieces of Styrofoam between the magnets until the magnets no longer attract each other. Students should work to find what is the largest number of Styrofoam pieces which will fit between the magnets but still attract the magnets together. They will then count how many pieces they used and then record it.

Assessment Activity:

Students will be assessed on their verbal contributions made during the closure activity when all students discuss their findings, and the teacher will make observations of students working during station activities.

Students will be additionally assessed on their cooperative working in teams through following directions at each station, acting responsible with materials, and completing their team packets.

Closure:

1. Have students return to the carpet in front of the dry erase board once all students have been to the four stations.

2. Focus on guiding students to describing the objectives of each station through questioning. This will vary upon what students share during initial discussion.
3. Write student responses on the board. Make sure to focus students on words such as attract, repel, non-attraction, push, pull, magnetic, metal, and non-metal.
4. Ask students to describe the new information that they learned about today and how it connects to our previous learning about magnets.

Station #1

Directions:

1. Pick up the magnet.



2. Pick up a piece of metal.



3. Pick up another piece of metal.

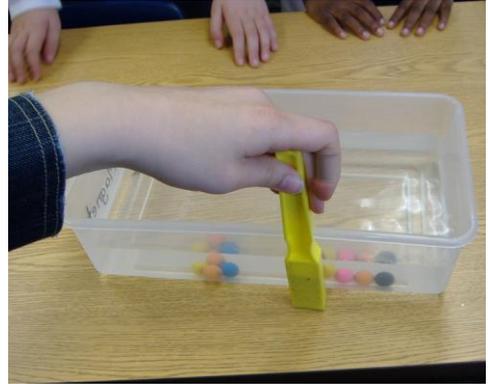


4. How much can you pick up?
Keep trying!



Station #2

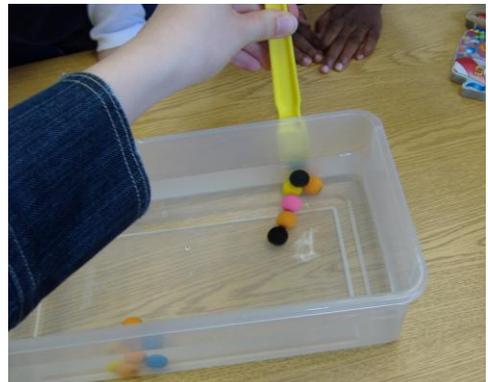
1. Put the wand on the outside of the box.



2. Move the wand to attract the magnet balls.



3. How many can you attract?



Station #3

1. Put both south sides together.



2. Put north and north sides together.



3. Put north and south sides together.



Station #4

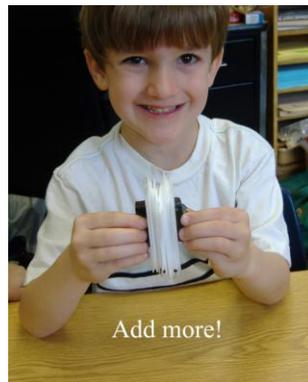
1. Pick up the magnets.



2. Put some white pieces between the magnets.



3. How many pieces can fit between the magnets without falling?



4. Count how many white pieces you used.



Magnets Circus!!!



Names: _____

Station #1

1. How many pieces of metal did you pick up at one time?

2. Draw the magnet and metal.

Station #2

1. Did the magnet work through the water?

Yes

No

2. Could you attract all of the balls?

Yes

No

3. Did the magnet always attract the balls?

Yes

No

4. Draw your magnet and ball chain.

Station #3

1. Did the south side attract the south side?

Yes

No

2. Did the north side attract the north side?

Yes

No

3. Did the north side attract the south side?

Yes

No

Station #4

1. Did the magnet attract through the white pieces?

Yes

No

2. Did the magnet not attract sometimes?

Yes

No

3. How many white pieces did you fit between the magnets?

4. Draw your magnet and white pieces.