Sciencenter 601 First Street, Ithaca, NY 14850 • (607) 272-0600

Dear Teacher,

Thank you for joining us for *Hidden Attractions*. We hope that you and your students found the program to be a fun learning experience. Enclosed in this packet are some materials to help you carry your Sciencenter experience back to the classroom and evaluate your students' learning.

You will find a number of short activities and a reproducible worksheet. The activities can be easily adjusted to suit your classroom, or students may wish to try them at home.

You will also find a survey and a postage paid envelope. We are always striving to improve this and all our educational programs. Please take some time soon to give us your feedback about the program and presenter you had today and the accompanying materials. We appreciate your input and look forward to hearing your comments and suggestions.

Remember, Sciencenter admission is free for teachers, so visit again soon!

Sincerely,

The Sciencenter Education Team

Hidden Attractions
Post Program Activities

Get in Line!
This activity demonstrates the making of a temporary magnet.
Time to get in line for lunch? During your magnet study, try an innovative method for getting your students to line up. Remind students that each tiny particle of matter in a piece of iron is facing a different direction. When a magnet passes over, all the atoms line up. Now pass a magnet over your students to get them to line up!

Make a Compass
This activity demonstrates the making of temporary magnets and that magnets will orient themselves to the earth's poles.
Materials

Bowl (non-metal) or other wide shallow container for water
Water
Steel sewing needle
Small piece of cork or polystyrene
Compass

Procedure

1. Stroke the needle about 100 times from the eye to the point using the south end of a bar magnet. (Be sure to lift the needle clear of the magnet each time. Just rubbing it back and forth will not magnetize the needle.)
2. Partially fill the bowl with water.
3. Stick the needle through the cork or polystyrene and float it on the water.
4. Does the needle slowly swing around and point in a certain direction? Compare the needle with the compass.
5. Try these things and watch what happens:
    - use your finger to move the needle so it points in a different direction, and then watch what happens after a few seconds.
    - gently turn the bowl.
    - hold your bar magnet near your homemade compass.

Adapted from: *Science Is…* by Susan B. Vosak

Visualize Magnetic Fields *Note: this activity is best for the overhead projector, so that students are not exposed to filings which should be handled with caution.
This activity demonstrates the shape and orientation of magnetic fields around the poles of a magnet
Materials

Bar Magnets
Sheet of glass or stiff acetate (an overhead projector sheet works well)
Iron filings or steel wool cut into bits (BE VERY CAREFUL – DO NOT GET FILINGS IN EYES)

Procedure

1. Place the glass or acetate over the bar magnet.
2. Sprinkle filings over the magnet.
3. Notice the patterns that appear when you sprinkle the filings:

- over a single bar magnet.
- over two like poles held together.
- over two different poles held together.

Adapted from: *Science Is…* by Susan B. Vosak

Bobbling Butterfly

This activity demonstrates that the magnetic field extends outside of a magnet.

Materials

Jar with a steel lid or paperboard box
Magnet
String
Tape
Paperclip
Paper, scissors and markers

Procedure

1. Make a small paper cutout of a butterfly or dragonfly.
2. If using a box, cut out a viewing hole in the side of the box. (A tissue box on its side works well.)
3. Tape a paperclip or other magnetic material to the butterfly.
4. Tie one end of a string to the paperclip and tape the other on the bottom of the jar or box so that the paperclip is near, but not touching the top.
5. Put the magnet inside the jar lid and screw lid onto the jar or tape a magnet into the top of the box.
6. Now turn the jar over and watch as the butterfly bounces in the magnetic field of the magnet on the jar's lid.

Adapted from: *Playing With Magnets* by Gary Gibson

Magician at the Table

This activity demonstrates that magnetic fields can work through non-magnetic materials.

Materials

Powerful magnet
Magnetically sensitive items like paperclips *note that most silverware, including stainless steel is not magnetic, so test your silverware before attempting the trick.

Procedure

1. Hold the magnet against the underside of the table. (You might want to tape it to your knee.)
2. Move the magnet to make objects dance on the table.
3. Place several objects over the magnet and turn them into temporary magnets.
4. After lowering the magnet, demonstrate to your companions how the objects stick together.
5. Before passing the objects to others for a try, tap them on the table to disorganize the temporary magnets.

Nail Pull Experiment

This experiment allows students to see that some magnets are stronger than others, and discover how to determine which magnet is stronger.

Materials

Several strong magnets
Several magnetic objects such as nails

Procedure

1. Put a nail or other object between two magnets.
2. Ask students how they can tell which magnet is stronger.
3. Try pulling apart the two magnets.
4. Repeat the test:
    - try it several times to confirm results.
    - try it with different objects to see if the result is the same.
    - try adding additional magnets to one side or the other.

Adapted from: *Magnets… A World to Discover* Level I by Jane Feiler & Nancy Terry Hooten.

How Strong is Your Magnet?

This activity demonstrates that magnetic fields are weakened by nonmagnetic materials

Materials

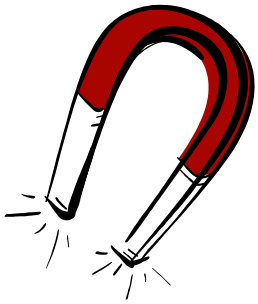
Several magnets
Paperclips, brads or other magnetizable objects
3X5 cards or scrap paper

Procedure

1. Hold a magnet against the card or paper and touch the pile of paperclips.
2. Count how many paperclips the magnet can hold.
3. Add one sheet of paper, or card and repeat steps one and two.
4. Continue adding one sheet at a time until the magnet will no longer hold a paperclip.
5. Repeat the test with different magnets.

Name: _____ Date: _____

What will happen?



Instructions: Write **A** if the objects will **Attract**
Write **R** if the objects will **Repel**
Write **N** if the objects will do **Nothing**

South pole of a magnet	_____	South pole of a magnet
Magnet	_____	Penny
Magnet	_____	Aluminum Foil
North pole of a magnet	_____	South pole of a magnet
Magnet	_____	Paperclip
North pole of a magnet	_____	North pole of a magnet
Magnet	_____	Plastic Straw
Magnet	_____	Paper

Instructions: Use the words in the box to complete the sentences.

Temporary	Permanent	Poles	North	South

1. When you stroke a nail across a magnet, you are making a

_____ magnet.

2. A magnet's pull is strongest near the _____.

3. If you let it spin, the _____ pole of a magnet will point north.

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We are constantly seeking ways to improve our programs and create materials that serve you better. Please take a few moments to evaluate your **Kids Discover the Trail!** experience so that we may tailor our school group programs to meet your needs.

Pre-Program Materials

1. How useful was the information packet (including logistical information, program overview, background information and the sorting activity) provided prior to your Sciencenter visit?

very useful	somewhat useful	neutral	unhelpful	confusing

2. Did your class do the pre-program sorting activity?

Yes No (please skip to question 2d)

2b. How clear and understandable was the activity lesson plan?

very clear	fairly clear	neutral	somewhat unclear	very unclear

2c. How useful was the activity in preparing for the program?

very useful	somewhat useful	neutral	unhelpful	confusing

2d. If you did not do the activity was it due to

_____ Time constraints
_____ Activity not appropriate for students
_____ Difficulty with directions
_____ Difficulty assembling materials
_____ Other: _____

Program and Presenter

3. Presenter's name: _____

4. How satisfied were you with your presenter's ability to engage and educate students?

very satisfied	somewhat satisfied	neutral	somewhat dissatisfied	very dissatisfied

5. How satisfied were you with the level of information presented in the program?

very satisfied	somewhat satisfied	neutral	somewhat dissatisfied	very dissatisfied

5b. If you were dissatisfied with the level of information, was it …

Too Advanced Too Easy

6. How satisfied were you that students achieved the learning objectives of the program?

very satisfied	somewhat satisfied	neutral	somewhat dissatisfied	very dissatisfied

Post-Program Materials

7. Which activities did you try with your class?

_____ Get in Line
_____ Make a Compass
_____ Visualize Magnetic Fields
_____ Bobbling Butterfly
_____ Magician at the Table
_____ Nail Pull
_____ How Strong is Your Magnet
_____ None

8. How useful were the activity suggestions for extending your Sciencenter experience?

very useful	somewhat useful	neutral	unhelpful	confusing

9. How clear and understandable were the activity directions/lesson plans?

very clear	fairly clear	neutral	somewhat unclear	very unclear

10. Did you use the reproducible worksheet?

Yes No

10b. If yes, how useful was it in assessing your students' learning?

very useful	somewhat useful	neutral	unhelpful	confusing

Please write any additional comments or suggestions for improving the overall Kids Discover the Trail! Sciencenter experience.