

Magnificent Magnets

Integration Cards, or *iCards*, may be used as enrichment activities by the teacher, teacher's aide or volunteer, in any sequence, to integrate Language & Literacy, Math and Creative Arts into the science content presented in this unit.

Language & Literacy

- L1. Fingerplay
- L2. Sing Along Song
- L3. Picture Walk
- L4. Read Aloud

Math

- M1. Magnetic Counting
- M2. Paper Clip Pick-Up
- M3. The Strongest Link
- M4. Five Little Fish

Creative Arts

- C1. Magnetic Attraction
- C2. Refrigerator Magnets
- C3. Painting with Magnets
- C4. Moving Magnetic Cars

Fingerplay**Guidelines**

1. Children should be standing, use a large open space for body movements.
2. Introduce the fingerplay words and hand motions one line at a time. Tell the children: **Say it after me.**
3. Use rhythm and hand motions to engage the children.
4. As the children recite the fingerplay chant, ask them to use soft voices, then loud voices.

Five Little Magnets

Sung to the tune of "Over in the Meadow"

Five little magnets *(Hold up five fingers.)*
On the old fridge door,
Were stuck very tight 'til one dropped to the floor. *(Move whole hand down to floor/table then pat floor/table.)*
"Whoops!" said the one, as it dropped to the floor.
Now there are only four magnets on the old fridge door.

Four little magnets *(Hold up four fingers.)*
You would probably agree *(Move whole hand down to floor/table then pat floor/table.)*
Won't stick very well to the side of a tree.
"Whoops!" said one as it fell from the tree.
Now there were just three magnets on the side of a tree.

Three little magnets *(Hold up three fingers.)*
Stuck without any glue, *(Move whole hand down to floor/table then pat floor/table.)*
Attracted to each other like magnets do.
"Whoops!" said one as it fell into my shoe.
Now there were just two magnets stuck without any glue.

Two little magnets *(Hold up two fingers.)*
Having so much fun, *(Move whole hand down to floor/table then pat floor/table.)*
Did attract and repel in the light of the sun.
"Whoops!" said one as it fell and spun,
Now there was just one magnet in the light of the sun.

One little magnet *(Hold up one finger.)*
As you already know *(Pretend to walk the two fingers by moving in a walking motion away from your body.)*
Needs another little magnet
Or some metal to tow.
"Hey!" said the metal, "Good day, hello!"
They walked off together, and they left not one!

Language and Literacy iCard

Sing Along Song

Guidelines

1. Introduce the song and motions one line at a time. Tell the children: **Sing after me. Do what I do.**
2. When children know the words, sing the song together.

Tiny Little Magnet Train

Sung to the tune of "The Itsy Bitsy Spider"

Verse 1

The tiny little magnet trains
Pull along so well.

*(Point hands in the same direction;
pull one hand with the other.)*



Turn one around
To make the trains **repel**.

*(Point hands together; on **repel**,
move hands apart.)*

Turn it back the other way
So they will pull again.

(Point hands in the same direction.)



The tiny little magnet trains
Pull right down the lane.

(Move hands forward together.)

Verse 2 (optional)

A tiny little magnet
Can pull a magnet car.

*(Point hands in the same direction;
pull one hand with the other.)*



Turn it around to
Repel it very far.

*(Point hands together; on **repel**,
move hands apart.)*

Turn it back the other way
To bring the car back.

(Point hands in the same direction.)

The tiny little magnet
Will start to **attract**.

(Move hands forward together.)

Picture Walk

Guidelines

1. Choose a book.

Select a book from the *Magnificent Magnets Picture Walk Books* list. If these books are not available, find another content-related book filled with rich, detailed pictures.

2. Get to know the book.

Read the story to yourself before sharing the book with the children. Notice how the illustrations tell the story.

3. Enjoy reading time!

Make sure everyone is comfortable and able to see the book. If needed, establish rules for good behavior.

Taking a picture walk through a book is one of the earliest stages of reading. It enables children to “read” books by looking at the pictures. Ideal Picture Walk books have rich illustrations. When a book has too much text to hold children’s attention, use it to show just the pictures. Wordless books are also a great choice for Picture Walks.

1. Before conducting the picture walk:

Let the children know you are going to read this book by looking at the pictures.

- Show the cover of the book.
- Read the title, the author’s name, and the illustrator’s name.
- Ask children to predict what they think the story will be about based on the cover and the title.

2. While conducting the picture walk:

- Slowly go through the book, page by page.
- Ask a few questions about each picture. For example:

What do you see in this picture?

Have you ever seen _____? Tell me something about it. (Substitute with a word related to the book; a character, animal or place.)

Where is this part of the story taking place?

Where do you think they are going?

What do you think will happen next?

3. Share the book again and again.

When children like a book, they want to “read” it over and over.

4. Leave the book in the science or book area for the children to enjoy.

Picture Walk Books

Lesson 1: What Does a Magnet Do?

What Makes a Magnet? by Franklyn M. Branley

Describes how magnets work and what type of objects magnets can attract or pick up. Also states that magnets come in different shapes and sizes. (Recommend pages 5-11.)

Lesson 2: Mighty Magnets

Magnets by Charlotte Guillain

Includes interactive, investigative and visual approaches to early science inquiry about magnets. How can we use magnets? What objects do magnets attract? What are poles?

Lesson 3: Push and Pull

My World of Science: Magnetic and Nonmagnetic by Angela Royston

Are all metals magnetic? Can magnetism pass through other materials? Learn how people use magnets every day, and how magnets can even work in water.

Lesson 4: Powerful Forces

Magnets Sticking Together by Wendy Sadler

Magnets can be used for all sorts of things, but what are magnets? Learn about their powerful attractive forces and take a closer look at magnets in our every day life.

Read Aloud**Guidelines****1. Choose a book.**

Select a book from the *Magnificent Magnets Read Aloud Books* list. If these books are not available, find another content-related book.

2. Get to know the book.

- Read the story to yourself before reading the book to your class.
- Plan ways to change your voice to fit the plot and characters.
- Gather props.

3. Enjoy reading time!

Make sure everyone is comfortable and able to see the book. If needed, establish rules for good behavior.

When children are read to, they are likely to grow into good readers. As listeners of stories, children hear rich vocabulary and proper language structure, and learn new information about the world. Being read to can enhance imagination, creativity, and curiosity. When selecting a book for a Read Aloud, consider the amount of text and the children's attention span.

1. Before reading the story:

- Show the cover of the book.
- Read the title, the author's name, and the illustrator's name.

2. While reading the story the first time:

- Focus on the flow of the story.
- Read with expression, change your voice for different characters.
- Vary the reading speed: faster for exciting parts, slower for scary or quiet parts.

3. After reading the story:

- Ask a few questions about the book. For example:

Who would you like to be in the story?	When did the story get exciting/scary?
What would you have done?	Why did they do that?
Where did the story happen?	How would you change the ending?

- Have the children re-tell the story or act out their favorite part.

4. For additional readings:

- Invite children to ask questions or discuss the story.
- Encourage children to say words they remember from the story as you read them.
- Assist children in recognizing the sounds that make up words.

Read Aloud Books

Lesson 1: What Does a Magnet Do?

ECHOS Book: *Why Is This Rock Special?* by Ted Myers

A young girl discovers that one of the rocks in her collection is special. This rock is not as bright, colorful, or shiny as the others; but the rock attracts her magnet toys. She then explores other magnets in her house, and uses one to help retrieve her mother's lost key ring.

Lesson 2: Mighty Magnets

What Magnets Can Do by Allan Fowler

This book provides excellent opportunities for children to use their science process skills, such as observing and inferring, as they explore and discover the true potential of magnets.

(Recommend pages 3-15.)

Lesson 3: Push and Pull

Magnets Push, Magnets Pull by Mark Weakland

Discover the wonder and science of magnets and how they "stick" to the fridge without tape or glue, what their magnetic energy looks like and where they are found.

Lesson 4: Powerful Forces

Magnets: Pulling Together, Pushing Apart by Natalie M. Rosinsky

Provides information about how and magnets work, where they are found, and how they are used.

Magnetic Counting

Materials

- 22" x 28" chart paper or poster board
- permanent marker
- copy paper
- *Magnetic Counting Cards* page
- one tissue box containing:
 - five metal washers
 - five large metal paper clips
 - five key rings
 - five ring magnets
 - five alphabet magnets
- one crayon
- one magnet wand
- masking tape

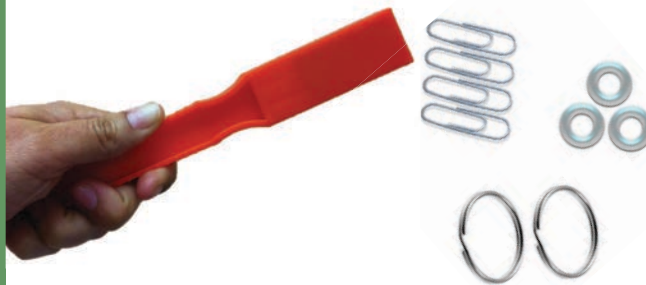
Preparation





1. Prepare the chart as shown on the right.
2. Place the tissue box containing magnetic objects, crayon and magnet wand on the table.

Children tally the number of magnetic objects a magnet wand will pick up.

Procedure

1. Say: **Today we will count and tally magnetic objects.**
2. Point to the column with the magnetic objects on the chart. **All these objects are magnetic.**
3. **I am going to place this magnetic wand inside the tissue box and see what I can pick up.** Model for the children. Place the objects that the magnet wand picked up on top of the table, separate them by kind, and count them out loud. Use the chart to tally each object on their corresponding row. **I am going to make tally marks next to each object I picked up to see how many of each I got.**
4. **Now, it's your turn.** Choose a child to go first and repeat Step #3. Allow each child to make tally marks on their own for the objects they picked up.
5. After all children have had a turn, count the tally marks on each row. **Let's count and see how many of each magnetic object we picked up as a group. Count with me.** After counting all the rows, discuss which has more and which has less.



	Magnetic Counting
	
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Magnetic Counting Cards



alphabet magnet



metal washer



ring magnet



paper clip



key ring

Paper Clip Pick-Up

Materials

- permanent marker
- 9" x 12" sheet of construction paper
- scissors
- circular item 2" in width to trace

For each child:

- one small cup containing 15 paper clips
- five small circle shapes cut from paper
- one strong round magnet

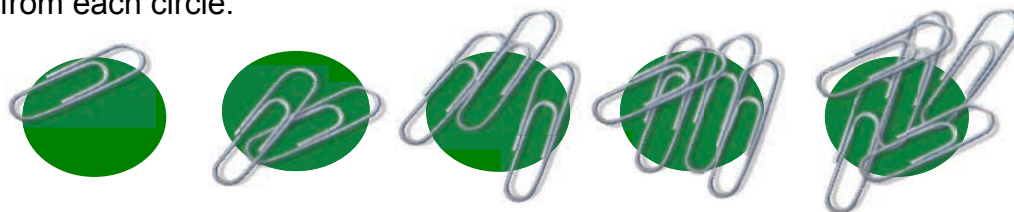
Preparation

Trace a small circular item about 2" in width. Trace five circle shapes per child in the group then cut out each circle shape.

Children divide paper clips into groups and test the strength of a round magnet.

Procedure

1. Say: **Today we will count as we put magnetic paper clips into groups. Then we'll try to pick up all of the groups of paper clips using a magnet.**
2. Give each child a cup of paper clips and five small circle shapes. **Put your five circle shapes in a row.** Assist children as needed. **Let's count out one paper clip and place it on the first circle.** Assist children as needed.
3. **Now, let's count out two paper clips and place them on the next circle shape in the row.** Assist children as needed. Continue verbally directing the children to place three paper clips on the third circle, four paper clips on the fourth circle, and five paper clips on the fifth circle.
4. **Do you think a magnet can pick up all of the paper clips on each circle shape? Let's find out. We'll begin with the first circle shape.**
5. Give each child a magnet. **Pick up one paper clip from the first circle.** Ask children to put the paper clip back on the paper circle.
6. **Now try to pick up two paper clips from the next circle shape.** Assist as needed as the children pick up paper clips from the first circle shape to the fifth circle shape. Return clips to circles.
7. Challenge the children to use the magnet to pick up all the clips, counting as they add the clips from each circle.



The Strongest Link

Materials

- horseshoe magnet
- bar magnet
- alphabet magnet
- *Chart Cards* page
- 22" x 28" chart paper or poster board
- permanent marker
- clear tape

For each child:

- small plastic cup or bowl containing ten large paper clips

Preparation

1. Make one copy of the *Chart Cards* page. Cut out the cards.
2. Create a chart with three columns. Use tape to attach the *Chart Cards* on the poster board, following the example to the right.

Children test the strength of various magnets.

Procedure

1. Say: **Today we will test the strength of magnets. Magnets are different in shape and size, and some are stronger than others.**
2. Hold up the horseshoe magnet. **Let's see how many paper clips this horseshoe magnet can pick up. When it is your turn, attach one paper clip to the magnet, then pass it on.**
3. Give each child a cup of paper clips. Pass the magnet around from child to child, and have each child try to attach one more paper clip. Continue to pass until no more papers clips can be added. **Let's count the number of paper clips.** After counting the paper clips, link them together to make a chain. Tape the chain to the chart under the horseshoe magnet picture.
4. Repeat the same procedure for the bar magnet and alphabet magnet. **Which magnet was the strongest? Listen to the children's responses. The strongest magnet picked up the most paper clips.**

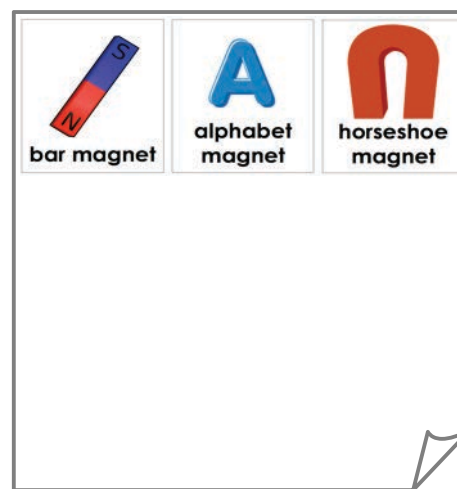


Chart (before)

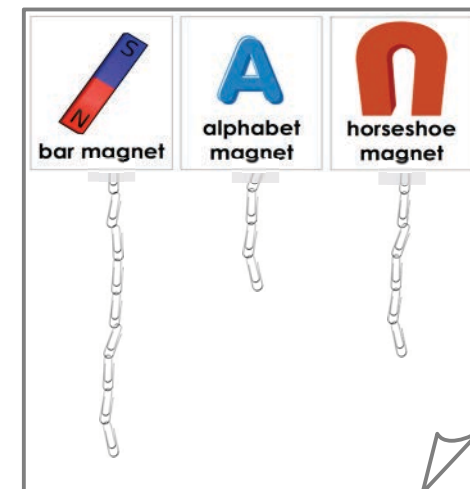
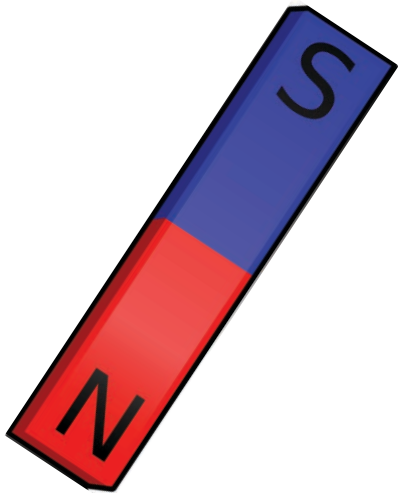


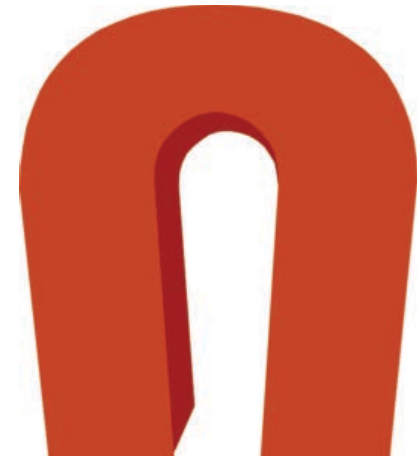
Chart (after)



bar magnet



**alphabet
magnet**



**horseshoe
magnet**

Math iCard

Five Little Fish

Materials

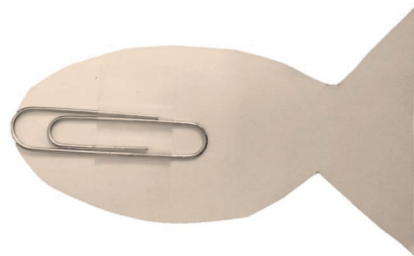
- *Fish Cutouts* page
- clear tape

For each child:

- 12" length of yarn
- strong ring magnet
- pencil
- three large metal paper clips
- five paper fish from *Fish Cutouts* page

Preparation

1. Tie each piece of yarn to a ring magnet and the other end to a pencil.
2. Make one copy of the *Fish Cutouts* page for each child. Cut out the fish shapes.
3. Tape a paper clip on the back of three fish, near their mouth, as shown. The other two fish will be nonmagnetic.
4. Designate a large open floor space for the lesson.

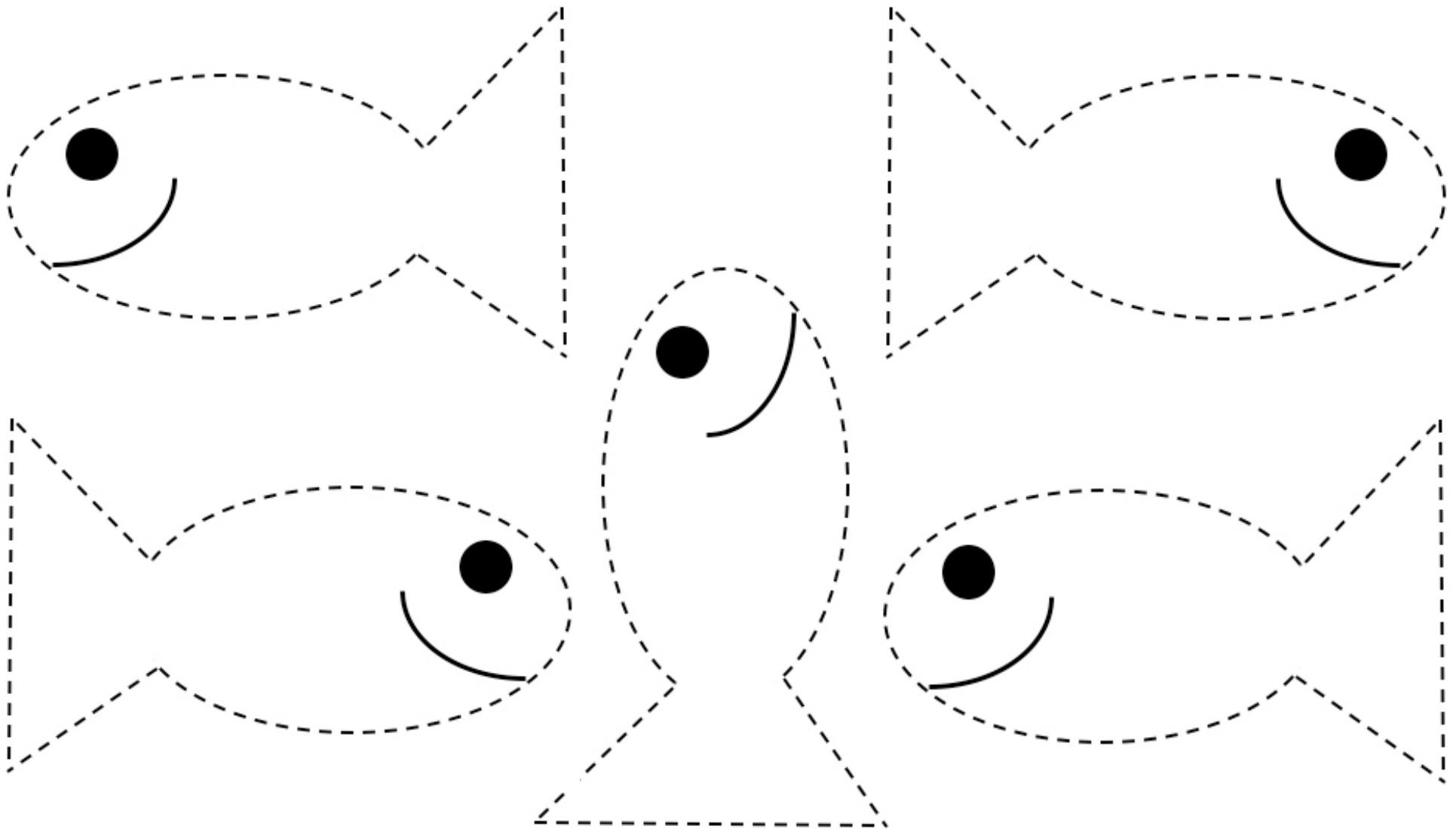


Children use a magnetic fishing pole to attract or pull up magnetic paper fish.

Procedure

1. Say: **Today we're going to use a special magnet fishing pole to do some pretend fishing.**
2. **Can someone tell me what happens when I hold a magnet close to something magnetic?** Listen to the children's responses. **Yes, the magnetic object is attracted or pulled to the magnet.**
3. Give each child a fishing pole and five fish cutouts. Have the children lay them out flat on the large open floor space.
4. Observe and guide the children as they attempt to pick up the fish.
5. **Which fish can you catch?** Listen to the children's responses. **Why can you catch the fish with the paper clips?** **Yes, the paper clips are attracted to the magnets.**





Magnetic Attraction

Materials

- strong horseshoe magnet
- assortment of magnetic and nonmagnetic objects: feather, paper clip, button, shell, leaf, paper clip or other metal objects
- *Horseshoe Magnet Tag* page
- *Nonmagnetic Object Tags* page
- *Magnetic Object Tags* page
- yarn
- scissors

Preparation

Make one object tag necklace per child:

- Make one copy each of C1.1, C1.2 and C1.3.
- Cut out each object tag. Punch a hole in each tag. String yarn through the hole to make a necklace.

NOTE: *If the group is smaller than ten, be sure to distribute an equal number of magnetic and nonmagnetic object tags and one horseshoe magnet tag.*

Children learn to identify objects that are magnetic or nonmagnetic.

Procedure

1. Say: **Today we will pretend to be magnetic and nonmagnetic objects.** Place all of the objects on the table. Show the children the horseshoe magnet. **First, let's predict which objects this magnet will pick up.**
2. **Will the magnet pick up the paper clip?** Try to pick up the paper clip. Continue asking the same question for each object. Review which objects are magnetic and which are not.
3. Ask the children to form a circle. Give one child the magnet tag necklace; this child stands in the center. Give the other children either a magnetic or nonmagnetic object tag necklace. ***(Insert child's name)* will pretend to be a magnet. Let's march around the circle and sing a magnet song.** (*Sung to the tune of "The Farmer in the Dell."*)

*The magnet will attract, the magnet will attract
Heigh-ho, way to go! The magnet will attract.*

4. Direct the child in the center to choose the child wearing the paper clip tag and lead him/her by the hand to the center. **A paper clip is magnetic. We will march around the circle and sing the song again.** Continue until all the magnetic objects are chosen.
5. Have the children with the magnetic object tags return to the outer circle.
6. Direct the child in the center to choose the child wearing the leaf tag and lead him/her by the hand to the center. **A leaf is nonmagnetic. We will march around the circle and sing another song.** Continue until all the nonmagnetic objects are chosen.

*The magnet will NOT attract, the magnet will NOT attract
Heigh-ho, no way no-no! The magnet will NOT attract.*

Horseshoe Magnet Tag



horseshoe magnet

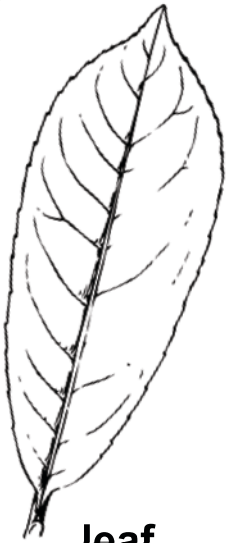
Nonmagnetic Object Tags



feather



shell



leaf



button



rubber band

Magnetic Object Tags



scissors



metal washer



paper clip



key ring

Refrigerator Magnets

Materials

- various collage materials, such as, tissue paper pieces, pompoms, pre-cut shapes, foam shapes, etc.

For each child:

- piece of 6" x 6" white cardstock paper
- two 2" pieces of peel-off magnet strips
- glue stick
- small bowl

Preparation

For each child, prepare a bowl containing a variety of collage materials.

Children use collage materials to make a decorative refrigerator magnet.

Procedure

1. Say: **Today we will make something magnetic that you can take home and put on your refrigerator door. Refrigerator doors are magnetic, so magnets attract to them.**
2. Give each child a piece of white cardstock paper and a glue stick. Supply either a small bowl of collage materials to each child, or a container of materials for the group to share.
3. Give the children time to decorate their piece of paper. **Now, how can we make your artwork attract to your refrigerator? Any ideas? What can we use? Yes! A magnet.** Attach two pieces of magnetic strips to the back of each child's artwork.
4. The children can take their work home to attach to their refrigerator.



Painting with Magnets

Materials

- two or three different colors of washable paint
- paper towels

For each child:

- paper dinner plate
- three large metal paper clips
- magnet wand

Preparation

Add several drops of paint to each paper plate.

Children use a magnet to move paper clips through paint.

Procedure

1. Say: **Today we are going to paint without using a paintbrush. We will use magnets and paper clips.**
2. Give each child a paper plate. Place three paper clips on top of each plate.
3. Give each child a magnet. **Use your magnet to move the paper clips around the paint. Try to move the paper clips from the bottom of the plate without letting the magnet touch them. See what happens.**
4. Give the children some time to paint with the magnets. **Can you control how the paper clip moves through the paint? Can you make different shapes?**



Moving Magnetic Cars

Materials

- Car Cutouts page
- sheet of 8½" x 11" cardstock paper
- clear tape
- crayons or markers

For each child:

- one car cutout from the Car Cutouts page
- large paper clip
- magnet (a magnet wand or bar magnet works best)
- sheet of cardstock about 3" x 8" long to be used as a roadway

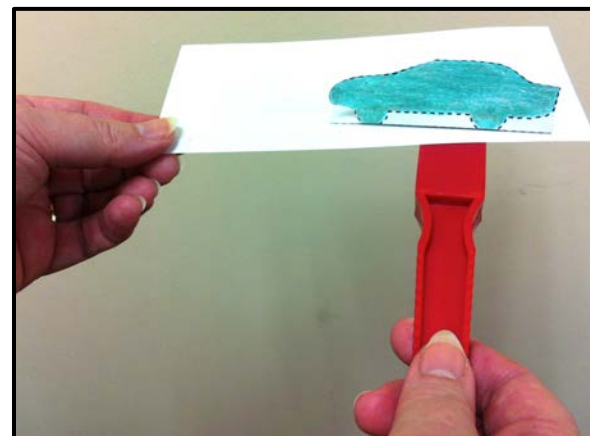
Preparation

1. Make enough copies of the Car Cutouts page to provide one car cutout for each child and cutout the car shapes.
2. Cut each sheet of cardstock into three 3" x 8" long pieces.

Children decorate a car cutout and move it using a magnet.

Procedure

1. Say: **Today we will make a paper car that moves using a magnet. I wonder how we can make our paper car move. What magnetic object can we attach to the car that will attract a magnet?** Listen to the children's responses. Prompt children to say a paper clip.
2. Give each child one car cutout. Provide crayons or markers for the children to decorate their car cutout. Assist each child to fold along the dotted line and use clear tape to fasten a paper clip to the bottom center of the fold.
3. Next, give each child a piece of cardstock 3" x 8" long. This will be the roadway for their car. They may color the roadway.
4. When the children complete their roadway and car cutout, give them a magnet. Place the car on top of the roadway. Guide them as they try to move the car along the roadway; be sure they use the magnet under the roadway (see example below.) Once the magnet latches onto the paperclip, the magnet will move the car along the roadway.



Creative Arts *i*Card Car Cutouts

