

Unit 2

Force & Motion

Introduction

From a young age, children enjoy exploring motion. This center will encourage them to think more closely about how things move.

- describe magnets
- explore properties of magnets
- make predictions
- test ideas about movement

Force & Motion #1 Magnets

Children have probably used refrigerator magnets to display their artwork in the kitchen at home! Allow students to further explore magnets at this center.

Recommended Supplies:
magnets (refrigerator magnets or magnetic wand work well)
Safety notes: Be sure that the magnets are big enough not to pose a choking hazard. Small objects can be placed inside a plastic bottle for safety. Do not use magnets near electronic equipment!

paper clip	great customer	cars	paper
leaf fall	bottom	toy	napkin
ball	staircase toy	toy train	spoon
pipe cleaner	toy car	toy train	spoon

Learning Objectives:

- The student will describe the effect magnets have on other objects
- The students will categorize objects as "magnetic" or "not magnetic"

Procedure:

1. Provide a bowl full of different magnets.
2. Encourage the students to hang paper clips from the magnets.
3. Describe the magnet's strength.

Force & Motion #2 Attract & Repel

As young children begin to explore magnets, they may notice that 2 magnets have interesting effects on each other. Set up this "attractive" invitation to play at the science center!

Recommended Supplies:
2 magnets

Learning Objectives:

- The student will observe and describe the effects that magnets have on other magnets
- The student will begin to use the terms "attract" and "repel"

Procedure:

1. Give students 2 magnets. Ask them to bring them together and describe what happens.

Force & Motion #3 How Strong?

Some magnets are so weak that they can't even hold a paper on the fridge. Others are so strong they can pick up a car! This center invites children to determine the strength of different magnets.

Recommended Supplies:

- magnets of varying sizes and strengths (small magnetic letter, horseshoe magnet, magnetic bingo wand, etc.)
- paper clips

Learning Objectives:

- The student will describe different magnets in terms of their strength.
- The student will order magnets from weakest to strongest.

Procedure:

1. Provide a bowl full of different magnets.
2. Encourage the students to hang paper clips from the magnets.
3. Describe the magnet's strength.

Force & Motion #4 Can it Roll?

Children naturally explore force at the playground when they go down the slide, and at the block center when they push a car down a ramp. This center encourages them to think more closely about why and how things roll.

Recommended Supplies:

- ramp (wooden block ramp, or a homemade version with small blocks and a piece of cardboard)
- materials to test

Learning Objectives:

- The student will ask questions and make predictions.
- The student will test the predictions through experimentation.
- The student will describe the rolling motion.

Procedure:

1. Give students a ramp and a car. Ask them to push the car down the ramp and describe what happens.

Force & Motion #5 Can it Spin?

Children spin on the playground merry-go-round and when they twirl a top or pinwheel. At this center, they can explore spinning (and get some fine motor practice as well!)

Recommended Supplies:

top	die	board game
dredel	CD or DVD	spinner
fidget spinner	plastic egg	pinwheel
lazy susan	solid spinner	yo-yo

Learning Objectives:

- The student will make a prediction, then test it through experimentation.
- The student will describe the spinning motion and how to make objects spin.

Procedure:

1. Talk about spinning. Can the students spin their bodies around? What other objects can spin?
2. Display the recommended supplies in the science center and pose the question, "Can you make it spin?"
3. Encourage the students to make a prediction about each object and then test their predictions.
4. Ask the students to describe what happens to the objects when they spin them ("They go around" or "They go in circles" etc.)

Force & Motion #6 Can the wind move it?

Wind is a very powerful force. It moves seeds, sand, and water. Students will explore the force of wind at this center.

Recommended Supplies:

Wind Source:
small battery-powered fan, accordion-style fan, balloon hand pump or disposable drinking straws

Test Objects:
cotton ball, leaf, rock, apple, play dough, feather, scissors, janderson, paper cup, pinwheel, tissue

Learning Objectives:

- The student will describe wind
- The student will make predictions then test them through experimentation.

Procedure:

1. Show the posters and ask the students to talk about wind. Have they ever flown a kite? Blown on a dandelion? Seen a wind turbine along the side of the road?
2. Talk about what wind is and how it works.
3. Invite students to create "wind" at the science center and experiment to see whether or not it will move different objects.

Book Recommendations:

- The Itsy Bitsy Dredel* by Jeffrey Burton and Chani Tornow
- Pinwheel* by Salina Yoon
- The Wind Blow* by Pat Hutchins
- Like a Windy Day* by Frank Asch
- One Windy Day* by Tammi Sotomoto
- When the Wind Blows* by Linda Booth Sweeney
- Leaf Man* by Lois Ehlert
- The Three Little Pigs* by James Marshall

Force & Motion #1

Magnets

Children have probably used refrigerator magnets to display their artwork in the kitchen at home! Allow students to further explore magnets at this center.

Recommended Supplies:

magnets (refrigerator magnets or magnetic wands work well)

Safety notes: Be sure that the magnets are big enough not to pose a choking hazard. Small objects can be placed inside a plastic bottle for safety. Do not use magnets near electronic equipment!

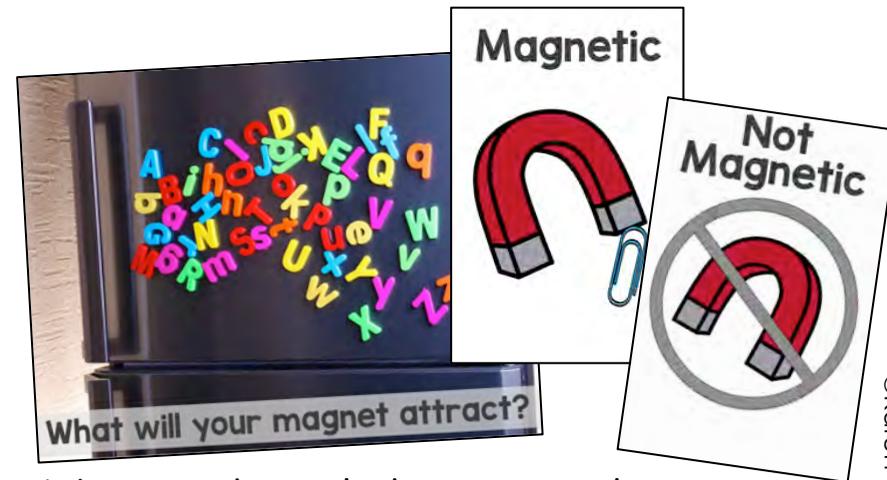
paper clip	brad fastener	coins	pencil
twist tie	battery	button	marble
nail	aluminum foil	key	toy train
pipe cleaner	tin soup can	scissors	spoon

Procedure:

1. Provide magnets and a tray of objects. (Include magnetic objects, as well as other metal and “shiny” objects that are not magnetic.)
2. Invite students to explore the objects with their magnet wands.
3. Encourage them to describe what happens. Introduce the term “attracted to”.

Learning Objectives:

- The student will describe the effect magnets have on other objects.
- The students will categorize objects as “magnetic” or “not magnetic.”



Warning: Do not place magnets near mobile phones or other electronic devices!

Book Recommendations:

What Magnets Can do by Allan Fowler
A Look at Magnets by Barbara Alpert

Force & Motion #2

Attract & Repel

As young children begin to explore magnets, they may notice that 2 magnets have interesting effects on each other. Set up this “attractive” invitation to play at the science center!

Recommended Supplies:

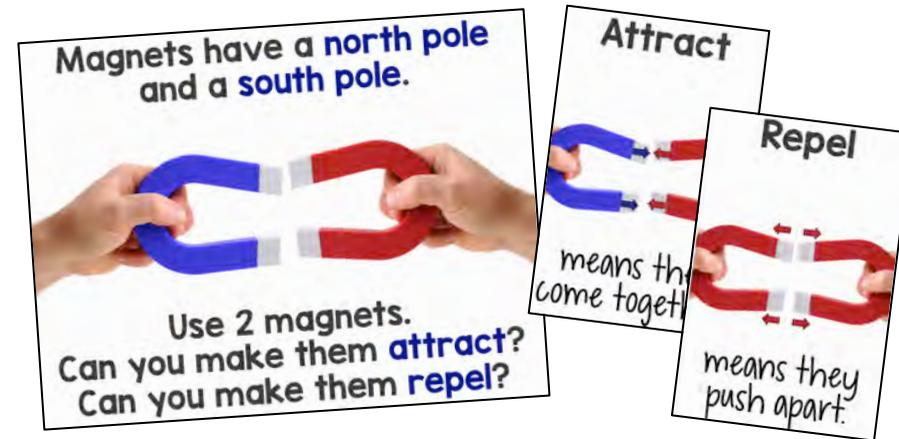
2 magnets

Procedure:

1. Give the students 2 magnets. Ask them to touch them together and describe what happens.
2. Encourage the students to turn one magnet over and touch them together again. What happens?
3. Allow them to explore with the 2 magnets. Offer challenges such as, “Can you move one of the magnets without touching it?”

Learning Objectives:

- The student will observe and describe the effects that magnets have on other magnets.
- The student will begin to use the terms “attract” and “repel”.



Book Recommendations:

Magnets: Pulling Together, Pushing

Apart by Natalie Rosinsky

Motion: Push and Pull, Fast and Slow by

Darlene Stille

Force & Motion #3

How Strong?

Some magnets are so weak that they can't even hold a paper on the fridge. Others are so strong they can pick up a car! This center invites children to determine the strength of different magnets.

Recommended Supplies:

- magnets of varying sizes and strengths (small magnetic letter, horseshoe magnet, magnetic bingo wand, etc.)
- paper clips

Procedure:

1. Provide a bowl full of paper clips and a number of different magnets.
2. Encourage the students to hold the magnet and hang paper clips from it. Count the paper clips. How many did the magnet hold?
3. Describe the magnets as weak, stronger, and strongest.

Learning Objectives:

- The student will describe different magnets in terms of their strength.
- The student will order magnets from weakest to strongest.



Book Recommendations:

The Three Little Rigs by David Gordon

Force & Motion #4

Can it Roll?

Children naturally explore force at the playground when they go down the slide, and at the block center when they push a car down a ramp. This center encourages them to think more closely about why and how things roll.

Recommended Supplies:

- ramp (wooden block ramp, or a homemade version with small blocks and a piece of cardboard)
- materials to test:

toy car	cotton ball	plastic egg	battery
ball	apple	coins	block
CD or DVD	ping pong ball	marble	eraser
pencil	roll of tape	button	

Procedure:

1. Set up a ramp and provide a basket of materials to test.
2. Pose this question to the students: "Will it roll down the ramp?"
3. Encourage students to make a prediction about each object, then test the prediction.
4. Discuss the difference between rolling and sliding, and why some objects roll while others do not.

Learning Objectives:

- The student will ask questions and make predictions.
- The student will test the predictions through experimenting.
- The student will describe the rolling motion.



Book Recommendations:

The Wheels on the Bus by Raffi
The Runaway Pumpkin by Kevin Lewis
Snowballs by Lois Ehlert
Little Mouse and the Big Red Apple by A.H. Benjamin
The Roly-Poly Egg by Kali Stileman

Force & Motion #5

Can it Spin?

Children spin on the playground merry-go-round and when they twirl a top or pinwheel. At this center, they can explore spinning (and get some fine motor practice as well!).

Recommended Supplies:

top	dice	board game
dredel	CD or DVD	spinner
fidget spinner	plastic egg	pinwheel
lazy susan	salad spinner	yo-yo

Procedure:

1. Talk about spinning. Can the students spin their bodies around? What other objects can spin?
2. Display the recommended supplies in the science center and pose the question, "Can you make it spin?"
3. Encourage the students to make a prediction about each object and then test their predictions.
4. Ask the students to describe what happens to the objects when they spin them. ("They go around." or "They go in circles" etc.)

Learning Objectives:

- The student will make a prediction, then test it through experimentation.
- The student will describe the spinning motion and how to make objects spin.



Book Recommendations:

The Itsy Bitsy Dreidel by Jeffrey
Burton and Chani Tornow
Pinwheel by Salina Yoon

Force & Motion #6

Can the wind move it?

Wind is a very powerful force. It moves seeds, sand, and water. Students will explore the force of wind at this center.

Recommended Supplies:

Wind Source:

small battery-powered fan, accordion-style fan, balloon hand pump or disposable drinking straws

Test Objects:

cotton ball	block	leaf	rock
feather	scissors	dandelion	apple
tissue	paper cup	pinwheel	play dough

A small kite makes a beautiful display at this center.

Procedure:

1. Show the posters and ask the students to talk about wind. Have they ever flown a kite? Blown on a dandelion? Seen a wind turbine along the side of the road?
2. Talk about what wind is and how it works.
3. Invite students to create "wind" at the science center and experiment to see whether or not it will move different objects.

Learning Objectives:

- The student will describe wind.
- The student will make predictions then test them through experimentation.



Book Recommendations:

The Wind Blew by Pat Hutchins
Like a Windy Day by Frank Asch
One Windy Day by Tammi Salzano
When the Wind Blows by Linda Booth Sweeney
Leaf Man by Lois Ehlert
The Three Little Pigs by James Marshall