

Teacher \_\_\_\_\_ Date \_\_\_\_\_ Class \_\_\_\_\_

Period(s) \_\_\_\_\_

Grade: 2 Course: Science

Lesson Topic: Magnetism

Objectives		Correlation to State Documents		
The student should be able to:		COS	SAT 9	AHSGE/EXIT
1) Describe observable effects of force		2:16		
2) Identify questions that can be answered through scientific investigation		2: 1		
3) Use appropriate skills to design and conduct a scientific investigation		2: 4		
Activities/Methods		Resource Materials		Assessment
1. Introduce the topic of magnets. Discuss attraction. (Use <i>Teacher Cheat Sheet</i> if needed) Use magnetite and paper clips in discussion.		Textbook		Check homework
2. Divide class into teams of four: <b>writer, examiner, experimenter, and organizer.</b> (Class of 24= 6 groups of 4)		Overhead Masters		Test/Quiz
3. Give each team 1 set of magnets, a ruler, pencils, 1 “Magnets” sheet, and a sheet of loose paper they can fold		X	Workbook/Handouts	Project
4. Ask the “writer” to write names of group members on the “Magnets” sheet.			Multimedia Materials	X Participation
5. Ask “Organizer” to give a magnet to the “experimenter” and one to the “examiner.”		X	Hands-On Materials	Class work
6. Ask the “experimenter” and “examiner” to pull magnets apart and move them together again to point of attraction so that “organizer” can measure distance and inform “writer” to record.		X	Reference Materials	Review
7. Ask “Organizer” to place the sheet of paper between the magnets. Team must decide if attraction still pulls magnets together with same strength. “Writer” record outcome.			Other Supplies	Presentation
8. Ask “Organizer” to fold paper in half. Place on top of one magnet. Place other magnet on top of paper. Paper will be between magnets. Then, Teams decides if attraction still holds the same way.				X Oral Responses
9. “Organizer” fold paper again and place between magnets... “Organizer” repeats folding paper again... “Organizer” folds... until attraction completely fails. Outcome should be recorded each time by “writer.”				X Teacher Observation
10. Ask team to “guess” why attraction failed. “Writer” record team explanation				Other
11. Discuss explanations. Explain relationship of evidence and explanation				
	Accommodations	Initials	Remediation Activities	
<b>Comments:</b>	Extended Time			
<i>Set up includes:</i> gathering materials and distributing to teams	Preferential Seating			
<i>Materials to distribute include:</i> Magnets, ruler, “Magnets” hand-out, loose paper. Magnetite and paper clips	Testing Accommodation			
	Segmented Assignments		Enrichment Activities	
<b>Extend activity as students design their own experiments with magnets :</b>	Copy of Teacher Notes		Cooperative learning	
Allow teams to try magnets on metal, plastic, and glass. Teams record response and speculate on why magnets do not work on plastic or glass materials.	Assignment Length			
	Communication		Character Education	
	Assignment Notebook		Respect for environment	
	Peer Tutor			
<b>Homework:</b>	Other: Copy of chart			

Non Instructional Events \_\_\_\_\_

# MAGNETS

**Name of the writer:** \_\_\_\_\_

Your job is to write things down.

**Name of the organizer:** \_\_\_\_\_

This job is to give out supplies. You also will try using magnets with paper.

**Name of the experimenter:** \_\_\_\_\_

This job is to work with the “examiner” to feel magnets attract. You will also use magnets with paper.

**Name of the examiner:** \_\_\_\_\_

This job is to work with the “experimenter” to feel magnets attract. You will also use magnets with paper.

Circle the correct word.

We felt the magnets pull together when they were \_\_\_\_\_ than 1 inch apart.

- a. more**                      **b. less**

## Magnet Power

Circle “Yes” or “No.” Answer “why or why not.”

	Did magnets stick?		Why or why not?
1. 1 <sup>st</sup> time paper was <b>between</b> magnets.	YES	NO	
2. Paper was folded in <b>half</b> .	YES	NO	
3. Paper was folded <b>again</b> .	YES	NO	
4. Paper was folded for <b>the 3<sup>rd</sup> time</b> .	YES	NO	

# MAGNETS “Teacher Cheat Sheet”

## Set Up:

Divide class into teams of 4.

Assign each student a role as the “writer,” “organizer,” “examiner,” or “experimenter.”

Distribute magnet sets, ruler, and loose paper.

Distribute “Magnets” hand-outs.

After class discussion, allow teams to test the attraction between magnets.

## Directing discussions:

**Why magnets attract:** Magnets are made of special metals called ferromagnetic metals. Iron and nickel are two of these special metals. Magnetite is another.

All things, including metals, are made up of tiny bits called atoms. When the atoms line up in a certain way a domain is made. The atoms all act alike creating a magnetic field. It’s like a group of kids pulling as one team during tug of war. The other kids are pulled toward the team.

Attraction is when a magnet made of one of these special metals pulls another object to it. Attraction works as long as nothing stops the magnet from pulling something toward it.

Look how the paper clips stick to the magnetite. What do you think will happen to the magnets and the magnetic field when I put something like paper between the magnetite and the paper clip?

## Activity:

You will work together as teams to test magnets.

You will each have an important job to do for the team.

You will feel magnetic force and try to stop magnets from pulling each other.

You will have to observe what happens and think about what is happening to answer your questions.

If time permits, you will design your own experiment to test magnetism.

## Experiment:

**Teacher guides teams through the steps allowing time for teams to answer questions.**

1. Materials are given to each team.
2. Team members are given tasks. The “writer” records the name of members by their assigned task.
3. “Organizer” gives 1 magnet to the “experimenter” and 1 to the “examiner.”
4. “Experimenter” and “examiner” pull the magnets apart to point of attraction- you can feel magnets pulling toward each other. “Organizer” uses ruler to determine if the point of attraction for the magnets is *more* or *less* than 1 inch. “Writer” circles the answer (should be <1 inch).
5. “Organizer” places sheet of paper between the magnets. Team answers “Did the magnets still stick?” Team must hypothesize “why or why not.”
6. “Organizer” folds paper in half and places between magnets. Team answers “Did the magnets still stick?” Team must hypothesize “why or why not.”
7. “Organizer” folds paper in half again and places between magnets. Team answers “Did the magnets still stick?” Team must hypothesize “why or why not.”
8. Paper is folded to point of magnet failure.

### Lead discussion of why magnets failed.

1. Ask teams to design their own experiment to test what magnets are attracted to. Have them write it on the back of the *MAGNETS* hand-out.
2. Experiments may include trying magnets on plastic or glass objects or may try slipping cloth or other material between magnets to discover point of attraction failure.
3. Allow groups to share their findings.