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Magnets Curriculum Map

What is a magnet and how does it work? These simple but fun hands-on activities and experiments will put your students in charge of their own learning as they are given the tools and guidance to discover the fascinating world of physics.

After delving into real-world experiences with magnets and everyday materials like money and compasses, students will apply their new knowledge to build a levitating train and create their own magnetic inventions.

The experiments in this curriculum fall under six topics: **Magnets and Magnetic Materials, Temporary and Permanent Magnets, Magnetic Poles, Magnetic Strength, Magnetic Fields, and Compasses and Magnets.**

A seventh section on **Magnets and Inventions** provides an excellent way to integrate the material that has been learned and introduce a technology component to the curriculum.

In each section, you will find teacher notes designed to provide you guidance with the materials needed, as well as provide some insight on what results to expect when the experiments are conducted.

Introduction Includes:

- At A Glance TM - List of Skills and Learning Expectations
- Teacher Rubric
- Student Rubric
- Introduction
- Materials List

Lesson Topics:

Magnets and Magnetic Materials

- Teacher Notes
- Student Activities
 - **What Do You Know?**
 - **Explore Magnets!**
 - **Horse Shoes**
 - **What's Magnetic?**
 - **Pick It Up**
 - **I Know What Is Magnetic**
 - **What About Your Bicycle?**
 - **Shopping For Magnetic Materials**
 - **What Is in My Cereal? (Iron)**
 - **Magnetic Money**
 - **A Natural Magnetic**
- Answer Key

Temporary and Permanent Magnets

- Teacher Notes
- Student Activities
 - **A Spoonful of Paperclips**
 - **Make a Magnetic**
 - **Can a Ruler Become a Magnetic?**
- Answer Key

Magnetic Poles

- Teacher Notes
- Student Activities
 - **Where's the North Pole?**
 - **North and South**
 - **Donut Magnets**
 - **Floating Donut Magnets**
- Answer Key

Magnet Strength

- Teacher Notes
- Student Activities
 - **Strong Magnets**
 - **What Did You Learn?**
 - **Magnetic Wordsearch**
- Answer Key

Magnetic Fields

- Teacher Notes
- Student Activities
 - **Magnetic Strength**
 - **Magnetic Artwork**
 - **Uncover the Magnetic Field**
 - **Can Magnets Be Blocked?**
- Answer Key

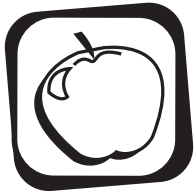
Magnets and Compasses

- Teacher Notes
- Student Activities
 - **The Earth Is a Big Magnetic!**
 - **What Is a Compass?**
 - **Draw Your Compass**
 - **How Does a Compass Work?**
 - **A Compass Story**
 - **Compass and Magnet**
 - **Make a Little Earth**
 - **Little Earth Template**
 - **Make a Compass**
 - **Magnetic Crossword**
 - **Magnets Poster**
- Answer Key

Inventions with Magnets

In this section, students will recognize how magnets are used in everyday life.

- Teacher Notes
- Student Activities
 - **Inventions Using Magnets**
 - **Be a Magnet Inventor**
 - **Build a Magnet Invention**
 - **Magnetic Magic**
 - **Invent a Magic Trick**
 - **Magnet Guessing Game**
 - **A Magnetic Levitation Train**
 - **Build a Magnetic Levitation Train**
 - **Electro-Magnet**
- Answer Key



Magnet Strength

Teacher Notes

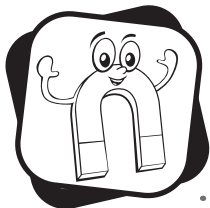
Strong magnets

The students will calculate the strength of a magnet using paperclips. The more paperclips that can be held by the magnet, the stronger it is.

If you provide different teams with different magnets, they will discover that some magnets are stronger than others.

This experiment also introduces the idea of repeated trials. The students are asked to repeat their measurement three times. They may not obtain exactly the same answer each time, which is perfectly fine. The following points can be brought up:

1. **In scientific experiments, it is important to write down exactly the results obtained.**
2. **If the results are not exactly the same each time, it is normal; a small difference is not necessarily the experimenter's "fault".**
3. **Scientists repeat experiments many times to check their results. This helps them avoid reaching the wrong conclusion because of a mistake, a broken piece of equipment, or even luck.**



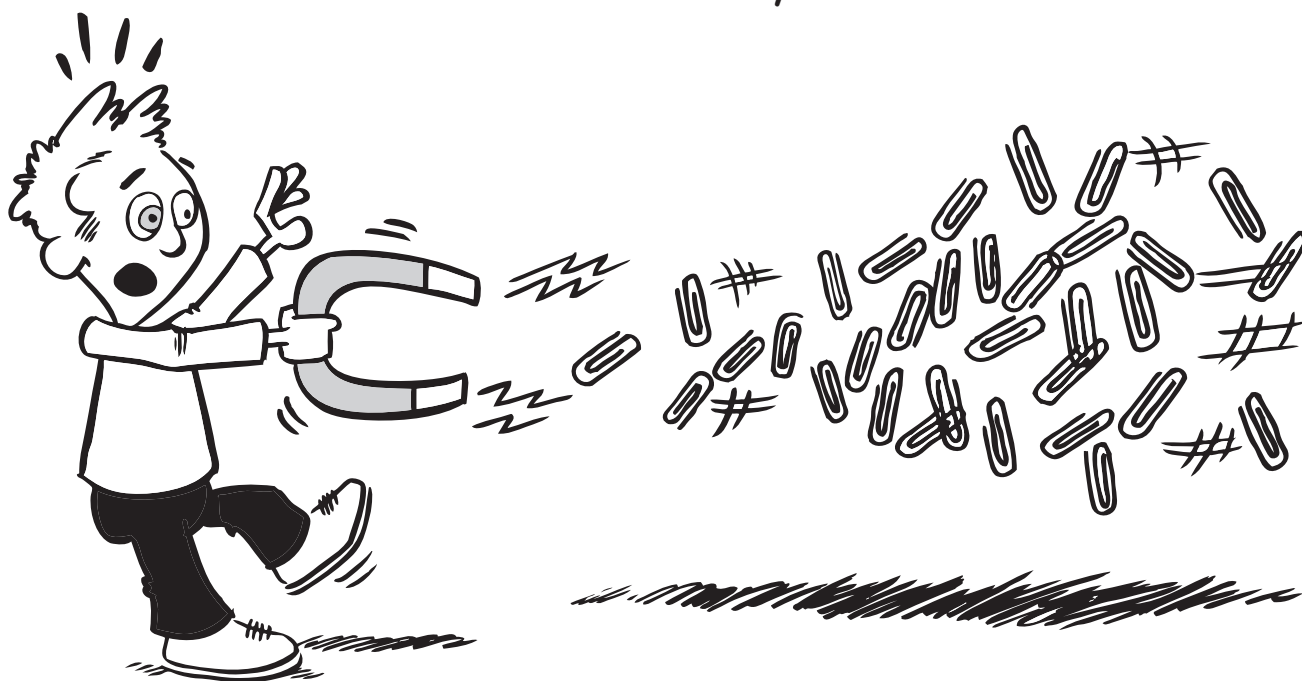
Strong Magnets

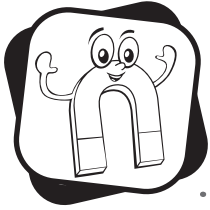


- a magnet
- a box of paperclips



1. Try to guess how many paperclips you can stick to your magnet.
2. Try to stick as many paperclips as you can on the magnet.
3. Count how many paperclips stick to the magnet. Write down your result.
4. Try it again two more times.
5. Compare your results with your classmates'.





Name: _____

Strong Magnets

Worksheet



1. How many paperclips do you think you can stick to your magnet? _____

2. How many paperclips could you stick to your magnet?



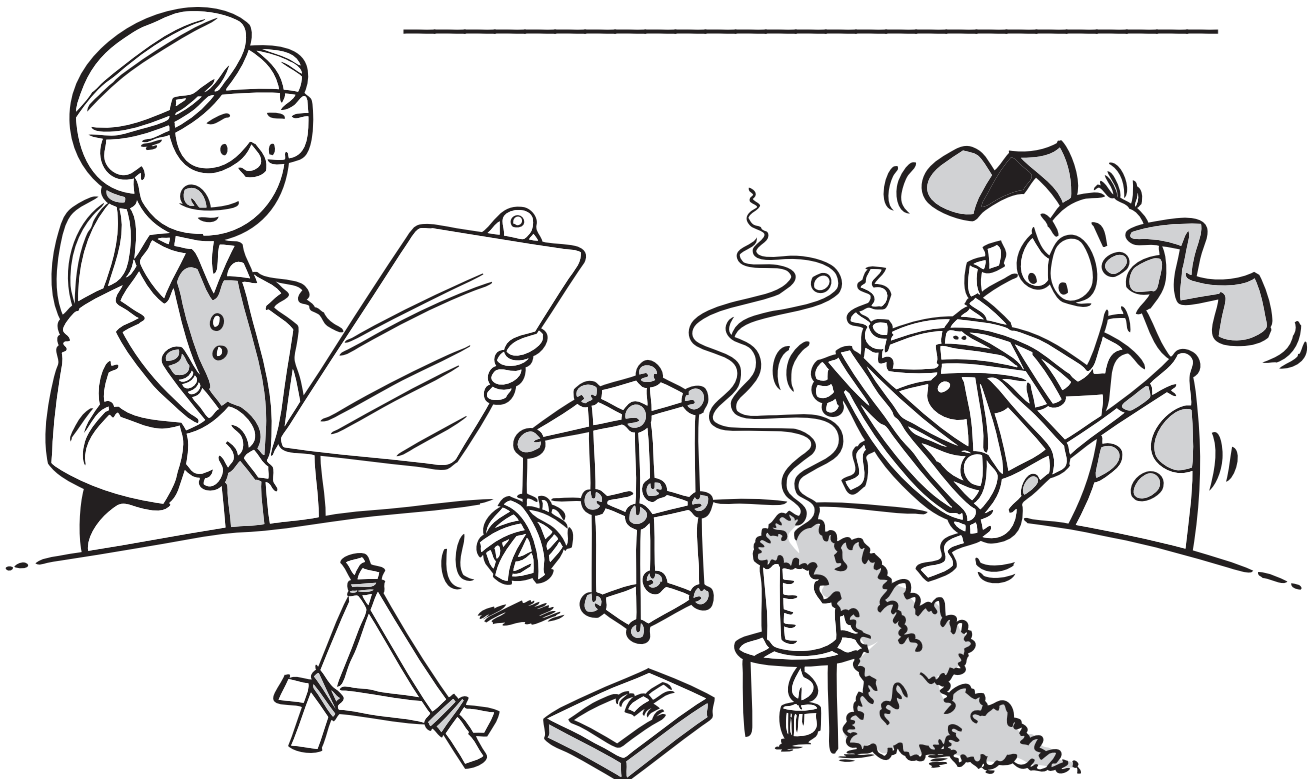
Try #1: _____

Try #2: _____

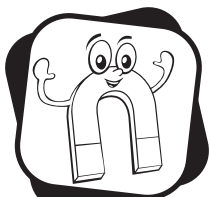
Try #3: _____



3. Why do scientists repeat experiments many times? _____

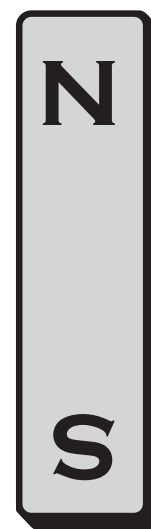
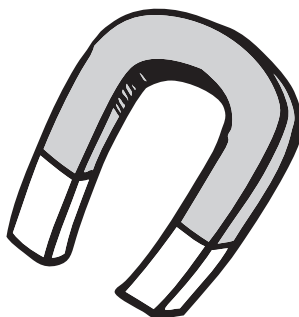
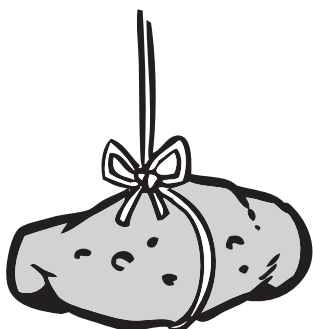


Name: _____



What Did You Learn?

Cut out the words and glue them at the right place.



lodestone

horseshoe
magnet

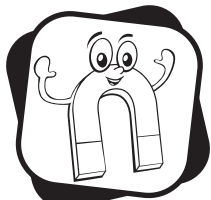
north pole

north pole

bar magnet

south pole

south pole



Name: _____

Magnetic Wordsearch

h	t	u	o	s	s	c	i	e
o	e	n	t	h	t	r	o	n
r	g	l	u	e	l	o	p	o
s	l	r	m	a	g	n	e	t
e	a	d	e	n	o	o	p	s
s	e	o	m	e	t	a	l	e
h	r	o	i	s	k	o	t	d
o	e	w	i	r	o	n	o	o
e	c	i	t	s	a	l	p	l

cereal
glue
Greek
horseshoe
iron

lodestone
magnet
metal
north
plastic

pole
spoon
south
tool
wood

Leftover letters:

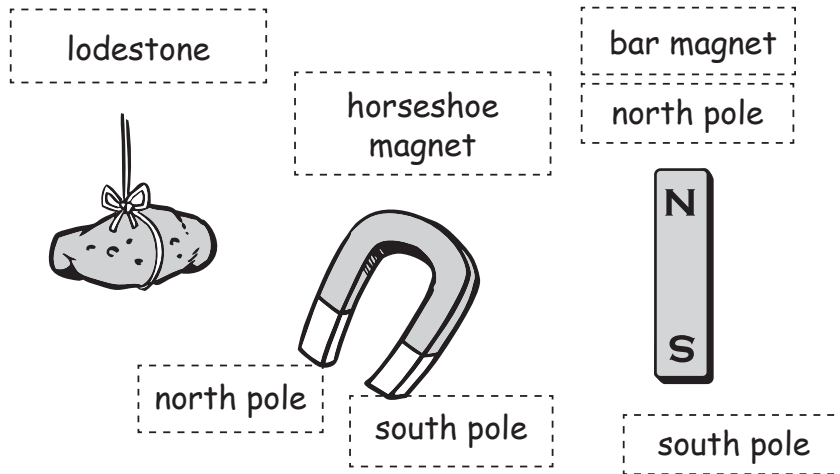
Would you like to be a _____?

Answer Key Magnet Strength

Strong Magnets

1. How many paperclips do you think you can stick to your magnet? Answers will vary.
2. How many paperclips could you stick to your magnet? Answers will vary. The numbers should be close, but not necessarily identical, for all three trials.
3. Why do scientists repeat experiments many times? Answers will vary. For example: To make sure their results are accurate.

What Did You Learn?



Magnetic Wordsearch

Would you like to be a
SCIENTIST?

