

# MAGNET MANIA

## Unit Overview

“Magnet Mania” is a three-part unit specifically designed to make the study of magnets a truly exciting classroom experience. The “hands-on” approach offers the students an opportunity to explore magnets, how they work, and their uses with the teacher as a facilitator or guide. “**In Part I - Core Teaching Lessons**”, students learn key concepts related to this exciting topic. “**Part II - Student Notes**” consists of fact-based information presented in a fun way that younger students will love. “**Part III - Optional Lessons**”, investigates charged particles and outlines an additional nineteen activities, allowing the teacher to build flexibility into the unit. A must for your science class!

## Part I - Core Teaching Lessons

- 1) **What Are Magnets?** - Magnets Wordsearch
- 2) **Kinds Of Magnets** - Experiment Worksheet - “Kinds Of Magnets”
- 3) **What Will A Magnet Pick Up?** - Experiment Worksheet - “Pick Me Up”
- 4) **Magnetic Fields** - Experiment Worksheet - “Magnetic Patterns”
- 5) **North And South Poles** - Experimental Worksheet - “How Much Strength”
- 6) **Making Magnets** - Experimental Worksheet - “Making Magnets”
- 7) **Earth: The Largest Magnet** - Experimental Worksheet - “The Largest Magnet”
- 8) **Electromagnets** - Experiment Worksheet - “Electromagnets”
- 9) **Uses Of Magnets** - Experiment Worksheet - “Homemade Compass”
- 10) **Magnet Review** - Worksheet - “Magnets”

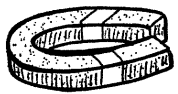
## Part II - Student Notes

These “notes” can be copied from an overhead projector, written on the board or given to the students as handouts. The notes provide structure and an informational base for the unit with each of the sections relating to core lessons listed above.

## Part III - Optional Lessons

Teachers may choose from this extensive list of optional activities for enrichment, review, or to simply add flexibility to the unit.

- |                             |   |
|-----------------------------|---|
| 1) Jumping Brads            | 2) Magnetic Magic                         |
| 3) Poles Apart              | 4) Creative Writing Suggestions           |
| 5) Estimating (Math)        | 6) Finding The Mass                       |
| 7) Research Topics          | 8) Magnetic Tag                           |
| 9) Magnetic Relay           | 10) Magnet Mania                          |
| 11) Magnetic Sculpture      | 12) Refrigerator Magnets - Cool Stuff     |
| 13) Magnet Movies           | 14) Crocodile Magnet                      |
| 15) Letter To Parents       | 16) Important Terms                       |
| 17) Magnet Crossword Puzzle | 18) Magnet Pictograms                     |
| 19) Optional Student Notes  | 20) Water Attraction (Static Electricity) |

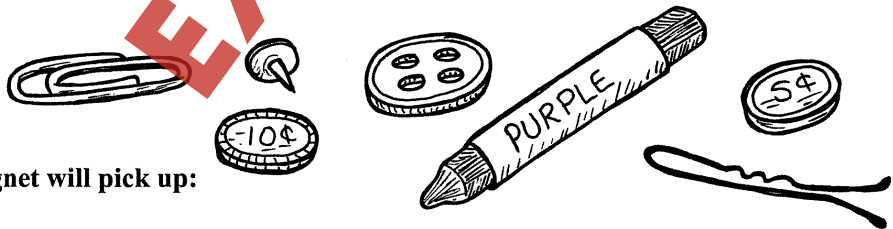


### PICK ME UP

Name: \_\_\_\_\_

Predict which objects a magnet will pick up. Place a check mark beside the objects **you think** a magnet will pick up. Test the objects with a magnet. Place a check mark beside the objects that the magnet picks up.

Object	Prediction	Magnet Picked Up
nail		
stick		
paper clip (metal)		
paper clip (plastic)		
tack		
button (metal)		
button (plastic)		
brass fastener		
penny		
nickel		
dime		
quarter		
hairpin		
crayon		



A magnet will pick up:

\_\_\_\_\_

\_\_\_\_\_

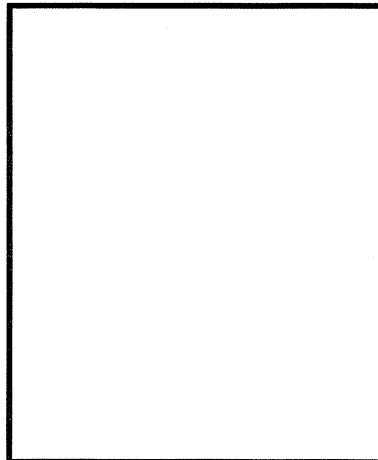


### MAGNETIC PATTERNS

Name: \_\_\_\_\_

Illustrate the magnetic field around the magnets.

The entire bar magnet



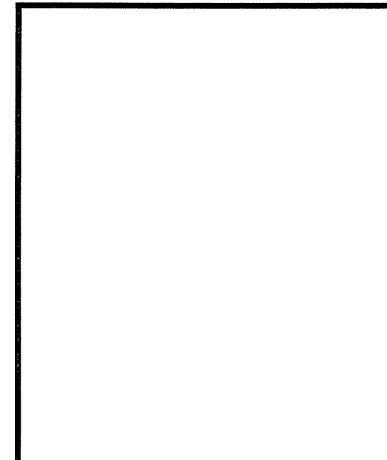
The north and south poles of two magnets facing each other



The 2 north ends of bar magnets facing each other



The two south ends of bar magnets facing each other



### HOMEMADE COMPASS

Name: \_\_\_\_\_

What are the similarities and differences between the compass you made and one you buy in the store?

Similarities:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Differences:

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Is your homemade compass easy and practical to use? Why?

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Draw a picture of your simple compass:

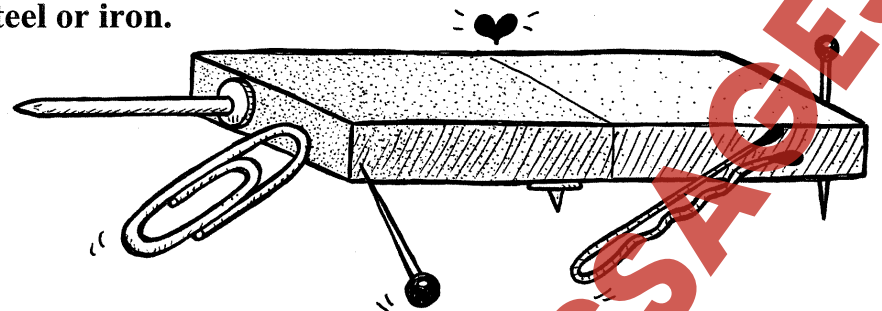
\_\_\_\_\_

\_\_\_\_\_

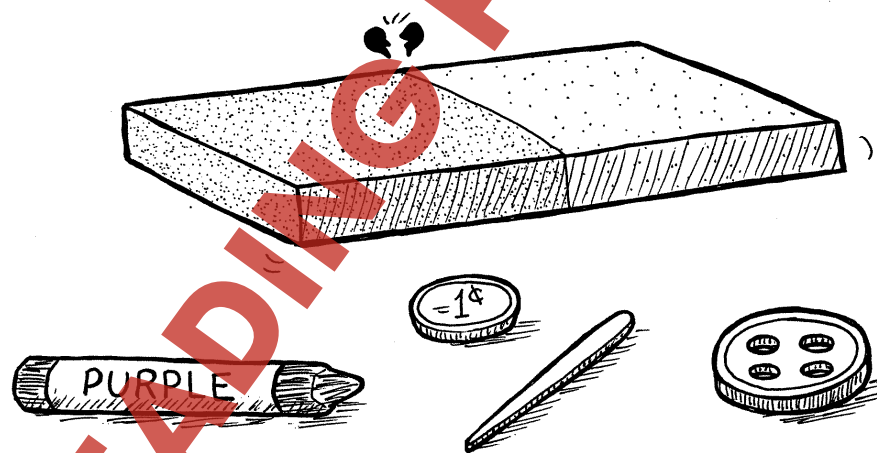
\_\_\_\_\_

### What Will A Magnet Attract?

Magnets attract objects that contain the metals iron, nickel or steel. These are called *magnetic materials*. Magnets attract nails, paper clips, tacks, and hairpins because they contain some steel or iron.



Objects made out of wood, glass, plastic, copper or gold are called *non-magnetic*. Non-magnetic materials are not affected by magnets and for this reason, a magnet will not pick up a toothpick, plastic button, crayon or penny.



**Factfile:** Objects made of magnetic materials can be turned into magnets or "magnitized".

Dear \_\_\_\_\_,

I enjoyed seeing your work samples. I really liked:

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One thing I would like you to work on is:

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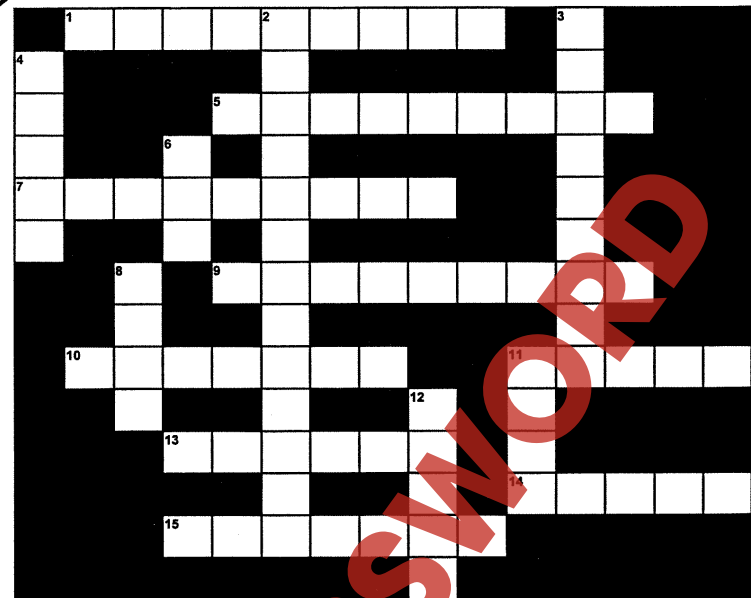
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Love from \_\_\_\_\_

LETTER WRITING

### MAGNET CROSSWORD

Name: \_\_\_\_\_

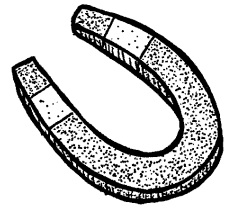


#### Across

- The name for the force that a magnet can have on another object.
- A magnet that loses its strength after a time is called this.
- A type of rock that is a magnet.
- A horse might wear a magnet shaped like this, on its foot.
- My needle always points north.
- What "like" poles of two magnets do.
- A strong magnet made out of aluminum, nickle, cobalt and iron.
- This is the biggest magnet in the world.
- "Opposite" poles of two magnets do this.

#### Down

- This type of magnet can be used to pick up cars!
- One pole of a magnet is called this - Santa also lives here.
- The area around a magnet where the magnetic force can act is called the "magnetic \_\_\_\_\_" (People also play football on one of these.)
- Do you love science?
- This metal is often found in metals.
- "\_\_\_\_\_ " earth magnet - a strong, permanent magnet.
- A push or a pull.



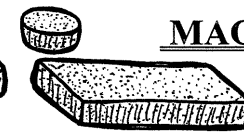
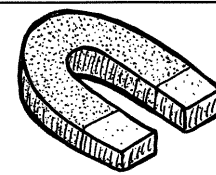
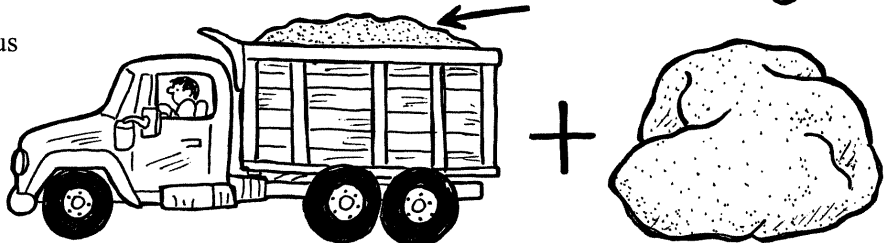
### MAGNET PICTOGRAMS

Name: \_\_\_\_\_

Use the clues below to solve the "pictograms".



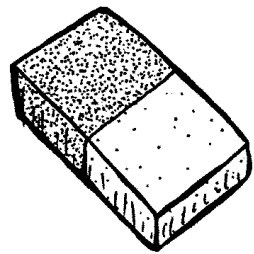
Bonus



### MAGNETS

Name: \_\_\_\_\_

- Every magnet has \_\_\_\_\_ poles.
- The poles of a magnet are called the \_\_\_\_\_ pole and the \_\_\_\_\_ pole.
- Name three different kinds of magnets.  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
- The strongest parts of a magnet are \_\_\_\_\_.
- Name materials that a magnet will attract.  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
- Name some materials that magnets will not attract.  
\_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_
- What is the largest magnet?  
\_\_\_\_\_
- What is the "law of magnetism"?  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
- Explain how to make a temporary magnet.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



# MAGNET WORDSEARCH

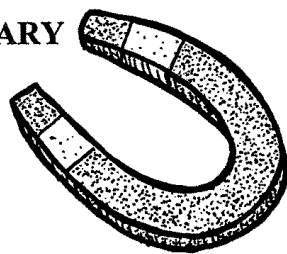


Name: \_\_\_\_\_

V F E L E C T R O M A G N E T  
 A V B V L J M A S X E E O E W  
 Y Z M K H I F I F U N K N L J  
 F Q C A T X T Z M O N G M E G  
 D E O L G E U J T N A E A C S  
 R V M Q N N M S P M C S G T R  
 W S P G C Y E P H R F P N R G  
 Z N A M Q D A T O M S C E O E  
 K M S T O X R F I R O N T N A  
 O R S L T A R G M C A K I S U  
 V N U W E R K M I M F R C T L  
 H E P E R M A N E N T I Y E Z  
 Q N R E P E L C A Z P U E E Z  
 Z A C O B A L T T N I C K L E  
 R T A B J L Y S P S Y R G G D

# ANSWER KEY

- |         |               |                |                   |
|---------|---------------|----------------|-------------------|
| ALNICO  | ELECTROMAGNET | MAGNETIC FIELD | RARE EARTH MAGNET |
| ATOMS   | ELECTRONS     | MAGNETISM      | REPEL             |
| ATTRACT | FORCE         | NICKLE         | STEEL             |
| COBALT  | IRON          | NONMAGNETIC    | TEMPORARY         |
| COMPASS | LODESTONE     | PERMANENT      |                   |



# MAGNETS WORDSEARCH (Answer Key)



V F E L E C T R O M A G N E T  
 A V B V L J M A S X E E O E W  
 Y Z M K H I F I F U N K N L J  
 F Q C A T X T Z M O N G M E G  
 D E O L G E U J T N A E A C S  
 R V M Q N N M S P M C S G T R  
 W S P G C Y E P H R F P N R G  
 Z N A M Q D A T O M S C E O E  
 K M S T O X R F I R O N T N A  
 O R S L T A R G M C A K I S U  
 V N U W E R K M I M F R C T L  
 H E P E R M A N E N T I Y E Z  
 Q N R E P E L C A Z P U E E Z  
 Z A C O B A L T T N I C K L E  
 R T A B J L Y S P S Y R G G D

- |         |               |                |                   |
|---------|---------------|----------------|-------------------|
| ALNICO  | ELECTROMAGNET | MAGNETIC FIELD | RARE EARTH MAGNET |
| ATOMS   | ELECTRONS     | MAGNETISM      | REPEL             |
| ATTRACT | FORCE         | NICKLE         | STEEL             |
| COBALT  | IRON          | NONMAGNETIC    | TEMPORARY         |
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