POWER OF MAGNETS

TEACHER GUIDE

ACCELERATE

PLANNING

Here's a suggested schedule for this kit! The activities should be completed in order, but you can choose when the lessons take place over time.

ACTIVITY INFORMATION	SECTION (S)	TIME REQUIRED	DAY/ LESSON
ACTIVITY 1: MATCHES AND MAGNETS Do matches hold a mysteriously magnetic secret? Let's find out! **Time required: 30 min**	☐ Burning Up	30 minutes	Day 1
ACTIVITY 2: POWERFUL PAPER CLIPS Can you turn paper clips into a magnet? If so, how does it compare to the real thing? **Time required: 1 h 30 min**	☐ There's the Rub	45 minutes	Day 2
	☐ Stick to the Magnet Facts	45 minutes	Day 3
ACTIVITY 3: IRON OUT THE DETAILS Use iron filings to see what a magnetic field *really* looks like. **Time required: 2 h**	☐ Filings Field	45 minutes	Day 4
	☐ [illegible]		
ACTIVITY 4: PYRAMID OF [illegible]			

Question 3: What are two questions you have about the magnetic matches?
Answer: Answers will vary.
How to Help:
• Prompt your student to think of scientific, testable questions.
• You can provide starters such as "What would happen if…" or "What would have happened if…" and let your student fill in the blank.

activity 2

POWERFUL PAPER CLIPS

Your student just observed how an object can become attractive to magnets through burning. In this activity, they will find out what happens when magnetism "rubs off" on other objects.

LEARNING GOALS:

- **I can ask questions to find out how two objects that are not touching can interact through electricity or magnetism.**
- **I can ask questions to find out what affects the strength of electrical and magnetic forces.**
- **I can do an investigation to show that objects can exert forces on each other if they are not touching each other.**

2 THERE'S THE RUB

PREPARATION AND SUPERVISION

- Your student will do a series of short tests to observe the magnetic abilities of the neodymium magnet and a magnetized paper clip to pick up other paper clips in two different ways (directly touching and in a line).
- The magnet should pick up more paper clips than the magnetized paper clip.
- Both the magnet and the magnetized paper clip should pick up more paper clips when they are directly touching the magnet compared to when each paper clip is only touching other paper clips in a row.

THINK ABOUT IT!

Question 1: How did the attractive power of the magnet compare to the magnetized paper clip? Why do you think that is?
Answer: The student should recognize that the more paper clips picked up, the more powerful the magnet.
How to Help:
• The magnet should have picked up more paper clips than the magnetized paper clip, so if that was the case, the magnet had more attractive power.
• In the next section, magnetic force will be introduced, allowing the student to describe the attraction with better clarity.

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TRANSFER OF POWER

PREPARATION AND SUPERVISION

- Your student will make an electromagnetic motor using the kit components.
- The following vocabulary terms are defined: motor and energy.
- Your student may need help stripping the ends of the wire.
- Help your student test new ways for the motor to work, as indicated in the Student Workbook.
  - Can they make it spin slower or faster? Can they change the components to make it look different but still work?

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SHOW WHAT YOU KNOW

Question 1: You've read about how magnets are useful in many ways and can solve a variety of problems.
a) Write about a time when you used magnets to solve a problem. Were magnets the best solution? Why or why not?
b) Make plans for an invention that uses magnets to solve a problem. Why would magnets make your invention work well compared to other solutions?
Answer: Answers will vary based on student experience and interest.
How to Help: *Look for accurate application of magnetism concepts such as magnetic force pushing and pulling objects, magnetic fields acting in a small area, electromagnets having the ability to be turned on and off, and magnets moving objects without touching them.*

MULTIPLE AGES AND ABILITIES:

If you are teaching multiple students, either of these options would work well in a discussion setting. Have students share their experiences or ideas, and have the other students ask questions related to the concepts of magnetism.

Question 2: A One Pager is a mini-poster, usually just one regular page in size, that shows all the information you've learned about a topic, arranged in a creative and organized way. On a separate piece of paper, make a One Pager about what you've learned about magnets. Be sure to include information about what magnets are, what magnets can do, magnetic force, magnetic field, and electromagnetism.
Answer: One Pagers will vary widely.
How to Help:
• A One Pager is a popular method of performance assessment that allows students choice and freedom but requires them to stay within the boundaries of the content.
• Encourage your student to write neatly and include visuals such as graphic organizers and diagrams. However, don't evaluate their work based on the artistry of their drawings.
• Look for the following qualities to check for understanding using the One Pager:
  • Appropriate usage of most or all vocabulary terms
  • Labeled diagrams showing understanding of what processes look like
  • Examples from and applications to everyday life, showing the ability to extend the concepts to a broad range of situations.

ACCELERATE

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Contact us at: www.homesciencetools.com/customer-service/

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Kit	SU-PWRMAG
Instructions	IN-PWRMAGT
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