

# Lessons at a Glance

## Magnets Unit Overview

The Magnets Unit introduces children to the properties of magnets and allows them to explore the pushing and pulling forces exerted by magnets. Through a variety of hands-on investigations, children test what types of materials are attracted to magnets and how magnets interact with one another. They set up simple investigations to test whether the force of magnets works through different materials and test the strength of different magnets. They examine a number of useful objects in everyday life that employ magnets, and examine how compasses work. This unit provides many opportunities for children to explore, predict, test ideas, make generalizations based on observations, and draw conclusions about the nature of magnets.

## Science Content: Big Ideas

The Magnets Unit concentrates on the following Big Ideas. Along with the scientific Habits of Mind discussed on pages 6-7, these concepts are reinforced throughout the unit. The lessons in which each Big Idea is introduced or is a major focus are indicated in parentheses.

- Magnets cause a push or pull (a force). (Lessons 1-5)
- Magnets pull on (attract) some materials and not others. (Lesson 2)
- Magnetic forces push or pull even if objects don't touch the magnet. (Lesson 3)
- Magnets can push or pull at a distance and through different materials. (Lesson 3)
- You can do useful things with magnets. (Lesson 6)

## Lesson Overviews

The following overviews briefly summarize each lesson in the Magnets Unit. Additional notes and suggestions for scheduling are shown in gray. An asterisk after the lesson title indicates a core lesson.

### *Lesson 0: Doing Science*

Children sharpen their awareness of scientific thinking and become familiar with the “I Wonder” circle as they conduct a self-directed exploration and then reflect on the processes they engaged in. In the context of these experiences, they are introduced to the work of scientists and to the Science Companion “I Wonder” circle, which provides a visual representation of many of the facets of scientific inquiry, exploration, and discovery.

### *Lesson 1: Observing Magnets \**

Children are introduced to the Magnets Unit by exploring what happens to magnetic objects when placed near a magnet. They describe in detail what they observe. Through exploration, they learn that magnets cause a pull (a force) on magnetic materials.

If you have access to other Science Companion units, consider teaching Skill Building Activity “Observing and Describing” prior to this lesson. (See the Level 1 Motion Unit or the Level 2 Sound Unit, Rocks Unit, or Life Cycles Unit.)

### *Lesson 2: Is It Magnetic?\**

In groups, children investigate whether magnets pull on objects made of different types of materials. They go on a scavenger hunt in the classroom to find and test magnets on different objects and classify the objects as magnetic or non-magnetic. They then discuss what all magnetic objects have in common.

### *Lesson 3: Do Magnets Work Through Different Materials?\**

Children observe how a magnet can attract a paper clip without touching it, establishing that the force of a magnet works through the air. Next, children carry out some investigations and discover that the force of a magnet works through many different materials.

### ***Lesson 4: Investigating the Strength of Magnets***

Children discuss whether all magnets have the same pulling strength. In groups, they think about different ways they might test the pulling strength of magnets and plan an investigation to test their ideas.

This lesson is conducted over two sessions.

### ***Lesson 5: Magnets on Magnets\****

Children observe the interaction between two magnets when they manipulate them on a flat surface. Next, the class predicts what happens when two donut magnets are stacked on top of one another on a pencil. During the exploration process, they discover that magnets can push (repel) as well as pull (attract) other magnets.

### ***Lesson 6: Magnets in Everyday Use***

Children complete the Magnets Unit by reviewing their magnet knowledge and thinking about everyday applications of magnets. They observe that magnets are an important part of how a compass works. They discuss different common objects that use magnets and search for magnets used in their homes. An optional component to this lesson challenges children to design something that uses magnets.

This lesson is conducted over two sessions.