Early Learning Magnets

Mid-Valley
STEM-CTE HUB

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Early Learning Magnets

The Early Learning Magnets Kit introduces young learners to the fascinating world of magnetism through hands-on exploration and play. Using a variety of magnets and magnetic materials, students investigate magnetic attraction and repulsion, identify magnetic and nonmagnetic objects, and develop observation and prediction skills through guided inquiry. Designed for early elementary learners, this kit encourages curiosity, scientific thinking, and collaborative problem-solving while providing an engaging introduction to physical science concepts.

Grade Level

Pre-K - 2nd

Group Size

groups of 2-3

Time Duration

15 - 30 minutes

Content of Kits

Components

- 10 Magnetic wands
- 10 Horseshoe magnets
- 20 Bar magnets
- Various magnetic and non-magnetic items to experiment with
- 5 sets of 20 activity cards

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Usage

Getting Started

1. **Inventory and Organize the Materials**
Begin by unpacking the five magnet kits and confirming that all magnets and activity materials are present and in good condition. Organize the materials into student stations so each group has easy access to the components they will need.

2. **Review Safe Magnet Use**
Before students begin exploring, discuss how magnets should be handled carefully. Remind students not to throw magnets, place them near electronic devices, or put small pieces near their mouths.

3. **Introduce Basic Magnet Concepts**
Allow students time to freely explore the magnets before beginning structured activities. Encourage them to make observations, ask questions, and predict which classroom objects they think magnets will attract.

4. **Prepare an Investigation Area**
Gather a variety of safe classroom objects made from different materials for students to test. Create a recording sheet or science journal where students can document predictions, observations, and conclusions throughout their investigations.

Storage

- **Keep Each Magnet Kit Together**

After use, return all magnets and activity pieces to their original storage containers. Keeping each set complete will make future classroom setup easier and help prevent missing pieces.

- **Store Magnets in a Dry Location**

Store the kits in a cool, dry place away from excessive heat, moisture, and electronic devices. Proper storage helps protect both the magnets and other classroom equipment.

Troubleshooting

- **Magnets Do Not Attract an Object**

If a magnet does not pick up an object, remind students that not all metals are magnetic. Encourage them to investigate what materials the object is made from and compare it with objects that are attracted to magnets.

- **Magnets Are Difficult to Connect or Separate**

If magnets unexpectedly repel each other or seem difficult to connect, have students rotate one of the magnets and try again. This provides an opportunity to introduce the concepts of magnetic poles and the difference between attraction and repulsion.

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Activity Guide

Beginner

Magnetic or Not?
Students investigate which classroom objects are attracted to magnets. They make predictions, test a variety of materials, and sort objects into "magnetic" and "nonmagnetic" groups.

Oregon Science Standards Alignment
K-PS2-1 & Science and Engineering Practice

Procedure
1. Introduce the magnets and discuss the meaning of "magnetic" and "nonmagnetic."
2. Have students predict which objects they think will be attracted to a magnet.
3. Test each object using the magnets.
4. Sort the objects into magnetic and nonmagnetic groups.
5. Discuss patterns students noticed about the materials.

Intermediate

Magnet Movers
Students use magnets to move objects without touching them. They investigate how magnets can push and pull objects through different materials while making observations about magnetic force.

Oregon Science Standards Alignment
K-PS2-1 & 2-PS1-1

Procedure
1. Place a paper clip on top of a table or sheet of cardstock.
2. Move a magnet underneath the surface to guide the paper clip.
3. Experiment with different materials between the magnet and the object.
4. Compare how easily the paper clip moves through each material.
5. Record observations and discuss how magnetic force can act from a distance.

Advanced

Design a Magnetic Maze
Students design and build a simple maze, then use a magnet to guide a magnetic object through it without touching the object directly. Students test, improve, and redesign their mazes using the engineering design process.

Oregon Science Standards Alignment
K-PS2-2 & K-2-ETS1-1

Procedure
1. Draw a maze on a piece of cardstock or cardboard.
2. Place a paper clip or magnetic object at the maze entrance.
3. Use a magnet beneath the maze to guide the object to the finish.
4. Test the maze and identify areas that are too easy or too difficult.
5. Redesign the maze to improve the challenge.

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Learning Extensions

STEAM Connections: Engineering - Math - Science

Learning Objectives:

- Explore the properties of magnets through hands-on investigations.
- Identify and classify objects as magnetic or nonmagnetic based on observations.
- Describe how magnets can push, pull, attract, and repel certain objects.
- Make predictions, conduct simple investigations, and communicate observations using scientific vocabulary.
- Compare results, identify patterns, and draw conclusions from evidence collected during activities.
- Develop an understanding of how magnets are used in everyday objects and technology.

Career Connections:

- **Electrical Engineer –** Designs devices and systems that use magnets and electricity.
- **Mechanical Engineer –** Develops machines and equipment that rely on magnetic forces.
- **Electronics Technician –** Builds, repairs, and maintains electronic equipment.
- **Robotics Engineer –** Designs and programs robots that use motors and magnetic components.
- **Medical Imaging Technologist –** Operates equipment such as MRI machines that use powerful magnets.
- **Materials Scientist –** Studies the properties of metals and other materials to develop new products.

Essential Employability Skills:

- Curiosity and Initiative
- Critical Thinking
- Communication
- Observation and Attention to Detail
- Problem Solving

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Resources and Accessibility

Safety Guidelines

- **Handle Magnets Carefully**

Use magnets as directed and avoid throwing, snapping, or striking them together, as they can chip or break. Keep magnets away from electronic devices and other items that may be affected by magnetic fields.

- **Keep Small Pieces Out of Mouths**

Some kit components may present a choking hazard for young children. Remind students not to place magnets or other small pieces in their mouths and always supervise activities closely.

Accessibility

- **Provide Multiple Ways to Participate**

Students can participate by making predictions, testing objects, sorting materials, recording observations, drawing results, or sharing discoveries with their group. Offering a variety of roles allows all learners to contribute meaningfully.

- **Support Learning Through Visual and Hands-On Exploration**

Use demonstrations, picture cards, labeled objects, and guided questioning alongside hands-on investigations. Encouraging students to observe, touch, discuss, and compare materials supports a variety of learning styles and accessibility needs.

Library Catalog

Library Resources

Feedback

QR to feedback survey