# Georgia Performance Standards Framework for Science – Grade 1

## 1st Grade Unit Organizer: Magnets

### 6 weeks

**OVERVIEW:** In this unit students will observe and demonstrate that:

- Magnets can make some things move (push or pull things).
- Magnets attract (pull on) some things, but not others.
- Magnets can pull through some things.

In order to accomplish these goals, students should be given the opportunity to conduct hands-on inquiry activities using a variety of materials.

### STANDARDS ADDRESSED IN THIS UNIT

#### Focus Standards:

- **S1P2** Students will demonstrate effects of magnets and other magnets and other objects.
  1. Demonstrate how magnets attract and repel.
  2. Identify common objects that are attracted to a magnet.
  3. Identify objects and materials that block magnetic force.

#### Supporting Standards:

- **S1CS1.** Students will be aware of the importance of curiosity, honesty, openness, and skepticism in science and will exhibit these traits in their own efforts to understand how the world works.
  a. Raise questions about the world around them and be willing to seek answers to some of the questions by making careful observations and measurements and trying to figure things out.
- **S1CS2.** Students will have the computation and estimation skills necessary for analyzing data and following scientific explanations.
  a. Use whole numbers in ordering, counting, identifying, measuring, and describing things and experiences.
- **S1CS3.** Students will use tools and instruments for observing, measuring, and manipulating objects in scientific activities.
  a. Use ordinary hand tools and instruments to construct, measure, and look at objects.
  b. Make something that can actually be used to perform a task, using paper, cardboard, wood, plastic, metal, or existing objects.
c. Identify and practice accepted safety procedures in manipulating science materials and equipment.

S1CS4. Students will use the ideas of system, model, change, and scale in exploring scientific and technological matters.
   a. Use a model—such as a toy or a picture—to describe a feature of the primary thing.
   b. Describe changes in the size, weight, color, or movement of things, and note which of their other qualities remain the same during a specific change.

S1CS5 Students will communicate scientific ideas and activities clearly.
   a. Describe and compare things in terms of number, shape, texture, size, weight, color, and motion.
   b. Draw pictures (grade level appropriate) that correctly portray features of the thing being described.
   c. Use simple pictographs and bar graphs to communicate data.

M1P3 Students will use the language of mathematics to express ideas precisely.

M1M1 Students will compare and/or order the length, weight, or capacity of two or more objects by using direct comparison or a nonstandard unit.

M1D1 Students will create simple tables and graphs and interpret them.

ELA1R1c. Demonstrates an understanding that punctuation and capitalization are used in all written sentences.

ELA1R6. Reads and listens to a variety of texts for information and pleasure.

ELA1W1j. Begins to use common rules of spelling.

ELA1LSV1c. Respond appropriately to orally presented questions.

ELA1R5a. Reads and listens to a variety of texts and uses new words in oral and written language.

ELA1LSV1a. Follows three-part oral directions.

ELA1LSV1b. Recalls information presented orally.

ELA1LSV1f. Uses complete sentences when speaking.

ELA1LSV1d. Increases vocabulary to reflect a growing range of interests and knowledge.

ELA1W1k. Begins to use variety of resources (picture dictionaries, the Internet, and books) and strategies to gather information to write about a topic.

ELA1LSV1e. Communicates effectively when relating experiences and retelling stories read, heard, or viewed.

ELA1R6m. Recognizes and uses graphic features and graphic organizers to understand text.

ELA1SV1: The student uses oral and visual strategies to communicate.

ELA1W1a. Writes texts of length appropriate to address a topic and tell a story.

ELA1LSV1d.-e. Increases vocabulary & Communicates effectively.

ELA2LSV1d. Listens to and views a variety of media.
### ENDURING UNDERSTANDINGS

Students will understand that:
- Magnets can make some things move (push or pull things).
- Magnets attract (pull on) or repel (push) some things, but not others.
- Magnets can make some things move (push or pull things) through some objects and materials (air, water, wood, paper, clothes).

### ESSENTIAL QUESTIONS:

- How are objects that magnets attract different from the objects they repel?
- What objects and materials will a magnet attract (pull)?
- What objects and materials will a magnet repel (push)?
- How can magnets attract metals through objects and materials such as air, water, wood, paper, and clothes, soft drink can?
- Why do people use magnets?

<table>
<thead>
<tr>
<th>MISCONCEPTIONS</th>
<th>TRUTHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>• All metals are attracted to a magnet.</td>
<td>• Some metals are attracted to magnets.</td>
</tr>
<tr>
<td>• All silver colored items are attracted to a magnet.</td>
<td>• Some metals are repelled by magnets.</td>
</tr>
<tr>
<td>• Magnets repel non metals</td>
<td>• Magnets can push or pull through certain objects and materials such</td>
</tr>
<tr>
<td>• Magnets only attract to iron</td>
<td>as air, water, wood, paper, and clothes.</td>
</tr>
<tr>
<td>• Magnetism causes the objects to attract and repel.</td>
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<tr>
<td>• Magnetism doesn’t go through objects.</td>
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<tr>
<td>CONCEPTS:</td>
<td>KNOW AND DO</td>
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<tr>
<td>---------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
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<tr>
<td>If two magnets are set close</td>
<td>Students will know that putting two magnets close to each other demonstrates how magnets attract or repel. Turn the magnets over and then move them near each other. Students will record their findings in a science journal.</td>
</tr>
<tr>
<td>to each other, they are</td>
<td></td>
</tr>
<tr>
<td>attracted or repelled.</td>
<td></td>
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<tr>
<td>Magnets attract (pull on)</td>
<td>Students will know that placing a magnet close to metal paper clips in a paper cup demonstrates how magnets attract or repel. Students will record their findings in a science journal.</td>
</tr>
<tr>
<td>some metal objects.</td>
<td></td>
</tr>
<tr>
<td>Magnets attract (pull on)</td>
<td>Students will observe, predict, and keep a record of objects that can or cannot be attracted to a magnet (pencil, eraser, penny, ruler, book, button, jewelry, toy car, ball, bobby pin, hair clip, metal spoon, plastic spoon, soft drink can). Students will classify items in two smaller boxes labeled &quot;Yes&quot; and &quot;No&quot;. If it is attracted to the magnet, they will put it in the &quot;Yes&quot; box. If not, they will put it in the &quot;No&quot; box.) Students will organize their findings in a chart.</td>
</tr>
<tr>
<td>some common objects, but</td>
<td></td>
</tr>
<tr>
<td>not others.</td>
<td></td>
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</tbody>
</table>
Magnets can attract or repel through some objects and materials.

Students will place a magnet close to plastic-coated metal paper clips in a paper cup, paper clips in a cup of water and will determine that magnets can attract through these materials. Students will record what happens in a science journal. Students will identify other materials or objects (air, paper, clothes, aluminum foil) that magnets can attract or repel through. Students will classify items in two boxes labeled "Yes" and "No". If the magnet attracts or repels through the material or object tested, they will put it in the "Yes" box. If not, then put it in the "No" box. Students will organize their findings in a chart.

<table>
<thead>
<tr>
<th>Magnet Attract Repel Material Aluminum foil</th>
</tr>
</thead>
</table>

Student’s science journals will include accurate observations of the magnet attracting or not attracting items tested. Students will tell a classmate or teacher their prediction of what will happen. Students will tell a classmate or teacher their tentative explanation for what happened (defend hypothesis). Students will organize their findings in a chart and will explain their chart.

Magnets are used at home and at school.

Students will observe and list or construct a drawing of common uses for magnets at home and at school, such as on a refrigerator.

<table>
<thead>
<tr>
<th>Common Magnet List</th>
</tr>
</thead>
</table>

Student’s science journals will include accurate observations and organized data into a list or drawing. Students will describe their list.

Magnets are used at work.

Students will recognize a giant magnet picking up crushed cars in a picture or from television. Students will sketch some of the ways people use magnets at work.

<table>
<thead>
<tr>
<th>Giant Crushed car Sketch</th>
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</table>

Student’s science journals will include accurate explanation for the picture. Students will label and explain their sketch.

Storybook characters use magnets to solve problems.

Students will listen to the "Mickey's Magnet" story and learn how Mickey used the magnets (he used them to pick up pins & clips.)

Students will view the illustrations in the story and identify the use of magnets by the character.
EVIDENCE OF LEARNING:

By the conclusion of this unit, students should be able to demonstrate the following competencies:

- Demonstrate knowledge of all language terms used in the unit to describe magnets.
- Make predictions about whether magnets will or will not attract and repel some objects.
- Make predictions about whether magnets can or cannot attract or repel some objects through some materials.
- Experiment with magnets and manipulate objects to collect data accurately.
- Record observations when experimenting with magnets in science journals.
- Organize data collected from experiments with magnets into lists or charts.
- Form tentative hypotheses to explain to others what the organized data mean.
- Work cooperatively with classmates as a group/partner to experiment.
- Work cooperatively with classmates as a group/partner to collect and record observation data.
- Work cooperatively with classmates as a group/partner to organize data in meaningful ways.
- Sketch how giant magnets are used at work to pick up cars for crushing.
- Create a poster which illustrates how magnets attract and repel some objects, and can attract or repel through some materials; or write a poem or song using the science vocabulary in this unit.

Culminating Activity: Magnetism play that describes and explains that magnets attract (push) or repel (pull) some objects and can attract or repel through some objects and materials.

GRASPS

Goal: Demonstrate that magnetism can act through different materials.
Role: Scientist, writer, storyteller
Audience: First grade classmates or younger children in K- or Pre-K.
Scenario: Explore how magnets can be used to make some things move without being touched. Create stick puppets by attaching magnets to craft sticks or other classroom objects. Write a story about magnets and use the stick puppet to tell the audience about magnets. Move the stick figures by using another magnet underneath a desk, table, or shoebox.
Product: Story about magnets written for a stick puppet as the main character.
Standard: Rubric for assessing story and its explanation of how magnets work.
## GENERAL TIMELINE, BALANCED ASSESSMENT PLAN, TASKS

### GENERAL TIMELINE

<table>
<thead>
<tr>
<th>Intro / Pre Assess</th>
<th>Magnets Attract or Repel Some Objects</th>
<th>Magnets Can Attract Through Some Materials</th>
<th>Magnets Are Useful</th>
<th>GRASPS Development</th>
<th>Post Assess</th>
<th>Reteach or Extend</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Lesson</td>
<td>1 week</td>
<td>1 weeks</td>
<td>1.5 weeks</td>
<td>2 weeks</td>
<td>1 Lesson</td>
<td>2-4 Lessons</td>
</tr>
</tbody>
</table>

### BALANCED ASSESSMENT PLAN FOR ORGANIZATION

<table>
<thead>
<tr>
<th>Informal Observations</th>
<th>Selected Response</th>
<th>Constructed Response</th>
<th>Performance Assessment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teacher Observations</td>
<td>Pre-Assessment</td>
<td>Predictions</td>
<td>Science Journal</td>
</tr>
<tr>
<td>Conferencing with</td>
<td>Magnets attract</td>
<td>Tentative hypotheses</td>
<td>Classifying objects</td>
</tr>
<tr>
<td>class or individual</td>
<td>through some</td>
<td>Magnet sketches</td>
<td>magnets attract or do</td>
</tr>
<tr>
<td>student.</td>
<td>materials activity</td>
<td>Magnet lists, charts</td>
<td>not attract</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Mickey story activity</td>
<td>Student’s science</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Post-Assessment</td>
<td>journals Entries</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Grasp activity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Mickey Story</td>
</tr>
</tbody>
</table>

### TASKS

The following collection of tasks represents the level of depth, rigor and complexity expected of all students to demonstrate evidence of learning.

**Lesson:** Introduction (1 day)

**Description:** Introduce Standard: S1P2 Students will demonstrate effects of magnets on magnets and other objects. Use “language” from the standards during the unit. Refer to posted standard as necessary throughout unit. Create word wall words for Magnet, Attract, and Repel, and encourage students to use these words in their writing.

A. Use KWL chart. Write what the students already know about magnets under the “K.” Write what the students want to know/learn about magnets under the “W.” During post-assessment, write what the students learned about magnets and the standard under the “L.”
B. Hook and Attention Getter – Ask students what pictures or objects are on the refrigerator door in their home.

C. Have each student share what is “stuck” to their home’s refrigerator door. Ask how the magnets keep the papers or photos stuck to the refrigerator door.

D. Ask students to locate where magnets are used in their classroom.

E. Ask students where magnets are used in other places, such as for work.

Assessment:
Selected Response-Pre-Assessment, Informal Assessment-Conferencing with class

Suggestions/Resources:
- Record and Post KWL chart on butcher paper, poster board, etc. Use sticky notes to add student knowledge and understanding under “Learned” column.
- Gather magnetism books to read to students throughout the unit.

Lesson: Day 2
Video Segment – Peachstar: Magnetism

Description: What Do Magnets Attract? (01:45) Grade: K-2 © 2002 United Learning

Assessment:
Informal: Teacher observation and Questioning after film – Refer to KWL chart from first lesson.

Suggestions/Resources: Have students draw a picture of magnets attracting objects in the video clip in their science journal. Encourage the students to list objects which were not attracted in the video clip magnetism.

Lesson: Sample
Magnets attract (pull on) some common objects, but not others.

Description: Provide a learning center for students to experiment with various objects to determine if they can or cannot be attracted to a magnet (pencil, eraser, penny, ruler, book, button, jewelry, toy car, ball, bobby pin, hair clip, metal spoon, plastic spoon, soft drink can).

Direct students to classify items in two smaller boxes labeled "Yes" and "No". If it is attracted to the magnet, they will put it in the "Yes" box. If not, they will put it in the "No" box.

Direct students to record the outcome of their experiments in their science journal. Assist students in organizing their findings in a chart.

Ask students why they believe some objects were picked up while the magnet did not pick up other objects.

Ask students why the magnet did not pick up every metal object. You may consider directing the discussion to help them understand magnets only attract objects made of certain metals such as iron and steel. Students DO NOT have to memorize which metals are/are not attracted to magnets.
### Assessment:
Informal: Teacher observation and questioning during activity – Refer to KWL chart from first lesson.

### Suggestions/Resources:
Encourage students to predict which objects will be attracted to the magnet and which will not.
Encourage students to share their tentative explanations for why magnets attract some objects and not others (defend hypothesis).

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### Lesson: Sample

**Magnets can attract or repel through some objects and materials.**

**Description:**
Provide a learning center for students to experiment with magnets and various materials (air, water, paper, clothes, and aluminum foil) to determine if they can attract objects through these materials.

![Sticky magnet diagram](image)

Direct students will place a paper clip under a piece of paper or cloth. Assist students to place their magnets close to the paper clips to determine if their magnets can attract through these materials.

Direct students to record what happens in a science journal.
Encourage students to identify other materials or objects that magnets can attract or repel through.
Assist students to devise an experiment with another material to determine if their magnets can attract through it.
Direct students to organize their findings in a chart.

**Assessment:**
Informal: Teacher observation and questioning during activity – Refer to KWL chart from first lesson.

**Suggestions/Resources:**
Encourage students to predict which materials the magnet will attract through and which will not.
Encourage students to share their tentative explanations for why magnets can attract through some materials and objects and not others (defend hypothesis).
<table>
<thead>
<tr>
<th>Lesson: Post-Assessment</th>
</tr>
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<tbody>
<tr>
<td>Description: A. Review KWL chart from the start of the unit. Assist students to add to the “L”- learned column.  B. Teacher should ask essential questions.  C. Teacher should ensure that the enduring understandings are met by all students through the use of questioning, one-on-one conferencing, Examine student’s science journals entries, performance assessments, and the post-assessment.</td>
</tr>
<tr>
<td>Assessment:  • Informal: Teacher observation, Oral Questioning, and Conferencing.  • Performance Assessment: science journal, observations chart, list, sketch  • Constructed Response: Post-Assessment</td>
</tr>
<tr>
<td>Suggestions/Resources: See list of books below – choose one to read for review.</td>
</tr>
</tbody>
</table>

**TASK – Reteaching**

Reteaching provides additional concrete opportunities for students who have shown limited progress in learning and understanding.

<table>
<thead>
<tr>
<th>Lesson: Basic magnetism and Characteristics of magnetism</th>
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</table>
| Description: Students know that a paper clip is attracted to a magnet. Investigate if the magnet can touch a paper clip and attract more paper clips through it.  
Encourage students to predict how many paper clips (in a string of clips) their magnet can pick up when the clips touch each other. They should record the number in their science journal and sketch the setup in the drawing at right.  
Direct students to touch one paper clip with their magnet and lift upward to pick up the paper clip. As this paper clip hangs below the magnet, assist students to move their magnet and allow the hanging paper clip to touch another paper clip on the table or desk. |
Direct students to slowly lift their magnet to see if the next paper clip is actually attracted to the paper clip hanging from their magnet. Encourage them to move the magnet to make sure both paper clips are actually stuck to the magnet.

Assist students to repeat this procedure to pick up as many paper clips as possible and record results in their science journal. Ask students how close their prediction was to the number of paper clips their magnet attracted in a string of paper clips and compare their results to their classmates.

Encourage them to explain what happened to each other and the teacher.

**Assessment:**
Performance Assessment: Informal observation, questioning, and review of science journal

**Suggestions/Resources:**
Read and discuss other books about magnetism or view other video clips.

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**TASK – Enrichment**

Enrichment provides additional opportunities for students who have mastery in learning and understanding.

<table>
<thead>
<tr>
<th>Lesson: Magnetism Explorations</th>
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<tbody>
<tr>
<td><strong>Description:</strong> Direct students to place one of the paper clips inside a plastic cup. Assist students to move the magnet under the cup below the paper clip. (If the magnet is strong enough, then the paper clip will move.)</td>
</tr>
<tr>
<td><strong>Assessment:</strong> Ask how can the magnet move a paper clip that it does not actually touch? Informal Assessment: observation and review of science journal</td>
</tr>
<tr>
<td><strong>Suggestions/Resources:</strong> Encourage students to predict what will happen as they move their magnet under the cup. Encourage students to share their tentative explanations for what happened (defend hypothesis).</td>
</tr>
</tbody>
</table>
Suggested Peachstar Streaming Video for Magnetism Unit

1. “Making Magnets” (01:38) Magnets come in different shapes, and can be made by rubbing iron or steel against a Magnet. Permanent Magnets keep their Magnetism. A Magnet does not lose its Magnetism if it is cut into pieces. Grade: K-2 © 2002 United Learning


3. “Kinds of Magnets and Uses of Magnets” (02:14) Different ways magnets are used in everyday life. Grade: K-4 © 1998 100% Educational Videos

4. “Magnets Push and Pull” (01:53) The teacher uses iron filings to demonstrate the push and pull force of magnets. Grade: K-4 © 1998 100% Educational Videos

5. “Magnets Attract and Repel: Magnetic Poles” (02:12) Magnets attract and repel; Similar poles of a Magnet repel while opposite poles attract. Grade: K-2 © 1990 AIMS Multimedia

6. “Does a Magnet Have to Touch Something to Attract It?” (01:57) Grade: K-2 © 2000 Rainbow Educational Media

Suggested Books

**Websites**

Background Information on Magnets www.kidskonnect.com/Magnets/MagnetsHome.html
Background information on magnets and lesson plans for student activities to determine the effects of magnets on objects in the environment. http://www.uen.org/utahlink/lp_res/TRB031.html
At this site students determine the kinds of objects which are attracted to a magnet.
http://www.sasked.gov.sk.ca/docs/elemsci/gr2ubesc.html
All About the Magnet ttp://www.kn.att.com/wired/fil/pages/listmagnetsfr.html- Watch this video to see some objects a magnet will attract and some objects that a magnet will not attract. Magnets and Springs - This is an interactive web page with magnets and springs. Click on the red knob near the magnet and drag the knob to the yellow, green or red light below the red knob to find out which objects the magnet will attract.