

INTRODUCTION TO SNAPS LABS

A SNAPS laboratory includes station activities designed to develop students' science skills with hands-on activities and thought-proving exercises. The labs require students to use science, math, literacy, problem-solving and engineering skills so to expand their understanding scientific ideas and apply scientific concepts to the real world.

Science Skills Station

Students explore a concept using science and math skills. The skills may be procedural that a student must physically do. The skills may be mathematical or require scientific thinking and reasoning.

Narrative Station

Students employ literacy skills important to understanding scientific text as well as illustrations, tables and graphs. In many labs, students will explore multimedia sources, such as videos, audio files or animations.

Assessment Station

Students answer multiple choice questions, short answer questions and/or open-ended, thought-provoking questions. The questions progressively get "harder" and require students to employ lower, mid and higher order thinking.

Problem-Solving Station

Students utilize the engineering design process and problem-solving skills so to identify problems, test solutions and/or make improvements to solutions.

Synthesis Station

Students compose a CER report as a lab conclusion so to relate the observations, data and other information gathered in the lab to the objective(s) of the lab.

Synthesis Project

Students complete an activity or project that helps summarize information studied and learned in the lab. This facilitates "bringing it all together" while getting students to think harder and deeper about a concept.

SNAPs LAB STATIONS ACTIVITY

The screenshot shows a PDF document titled "MS-PS2-5 Magnetic Field Stations Lab.pdf" open in a browser. The document is a multi-page lab activity with various stations. The visible pages include:

- Science Skills Station:** Focuses on understanding magnetic field lines and their relationship to magnetic force.
- Science Skills Station:** Focuses on understanding magnetic field lines and their relationship to magnetic force.
- Navigation Station:** Focuses on understanding magnetic field lines and their relationship to magnetic force.
- Navigation Station:** Focuses on understanding magnetic field lines and their relationship to magnetic force.
- Assessment Station:** Focuses on understanding magnetic field lines and their relationship to magnetic force.
- Problem-Solving Station:** Focuses on understanding magnetic field lines and their relationship to magnetic force.
- Synthesis Station:** Focuses on understanding magnetic field lines and their relationship to magnetic force.
- Synthesis Station:** Focuses on understanding magnetic field lines and their relationship to magnetic force.
- Problem-Solving Station:** Focuses on understanding magnetic field lines and their relationship to magnetic force.
- Assessment Station:** Focuses on understanding magnetic field lines and their relationship to magnetic force.

The document also includes various diagrams, tables, and text boxes for students to complete. The browser window shows the file path: "file:///Users/stephanieelkowitz/Desktop/MS-PS2-5 Magnetic Field Stations Lab.pdf".

Features:

- ✓ Connects Science, Math, ELA & Engineering (Problem-Solving) Skills
- ✓ Requires easy-to-get and inexpensive materials
- ✓ **Printable lab** for traditional classrooms included
- ✓ Student Recording Sheets, Teacher Guide and Answer Key included

Printable Lab downloaded as a PDF file. Teacher Guide and Key not shown.

DIGITAL SNAPs LAB STATIONS ACTIVITY

The image shows a digital lab interface with 16 numbered stations. The interface includes a top navigation bar with icons for Home, Insert, Draw, Design, Transitions, Animations, Slide Show, Review, View, Recording, Acrobat, and Tell me. The main content area displays 16 numbered stations, each with a title and a description of the activity. Stations 1-6 are Science Skills Stations, stations 7-8 are Narrative Stations, and stations 9-16 are Assessment Stations. Each station contains text, diagrams, and tables. Station 10 includes a table with magnetic field strength data.

Distance from Magnet	Magnetic Field Strength (mT)
1.00	1.12
2.00	0.56
3.00	0.38
4.00	0.28
5.00	0.22
6.00	0.18

Features:

- ✓ **Digital lab** for distance learning and paper-free classrooms included
- ✓ Fillable slides (pptx file) compatible with both Microsoft PP and Google Slides
- ✓ Assessment station available as self-grading Google Form (via force copy link)

EDITABLE SNAPs LAB STATIONS ACTIVITY

AutoSave OFF MS-PS2-5 Magnetic Field Editable Lab Stations

Home Insert Draw Design Layout References Mailings Review View Grammarly Acrobat Tell me Comments Editing Share

Name: _____ Date: _____

Magnetic Field Lab Overview

Objectives

- Verify that an invisible magnetic field surrounds a magnet.
- Illustrate a magnet's magnetic field with field lines.
- Explain how Earth behaves like a magnet.
- Identify and evaluate problems that could arise during a normal Earth's magnetic field.

MS Science and Engineering Practices

Looking for patterns (Practices 1)
Planning and carrying out investigations (Practices 3)
Obtaining, evaluating, and communicating information (Practices 8)

Science Skills Station

At this station, students will **analyze** **graphs** to help them visualize a magnet's magnetic field. They will observe the magnetic field to be able to draw a magnet's magnetic field with magnetic field lines.

Review Station

At this station, students will read about the magnetic field of a magnet. They will also read about Earth's magnetic field to understand why Earth is like a giant magnet.

Assessment Station

At this station, students will answer questions about the terms and ideas relating to magnetism and magnetic field. Students must employ **graph** higher order thinking skills to answer these questions.

Problem-Solving Station

Students will conduct their research to determine the possible effects of a geomagnetic reversal (reversal of Earth's magnetic poles). They will identify problems that might arise during a geomagnetic reversal and evaluate the severity and likelihood that those problems will arise.

MS-PS2-5 Magnetic Field © Stephanie Edwards

Name: _____ Date: _____


Magnetic Field Lab Assignment

Directions

- Read through the Lab Overview.
- Create a new entry for the Magnetic Field in the table of contents on your lab journal and determine the pages of your lab entry. Complete the following steps at the end of your activity.
- Define the following terms in your lab journal:
 - Magnetic field
 - Magnetic force
 - Transparency paper
 - Magnetic field lines
 - Magnetic field lines
- Write a 4-5 sentence summary about what you will do in this laboratory.

Activity #1

- Put the gloves on your hands.
- Place one magnet inside the small box.
- Place the transparency film on top of the magnet. Your magnet and transparency film should look like the following sketch below.



Science Skills Station

Objective

Conduct an investigation that allows for the visualization of a magnet's magnetic field. Illustrate a magnet's magnetic field with magnetic field lines.

Materials Required

- Bar magnet
- Iron filings
- Compass
- Plastic box
- Transparency paper
- Rubber gloves

Activity #2

- Place two bar magnets with the North poles facing each other inside the small box. Place the magnets as close together as possible.
- Place the transparency film on top of the magnet.
- Press what you think the magnetic field lines will look like when you sprinkle iron filings over the magnets. Draw a picture of your prediction.
- Sprinkle approximately two teaspoons of iron filings sparingly around and over the magnets on top of the transparency film. Observe the pattern of the iron filings.
- Draw the magnet's magnetic field using magnetic field lines on your recording sheet. Draw the direction of the magnetic field using arrows. Use the compass to help you verify the direction of the magnetic field.
- What does the visualization of the magnetic field about Explain.
- Do the results of this investigation support or refute your prediction? Explain.
- Carefully lift the transparency film. Slightly bend the transparency film and discard the iron filings back into the small container.

Activity #3

- Place two bar magnets with opposite poles facing each other inside the small box. Place the magnets close together (NOT too physically touching).
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
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
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
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
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Name: _____ Date: _____

Magnetic Field Lab Reflection

Objectives

- Define the terms and ideas relating to magnetism and magnetic field.

Skills learned

- Define a **term**
- Label a **diagram**
- Summarize a **process**
- Determine **relationships**
- Interpret or analyze a **graph**
- Compare and contrast
- Illustrate a **concept**

Assessment Directions

- Answer the following questions. Write when you answer on the recording sheet.
- There are two bonus questions. If time allows, try to answer these questions.

MS-PS2-5 Magnetic Field © Stephanie Edwards

Question #1: What is **magnetic field**?

Question #2: What are magnetic field lines and how are magnetic field lines important to studying magnetism, magnetic force, and magnetic field?

Question #3: What is the relationship between the size of a magnet and the size of the magnetic field produced by the magnet? Draw a simple line graph and explain what the graph means.

Question #4: A student measures the strength of a magnet's magnetic field at different distances from the magnet. He measures the magnetic field strength and knows the field strength measured the following. What does this suggest about magnetic field strength?

Distance (cm)	Magnetic Field Strength (G)
1.0	0.1
2.0	0.2
3.0	0.3
4.0	0.4
5.0	0.5

MS-PS2-5 Magnetic Field © Stephanie Edwards

Question #5: What is the difference between Earth's geographic poles and Earth's magnetic poles?

Question #6: Draw a bar magnet's magnetic field using magnetic field lines. Be sure to include arrows to show the direction of the magnetic field.

NCPE Question #7
Draw Earth's magnetic field using magnetic field lines. Use arrows to show the direction of the field.

NCPE Question #8
Compasses are great navigational tools. They can help us orientate ourselves by pointing toward Earth's geographic North Pole. However, they do not work well when near the North Pole. Why do you think this is?

MS-PS2-5 Magnetic Field © Stephanie Edwards

Problem-Solving Station

Background Information

Students will determine what might cause Earth's magnetic poles reversal location.

Objectives

- Identify the factors that might cause Earth's magnetic poles reversal location.

Key Information

Did you know that Earth's magnetic poles have not always been located where they are today? In fact, they've moved many times. Earth's magnetic poles have in completely opposite positions! Scientists know Earth's magnetic poles have reversed hundreds of times over the Earth's existence. They call the geomagnetic reversal.

Directions

- Watch a **video** on the video about geomagnetic reversal using a computer or tablet:
Earth's Magnetic Poles Flip: <https://www.youtube.com/watch?v=8022>
Original YouTube Video: <https://www.youtube.com/watch?v=8022>
- After watching the video, conduct short research to identify possible problems that could arise during a geomagnetic reversal. Identify at least two possible problems that impact humans and other lifeforms on Earth.
- Evaluate the severity and likelihood that these problems might arise during a geomagnetic reversal. Support your thinking with scientific reasoning and data.

MS-PS2-5 Magnetic Field © Stephanie Edwards

Name: _____ Date: _____

Magnetic Field Post-Lab Reflection

Directions

- Write a 4-5 sentence summary about what you learned in this lab.
- Write a 4-5 sentence post-lab self-reflection. Answer at least two of the questions below in your reflection:
 - How well did you participate today?
 - What do you know now that you didn't know before?
 - What questions do you have about things you don't understand?
 - What do you need to do to better understand what you applied in this lab today?
 - What did you do well today? What are you proud of?
 - Rate your performance today on a scale from 1 to 5.
 - Rate your understanding of what you learned on a scale from 1 to 5.
 - Do you notice any patterns when you learn better? Do you notice any patterns when you struggle with a topic?
 - Could you use what you learned today to help you with something else?

IMPORTANT NOTE: Instead of writing formally, you can doodle, jot down bullet points or make a diagram to organize the two parts of the post-lab reflection.

Evidence

Research is scientific data used to support the claim. Evidence can be qualitative, quantitative or a combination of both. You can use data from observations, measurements, tables, graphs, or analyzing

Reasoning

Reasoning is the logical explanation that connects the claim and the evidence. It establishes how and why the evidence supports the claim. The reasoning should include scientific principles or laws and are important to the claim and evidence.

Claim

Important Note: Claims cannot be made until you have gathered evidence on each side. Both sides of the claim are **not** correct.

Directions

- Use the template, cite evidence from the science skills, narrative and/or problem-solving station that supports the claim above. You can **bullet point** the items.
- On the template, cite logical explanations and scientific principles that explain how and why the evidence supports the claim above. You can **bullet point** the items.
- Write a 4-5 sentence **conclusion**. Write in complete sentences. The **conclusion** reports a conclusion to the lab. It **must** include the claim, **evidence**, and **reasoning**.

MS-PS2-5 Magnetic Field © Stephanie Edwards

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MS-PS2-5 Magnetic Field © Stephanie Edwards

Features:

- ✓ **100% Editable** stations downloaded as a docx file
- ✓ Necessary diagrams, tables and graphs included
- ✓ Illustrative graphics and clipart NOT included

TEACHER GUIDE

PRINTABLE LAB SETUP AND PREPARATION

Each “traditional PDF file” includes directions and questions for each station. Print one copy of these materials for each station. Place copies of the letter-sized directions questions in sheet protectors or use self-laminating sheets to protect the documents. Position the materials at each station with the general supplies of that station.

TEACHING DURATION

Most SNAPs lab activities require **two class periods** or **90 to 120 minutes**. However, the time needed to require one lab can vary with grade level, student autonomy and difficulty of content. Allowing two class periods allows ample time – regardless of these factors – for students to finish the four in-class stations.

Suggestions for shortening the lab:

1. Assign the Narrative Station as pre-lab work. By doing this, you ensure your students have first-order knowledge of the concepts and ideas explored in the lab. If you are using this lab to introduce new concepts, using the narrative station as a pre-lab will increase student success at the other lab stations.
2. Assign the Assessment Station as post-lab work. By doing this, you ensure your students are evaluated on the concepts and ideas in this lab after completing ALL stations.

DOCUMENT DISTRIBUTION

1. Distribute student copies of the lab overview and pre-lab assignment the night before the laboratory. The pre-lab is a ½ page assignment. Staple the pre-lab to the lab overview before distributing these documents.
2. Distribute student copies of the recording sheet at the beginning of the laboratory.
3. Distribute copies of the post-lab, synthesis station and synthesis project at the end of the lab. The post-lab is a ½ page assignment. Staple the post-lab to the synthesis station and project before distributing these documents.
4. Assign a due date for the synthesis project. The post-lab reflection is a formative assessment and should not require a formal “due date.”

TEACHER GUIDE

DIGITAL VERSION OF SNAPs LAB ACTIVITIES

This download includes a digital lab/fillable slides that allow students to complete the laboratory on a computer or tablet. This file was created to work with a variety of online platforms and secure file-sharing platforms. The digital lab has been modified so students record answers directly following questions rather than in a student packet.

Important Notes

- The answer key is removed from the digital lab.
- The answer key is included in the traditional PDF file.
- The digital laboratory CANNOT be edited; only fillable areas can be manipulated.
- When applicable, videos are included to help students create digital graphs.

The digital laboratory can be used a variety of ways:

- Distribute paper-free laboratories as part of regular instruction
- Use to assign at-home work as part of a remote or distance learning plan
- Send work to acutely or chronically absent students
- Support tutoring or at-home instruction for homebound students

How can you distribute and share the digital laboratory with your students?

- The laboratory CAN be distributed directly to students through email.
- The laboratory CAN be distributed or assigned with Google Classrooms, Microsoft Teams, Blackboard, Canvas, Schoology and other like platforms that are password-protected or require a code to enroll.
- The laboratory CAN be distributed with secure file sharing platforms like Google Drive, OneDrive and DropBox that are password-protected or shared only with students with their email or student account.
- Printable SNAPs labs can be shared or distributed just like the digital labs.

TEACHER GUIDE

To use the digital laboratory with Microsoft Teams:

1. Upload an assignment to your One Drive.
2. Create a new assignment. Add the file as a "resource."
3. Assign to the appropriate class or students.

To use the digital laboratory with Google Classrooms:

1. Upload the assignment to your Google Drive. Add the file using the upload tool in a web browser or drag and drop the file into your Drive. Watch a demonstration of the process: <https://safesha.re/3h6n>
2. Create a new assignment and add the digital lab to it. Make a copy for each student.
3. Assign to the appropriate class or students.

GOOGLE FORM ASSESSMENT

To better support digital classrooms, I created a Google Form version of the assessment station. There are two ways the Google Form assessment station can be used:

1. If using the digital lab, you can remove slides for the assessment station and use the Google Form assessment station instead. This makes the assessment station "more formal" since it is separate from the rest of the lab station activities.
2. If looking for a way to shorten the in-class lab, remove the assessment station – including the assessment station student recording pages – and assign the Google Form assessment station as an at-home assessment. Alternatively, you can use the Google Form assessment station as an in-class quiz if students have their own digital personal learning device.

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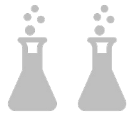
DISTANCE – INDEPENDENT LEARNING COMPATIBILITY

SNAPs lab activities are rated for their ease with distance – independent learning. Some lab activities are very hands-on and require a lot of materials whereas other lab activities are more thought-provoking and require minimal – or no – additional materials.

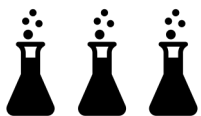
This lab has been rated the following:



The lab requires no modification to the required materials for distance – independent learning. All materials important to the lab are included in the digital lab. A calculator, colored pencils or a ruler may be needed.



The lab requires some modification to the required materials for distance – independent learning. Students can use household items, if needed, to complete hands-on activities.



The lab requires significant modification. Teacher should demonstrate or perform activities in a live session or prerecorded video and/or provide materials needed for the science skills or problem-solving station.

Suggestions

- This lab includes hands-on activities so to make observations and measurements. The activities at the science skills and problem-solving stations should be performed by the teacher in a pre-recorded video or in a live teaching session.

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EDITABLE COMPONENTS OF SNAPs LAB ACTIVITIES

This download includes an editable word document of all lab components. The stations are available as fully editable DOCX files., Diagrams, illustrations, tables and/or graphs that are essential to lab activities are included in the editable document. Illustrative clipart is NOT included in the editable document.

Some labs have a directed synthesis project. When applicable, the directed synthesis project is available as an editable word document as well. Editable documents and rubrics important to standard synthesis projects are included in the [SNAPs Lab Stations Setup Guide](#).

There are three important reasons for creating editable versions of these stations:

1. Most lab station activities utilize five or more stations with relatively simple and short activities. However, my SNAPs lab activities include four comprehensive stations. The science skills station and problem-solving station could be used independently as single class period laboratories. To better allow for this option, I have made these stations editable. Teachers can use the narrative station as "pre-lab" work and the assessment station as "post-lab" work.
2. The science skills and problem-solving stations are the only stations that will require materials other than computers or calculators. By providing these stations in an editable format, you can manipulate the materials required and/or the directions so the activities work for your classroom.
3. By making the science and problem-solving station editable, you can alter the scope of the activities to suit your students' needs. You can also edit the questions so to evaluate your students in a manner that is best for you and your classroom.

MAKE SURE YOU DOWNLOAD the FREE [SNAPs Lab Stations Setup Guide](#) for SIGNAGE, BEST PRACTICES & EDITABLE DOCUMENTS (<https://www.teacherspayteachers.com/Product/SNAPs-Lab-Stations-Guide-2953726>)