

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 image shows a PDF viewer displaying a grid of lab station pages for 'Static Electricity Stations Lab.pdf'. The viewer interface includes a title bar with the file name, a navigation bar with back, forward, and search icons, and a zoom level of 20%. The grid contains 24 pages, each with a different layout and content. The pages are organized into columns and rows, with some pages featuring illustrations and diagrams. The content includes objectives, materials lists, procedures, assessment questions, and problem-solving stations. The pages are numbered 1 through 24, and the viewer shows page 1 of 19 in the top left corner.

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 screenshot displays a digital lab interface titled "Static Electricity Digital Lab - Saved to my Mac". The interface is organized into a grid of 15 lab stations, each with a title, objectives, and a workspace for student work. The stations include:

- 1. Static Electricity & Electric Discharge Lab Overview
- 2. Static Electricity & Electric Discharge Lab Assignment
- 3. Science Skills Station
- 4. Narrative Station
- 5. Narrative Station
- 6. Narrative Station
- 7. Narrative Station
- 8. Assessment Station
- 9. Assessment Station
- 10. Problem Solving Station
- 11. Problem Solving Station
- 12. Problem Solving Station
- 13. Narrative Station
- 14. Narrative Station
- 15. Assessment Station

The interface also includes a top navigation bar with "Home", "Insert", "Draw", "Design", "Transitions", "Animations", "Slide Show", "Review", "View", "Recording", "Acrobat", and "Tell me". A bottom status bar shows "Slide 15 of 15", "English (United States)", "Accessibility: Investigate", and a zoom level of 66%.

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

Static Electricity Editable Lab Stations

<p>Name: _____ Date: _____</p> <p>Static Electricity & Electric Discharge Lab Overview</p> <p>Objectives:</p> <ol style="list-style-type: none">1. Observe and illustrate how an object gains static electricity.2. Explain the process of electric discharge.3. Describe lightning bolts and other natural structures from a lightning strike. <p>Skills Addressed and Engineering Practices:</p> <p>Defining problems (Practices 1 & 2) Planning and carrying out investigations (Practice 3) Constructing explanations (Practices 4 & 5) Designing solutions (Practices 6 & 7)</p> <p>MS-ETS1 Engineering Overview</p> <p>ETS1.2 Defining and solving problems (defining criteria and constraints) ETS1.2 Developing possible solutions</p> <p>Science Skills Station</p> <p>At this station, students will conduct investigations with a balloon and soda can. They will observe how an object gains static electricity and how that object creates a storm on a neutral object. Students will also observe the process of electric discharge.</p> <p>Sample Data</p> <p>At this station, students will read informational texts about static electricity. They will read about how an object gains and loses static electricity. They will also read about lightning; they will learn why lightning forms and how it is an example of a powerful electric discharge.</p> <p>Assessment Station</p> <p>At this station, students will answer questions about key terms and ideas relating to static electricity and electric discharge. Students must employ lower, middle and higher order thinking skills to answer these questions.</p> <p>Problem-Solving Station</p> <p>Students will analyze the engineering design process to identify and solve problems associated with electric discharge. Identify lightning. Students will design a lightning rod. They will determine the material, show a good option location for the rod so that it can direct lightning from damaging homes, buildings, trees and/or power lines.</p>	<p>Name: _____ Date: _____</p> <p>Static Electricity & Electric Discharge Pre-Lab Assignment</p> <p>Directions:</p> <ol style="list-style-type: none">1. Read through the Lab Overview.2. Create a new sheet for Static Electricity and Electric Discharge in the table of contents in your lab journal and determine the pages of your lab entry. Complete the following steps on the first page of the entry.3. Before the following terms in your lab journal:<ul style="list-style-type: none">• Electricity• Static Electricity• Electric Discharge• Lightning4. Write a 4-6 sentence summary about what you will do in this laboratory.	<p>Station Skills Station</p> <p>Objectives:</p> <ol style="list-style-type: none">1. Observe how an object gains static electricity.2. Summarize how charges transfer from an electrically charged object.3. Demonstrate how to discharge static electricity from a charged object. <p>Materials Required:</p> <ol style="list-style-type: none">1. Balloon2. Empty soda can3. Wool sweater <p>Activity</p> <ol style="list-style-type: none">1. Rub the balloon on your sweater.2. Inflate the balloon so it has a diameter of 30 inches. Knot the balloon's opening.3. Place the soda can on its side on your table or desk. Bring the balloon close to the soda can, but do not touch it. Repeat your observations.4. Empty the soda can with a wool sweater on or on a rug for 30 seconds.5. Bring the balloon (specifically the region of the balloon you rubbed with the mitten) close to the soda can, but do not touch it. If you accidentally touch the can, repeat step four. Record your observations.6. Repeat step 5. Bring the balloon very close to a metal electronic handle, without actually touching it. Record your observations.7. Lay the soda can flat on its side on your table or desk. Again, bring the balloon near the soda can. Record your observations. <p>Questions:</p> <p>For each observation you made, draw a picture that shows the electrical charge and distribution of electrons from the object to another. Note: The balloon becomes negatively charged, not positively charged.</p> <ol style="list-style-type: none">1. What happened when you rubbed _____ on a rug?2. Complete the sentence between _____ (the soda can) before you rubbed the balloon with the wool and after you _____ (the soda can) removed the wool? (What happened? How did you feel? How did you observe the soda can? How did you observe the balloon?)3. How could you further study the can's behavior in this investigation? Design an experiment that would require a deeper understanding of how objects gain static electricity, how it affects other objects or how it loses static electricity.	<p>Review Station</p> <p>Objectives:</p> <ol style="list-style-type: none">1. Define static electricity and electric discharge.2. Explain how lightning is an extreme example of electric discharge. <p>Activity #1</p> <p>Directions: Read the passage. Then answer the questions.</p> <p>WHAT IS STATIC ELECTRICITY?</p> <p>All objects have positive and negative charges. Neutral objects have equal amounts of positive and negative charges. If negative charges build up on an object, the object becomes negatively charged. If positive charges build up on an object because the object has more positive charges, the object becomes positively charged. Charged objects have static electricity. Static electricity is electrical energy that builds up on a charged object. It is called static electricity because the energy is static, or immovable. Only charged objects have static electricity. This is because charged objects have an electric field. Electric energy, or electricity, is contained inside the object's electric field.</p> <p>Static electricity builds up objects because of friction. When objects rub against each other, charges from one object transfer to the other object. Specifically, negative charges (if that electron) are transferred. This results in one electrically charged object. Both objects have static electricity because they are both electrically charged.</p> <p>Different materials are more likely to "gain" static electricity than others. These materials more easily gain or lose negative charges. Some are silk, hair, glass, nylon, wool, vinyl, felt, car air, wood, cardboard, paper, and plastic. Some are metal, aluminum, steel, and copper. Metal would not get easily transfer electrons and, thus, do not gain static electricity.</p> <p>Questions:</p> <ol style="list-style-type: none">1. What is static electricity? Why is it called so?2. What causes an object to "gain" static electricity?3. Why would a person wear a cotton shirt and a wool sweater, especially during the winter when the air is dry and static electricity builds up more easily?	<p>Activity #2</p> <p>Directions: Read the passage. Then answer the questions.</p> <p>STATIC DISCHARGE AND LIGHTNING</p> <p>A charged object eventually loses static electricity. The loss of static electricity is called discharge. Sometimes the object loses it gradually. Other times it loses it quickly.</p> <p>When an object loses static electricity quickly, you may see a spark or feel a zap. You may have seen an experiment like this other working on target with socks. When you rub your feet on carpet, negative charges build up on you. When you touch something, you discharge the negative charge. If you touch a metal object, like a door handle, you may see a spark or feel a zap. This is because metal discharges static electricity very quickly.</p> <p>Lightning is a powerful form of electric discharge. It results from the buildup and release of static electricity in clouds. Storms charge the electrostatic. The ground, other clouds or water in the cloud. The diagrams below summarize how lightning develops.</p> <p>Questions:</p> <ol style="list-style-type: none">1. What is electric discharge?2. What might you observe when an object loses static electricity quickly?3. Summarize how lightning develops. Use the diagrams and captions to help you.	<p>Assessment Station</p> <p>Objectives:</p> <ol style="list-style-type: none">1. Define key terms and ideas relating to static electricity and electric discharge.2. Explain how lightning forms and how it is an example of a powerful electric discharge.3. Describe lightning bolts and other natural structures from a lightning strike. <p>Assessment Questions</p> <ol style="list-style-type: none">1. Define key terms.2. Explain or summarize a concept.3. Evaluate a concept.4. Use prior knowledge.5. Think or create a concept. <p>Assessment Directions</p> <ol style="list-style-type: none">1. Answer the following questions. Write down your answers on the recording sheet.2. There are two bonus questions. If time allows, try to answer these questions.			
<p>Question #1</p> <p>What is static electricity?</p>	<p>Question #2</p> <p>What is electric discharge?</p>	<p>Question #5</p> <p>The diagram below illustrates the formation of lightning. Explain in a 300-400 word paragraph how lightning forms and discharges from a cloud, using the illustrations to help you.</p>	<p>Question #6</p> <p>A student rubs a neutral balloon and wool sweater together. Draw a picture to show what happens to the charge of the mitten and balloon after rubbing them.</p>	<p>Problem-Solving Station</p> <p>Directions:</p> <p>As an engineering design process to solve problems relating to electric discharge.</p> <p>Activity</p> <p>Design an experiment to see if lightning rods can prevent lightning strikes. You can create a spark. This spark can give lightning rods a static charge as good as lightning bolts as a comparison for safety.</p> <p>When a large amount of static electricity is built up, with lightning, the electricity can cause fires to buildings or trees if the electricity is discharged directly to the object. If lightning strikes on or near a person, it can get very close to a person's body. In some cases, a lightning strike to a person can cause sudden death.</p> <p>We can reduce damage associated with electric discharge through grounding. The process of removing the excess charge from an object by transferring the charge to the object and a very large object – like Earth. This neutralizes the charged object. Earth can transfer charges to and from without becoming electrically charged because of its massive size. For this reason, grounding usually always involves Earth.</p> <p>Engineers create grounding systems to minimize grounding. When we provide a conductive path for electrons to travel to a lower resistance object (and Earth), we bypass and prevent objects that could be negatively affected by electric discharge and lightning rod over time. A lightning rod is a metal rod mounted on the top of a structure. It is connected to the ground by one or more conductive paths. If lightning strikes the structure, it will preferentially strike the lightning rod because it is taller and provides an "easier" path to discharge static electricity than the rest of the structure. The Empire State Building in New York City has a lightning rod attached to it. It protects the structure from lightning damage.</p> <p>Watch a 30-second video to see the lightning rod in action.</p> <p>Video Info:</p> <p>URL: https://www.youtube.com/watch?v=UWU111111111</p> <p>Original YouTube Video: https://www.youtube.com/watch?v=UWU111111111</p>	<p>Question #3</p> <p>How is static electricity different from current electricity?</p>	<p>Question #4</p> <p>A student wants to determine how rubbing a balloon on different materials will affect the balloon's static electricity. The diagram below illustrates a question that could be asked. Write the question, then describe a procedure to answer the question. What would the balloon do to each to be what? What would it be?</p>	<p>Question #7</p> <p>Warning: See the red label below for safety instructions. The address shown is for informational purposes only. Do not attempt to replicate the experiment at home. Please do not attempt to replicate the experiment at home.</p>	<p>Question #8</p> <p>A student wants to determine how rubbing a balloon on different materials will affect the balloon's static electricity. The diagram below illustrates a question that could be asked. Write the question, then describe a procedure to answer the question. What would the balloon do to each to be what? What would it be?</p> <p>Design an experiment: Write a procedure to determine how rubbing a balloon on different materials will affect the balloon's static electricity. Use the diagram below which material would cause the greatest buildup of charge on the balloon.</p>
<p>Question #9</p> <p>How is static electricity different from current electricity?</p>	<p>Question #10</p> <p>A student wants to determine how rubbing a balloon on different materials will affect the balloon's static electricity. The diagram below illustrates a question that could be asked. Write the question, then describe a procedure to answer the question. What would the balloon do to each to be what? What would it be?</p>	<p>Question #11</p> <p>Warning: See the red label below for safety instructions. The address shown is for informational purposes only. Do not attempt to replicate the experiment at home. Please do not attempt to replicate the experiment at home.</p>	<p>Question #12</p> <p>A student wants to determine how rubbing a balloon on different materials will affect the balloon's static electricity. The diagram below illustrates a question that could be asked. Write the question, then describe a procedure to answer the question. What would the balloon do to each to be what? What would it be?</p>	<p>Problem-Solving Station</p> <p>Directions:</p> <p>As an engineering design process to solve problems relating to electric discharge.</p> <p>Activity</p> <p>Design an experiment to see if lightning rods can prevent lightning strikes. You can create a spark. This spark can give lightning rods a static charge as good as lightning bolts as a comparison for safety.</p> <p>When a large amount of static electricity is built up, with lightning, the electricity can cause fires to buildings or trees if the electricity is discharged directly to the object. If lightning strikes on or near a person, it can get very close to a person's body. In some cases, a lightning strike to a person can cause sudden death.</p> <p>We can reduce damage associated with electric discharge through grounding. The process of removing the excess charge from an object by transferring the charge to the object and a very large object – like Earth. This neutralizes the charged object. Earth can transfer charges to and from without becoming electrically charged because of its massive size. For this reason, grounding usually always involves Earth.</p> <p>Engineers create grounding systems to minimize grounding. When we provide a conductive path for electrons to travel to a lower resistance object (and Earth), we bypass and prevent objects that could be negatively affected by electric discharge and lightning rod over time. A lightning rod is a metal rod mounted on the top of a structure. It is connected to the ground by one or more conductive paths. If lightning strikes the structure, it will preferentially strike the lightning rod because it is taller and provides an "easier" path to discharge static electricity than the rest of the structure. The Empire State Building in New York City has a lightning rod attached to it. It protects the structure from lightning damage.</p> <p>Watch a 30-second video to see the lightning rod in action.</p> <p>Video Info:</p> <p>URL: https://www.youtube.com/watch?v=UWU111111111</p> <p>Original YouTube Video: https://www.youtube.com/watch?v=UWU111111111</p>	<p>Question #13</p> <p>How is static electricity different from current electricity?</p>	<p>Question #14</p> <p>A student wants to determine how rubbing a balloon on different materials will affect the balloon's static electricity. The diagram below illustrates a question that could be asked. Write the question, then describe a procedure to answer the question. What would the balloon do to each to be what? What would it be?</p>	<p>Question #15</p> <p>Warning: See the red label below for safety instructions. The address shown is for informational purposes only. Do not attempt to replicate the experiment at home. Please do not attempt to replicate the experiment at home.</p>	<p>Question #16</p> <p>A student wants to determine how rubbing a balloon on different materials will affect the balloon's static electricity. The diagram below illustrates a question that could be asked. Write the question, then describe a procedure to answer the question. What would the balloon do to each to be what? What would it be?</p>

Page 3 of 12 | 2401 words | English (United States) | Accessibility: Investigate | Focus | 30%

Features:

- ✓ **100% Editable** stations downloaded as a docx file
- ✓ Necessary diagrams, tables and other graphs included
- ✓ Illustrative graphics and clipart NCT 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.

TEACHER GUIDE

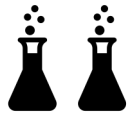
DISTANCE – INDEPENDENT LEARNING COMPATIBILITY

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 at the science skills station. Students need a balloon, soda can and wool mitten or piece of cloth to perform this activity, which are relatively common household items. Students could perform this activity at home. Alternatively, the activities at the science skills station could be performed by the teacher in a pre-recorded video or in a live teaching session.

TEACHER GUIDE

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>)