



Grades 2-7

Electricity

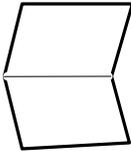
Learning Lapbook with Study Guide



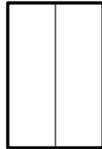
A Journey Through Learning
www.ajourneythroughlearning.com

Things to Know

Hamburger Fold-Fold horizontally



Hotdog Fold- Fold vertically



Folds- Labeled with a small line to show where the fold is and the words hamburger fold or hotdog fold.

Dotted Lines-These are the cutting lines

Cover Labels- Most of the booklets that are folded look nicer with a label on top instead of just a blank space. They will be labeled "cover label."

So where do the mini-booklets go?

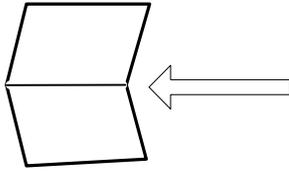
A color coded and labeled KEY is included. This key shows you where all of the mini-booklets go in each folder. Keep this page handy! You'll also see at the top of the mini-booklet pages another graphic that shows, once again, where to place the booklet in each folder. So there are TWO ways to see where to place the booklet. We made it easy!! You won't get lost.

How do I use the study guide and mini-booklets?

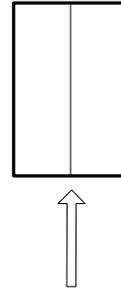
Read the study guide page to your child or if your child is reading, let him/her read it to you. After each study guide page, you will find the mini-booklet pattern that goes with that study guide page (Occasionally, a study guide page might have more than one mini-booklet). Cut out, construct and glue the mini-booklet into the lapbook (The directions for cut out, assembly and placement will be found on the same page as the mini-book pattern). Then fill in the answers. Most of the answers for the mini-booklets can be found within the study guide. Further research on the study guide topic can be done if desired.

Keep in mind that children of the same age can have very different academic and motor skills. Some children may have trouble writing in some of the smaller spaces of this lapbook. If this describes your child, we encourage you to let your child dictate the answers and you write for him. A lapbook is to be a fun project, not stressful.

Hamburger Fold-Fold horizontally



Hotdog Fold-Fold vertically



Dotted Lines-These are the cutting lines.

Accordion Fold-This fold is like making a paper fan. Fold on the first line so that title is on top. Turn over and fold on next line so that title is on top again. Turn over again and fold again on the next line so that title is on top. Continue until all folds are done.

Cover Labels-Most of the booklets that are folded look nicer with a label on top instead of just a blank space. They will be referred to as "cover label."

How Long Does it Take to Complete the Lapbook?

Doing a study guide page and mini-booklet a day, a 2-folder lapbook takes 2- 3 weeks to complete. However, you can expand the study portion and make it last as long as you like! That's the beauty of homeschooling! Do it YOUR way!

Lapbook Assembly Choices

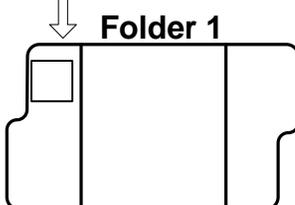
(see photos on how to fold and glue your folders together)

We recommend using Zip Dry Glue or Elmer's Extreme.

Choice #1 -Do not glue your folders together until you have completely finished both folders. It is easier to work with one folder instead of two or three glued together.

Choice #2 -Glue both folders together before beginning. Some children like to see the entire project as they work on it. It helps with keeping up with which folder you are supposed to be working in. The choices are completely up to you and your child!

How do I know where to place each template in the folder?



This placement key tells you the template goes in the first folder at the top of the left flap.

Tips and tricks to go the extra mile! (optional)

Supplies Need:

½ inch three-ring binder

5 tabs (if you are using our copywork and/or notebooking pages, you will need to have 7 tabs. Label with copywork and notebooking)

Quart size baggies

Duct tape

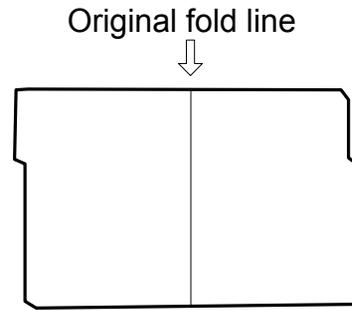
Your study guide and mini-booklets pages and copies of the enrichment pages at the end

Office supplies-glue, scissors, brads, stapler, pencils, crayons and ribbon (if needed)

1. Label your tabs: Study Guide/Mini Booklets, Book Log, NICK Notes(easier) or Outline Form (harder), Biography Reports, What I Learned Pages (Copywork and Notebooking, if using these).
2. You will find a master copy of all of these special pages at the back of the lapbook packet. Make copies of the NICK Notes or Outline Form, Biography Report (if included), and What I Learned Pages and put them behind the tabs. Make more copied of the Book Log if your child reads a lot and needs more room to log books. We will explain how your child can use all of these enrichment pages later.
3. Hole punch your study guide and mini-booklets sheets and place behind the Study Guide tab. You will read a page of a study guide. Behind the study guide is the booklet(s) that goes with that study guide.
4. Keeping your office supplies handy-Measure the bottom of a quart size zip-lock bag. Then measure out a strip of duct tape that length. Lay the zip-lock bag on the lower edge of the tape. Fold the other end of the tape down on the zip-lock bag. Your duct tape should be sticking out from the bag. Now, you can hole punch the duct tape strip. **DO NOT HOLE PUNCH INTO THE BAG!** Then put it into your 3-ring binder. Use this bag to store items you will be using for your lapbook. Glue, scissors, hole puncher, stapler and extra staples, crayons, pencils, brads, ribbon, and any unfinished work. Doing this one step keeps you from having to constantly gather supplies every time you want to work on your lapbook!

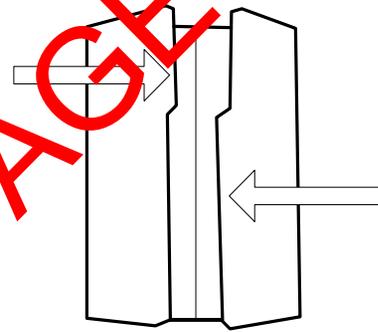
Folding a Lapbook Base

Gather the number of folders required for the project. Fold them flat as seen here.



For each folder, fold the left and right sides inward toward the original line to create two flaps. Crease so that the highest part of each flap is touching the original line. It is important not to let the two flaps overlap. *You may want to take a ruler and run it down each crease to make it sharper.*

Highest part of flap.



Glue your folders together by putting glue (or you may staple) on the inside of the flaps. Then press the newly glued flaps together with your hands until they get a good strong hold to each other. Follow this step to add as many folders as you need for your project. Most of our lapbooks have either 2 or 3 folders.

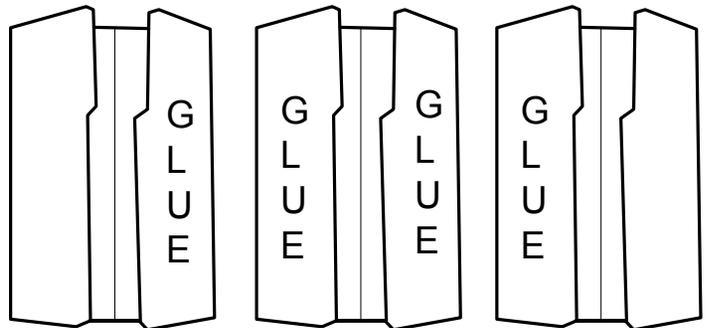
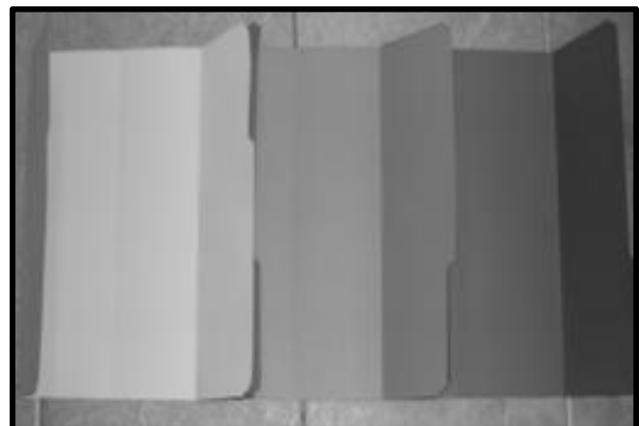
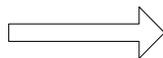


Photo of a completed lapbook base



Supplies and Storage

- *Lapbook Pages and Corresponding Video
- *2 Colored File Folders
- *Scissors
- *Glue
- *Stapler
- *Brads (not needed for every lapbook. If brads are not available, a stapler will do.)
- *Hole Puncher (again, not needed for every lapbook.)

To make the storage system (optional)

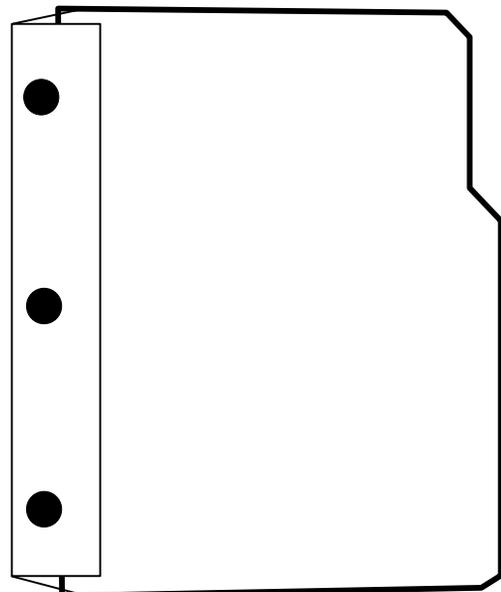
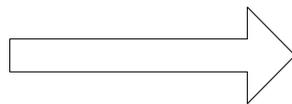
See details below about the use of a storage system.

- *Duct tape (any color)
- *One 3-ring binder
- *Hole Puncher

My child has made several lapbooks. Can I store all of the lapbooks together in one place?

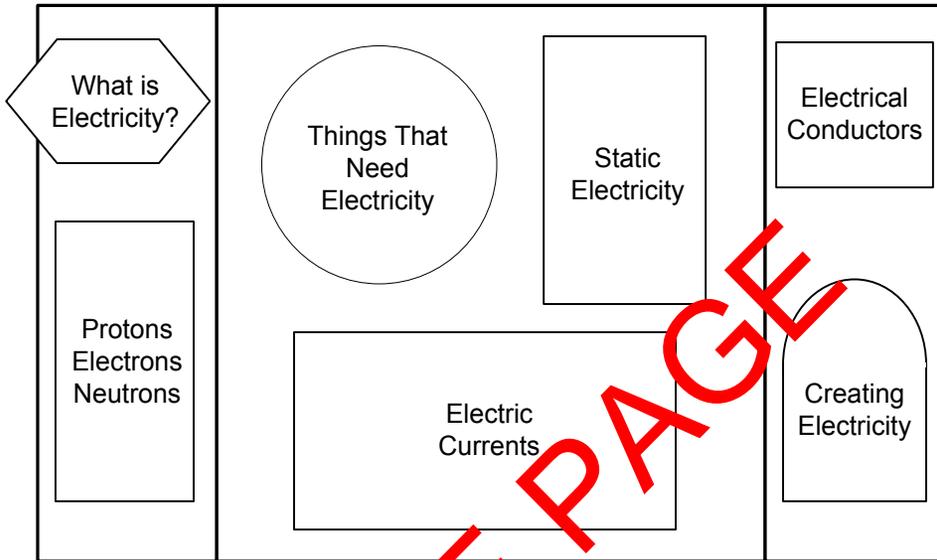
Yes! A three-ring binder serves as a great place to keep your lapbooks. This method of storage not only keeps your lapbooks from getting lost but also keeps them neat and readily available to share with dad, grandparents, friends, etc. When you are through sharing your lapbooks, just place the three-ring binder back on your bookshelf! Below are step-by-step directions of how to prepare each lapbook to be placed in a three-ring binder.

Close the lapbook. Measure a piece of duct tape that is as long as the lapbook. Place the edge of the duct tape on the top edge of the lapbook. Then fold the duct tape over so that it can be placed on the bottom edge. Make sure to leave enough duct tape sticking out from the edges to punch three holes. Be careful when punching the holes that you do not punch the holes in the folder. If you do, that's okay. Then place in three-ring binder. Depending on the size of your three-ring binder, you can store many lapbooks in it.



Booklet Placement Key

Folder 1



Folder 2

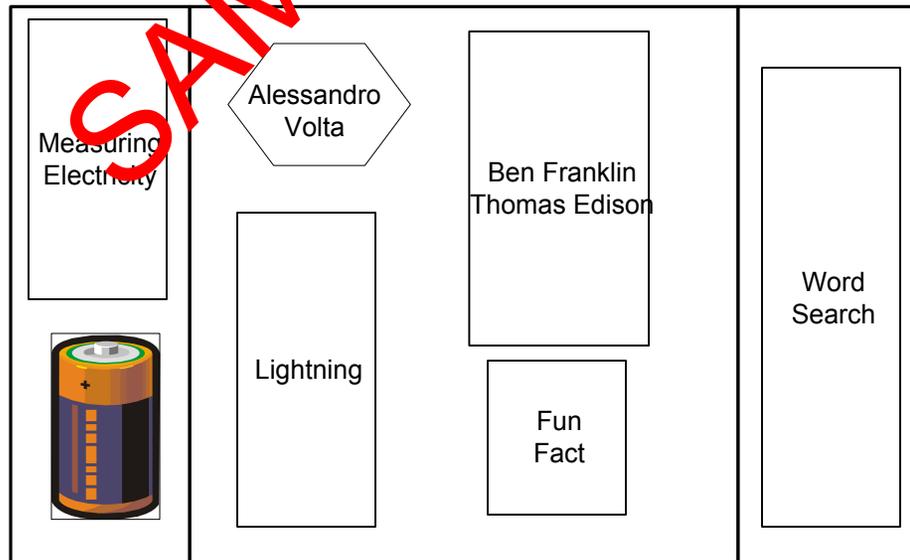


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SAMPLE PAGE

What is Electricity?

Electricity is power created by the movements in atoms. All matter (everything) is made out of atoms. Atoms are the building blocks of everything in the universe. In turn, atoms themselves are made out of some basic parts. These parts are what makes electricity.

The parts in the atom are the neutron, the proton, and the electron. The parts sometimes react with each other and move around, creating energy. Protons have what is called positive charge, while neutrons are neutral and have no charge. The neutrons and protons are bunched up together in the center of the atom, like a little ball. The third part of the atom is the electron. The electrons have a negative charge, and are moving in circles around the center of the atom, like planets orbiting the sun.

Under normal circumstances, atoms have equal numbers of protons (positive charges) and electrons (negative charges). Sometimes, however, some of the electrons will leave one atom and jump onto another. That little jump is electricity, a tiny spark of energy.

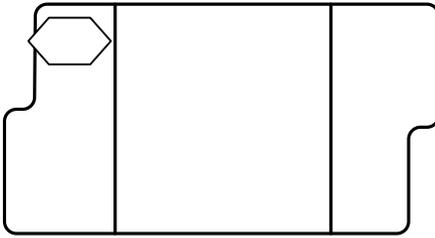
Once atoms have lost or gained electrons, they become charged. That means they have either too many or too few electrons. Atoms with too many electrons are negatively charged, while atoms with too few are positively charged. This is because the electrons are negative, so if there are more than normal, the atom has more of that negative energy, and if it has fewer, it has more of the proton's positive energy.

Atoms are attracted or repelled (pushed away) depending on their charges. Atoms with the same charges are repelled; either two negatively charged, or two positively charged atoms. Atoms with opposite charges, one negative and one positive, are attracted to each other. This is because the atoms with too few electrons are trying to gain their missing pieces back. They are pulled against the negatively charged atoms.

This attraction creates energy, as the atoms push and pull against each other. One kind of electricity, called static electricity, is not moving. Static means still. These atoms are charged but are not moving. The other kind of electricity is called electric current. These atoms are moving, constantly flowing around in a loop.

Electricity has always been a part of nature, but in the last century the ability to harness, control, create, and use electricity has given rise to most of modern technology. Light bulbs, computers, vehicles, telephones, and power tools all rely on electricity to work.

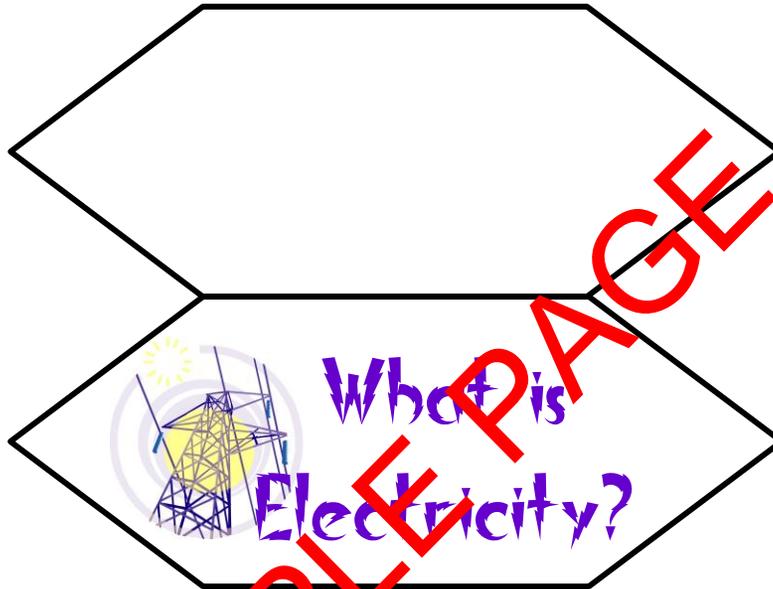
Folder 1



Read What is Electricity?

Cut out as one piece. Fold in half on the middle line. Glue into lapbook.

Directions: What is electricity? Write it inside the booklet.



Folder 1



Read What is Electricity?

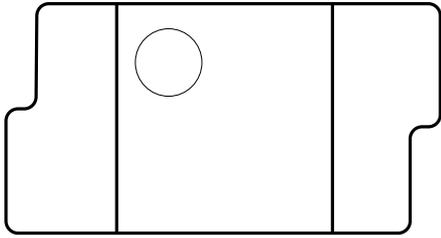
Cut out the booklet as one piece. Fold in half. Cut on the dotted lines to create flaps. Glue into lapbook.

Directions: What are protons, electrons, and neutrons? Write your answer under the flaps.

pro

A large diagram of a folder template, similar to the one in the top left. It is divided into three vertical sections. The right side of the rightmost section is further divided into three horizontal sections by two dotted lines. The top section is labeled 'Protons' in orange, the middle section is labeled 'Electrons' in green, and the bottom section is labeled 'Neutrons' in purple. A large red watermark 'SAMPLE PAGE' is overlaid diagonally across the entire diagram. On the right edge of the diagram, there are three small vertical labels: 'pro' at the top, 'ele' in the middle, and 'neu' at the bottom.

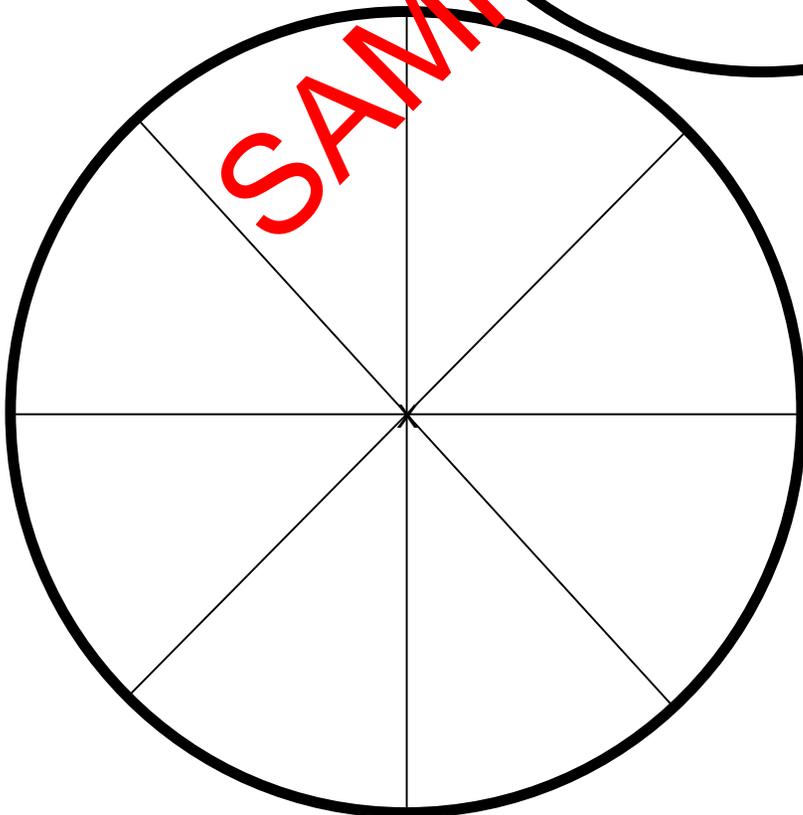
Folder 1



Read What is Electricity?

Cut out the two big pieces. Cut out the "window". Stack both big pieces on top of each other and fasten with a brad so top piece can rotate around. Glue into lapbook.

Directions: Draw or list items that need electricity to work. Put one item in each wedge. Do ones not mentioned in the study guide.



Static Electricity

Static electricity, you remember, is electricity that is not moving. These atoms have positive or negative charges, but are just sitting still. Static electricity builds up in something and that item is then holding a positive or negative electric charge. Static electricity is a form of potential energy, energy that is being stored but not used.

Many times static electricity builds up from friction. Friction is the process of two objects rubbing on each other. Sometimes, when friction happens, electrons rub off one atom and on to another. Have you ever rubbed a balloon against your head to make your hair stand up? That is static electricity. The atoms in your hair are charged because some of the electrons in the balloon have jumped onto you! Your hair stands up because the extra electrons are trying to go back where they belong to balance the charge in the atoms.

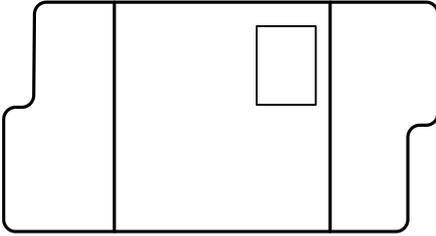
Another way to see static electricity is to rub your stocking feet across the floor in the winter. This builds up static electricity in you. You might not feel any different, but your body is electrically charged. Those atoms are constantly trying to return to their normal, un-charged state. Because of that, when you touch something that is a good conductor of electricity, such as metal, the electrons suddenly leave your body all in one zap. The slight shock you feel is electricity leaving your body as the atoms in the metal grab the extra electrons.

Lightning is also the result of static electricity. The water molecules in the clouds bump and tumble against each other, passing electrons around as they do so. The clouds become more and more charged, building up energy. When the energy has become too strong, the electricity makes a sudden, huge leap, either to the ground or another cloud, balancing the energy in the atoms. In this way lightning is really just a gigantic spark of electricity.

Static electricity is built up in things that are less conductive to electricity. This is because the atoms tend to hold on to their electrons more, so when they get too many or too few, it takes more work for them to return to normal. Things that easily move electrons around, such as metal, don't build up static electricity. The extra electrons just move around, and easily return to their normal un-charged state, if they get the chance.

Sometimes in the winter or when the weather is really dry, static electricity can build up very easily. You may notice sparks after riding in the car, walking on carpet, combing your hair, and drying clothes in a dryer. Dry things are more likely to build up static electricity, because water is an excellent conductor. Things that are dry have more trouble getting rid of extra electrons, so they build up static charges. This is why the experiment of rubbing your stocking feet on the carpet works better in the winter, when the air in your house is dryer.

Folder 1



Read Static Electricity.

Cut out the booklet as one piece along the black lines. Fold on the middle line. Glue into lapbook.

Directions: What have you learned about static electricity? Write about it inside the booklet.

