

Assemble the Computing System

About This Activity

Introduction

In this activity, learners will create a paper model of the main parts of the inside of a laptop to learn about computing systems. First, learners will read about the parts that make up the system. The way that the material is presented allows learners to relate each of the parts to a character with a role that will make it easy to remember the part's function.

Learners will then take what they learned and construct the interior of a laptop that has missing parts. Learners will use clues for the parts to help them identify each piece. This activity will reinforce the concepts.

Objective

Upon completion of this activity, learners will:

- know how the basic parts of a computer work together as a system

What You Need

This activity requires a low level of facilitator participation.

This activity will take about 30 minutes to complete.

You will need the following supplies:

- Scissors
- Tape or glue stick

Facilitator's Instructions

1. Print out the Learner's Sheet pages.
2. Gather the supplies needed.
3. Tell your learner about this activity: "Today, we're going to learn about computing systems! First, we're going to read about the parts that make up the inside of a computer, which is called a computing system. Then, you're going to use what you learned to fill in the missing pieces of the inside of a laptop. Let's get started!"
4. Pause and read the "Introduction" and "Meet Your Computer Parts!" sections of the Learner's Sheet. You can have your learner read these to themselves or you can take turns reading it aloud.

Assemble the Computing System

Facilitator's Instructions Cont'd

5. Tell your learner: "Now, let's do the activity! Get your scissors and tape or glue stick ready. Follow the directions to cut out the parts and place them in the spots of the motherboard that are missing. There are clues to help you figure out what goes where. Let me know when you're done and we'll check to see which ones you got right."
6. Pause and have your learner do step #5 now. Check their work against the answer key when they are done and make any necessary corrections.
7. Tell your learner: "Great job! Now, let's put the parts into the computer. Cut out the laptop on the next page and then tape or glue the finished motherboard into the space where the instructions are."
8. Pause and have your learner complete step #7 now. Have them let you know when they are done.
9. Tell your learner: "One more step left to do! Now, we need to close the laptop back up. On the last page, cut out the bottom half of the keyboard. This part has the keyboard and touchpad. Then, line it up over the motherboard so that it covers the whole bottom half of the laptop to close it up. Using your tape or glue, stick only the top part of this new part to the rest of your laptop. If you do this right, it will work like a hinge that you can open and close, and will look something like the picture on the top right-hand side of the page." This picture is also included on the answer key page for your own reference.
10. Pause and have your learner complete step #8 now. They may need some help with this part. If they are using a glue stick, they may need to fold part of the new piece so that it forms a better hinge.
11. Congratulate your learner on a job well done!

Standards Addressed

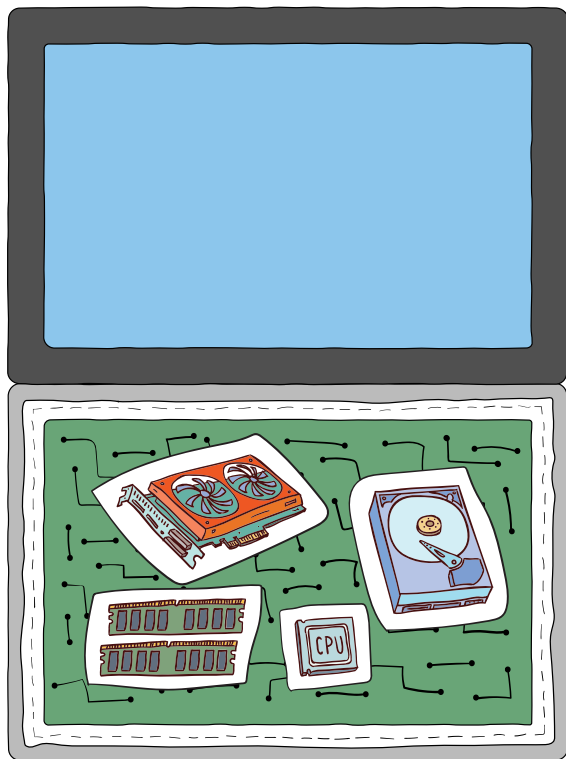
CSTA

1B-CS-01, Computing Systems, Devices: Describe how internal and external parts of computing devices function to form a system.

1B-CS-02, Computing Systems, Hardware and Software: Model how computer hardware and software work together as a system to accomplish tasks.

Assemble the Computing System

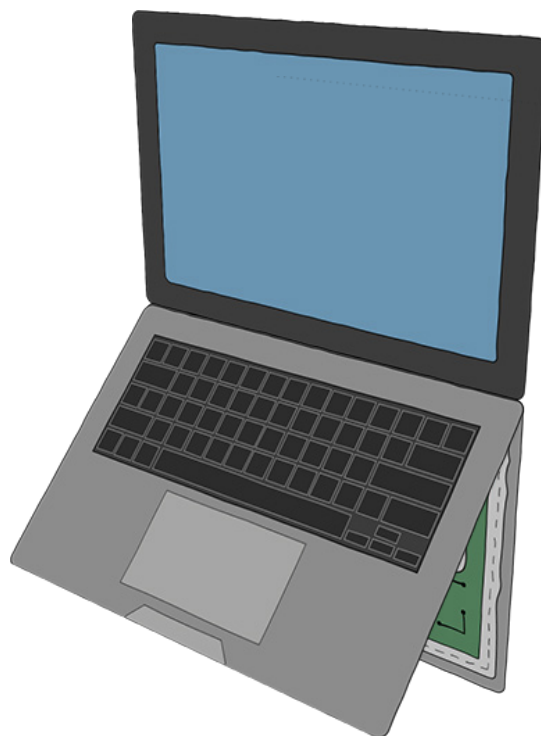
Answer Key



When the missing pieces of the motherboard have been added and the motherboard has been added to the laptop, it will look like the image on the left.



When the top piece has been added to cover the laptop's internal parts, it will look like the image to the right.



Assemble the Computing System

Introduction

Ever wondered what's inside your computer and how it all works? Let's take a look!

There are lots of parts that make your computer work. Each part has a job and works with the other parts to get that job done. By working together, these parts make a *computing system*.

Whether you are using a laptop or a desktop, the parts that make up the computing system are the same. They have all popped out from under the laptop keyboard below to say, "Hello!"

Read about each of them on the next pages. Then, follow the directions for the activity that follows where you will use what you learned to replace the missing parts inside of a laptop.

What You Need

- ✓ Scissors
- ✓ Tape or glue stick



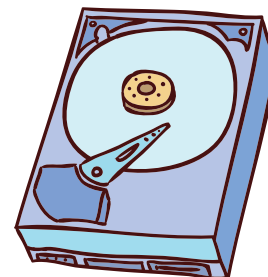
Assemble the Computing System

Meet Your Computer Parts!

The Librarian: the Hard Drive



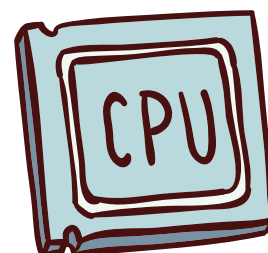
The *hard drive* in your computer is like a librarian. They are the safekeeper of all of your files. You can check out files by opening them, and then return them to the librarian by closing them. When not using a file, the librarian will keep them stored until you need to open them again.



The Conductor: the CPU



Who tells the hard drive and other parts what to do? The *CPU*, or *central processing unit*, is like a music conductor. It calculates and processes everything so it can direct all of the other parts and tell them what to do.

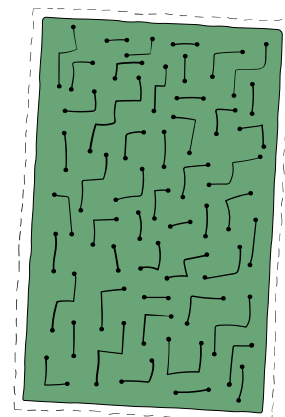


The Messenger Bird: the Motherboard and RAM



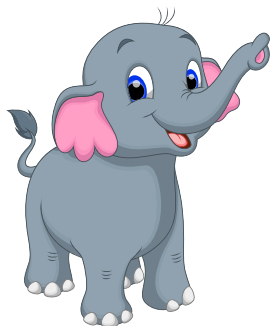
How do the instructions get from the CPU to the other parts of the computer? All of the parts are plugged into a *motherboard* that connects them and allows them to talk to each other.

This motherboard has another part built into it called *RAM*. The RAM is like a messenger bird that carries messages and instructions from part to part, flying through the connections in the motherboard just like a bird flies through the sky. This bird, however, does not remember any of these messages once the computer is turned off.

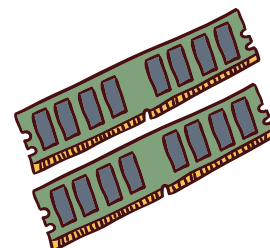


Assemble the Computing System

The Elephant: the ROM



How does your computer remember things for longer, such as after it turns off? The *ROM*! Like an elephant, the ROM never forgets and remembers things that the computer needs to not forget once it turns off.



The Artist: the GPU



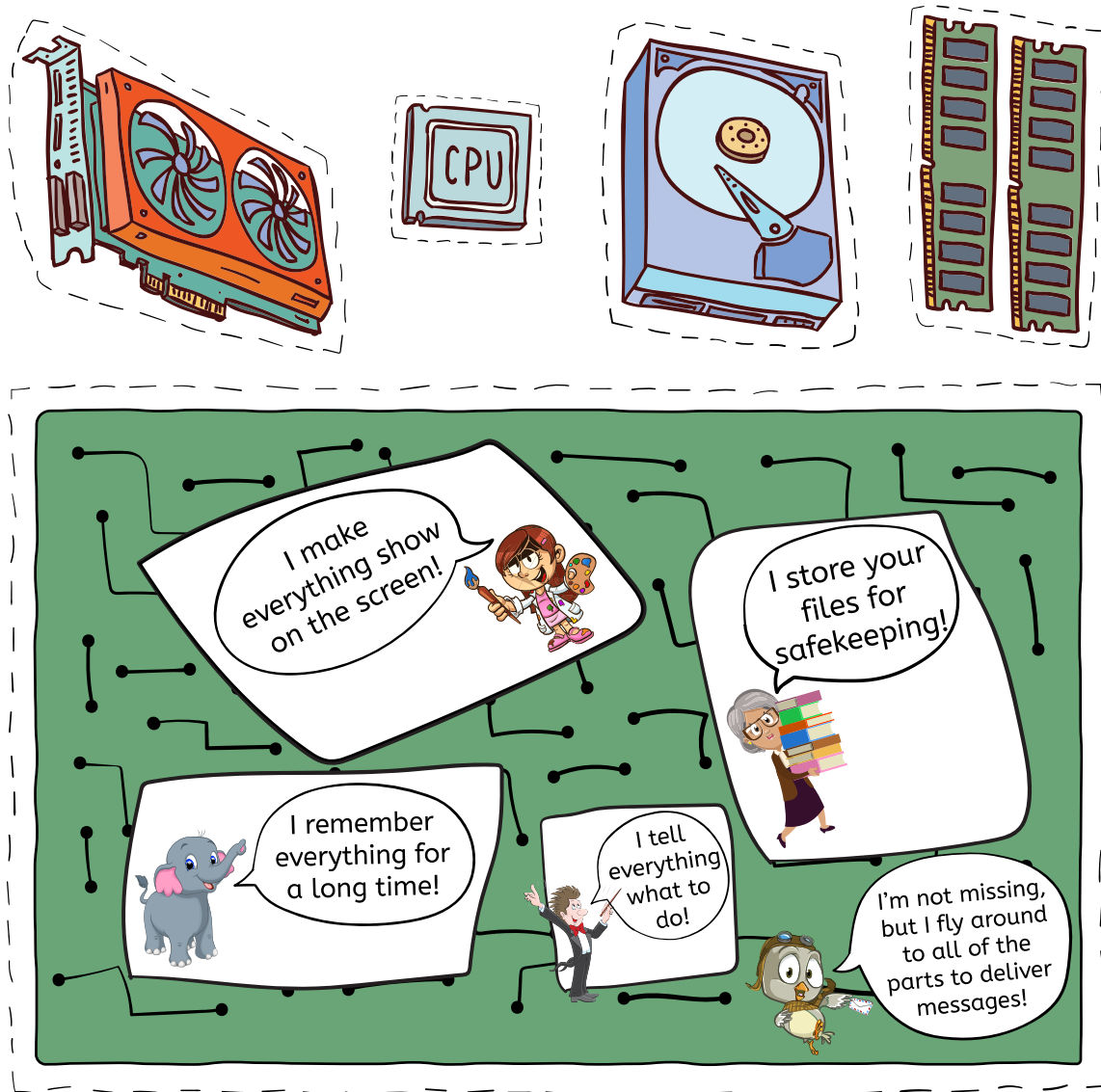
How does all of the work that these parts do show up on your screen so you can see it? The *GPU*, or *graphics processing unit*, makes it all visible on your screen. Your GPU is like the artist of your computer. It draws and paints all of the graphics that you need to see and puts them onto the screen.



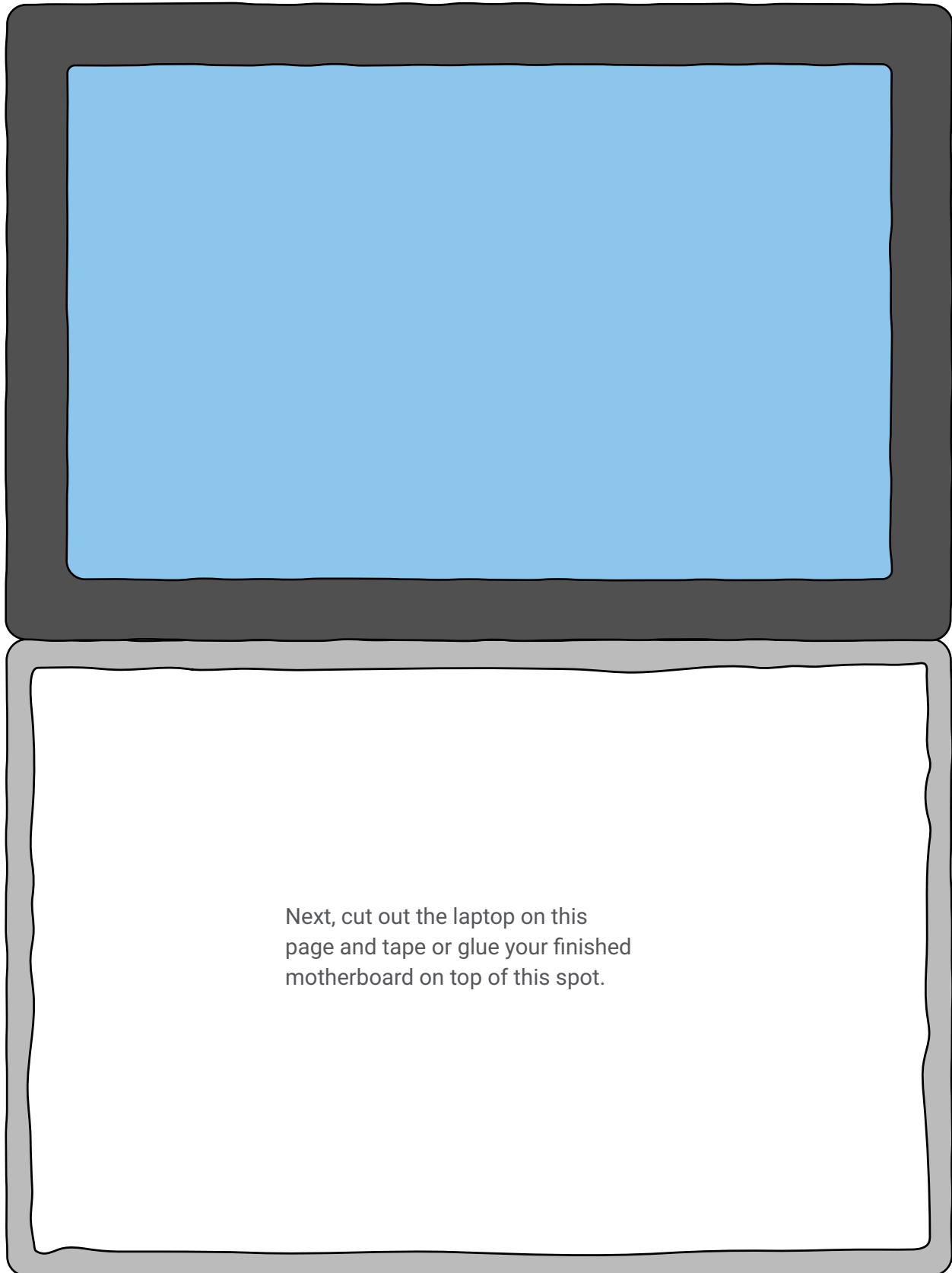
Assemble the Computing System

Activity Directions

Let's assemble the parts that live under the laptop's keyboard! Below are computer parts as well as a motherboard that needs missing parts plugged into it. Cut out the motherboard and the parts. Then, read the hints to figure out where the pieces go. Finally, to plug in the parts, tape or glue them into the correct spaces using the hints.



Assemble the Computing System



Assemble the Computing System

Finally, cut out the bottom half of the laptop below with the keyboard and touchpad. Next, line it up so that the keyboard covers the bottom half of your laptop that has the motherboard. Then, tape or glue just the top of this piece to the bigger piece so that you can lift the keyboard up and down. The example on the right shows what this will look like.

You're all done! Hang up your work to help you remember all of the parts and what they do.

