

The following tasks are part of a GaDOE collection of Unit Frameworks, examples of Student Work, and Teacher Commentary. Many more GaDOE approved instructional plans and tasks are available by using the Search Standards feature located on [GeorgiaStandards.Org](http://GeorgiaStandards.Org).

## Georgia Performance Standards for Science

### Third Grade Science Tasks

#### Earth Science

##### **S3E1.**

- A. Collect a variety of rocks and minerals from your area. Use this collection of rocks to complete your tasks. Duplicates of rocks and minerals can go into the class collection. Store rocks in containers like egg cartons.
- B. Invite a guest speaker such as a rock collector or geologist to speak about collecting and identifying rocks.
- C. Investigate the physical attributes of rocks and minerals in your area.
  - Size (Use measurement tools to compare.)
  - Shape
  - Color
  - Texture
  - Hardness: Use common objects to conduct hardness tests and compare results. Moh's Hardness Scale suggests using a fingernail, a penny, a metal object like scissors or a nail. If you can scratch the surface of the rock with your fingernail, it is a soft rock (1-2). If you can scratch the rock with a penny, it is medium soft (3-4). If you can scratch a rock with a metal object, it is a medium hard rock (5-6). A rock that won't scratch with any of these is a hard rock (7+.)
- D. Write a riddle using the physical attributes you observed. Put the rock with other rocks. Challenge your classmates to find the rock according to the riddle. Explain how this is similar to what a scientist does to classify a rock.
- E. Use the information from your collection of rocks and their physical attributes to compile a brochure about common rocks and minerals in your area. Exchange and compare your brochure with third graders in other regions of Georgia to find out about rocks around the different regions. Websites of schools around Georgia are available on the Department of Education website: [http://www.doe.k12.ga.us/\\_dbs/schools/public.asp](http://www.doe.k12.ga.us/_dbs/schools/public.asp).
- F. Write a story about the life of a rock. Use your research to explain how you think the rock was formed and what has happened to the rock over time.
- G. Use media and online resources to research Georgia's state gem and mineral—quartz, amethyst, and staurolite. See if you can find samples of these where you live.  
Suggested books—**Everybody Needs a Rock** by Byrd Baylor, Aladdin Paperbacks; **Stories in Stone**, LHS GEMS Guide, **The Amazing Earth Model Book** by Donald Silver and Patricia Wynne, Scholastic
- H. Investigate the physical attributes of soils in your area.
  - Particle size or texture (Use a magnifier.)
  - Composition (organic substances, rocks, etc.)
  - Color
  - Ability to support life (What evidence shows this?)
  - Smear it on paper to see how it looks.

## Georgia Performance Standards for Science

- Capacity for absorbing water: Put a small amount of soil in a funnel with a filter such as a coffee filter or paper towel. Pour a measured amount of water through it. After several minutes, measure and record how much water dripped through. Test different soil samples such as clay, sand, potting soil, etc. Explain which soil absorbs the most water. Infer which soil would be the best for plants.
  - Time how long it takes for the water to drip through the soil samples. Test soils from different areas and compare the times. Graph the results.
- I. Contact the county extension agent or a gardener to discuss the differences in soils in your area and how these differences affect plant growth.
- J. Generate a composting project using garden soil, worms, and plant remains. Predict and record what happens to the organic matter throughout the year. Explain what you find out about how organic matter becomes soil.
- K. Research the Internet or other current media, county extension agent, relatives and friends to find out about other soils around Georgia. (Sandy beaches on the coastal plains, dark rich soil in the forests of the north Georgia mountains, red clay in the Piedmont, etc.) Compare and contrast how the soils in Georgia are used and relate it to what you have learned about their physical attributes. Some questions you may ask yourself include, Do all regions in Georgia plant the same crops? Why are Vidalia onions grown only near Vidalia, Georgia? How do gardeners and farmers control the watering of plants if the soil absorbs water well or if it absorbs water poorly?
- L. Observe how water and wind can change rocks and soils over time. Check an area in a convenient location to see where water has moved soils or made puddles. Find rocks worn smooth by flowing water in a creek or stream. Read about sand dunes. Create an investigation to find out what protects rocks and soils from water and wind. For example, put ground cover (such as planting grass or covering with pine straw) over a bare spot to see if it protects the soil. Find a place to conduct your investigation and observe the soil periodically throughout the year.
- M. Investigate the effect of shaking rock particles with and without water in an unbreakable container and determine the factors that produce the most particles. Explain where these two kinds of weathering would occur naturally.

### S3E2.

- A. Compare and contrast fossils with organisms that are living today.
- Composition
  - Formation
  - Similarities and differences with other related fossils
- B. Produce a display, diorama, or multimedia presentation to show how fossils of organisms that lived long ago relate to organisms that are living today.
- C. Visit a science museum with fossil displays or invite a guest speaker who collects fossils. (See attached list.)
- D. Georgia's state fossil is the shark's tooth. Find out more about fossils of Georgia and where they are found. (<http://home.att.net/~cochrans/nwfoss01.htm>)
- E. Make a simulated fossil by pressing various objects into a substance such as clay or mud. Compare the fossils to the original objects and record the differences and similarities.

## Georgia Performance Standards for Science

Observe authentic fossils if available or view fossils using media resources including the Internet\*. Describe how they are similar or different to organisms that exist today.

- F. Find out how fossil fuels (coal, oil, and natural gas) are used as an energy source. Explain how fossil fuels were formed and why they need to be conserved.

\*Suggested resource: <http://fossilweb.com>.

### Physical Science

#### S3P1.

- A. Investigate heat produced by shaking a closed tube full of steel pellets (such as BB's or fishing weights) and record the temperature before and after shaking. Share your findings.
- B. Brainstorm a list of ways to transfer heat energy. Categorize the list into groups of burning, rubbing (friction), and mixing one thing with another. (Note: Energy cannot be produced or destroyed, only transferred.)
- C. Investigate melting ice cubes by having an ice cube race. Compile a set of rules and how the winner will be determined. In a small group make a plan for melting an ice cube faster than other classmates. Test your plan to see who has the best plan. Time the race and graph the results. Write your conclusions.
- D. Investigate melting ice cubes by having a race to see who can keep the ice cube from melting for the longest period of time. Compile a set of rules and how the winner will be determined. Test your plan to see who has the best plan. Time the race and graph the results. Write your conclusions.
- E. Compare the winning plans of each race. Write about what you learned.
- F. Design and construct a device that prevents the heat transfer (insulating device for cold drinks). Keep a record of temperatures periodically to measure success.
- G. Design tests to determine which type of container to use to keep a liquid hot or cold. Use various designs to test for the best insulator. Ideas of containers include different drinking cups—paper, plastic, Styrofoam, glass, cups with covers, etc. For example, you could see how long it takes for an ice cube to melt in different containers or measure the temperature of warm liquids over a period of time.
- H. Observe a small amount of water in various places: in a plastic bottle when it is left in the freezer overnight, left at room temperature, or set in a warm, sunny area. Diagram physical attributes of the water as it changes from solid to liquid to gas and from gas to liquid to solid.
- I. Compare and chart the materials that conduct heat well and those that conduct heat poorly. The chart can contain words and/or pictures and drawings of materials.
- J. Gather three bowls. Put warm water in a bowl on the left, cold water in a bowl on the right, and room temperature water in the middle one. Put your left hand in the bowl of warm water and your right hand in the bowl of cold water. Leave for one minute. Then put both hands in the bowl of room temperature water. Discuss the differences in how each hand “feels” the temperature of the water. Use a thermometer to measure the temperatures of the water. Explain why scientists use instruments such as thermometers to report temperature instead of using their senses such as touch.

## Georgia Performance Standards for Science

- K. Compare temperatures of metal, plastic and wooden spoons before and after they are immersed in warm water and cold water. Touch the bowl of the spoons before and after to compare. Relate your findings to kitchen utensils and handles of cookware. Design a kitchen utensil or cooking container that will keep the user from getting burned.
- L. Investigate how various materials (i.e. wood, paper, cloth, soil, water, etc.) transfer heat energy from the sun and then how quickly the same items lose heat when in the shade or classroom. Put the top of a shoe box out in the sunlight. Put a thermometer under each of the materials. Record beginning temperatures in a chart, such as the sample below. Leave the box top out in the sunlight for several minutes (10 or 15) and record the temperatures. Continue to check the temperatures every 10 or 15 minutes for a period of time. Graph results and write conclusions.

|                      | No cover | Under Paper | Under Cloth | In Cup of Soil | In Cup of water |
|----------------------|----------|-------------|-------------|----------------|-----------------|
| Starting Temperature |          |             |             |                |                 |
| After 15 minutes     |          |             |             |                |                 |
| After 30 minutes     |          |             |             |                |                 |

- M. Investigate how the temperature of a water sample changes over time in relation to its starting temperature. Set up an experiment with warm water, cold water, and room temperature water to demonstrate. Use the same amount (1 cup) of each temperature of water and record temperature readings at the beginning of the experiment and periodically (every 15-30 minutes). Graph the temperatures and write conclusions about how objects gain and lose heat until they reach the same temperature based on the results recorded in your graph.

### S3P2.

**Teacher Note: Caution—Students should not put magnets near electronic equipment such as computers or near personal medical devices such as pacemakers or hearing aids.**

- A. Investigate how magnets affect common objects. List objects in the classroom that are attracted to a magnet and those that are/are not. Display and label items that are attracted to magnets and items that are not attracted to magnets. Conclude how items of the two sets are similar and how they are different from items of the other set.
- B. Use more than one magnet to investigate how magnets attract and repel each other. Use a variety of magnets. Measure how close you can move a magnet (A) toward a different magnet (B) before magnet B moves.
- C. Use a magnet to pick up a string of paper clips. Record the number of paper clips that the magnet can hold. Test other magnets to see if they have the same strength. Put two magnets alongside each other, both with like poles together and then with opposite poles together, and record how many paper clips the two magnets can pick up. Explore the strengths of different kinds of magnets and different combinations of magnets. Generate a

## Georgia Performance Standards for Science

graph showing how many paper clips different kinds of magnets and different combinations of magnets will pick up. Communicate your findings about magnets with other classmates and draw a conclusion about what causes a stronger magnetic force.

- D. Research how magnetic force is used in transportation (electric car or trolley car, Maglev train) and to do work (moving wrecked cars in a junk yard). Make a collage of pictures and/or drawings of magnets at work.

### **Life Science**

#### **S3L1.**

- A. Identify green plants, fungi (mushrooms), and animals present on the school grounds and around your home. Make a list of the aspects of their habitat that are necessary for the organisms to survive. Remember to include organisms that live in fresh water or salt water environments if you live near lakes, rivers, or the ocean.
- B. Research green plants, fungi (mushrooms) and animals that live in other regions of Georgia. Using informational resources including maps, match animals and plants with their homes (areas in Georgia where they live: mountains, marsh/swamp, coast, Piedmont, Atlantic Ocean).
- C. Contact other third graders in Georgia and share your lists of green plants, fungi (mushrooms) and animals and their habitats that live in your area with them. Ask them to share their lists with you. Compare and contrast the lists to determine similarities and differences.
- D. Write an illustrated story telling what you found out about the organisms in your area, such as where they live, what they consume, and what external features the animals or plants have that enable them to live where they do. Use what you know about other areas in Georgia to conclude if the organisms could live in those other habitats.
- E. Choose an organism that lives in a place other than Georgia. Do a report about that organism, its needs, its habitat, and why, based on its needs and features, it lives somewhere other than Georgia. For example, penguins do not live in Georgia except in zoos or animal parks. You would find out why penguins are not native to Georgia, what it needs to live, and its habitat.
- F. Visit a zoo or botanical garden and find out what accommodations in food, environmental conditions, and habitat the caretakers had to make to keep exotic organisms alive in Georgia.
- G. Identify external features of animals that allow them to live and thrive in different regions (cold, warm, w, dry, etc.). Explain why certain animals need to live in a certain region due to their life cycles. External features may include but are not limited to
  - Body covering
  - Size and relative scale of body parts
  - Movement
  - Food gathering

## Georgia Performance Standards for Science

- H. Identify external features of green plants and fungi (mushrooms) that enable them to live and thrive in different regions of Georgia (mountains, swamps/marshes, coasts, fresh water, Atlantic Ocean, and Piedmont).
  - Seeds, cones, flowers
  - Leaf structure (leaf shape, thickness, etc.)
  - Size
  - Shape
- I. Compile information into a research display of different plants and animals and their external features that help them thrive in different kinds of places. Use maps to show locations.
- J. Write an illustrated story telling what you found out about the organisms in your area, such as where they live, what they consume, and what external features the animals or plants have that enable them to live where they do. Use what you know about other areas in Georgia to conclude if the organisms could live in those other habitats.
- K. Choose an organism that has unusual features. Do a report about that organism, its needs, and why, based on its needs and features, it lives in a specific habitat.
- L. Produce a display (diorama, multimedia presentation, brochure, etc.) about external features of organisms. For example, you could compile a brochure about beaks or feet of different birds. You could do a presentation about different leaves or fungi.

### S3L2.

- A. Sometimes pollution such as littering changes an organism's habitat. Anchor a piece of paper on a grassy area on the school ground. Leave the paper for two weeks. Remove the paper and observe the impact the paper had on the grass. Develop a plan to help clean up the area so that the organisms in the area are more likely to survive. Publicize your plan and write letters to encourage others to help with the plan. Test your plan and keep a record of the number of organisms or the condition of the organisms before and after implementing the plan.
- B. Research other ways to help the environment such as conservation of resources and recycling. Look around your school and home for ways to help conserve resources and recycle products. Make posters to display around the school informing other students of the need to conserve water and land resources by careful use and recycling. Celebrate Earth Day in April by sharing what you have done to help "save the planet."