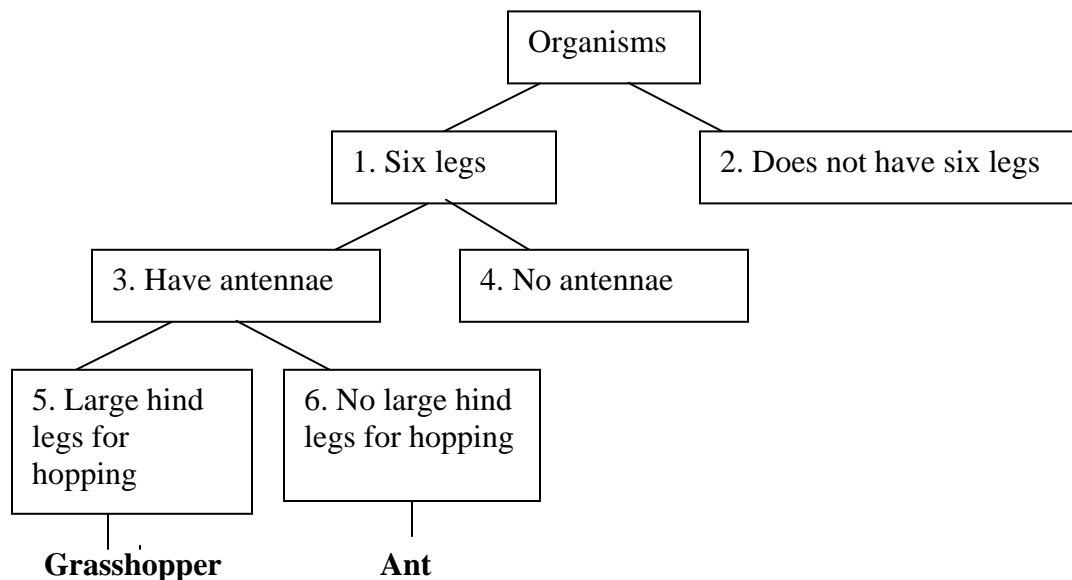


Seventh Grade Science Tasks

S7L1.

- A. Go on a scientific expedition around the school grounds to chart as many organisms as you can find. Work in small groups to organize the list according to observable features such as animals that are insects, fungi that are mushrooms, plants that are grass, etc. Compare your findings with other groups and compile a guide to organisms found in the schoolyard environment. Your guide could include sketches, location, common names and scientific names.
- B. Take the list of organisms and put each name on a card. Take turns choosing rules for grouping or sorting them by a characteristic they either have or don't have. For example, if the rule was "green leaf." All of the organisms that had green leaves would go in one stack and all of the organisms that did not have green leaves would go in a different stack. That is the first step in a dichotomous key. Practice making a rule and sorting the organisms. See if classmates can guess your rule by looking at the two stacks after sorting. Keep a list of as many specific categories as you can.
- C. Choose two organisms from the schoolyard environment guide you compiled in the previous activity. Compare the two by devising a list of what the organisms are and what they are not by observable features. If you compared an ant and a grasshopper, they would have common features, but some features would pertain only to the ant or only to the grasshopper. Make a chart to show your work like the one shown. Use only one feature at a time and only ask if it does have that feature or it doesn't until each organism has a specific list of features. Both the ant and the grasshopper have six legs and antennae, but only the grasshopper has large hind legs for hopping. Explain how scientists use this method to classify organisms.



- D. Use the chart to make a dichotomous key. For example,
If the organism has six legs go to number 1. If the organism has antennae, go to number 3. If the organism has large hind legs for hopping, go to number 5. It is a grasshopper. Practice writing keys and share them with classmates to see if the key is accurate.
- E. Use organisms from the list of schoolyard organisms to compare and create dichotomous keys comparing more than two organisms. Share your key with other classmates to see if

they can correctly identify the organisms. Refine your key. Compile the class keys and add them to the guide of organisms found in the schoolyard environment.

- F. Research dichotomous keys to see how scientists classify organisms.
- G. Compare the six kingdoms (Plants, Animals, Protists, Fungi, Archaeobacteria, Eubacteria), and the characteristics of each. Divide the class into six small groups. In each small group choose a different kingdom to research the organisms classified in that kingdom. Share the information with the class. (To classify organisms, you must understand the characteristics of the organisms and the differences in complexity. You may want to organize your understanding from simple organisms to more complex organisms.)
- H. Choose two similar animals or plants and compare their classifications to see how scientists distinguish between the two.
- I. Go on a scavenger hunt to find as many examples of different kingdoms as you can. Your scavenger hunt could focus on pictures or photographs, it could be a list of organisms you have observed, or it could include information you have found in print or was part of a report in the media. Display the class list on a bulletin board for a period of time to see how it changes as you learn more about living things.

S7L2.

- A. Explain how a cell performs basic life functions through a class presentation of essay. Remember to include how a cell takes in nutrients in order to grow and divide, makes needed materials, extracts energy, and gets rid of waste.
- B. Design an experiment to show that cells are composed mostly of water. One of the functions of the cell membrane is to control the flow of materials into and out of the cell. In this investigation, you will observe the effects of placing plant cells in solutions of various concentrations. **Materials:** *Elodea* leaves, microscope slides, cover slips, microscope, distilled water, tap water, 5% salt solution, 10% salt solution, paper towel. **Methods:** Prepare a wet mount of an *Elodea* leaf with tap water. Observe the leaf using magnification and record your observations. Place 2 drops of the 5% salt solution on the slide at the edge of the cover slip. Tear off a small piece of paper towel and place the torn edge on the slide at the edge of the cover slip that is opposite the side where the salt solution was placed. The piece of towel should begin to soak up water, drawing the salt solution under the cover slip as it does. Repeat the observations of the cells. Record your observations.
- C. **Conclusions:** Prepare sketches of a group of *Elodea* cells under each set of conditions. Label the sketches to note the cell structures that you can identify. Be sure to note any changes in the color, size, and shape of the cells. Make your sketches as accurate as possible.
- D. Write a play or skit about the processes of the cell. Have classmates act out the various roles of the organelles in the cell during the processes.
- E. Research the structures in an animal cell (membrane, nucleus, cytoplasm, chloroplasts, vacuole, and mitochondria) and a plant cell (Add cell wall and chloroplasts to the previous list.). Develop an organized chart, table, or graphic organizer to explain their functions, characteristics and how they relate to each other.
- F. Dissect flowers, fruits, and seeds to determine physical features of plants that allow them to produce food and reproduce. Discuss how you recognize the differences between the tissues, organs, and organ systems of the plants.
- G. Illustrate how various organs and tissues serve the cell's need for food, air, and waste removal.

S7L3.

- A. Conduct research that shows an example of how selective breeding produces organisms with desired traits such as drought-resistant plants, varied color/shape of flowers, increased milk or meat production in animals, etc. Share your findings with the class.
- B. Scientists have found that certain traits tend to be more dominant than others. Some traits are recessive. A dominant trait has a greater probability of showing up in successive generations. Gregor Mendel studied peas and used charts to explain his findings. Research Mendel and other individuals who study genetics to find out more about their findings.
- C. Use Punnett Squares to explain the probability of inheriting a specific trait.
- D. Survey classmates and make a chart on hereditary characteristics that are dominant or recessive such as hair color, hair texture, eye color, blood type, height, etc.

S7L4.

- A. Draw a food chain depicting producers, consumers, and decomposers of a major biome. Label specific predator/prey relationships with an energy flow diagram. Meet with classmates who chose the same biome and sketch a food web using all relationships. Discuss the value of interdependence in the food web and explain the cause/effect relationships that happen with changes to the organisms in the web (overabundance or scarcity).
- B. Given actual census data on populations and species in a wetland, present arguments in support of and against a proposition to develop the area.
- C. Research the cause/effect relationship impacting an organism that has been identified as endangered or extinct. Make a timeline depicting the relationship and different milestones in the survival/extinction of the organism. For a list of plants and animals identified as on Georgia Endangered Species: <http://www.endangeredspecie.com/states/ga.htm>
- D. Research how human impact has affected organisms in Georgia. Design a campaign to help protect a threatened species. Ideas about protecting endangered plants and reasons for their threatened status are found on the Georgia Endangered Plant Stewardship Network: <http://www.uga.edu/~botgarden/GEPSN2b.html>
- E. Categorize organisms that have relationships that are mutually beneficial or competitive by either
 - Growing milkweed in an outdoor setting and discovering the variety of life on the plant,
 - Maintaining an ecosystem such as an aquatic food chain in an aquarium or terrarium,
 - Observing life in and on a rotting log.

S7L5.

- A. Make a list of adaptations and explain that either increase survival chances of an individual or species, or factors that contribute to their extinction. Present this list to the class in the form of a poster or display.
- B. Investigate how scientists use rocks and fossils to explain changes in organisms over time.
- C. Make imprint fossils using clay. Compare the simulated fossils to the original object. Discuss the difficulty paleontologists have in using a fossil to infer what an organism was like.