



Nature-Watch Activity Kit

Pressed Leaf Coaster

(Nature Watch Kit #139)

Kit Contents

| <u>Item:</u> | <u>Kit Size</u> | |
|----------------------------|-----------------|-----|
| | 25 | 100 |
| Assortment of Pressed | 1 | 4 |
| Acrylic Squares | 50 | 200 |
| Foil Tape lengths (18" per | 25 | 100 |
| Coaster Feet | 100 | 400 |
| Instructor Manual | 1 | 1 |

This page includes the Next Generation Science Standards (NGSS) mapping for this kit and Science, Technology, Engineering, and Math (STEM) extensions (on back) to use in adapting and extending this activity to other subject areas.

**See Back for
STEM Extensions**

Next Generation Science Standards Alignment

K-LS1-1. Use observations to describe patterns of what plants and animals (including humans) need to survive.

2-LS2-1. Plan and conduct an investigation to determine if plants need sunlight and water to grow.

2-LS4-1. Make observations of plants and animals to compare the diversity of life in different habitats.

4-LS1-1. Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction,

5-LS1-1. Support an argument that plants get the materials they need for growth chiefly from air and water.

5-LS2-1. Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

MS-LS1-1. Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.

MS-LS1-2. Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.

MS-LS1-6. Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.

MS-LS1-4. Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristics animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.

This Nature Watch Activity Kit contains an Instructor Manual and materials to implement the curriculum. The kit was designed to be used with adult supervision only. Unsupervised use is not recommended.



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STEM Extension

Science

What happens if a plant does not get sunlight? Find out by covering the top and the bottom of a few leaves on a small plant with black construction paper or aluminum foil. Paper clip the paper/foil to keep it secure on the leaves and place the plant in the sunlight. After a week, remove the paper/foil to see how those leaves look. What do you think happened? Then, leave the plant in the sunlight, uncovered, for a week and see what happens to the leaves that were previously covered.

Make a deck of tree leaf identification cards that you and your peers can take on nature walks. On one side of an index card, draw the leaf and write the name of the tree. On the other side, describe the leaf and give tips about identifying the leaf in the wild.

Conduct an experiment to get insight into why leaves change color in autumn. Break three fresh, green tree leaves into tiny pieces and place them in a jar. Pour enough rubbing alcohol into the jar to cover the leaf pieces. Mash and stir the leaves and rubbing alcohol thoroughly with a spoon. Cover the jar with plastic wrap. Place the jar into a bowl of hot water for 30-60 minutes. Periodically, open the jar to stir, mash, and swirl the leaves and rubbing alcohol some more. After you remove the jar from the bowl, cut a rectangular strip from a coffee filter and tape one end to the mouth of the jar. Let the other end hang down in the rubbing alcohol and leaf mixture. Check the filter in about an hour. You'll see the different pigments in the leaf, now separated out. The green chlorophyll breaks down in autumn, leaving the other pigments to give the leaves their fall colors.

Technology

(Younger) Record time-lapse photography of fall foliage by taking a photo of one selected tree each day during the fall. Print the photos and make a flip book to "play back" the photos.

(Older) Record time-lapse photography of fall foliage by taking a photo of one selected tree each day during the fall. Play back the time-lapse photographs in PowerPoint or by simply clicking through them to see a "movie" of the changing colors.

Engineering

Create a surprise leaf while practicing the leaf vocabulary on page 2. To prepare, set out four small containers and label them: Configuration, Arrangement, Margins, and Shape. Into the Configuration container, place pieces of paper with the possible configuration characteristics: Simple, Palmately Compound, and Pinnately Compound. For Arrangement, put in Alternate, Opposite, and Whorls. For Margins, put in Entire, Sinuate, Dentate, Serrate, and Lobed. For Shape, put in Elliptic, Lance-shaped, Acicular, Ovate, Cordate, Sepathulate, Rhomboid, and Hastate. Select one piece of paper from each container, then draw a leaf that exhibits the characteristics you selected.

Imagine you were lost in a forest for several days. Brainstorm all the ways you would use leaves to help you survive and what kinds of tools that you could construct from the leaves. Write a story or draw a picture showing how the leaves could be helpful for you in that situation. Name your leaf inventions, too.

Math

Compare the surface area of a leaf from a broadleaf tree and a leaf from a conifer tree. How would the difference in surface area affect the trees?

After you go on a leaf hunt, lay the leaves you found on a table. Find the perimeter of each leaf by lining a string around its edges, then measuring the length of the string it took to go all the way around the leaf. How does the perimeter range among leaves from the same kind of tree? What is the average perimeter for leaves from each kind of tree?

Plant leaves help improve indoor air quality by capturing off-gases from furniture, cleaning supplies, and building materials. It is recommended to have two plants per 100 square feet of space for this purpose. Check your school and/or home to see if you have enough plants and if, not, how many more you would need to meet this recommendation.