



July 2011 – Backyard Science

Explore your own backyard with these science projects and learn fascinating details about plants, rocks, and insects! Find out about the texture of trees by making a bark rubbing.

Backyard Science Projects

One Small Square Study

Study a small area of your backyard and find a host of fascinating objects! See fine details on grass and find insects of all sorts. You will need this worksheet, two heavy books, scissors, a pencil, and a magnifying glass. You may also want a towel if the grass is wet, so you can kneel comfortably close to the ground.

What To Do:

1. Print out the worksheet, fold on the dashed line, and then use scissors to cut out along the dotted line. When you unfold the paper there will be a square hole in the paper.
2. Look around your yard for a flat area covered in grass. If you can, choose a spot that is part in the sun and part in the shade. Once you have chosen the spot, place the paper with the square cut out on the ground. Press the paper down, and set a book (or other weight) on either side of the paper to hold it down.
3. Once you have the area mapped out, get on your hands and knees on the ground (put a towel beneath you if you want), and explore the ground up close. Hold your magnifying glass up to your eye, and slowly move it around the area. Try to spot different insects. Are there any flowers or weeds growing in the square you chose? Pay attention to how the grass is growing and what is happening on the top layer of soil.
4. Make a list of all the objects you spotted. Are there different kinds of plants? Different insects? Write them down or draw pictures to show each one.
5. If you like, you can use a clear plastic container or jar to catch an insect and study it closer. Lay the container close to the ground and let the insect crawl into it. Carefully tip the container so the insect is at the bottom. Let it crawl around, and study it up close using a magnifying glass. When you are done, let the bug crawl out of the container.
6. Study the dirt by taking a small dish and scraping up a thin layer of soil. Is the soil wet or dry? Look at it with the magnifying glass to see what you can find.
7. When you are done exploring, take the books off of the paper square. You can try the study in another area of the yard, or even visit a park or field nearby.

What's Happening?

When we look closely, we find out that there is a lot going on in nature - even in a small area. By focusing on only one small square of your yard, you were hopefully able to observe a lot. Many insects live on the surface of the ground, crawling in and around the grass, so they blend in at times. Some creatures live underneath the ground, such as earthworms. Other insects (such as butterflies and bees) fly above the surface, though they do land on the ground or on a plant to rest. The kinds of plants you have growing in your yard draw in certain kinds of insects. The variety of insects you will see in your small square depends on what the grass is like, how moist the soil is, and how warm it is. If you did the project again in a different area, you might have very different results!

For more nature studies, see the One Small Square books on our website:
<http://www.hometrainingtools.com/search.asp?ss=one+small+square>.

Bark Rubbings

Using crayons and paper you can make a work of art that captures the texture of a tree. You can study different trees that are in your backyard and take a bark rubbing of each one. You will need some tape, crayons, and regular copy paper.

What To Do:

1. Find a tree that you want to make a bark rubbing of. Rough bark works best, like that of an oak, pine, or cottonwood tree.
2. Tape the piece of copy paper to the bark of the tree, being sure to wrap it around the trunk closely, without ripping or tearing the paper.
3. Use the crayon color of your choice to rub back and forth diagonally over the entire piece of paper, until the bark design appears.
4. Try making more bark rubbings! Compare different types of trees by the kinds of crayon rubbings you get from their bark. Try using a light crayon on dark paper, or dark crayons on light paper.

What's Happening?

Different trees have different bark. Some bark is very smooth, and some is thick and rough. The bark on a tree protects it from things like very cold or very hot temperatures, insects that try to get inside and eat the tree, and diseases that could harm or kill the tree. When you made a texture drawing of the tree by rubbing the crayon over the paper taped to the tree trunk, you might have noticed that each tree had a different texture. Do you remember which crayon rubbings came from each tree? Which tree has the roughest bark? Which tree has the smoothest bark? Noticing these things can help you find out what kind of tree it is, using a field guide. The bark on trees and how the leaves are shaped help scientists (and can help you!) know the name of the tree, which is called classification.

Fun Facts

- All the ants of the world together weigh more than all the people on earth. There are almost 7 billion people on earth, and there may be as many as ten thousand trillion ants!
- Squirrels usually jump around at a speed of 10 mph, but they can move up to 20mph.

- Honey bees flap their wings about 200 times every second during flight. That's 20,000 times in one minute! Butterflies flap their wings around 5-20 times each second when they are flying.

Silly Science

- What has six legs and talks in code?
 - A morse-quito.
- What do you get when you cross a rhinoceros with a firefly?
 - I don't know but at least you'll be able to see it in the dark!
- What do you call a fly with no wings?
 - A walk.

Way Cool Websites

- This site from Audubon has some wonderful games and activities like guessing which birds make which sounds: <http://web4.audubon.org/educate/kids/>
- Learn about how scientists give animals their names in this critter classification game: <http://www.hhmi.org/coolscience/forkids/critters/critters.html>
- Visit this site and then click on Play! to find fun games and explore more about rocks, trees, and animals: <http://www.burkemuseum.org/static/kids/index.html>
- Create your own crazy insects with this fun game that lets you mix a different, head, thorax, and abdomen to create a new insect: <http://www.insectlore.com/ilsitestuff/play/transmog/>

Teacher Tidbits



As you look around your backyard, you might see something you've never seen before, or notice something different about the grass, rocks, or trees that are in your yard. Part of being a scientist is being observant and writing down the things you see so you don't forget. You can keep a science journal, and write notes and draw pictures about the things you see and do.

Another important part of being a scientist is giving names to the things that we see. This is called classification. Classification is a way of organizing or sorting all of the different living things in to big groups, and then dividing them up into smaller groups. When we give names to things, it can help us understand them. Classification helps us to understand the world better. In your backyard you can explore the names of trees, bugs, rocks, flowers, and more!

Animals, plants, and fungi are the three main groups of things that you might find in the backyard. Big groups like that are called kingdoms. Inside the animal kingdom there are big and small creatures such as horses, dogs, squirrels, frogs, fish, birds, and all kinds of insects. The plant kingdom includes everything from giant trees to small flowering plants and grass. The fungi kingdom has a lot of different living things in it, including mold and mushrooms. Did you see any mushrooms in your backyard? If so, you found something from the fungi kingdom!

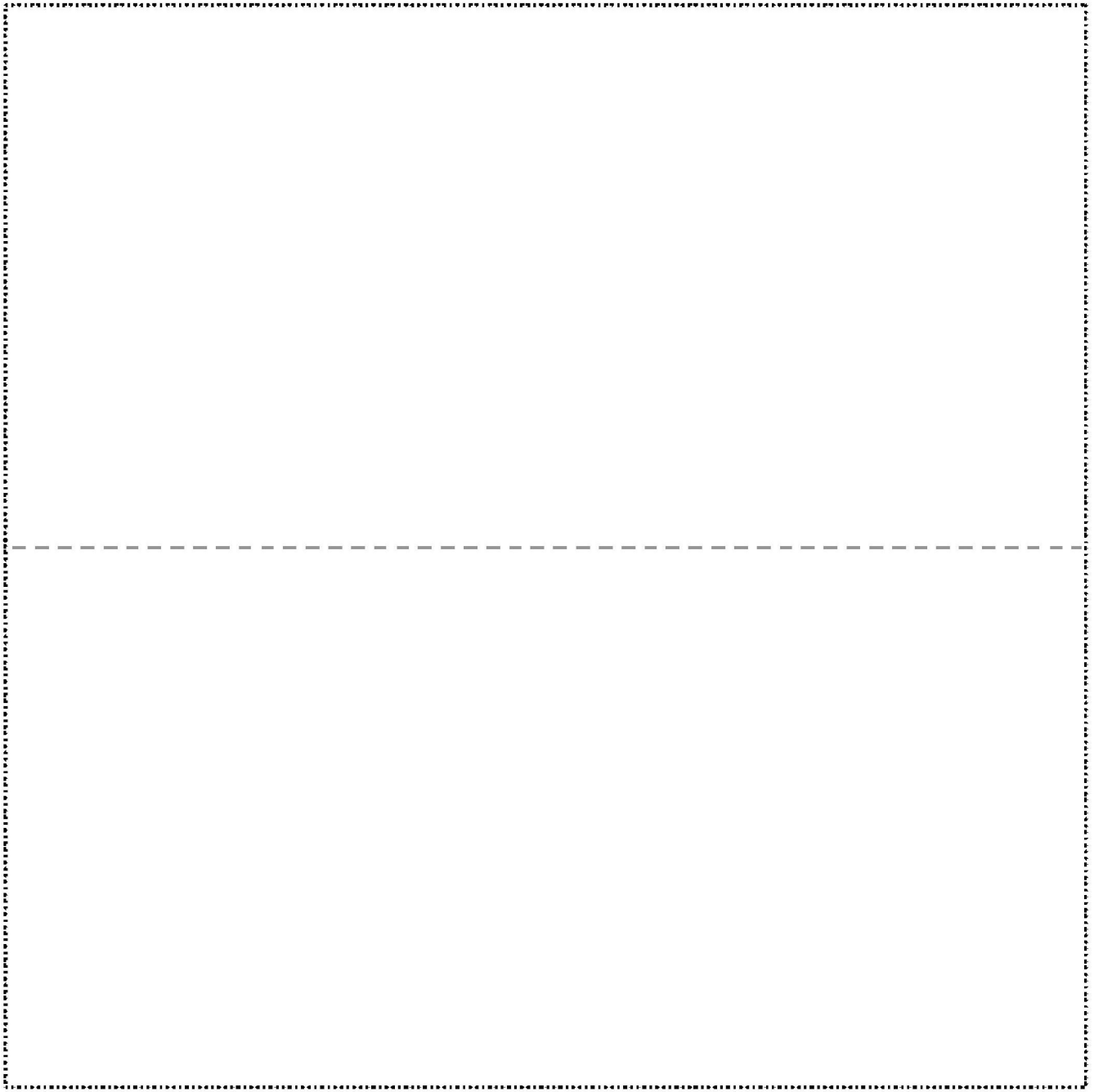
If you are wondering about an insect you find, or a type of flower, try to look it up in a field guide. You can borrow books from your library, or look here: <http://www.enature.com/fieldguides>. To use the field guide, think about what group the thing you are trying to identify is in: is it an insect, spider, tree, or flowering plant? If you spot an animal, is it a mammal, reptile, or amphibian? If you know this, it will help you find the right part of the field guide to look in.

Printable Worksheet

Use the worksheet on the next page to do the One Small Square project and then color and draw what objects you see in the backyard!

Small Square Study

What is in the grass in your backyard? Investigate a small area by folding on the dashed line and then cutting out the square below. Have fun!



Look for grasshoppers, beetles, and more! Color in the objects you saw inside the square. Try drawing other things that you saw!

