



I AM A BOTANIST

Botany is a branch of biology dealing with plants, so a botanist studies all kinds, trees, flowers, bushes, and fungi. We might see a weed, but a botanist will see a living thing that supplies food, shelter and shade to other living things. Use the magnifier to explore a tree or plant up close and personal. Compare and contrast what you see.

You can place a piece of paper over a tree's bark and rub over with a crayon. Nature's artwork. Included in the kit are rubber plate leaves that will give you the same effect. Take your leaf art outside and see if you can find a tree where the leaves match.

Read the books and compare what you have learned with the plant life around where you live or around your neighborhood.

Plant some seeds and watch them grow. This kit emphasizes how things grow and change. Keep a journal of one or more plants as the seasons change. Write down and draw your observations just like a real botanist. Famous explorers often took botanists with them on their journeys as they explored new territories. These botanists became known as "plant explorers." Keep your eyes, ears, and nose ready for finding new plants in new areas where you have never been.

Hands-on activities included in the kit offer suggested vocabulary, fun facts, and further reading. The chart below provides an overview of language, science, and math literacy skills highlighted in each activity.

	Activity # 1 "Indoor Seeds"	Activity #2 "Outdoor Seeds"	Activity #3 "carrot top"	Activity #4 "Leaves"	Activity #5 "Tree Sizes"
Language	Vocabulary	Vocabulary	Description	Comparison	Comparison
Math	One-to-one correspondance		Measuring		Measuring
Science	Observation	Observation	Observation Experiment	Comparison	Comparison



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#1: Finding Seeds Indoors

SUMMARY: Explore the connection between seeds and the food we eat by looking around the kitchen for edible seeds. Sort the seeds into different categories and describe how they are alike and different. Investigate further by looking them up on the internet or in a book to see what they look like as a plant.

WORDS TO USE:

- Bulb – the dormant part of the plant that is formed underground
- Category – a grouping of things, sometimes with similar characteristics
- Edible – safe to eat
- Grow - Harvest – the gathering of a crop (ex. Corn)
- Pulp - soft juicy or moist part of a fruit or vegetable
- Reproduce – make more plants
- Seed – a tiny developing plant that is enclosed in a protective coat that eventually will grow into the plant like the one that produced it.
- Skin – outer or surface layer
- Tubers – a short thick fleshy usually underground stem as of a potato plant having buds that can reproduce new plants.

MATERIALS NEEDED:

- Assortment of Fruits and Vegetables (ex. Orange, apple, lemon, cantaloupe, peach, cherry, watermelon, plum)
- Knife for adult use only
- Plate
- Craft glue
- Small paintbrush

ACTIVITY:

- Did you know that there are seeds in the vegetables and fruits that you eat?
- Ask a grown-up to help you cut open an apple, orange, pear, pomegranate, tomato, pumpkin.
- Look inside the fruits and vegetables and take out the seeds.
- Let them dry on a paper towel for several hours.
- Can you use them to create a picture by gluing them on a piece of paper? You may want to use a small paint brush for the glue.
- Ask your grown-up what else is in the kitchen cupboards that might be seeds or made from edible seeds? (Beans, peanuts, sunflower seeds, sesame seeds, poppy seeds, etc.)

OBSERVATIONS:

- Can you sort the seeds by color? By shape? By size?
- What happens to the seeds if you put them in water?
- Do all seeds taste alike?
- What other animals do you know who like to eat seeds?

DID YOU KNOW?

- New plants grow from seeds.
- Some plants, like tulips, grow from bulbs.
- Potatoes are fat, round stems called tubers.
- Plants are the only living things that can make their own food.
- Plants need sunlight, air, and water to make food.
- Seeds can have an outer coating to protect them.
- Pine cones are “naked” seeds because they are not enclosed in fruit.
- A Dandelion seed head is on a tall stem so it can catch the wind.

SUGGESTED READING:

E Ehlert	Growing Vegetable Soup
J 581.467 McElroy	It's Harvest Time!
J 634.11 Rustad	Fall Apples
J 634.11 Schuh	Apples Grow on a Tree



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#2: Going on a Seed Hunt Out of Doors

SUMMARY: By taking a walk outside your child can look for seeds in the natural world. Observe plants and trees in all of the seasons to explore the differences.

WORDS TO USE:

- Burr – a rough or prickly covering or shell of a seed or fruit
- Cones - shape with a round, flat bottom, and sides that come together in a point at the top. A pine cone contains seeds for the pine tree.
- Germinate – to begin to grow
- Life Cycle – the series of stages through which an animal or plant passes (ex. Seed to tree to seed)
- Seed – a tiny developing plant that is enclosed in a protective coat that eventually will grow into the plant like the one that produced it.
- Tree – a long-lived woody plant that has a single usually tall main stem with few or no branches on its lower part.

MATERIALS NEEDED:

- Collection Bag
- Paper and pencil

ACTIVITY:

- Take a walk with your grown-up and be on the look-out for seeds outside.
- You should be able to find a lot of seeds, especially in the fall
Tree seeds – oak acorns, maple helicopters, chestnuts, honey locust pods
Burs – seeds that grab onto your pants
Dandelion parachutes – blow one and make a wish

OBSERVATIONS:

- What do plants need to grow?
- Look at the various seeds that you have gathered, how are they alike?
- How are they different?

DID YOU KNOW?

- Observe a squirrel as it tries to bury a nut. It may just try to fool you and pretend to bury its seed in several places. Where is the seed really buried for the squirrel's future meal?
- Some plants rely on animals to spread the seeds to new locations. If the seeds all tried to grow up under the big tree, they would not get enough sunshine.
- Many plants rely on the wind to scatter their seeds.
- Watch out for plants that have burrs, seeds that get hooked onto your clothing or animal's fur. The seeds could be carried for miles before they fall off.
- Ferns, mosses, algae, and mushrooms do not reproduce by way of seed.

SUGGESTED READING:

J 580 Goodman	Plant Secrets
J 580.78 Gray	Junior Scientists Experiment with Plants
J 581.467 Fowler	From Seed to Plant (ICR)
J 581.467 Aston	A Seed is Sleepy

EXTRA ACTIVITY: Plant a spring bulb (daffodil, crocus, tulip) in dirt in a pot and keep it inside.



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#3 Growing Carrot Tops

SUMMARY: Watch the roots and leaves of a carrot grow as it sits in water for a week.

WORDS TO USE:

- Evaporation – the process of changing from a liquid to a vapor.
- Leaf – usually the flat green part of a plant that grows from the stem and helps make food for the plant.
- Root – the leafless underground part of a plant that absorbs water and minerals, stores food, and holds the plant in place.
- Tubers – a short thick fleshy usually underground stem as of a potato plant having buds that can reproduce new plants.

MATERIALS NEEDED:

- Carrot (can substitute sweet potato but will need larger container)
- Toothpicks
- Jar lid or shallow dish
- Water

ACTIVITY:

- Before peeling a raw carrot to eat, chop off the top about $\frac{3}{4}$ " height
- Have a grown-up help you attach 3 toothpicks into the sides of the carrot, spacing them out to create spokes.
- Put water in a jar lid and lay the spokes on the rim of the lid with the flat side of the carrot touching the water. The nubby part will be facing the sky.
- Water evaporates so you will have to add water to your lid every day.
- After several days you should see roots growing out of the bottom of the carrot and leaves out of the top.
- Draw pictures of what is happening each day to the carrot.

OBSERVATION:

- Did anything happen the first day? The second?
- How long did it take for the roots to appear? The leaves?
- What do you think will happen to the carrot if it has no water to drink?
- What do you think will happen to the carrot if it has not light upon it?
- What happens to the extra water in the lid that is not being sucked up by the roots?

DID YOU KNOW?

- Did you know that a carrot is a root? It grows under the ground away from the light and toward the water in the soil.
- The orange part is swollen with the carrot's food, which is what we eat.
- A carrot also has roots that grow from its sides, not just from the bottom.

SUGGESTED READING:

E Krauss
J 398.208996073 Stevens
J 580 Kalman
J 581.498 Fowler
J 635.13 Schuh

The Carrot Seed
Tops and Bottoms
Plants are Living Things
Taking Root (ICR)
Carrots Grow Underground



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#4: Leaf Collection

SUMMARY: Collect a variety of leaves outside and compare and contrast them to see how they are similar and different.

WORDS TO USE:

- Leaf – usually the flat green part of a plant that grows from the stem and helps make food for the plant.
- Compare- to examine for similarities or differences
- Contrast – to show differences between two things
- Collection – a group of things that have been gathered
- Texture – the structure, feel, and appearance of something
- Needle – a slender pointed leaf

MATERIALS NEEDED:

- Leaves from trees and plants
- Light paper
- Crayons
- Collection Bag
- Individual Plastic Ziploc bags

ACTIVITY:

- Explore your yard or neighborhood and gather leaves with a grown-up. Put them in a plastic bag. (Leave alone poison ivy and poison oak.)
- Sort them by color, size, shape.
- Carefully look and observe the lines and the edges on the leaves.
- Lay a piece of white paper over a leaf and color over the hidden leaf with a crayon. Your leaf outline should appear. What colors did you use?

OBSERVATIONS:

- Compare the leaves from all of the trees
- Talk about how they are alike and different.
- What is their shape? (ex. Triangular?)
- Are they rounded or pointed?
- Do they have any texture?
- Are they all green, and if so, are they the same shade of green?
- How do their edges feel?
- Do they have lines on them? Which way do they go?

DID YOU KNOW?

- Leaves are the tree's "food" maker.
- Leaves come in all shapes and sizes.
- The leaves of a pine tree are called needles. Pine needles are covered with a thick, waxy skin.

SUGGESTED READING:

E Ehler	Red Leaf, Yellow Leaf
J 581.48 Robbins	Autumn Leaves
J 581.48 Rustad	Fall Leaves: Colorful and Crunchy
J 582.16 Godwin	From Little Acorns...A First Look at the Life Cycle of a Tree
J 583.46 Dickmann	An Oak Tree's Life (ICR)
J 745.58 Sohi	Look What I Did with a Leaf



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#5: Find the Biggest Tree

SUMMARY: After observing different trees, the child will notice that there are similarities and differences between the trees. Be careful that you do not touch poison ivy that may grow on the trees.

WORDS TO USE:

- Bark – the outside covering of the trunk, branches, and roots of a tree
- Circumference – the distance around a circle
- Length – the measured distance from one end to the other end of an object
- Measurement – determining the size
- Root – the leafless underground part of a plant that absorbs water and minerals, stores food, and holds the plant in place.
- Tape Measure – a flexible piece of material marked off for measuring
- Trunk – the sturdy stem of a tree

MATERIALS NEEDED:

- A tree or trees
- String
- Measuring tape
- Towel for lying on

ACTIVITY:

- Take a walk outside and carry a tape measure or a long string
- Find a tree and guess how wide the tree it
- Wrap the string around the tree
- Lay the string down on the ground and measure the length of the circumference using the tape measure
- Compare your guess with the actual measurement of the tree
- Take the measurements of other trees on your walk.
- Lie on the ground under the tree and look up. Lie under different types of trees.

OBSERVATIONS:

- How does the tree bark feel? (Rough? Smooth?)
- Do all of the trees have the same kind of bark?
- Are all tall trees fat? Are all short trees skinny?
- Which is taller, you or the tree?
- How do the roots of the tree grow? (underground, surface roots)
- How do the branches extend on the different trees?
- Is grass growing around the trees?
- Do you see any bugs or animals on the trees?
- Which is taller, you or the tree?

DID YOU KNOW?

- Plants help clean the air by making oxygen.
- Trees reduce flooding and erosion by catching rain on their leaves and absorbing water through their roots.
- Trees give us wood to build our homes.
- We can use trees to make paper.
- Every year the trunk of a tree gets thicker.
- When you look at a cut tree trunk you will see rings. By counting the number of rings, you can determine the age of the tree.
- Plants cannot move from place to place like animals can.
- Shade providing trees can save 10 – 50% on a home's summer cooling costs

SUGGESTED READING:

E Udry	A Tree is Nice
J 574.5 Pfeffer	A Log's Life
J 582.16 Arnosky	Crinkleroot's Guide to Knowing the Trees
J 582.16 Dorros	A Tree is Growing

EXTRA ACTIVITY: Make a picture of the tree bark by holding a piece of paper over the bark and rubbing a thick crayon over the paper to reveal the lines of the bark underneath.