Creative Kits
ACTIVITIES FOR KIDS

OCTOBER 2020

“INTO THE WOODS”
Welcome to your Creative Kit! Because the library is not yet open for programs, this kit includes a month’s worth of activities for you to complete at home. Inside, you’ll find craft projects, science experiments, games and activities, a book list, a reading challenge, and much more.

To make the most of your kit, tune in to videos and virtual programming hosted by the library (a full schedule is included). If you have any questions about your kit, please call the library at 224-7113, or email the Youth Services Librarian at juliana@bakerfreelib.org.

This month’s theme is Into the Woods. October is one of the best months to spend outside in New Hampshire! The projects in kit will help us to explore and connect with the natural world around us, sending us into the woods to learn:

- What Tree Rings Can Tell Us
- Why Leaves Change Color (and how to predict which color they’ll turn)
- How Nature Can Help us Predict the Weather
- How to Make Autumn-Inspired Oobleck
  ...And much more!

Register for programs and future kits at www.bowbakerfreelibrary.org.
Let's Explore!
Additional Information & Resources

Additional Resources
Visit www.explore.org (or use their free app) to watch a live animal webcam! We recommend the following livestreams this month:

1. International Wolf Center in Ely, Minnesota
2. Brown Bears at Brooks Falls in Katmai, Alaska
3. Turkey Barn in Watkins Glen, New York
4. Great Gray Owls in Mission Valley, Montana
5. Decorah Eagles in Decorah, Iowa

Curious Questions

Why do Leaves Change Color?
To understand why leaves change color in the fall, we need to understand why they’re green in the first place!

Trees appear green because of a chemical in their leaves called chlorophyll. This chemical allows trees to absorb light and heat from the sun, which is essential to their growth. Throughout the spring and summer, trees make lots of chlorophyll to take advantage of the long daylight hours, and warm temperatures, of those seasons.

In the fall, as night becomes longer and temperatures drop, trees stop making chlorophyll. When they do, other pigments (that are always present in the leaves, but hidden by the chlorophyll) are allowed to shine.

Depending upon the tree and the chemicals inside it, green leaves might become red, orange, yellow or even purple. In general, trees that hold more sugar in their leaves turn a vibrant red: maples are an excellent example.

What About Evergreens?
You’ll notice that some trees never change color, and hold on to their leaves all winter long. These are called evergreens, and include many types of spruce, fir, and pine trees.

Most trees stop making energy from sunlight (a process called photosynthesis) during the dark winter months, causing their leaves to change color and fall. Evergreens, though, store nutrients and water throughout the winter, but it means they can only produce short, spiky leaves: that’s why they look more like needles!

Want to predict what color a tree will turn? Try the STEM activity in your kit!

NATIONAL GEOGRAPHIC KIDS
A great resource to learn about animals and the natural world. Research your favorite animal species, check out the web series Amazing Animals, find facts about U. S. States and Native American tribes, and access a bunch of free games and quizzes! All at kids.nationalgeographic.com.

PROJECT NOAH
Become a Citizen Scientist! Anyone can contribute data, information and photographs to scientific projects. Check out wildlife sightings posted by other users, and contribute to many active projects by observing and recording wildlife wherever you are. www.projectnoah.org

Register for future kits at www.bowbakerfreelibrary.org.
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<tr>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
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</thead>
<tbody>
<tr>
<td>READING CHALLENGE&lt;br&gt;Stock up on some new books at the library, and check off an item on your monthly reading challenge!</td>
<td>COLOR AND COUNT&lt;br&gt;Break out the crayons and complete some of your fall worksheets and coloring pages.</td>
<td>WOODLAND WALK&lt;br&gt;Head out into nature today. Write your name using natural items, or find the colors of the rainbow!</td>
<td>READING CHALLENGE&lt;br&gt;Check off one of the items on your October Reading Challenge.</td>
<td>LEAF ART EXPLORATION&lt;br&gt;Create stunning art prints using fallen leaves, black paper, and chalk or pastels.</td>
<td>STEAM EXPLORATION&lt;br&gt;Create your pinecone weather station (3-7), or learn the science of tree rings (8-12) today!</td>
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<tr>
<td>EXPLORE A LIVESTREAM&lt;br&gt;Watch a live animal camera on explore.org to see forest-dwelling animals up close.</td>
<td>COLORING CONTEST&lt;br&gt;Color your picture for the October coloring contest, and bring it by the library to enter!</td>
<td>STEM EXPLORATION&lt;br&gt;Why do leaves change color? Try an experiment to predict what color your favorite tree will turn.</td>
<td>PICTURE BOOK READ-ALOUD&lt;br&gt;10:30AM (Virtual)</td>
<td>CLOTHESPIN PAINTING&lt;br&gt;Break out the paint to make clothespin painted trees and pumpkins! (3-7).</td>
<td>SIGN-UP FOR NOVEMBER'S KIT&lt;br&gt;Don't forget to register for the November kit! Sign-up using our online calendar.</td>
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<tr>
<td>READING CHALLENGE&lt;br&gt;Check off one of the items on your October Reading Challenge.</td>
<td>STORY TELLER&lt;br&gt;Tell your story! Try the Roll-a-story activity (3-7), or get spooky with our short story challenge (8-12).</td>
<td>CITIZEN SCIENTIST&lt;br&gt;Contribute to a scientific mission on projectnoah.org, by counting or observing animals in your backyard.</td>
<td>PICTURE BOOK READ-ALOUD&lt;br&gt;10:30AM (Virtual)</td>
<td>CATCHING UP&lt;br&gt;Are there any projects you haven't finished? Today's the day to tackle them.</td>
<td>REFLECTION&lt;br&gt;What topics are you still curious about? Ask a librarian to help you learn more!</td>
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<tr>
<td>BOOKANEERS BOOK CLUB&lt;br&gt;4:00PM (Virtual)</td>
<td>LEAF LABYRINTH&lt;br&gt;Rake up some of those falling leaves from the yard, and create your own leaf maze!</td>
<td>EXPLORE A LIVESTREAM&lt;br&gt;Watch a live animal camera on explore.org to see forest-dwelling animals up close.</td>
<td>LEGO CHALLENGE&lt;br&gt;Build your own project, inspired by the library's monthly Lego Challenge!</td>
<td>APPLE Oobleck&lt;br&gt;Spend some time in the kitchen today, and make your own autumn-inspired slime called Oobleck.</td>
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<tr>
<td>OUTDOOR GAMES&lt;br&gt;Spend some time outside! Try the Pollinator Game and Scavenger Hunt included in your kit.</td>
<td>THE WOODS AT NIGHT&lt;br&gt;Daylight Savings Time ends this Sunday! Explore the woods at night with this unique art project. (8-12)</td>
<td>BOOK TRACKER&lt;br&gt;Look over all the books you finished this month. Can you complete one more reading challenge today?</td>
<td>PICTURE BOOK READ-ALOUD&lt;br&gt;10:30AM (Virtual)</td>
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**YOU CAN COMPLETE THE ACTIVITIES IN YOUR KIT AT ANY TIME. THIS CALENDAR SHOWS A PROPOSED SCHEDULE THAT SPREADS YOUR KIT’S CONTENTS THROUGHOUT THE MONTH, AND IS DESIGNED TO COORDINATE WITH PROGRAMS HOSTED BY THE LIBRARY. LIBRARY EVENTS ARE COLORED IN GREEN!**

**OCTOBER 2020 SUGGESTED CALENDAR**
<table>
<thead>
<tr>
<th>Ages 3-7</th>
<th>Ages 8-12</th>
<th>Non-Fiction</th>
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<tr>
<td><strong>Hocus Pocus, It's Fall!</strong></td>
<td><strong>Appleblossom the Possum</strong></td>
<td><strong>The Sequoia Lives On</strong></td>
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<tr>
<td>NATURE: JP O'BRIEN</td>
<td>Holly Goldberg Sloan</td>
<td>J 585.2 COOKE</td>
</tr>
<tr>
<td><strong>Apples and Pumpkins</strong></td>
<td>The Wind in the Willows</td>
<td>Poetrees</td>
</tr>
<tr>
<td>NATURE: JP ROCKWELL</td>
<td>Kenneth Grahame</td>
<td>J 811 FLORIAN</td>
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<tr>
<td><strong>Yellow Time</strong></td>
<td>Where the Woods End</td>
<td>Birches</td>
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<tr>
<td>NATURE: JP STRINGER</td>
<td>Charlotte Salter</td>
<td>J 811 FROST</td>
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<tr>
<td><strong>A Fall Ball for All</strong></td>
<td><strong>The Girl Who Speaks Bear</strong></td>
<td>The Tree Lady</td>
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<tr>
<td>NATURE: JP SWENSON</td>
<td>Sophie Anderson</td>
<td>J 92 SESSIONS</td>
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<tr>
<td><strong>Red Leaf, Yellow Leaf</strong></td>
<td><strong>Wishtree</strong></td>
<td>Up in the Leaves: The True Story of</td>
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<tr>
<td>NATURE: JP EHLERT</td>
<td>Katherine Applegate</td>
<td>the Central Park Treehouses</td>
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<td><strong>The Apple Pie Tree</strong></td>
<td><strong>A Wolf Called Wander</strong></td>
<td>Bringing Back the Wolves: How a</td>
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<tr>
<td>NATURE: JP HALL</td>
<td>Rosanne Parry</td>
<td>Predator Restored an Ecosystem</td>
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<tr>
<td><strong>North Woods Girl</strong></td>
<td>**The True Blue Scouts of Sugar</td>
<td>J 599.77 ISABELLA</td>
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<tr>
<td>NATURE: JP BISSONETTE</td>
<td>Man Swamp**</td>
<td>10 Reasons to Love a Bear</td>
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<tr>
<td><strong>In the Woods</strong></td>
<td>Kathi Appelt</td>
<td>Winnie: The Story of the Bear</td>
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<tr>
<td>NATURE: JP ELLIOTT</td>
<td><strong>Seven Wild Sisters</strong></td>
<td>Who Inspired Winnie the Pooh</td>
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<tr>
<td><strong>The Searcher and Old Tree</strong></td>
<td>Charles De Lint</td>
<td>J 599.78 WALKER</td>
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<tr>
<td>NATURE: JP MCPHAIL</td>
<td><strong>Nuts to You</strong></td>
<td>How Chipmunk Got His Stripes</td>
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<tr>
<td><strong>All Eyes, All Ears</strong></td>
<td>Lynne Rae Perkins</td>
<td>J 398.24 BRUHAC</td>
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<tr>
<td>NATURE: JP JACKSON</td>
<td><strong>Winnie to You</strong></td>
<td>Owls: Strange and Wonderful</td>
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<tr>
<td><strong>The Great Aaa-Ooo!</strong></td>
<td>Katherine Applegate</td>
<td>J 598.97 PRINGLE</td>
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<tr>
<td>ANIMALS: JP LAMBERT</td>
<td><strong>Nuts to You</strong></td>
<td>The Bat Book</td>
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<tr>
<td><strong>Squirrels Leap, Squirrels Sleep</strong></td>
<td>Lynne Rae Perkins</td>
<td>J 599.4 MILNER</td>
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<tr>
<td>ANIMALS: JP SAYRE</td>
<td><strong>Winnie the Pooh</strong></td>
<td>Nocturne: Creatures of the Night</td>
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<tr>
<td><strong>Little Owl's Night</strong></td>
<td>A. A. Milne</td>
<td>J 591.518 SCOTT</td>
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<tr>
<td>ANIMALS: JP SRINIVASAN</td>
<td><strong>Winnie the Pooh</strong></td>
<td>Green Planet: Life In Our Forests</td>
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<tr>
<td><strong>Looking for a Moose</strong></td>
<td><strong>Little House in the Big Woods</strong></td>
<td>J 577.3 BUTTERFIELD</td>
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<tr>
<td>ANIMALS: JP ROOT</td>
<td>Laura Ingalls Wilder</td>
<td>National Parks of the U.S.A.</td>
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<td><strong>Fawn at Woodland Way</strong></td>
<td><strong>The Owl Diaries</strong></td>
<td>J 363.68 SIBER</td>
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<tr>
<td>ANIMALS: JP ZOEHFELD</td>
<td>Rebecca Elliott</td>
<td>Put On Your Owl Eyes:</td>
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<tr>
<td><strong>Fox Explores the Night</strong></td>
<td><strong>The Owl Diaries</strong></td>
<td>Mapping, Tracking and Journaling</td>
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<td>CONCEPTS: JENKINS</td>
<td><strong>The Owl Diaries</strong></td>
<td>J 508 FRANKLIN</td>
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<td><strong>The Owl Diaries</strong></td>
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<td><strong>The Owl Diaries</strong></td>
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To the tune of: “Twinkle, Twinkle, Little Star”
Falling, falling falling leaves
Mother Nature did you sneeze? (ACHOO!)  
Red and yellow, orange and brown  
Big and little ones on the ground  
Falling, falling, falling leaves  
Mother Nature did you sneeze? (ACHOO!)

To the tune of: “London Bridge Is Falling Down”
Autumn leaves are falling down,  
Falling down, falling down,  
Autumn leaves are falling down,  
Red, yellow and brown!

Now it’s time to rake them up,  
Rake them up, rake them up,  
Now it’s time to rake them up,  
Red, yellow and brown!

Now it’s time to jump right in,  
Jump right in, jump right in,  
Now it’s time to jump right in,  
Red, yellow and brown!

Pumpkin, pumpkin on the ground  
To the tune of: “Twinkle, Twinkle, Little Star”
Pumpkin, pumpkin on the ground,  
How’d you get so big and round?  
Once you were a seed so small.  
Now you are a great big ball.  
Pumpkin, pumpkin on the ground,  
How’d you get so big and round?

I’m a little acorn round,  
Lying on the cold, cold ground.  
Everybody steps on me,  
That is why I’m cracked, you see!

I’m a nut (tap knuckles on head)  
I’m a nut (tap knuckles on head)  
I’m a nut, I’m a nut, I’m a nut (tap knuckles on head)

ALTERNATIVE VERSION:  
Five little acorns in a tree  
Swaying in the cold, cold breeze  
When the when blows through the town,  
One little acorn tumbles down.  
(Repeat until no acorns are left).

Way up high in the apple tree  
To the tune of: “I’m A Little Teapot”  
I’m a little pumpkin, short and round.  
Here is my stem and there is the ground.  
When I get all cut up, don’t you shout!  
Just open me up, and scoop me out.

I’m a little apple, red and round,  
Two little apples smiled at me!  
I shook that tree as hard as I could…  
Down came the apples,  
Mmm, they were good!
STORYTIME AT HOME

Suggested songs, rhymes and stories to share before bedtime, or anytime you’re missing our regular storytimes!

STORIES TO SHARE

Books about trees and leaves, autumn, and all kinds of woodland creatures! Ask a librarian to help you find more.

ANIMALS:
The Great Aaa-Ooo! (JP LAMBERT)

Little Owl's Night (JP SRINIVASAN)

Where Do Bears Sleep? (JP HAZEN)

Bear and Wolf (JP SALMIERI)

Wolves (JP GRAVETT)

The Happy Hedgehog (JP PFISTER)

The Golden Acorn (JP HUDSON)

In the Woods (JP ELLIOTT)

NATURE:
Wonderfall (JP HALL)

I Know It’s Autumn (JP SPINELLI)

Hocus Pocus, It’s Fall! (JP O’BRIEN)

Mouse’s First Fall (JP THOMPSON)

When A Tree Grows (JP MEALEY)

Little Tree (JP LONG)

There Was a Tree (JP ISADORA)

Tree: Peek-Through Picture Book (JP TECKENTRUP)

NON-FICTION:
Drawn From Nature 508.2 AHPORNSIRI

The Sequoia Lives On J 585.2 COOKE

Poetrees J 811 FLORIAN

The Bat Book 599.4 MILNER

Burrowing Owls J 598.9 MARSTON

Why Do Wolves Howl? J 599.74 RESNICK

Secret Life of the Red Fox J 599.775 PRINGLE

How Chipmunk Got His Stripes J 398.24 BRUHAC

FEATURED READ-ALOUDS

Tune in every Thursday to hear a virtual read-aloud with Miss Juliana!
Celebrate the arrival of fall by reading a book with a red, orange, or yellow cover.

Read a book in the dark or under the covers, using only a flashlight to see.

Read a book that features a fox, a bear, or a wolf as a character.

Pick a book you’ve read and loved, and make a bookmark inspired by it.

Read out loud to a pet or stuffed animal.

Read a spooky story, or one that features traditionally spooky creatures like goblins, monsters, ghosts or witches.

Read a book that takes place in the woods.

Read beneath the shade of your favorite tree.

October 12 is Indigenous People Day. Read a story about or inspired by Native American culture.

Challenge inspired by readbrightly.com.
<table>
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<tr>
<th>Books Finished</th>
<th>Challenge Completed</th>
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The Challenge: Write a short story that includes the phrase "It came from the woods." The phrase can occur anywhere in the story. Be creative, and feel free to add pictures! If you’d like to be featured on the library’s website, submit the completed story to juliana@bakerfreelib.org or bring it to the library on your next visit!

Space is provided below, but you can write or type your story anywhere you choose.
Look to the Sky...
Roll a Story Activity

All you need for this activity is a single die and some imagination! Create a story that weaves together the character, place and problem you receive by randomly rolling the dice. Your story can be long or short, and take as many twists and turns as you choose.

<table>
<thead>
<tr>
<th>If You Roll A...</th>
<th>First Roll: Place</th>
<th>Second Roll: Character</th>
<th>Third Roll: Problem</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>In a haunted house</td>
<td>A curious owl</td>
<td>Runs out of Halloween candy</td>
</tr>
<tr>
<td>2</td>
<td>In the deep, dark woods</td>
<td>A hairy troll</td>
<td>Is lost!</td>
</tr>
<tr>
<td>3</td>
<td>In a pumpkin patch</td>
<td>A wobbly moose</td>
<td>Can only spin around in circles</td>
</tr>
<tr>
<td>4</td>
<td>Inside of a cave</td>
<td>A very stinky skunk</td>
<td>Drinks a witch’s brew</td>
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<tr>
<td>5</td>
<td>At a pond</td>
<td>A black cat</td>
<td>Chased by wolves</td>
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<tr>
<td>6</td>
<td>Under a bridge</td>
<td>A group of children trick or treating</td>
<td>Stuck in a Zoom meeting</td>
</tr>
</tbody>
</table>

If you’d like to be featured on the library’s website, submit the completed story to juliana@bakerfreelib.org, or bring it to the library on your next visit!
Science Exploration
How To Make Apple Oobleck

THE SCIENCE OF SLIME
Slime is a unique mixture of ingredients that creates something strange: a substance that acts like both a solid and a liquid at the same time. It will hold its shape when pressed or molded, but oozes like water when allowed to flow. These mixtures defy the usual laws of science, and so they are called Non-Newtonian Fluids. Oobleck is one example, and includes any slime mixture made with corn flour.

Try the recipe below to make your own fall-inspired Apple Oobleck. Under what conditions does your Oobleck act like a solid (can you hold it, or shape it inside a mold or container?) When does it act more like a liquid?

MATERIALS NEEDED:
1+ cups applesauce
2+ cups of cornstarch
Bowl and spoon for mixing
Optional:
A cookie tray or pie plate for experimenting
Cinnamon spice

STEP 1: Start by adding cornstarch to the bowl. It is recommended that you have cornstarch on hand, in case you need to adjust the ratio of cornstarch and liquid.

STEP 2: Next, add the applesauce and get ready to mix. This can be a messy process, and may be easier than a spoon. Start with 1 cup of applesauce and then add more as needed.

STEP 3: (Optional) Add a sprinkle of cinnamon to spice up your Oobleck!

STEP 4: Stir or mix your mixture. If the consistency doesn’t feel right, add a little bit of cornstarch or applesauce as needed, in small increments. Adding cornstarch will firm it up; applesauce will make it more runny.

How do I know when it’s right?
Your Oobleck should be solid enough that you can pick up a clump in your hands, but runny enough that the clump then oozes back into the bowl. Once it feels right, experiment by squishing, squeezing, and using cookie cutters or containers to make fun shapes!

NOTE: This mixture is non-toxic and safe to taste, but it won’t taste very good.

Activity from Little Bins for Little Hands | Visit their website for more slime recipes!
WHAT IS DENDROCHRONOLOGY?

Dendrochronology (DEN-DOH-KRUH-NAW-LA-GEE) is the science of dating events and environmental changes by using the annual growth rings found in timber and tree trunks. Those rings can tell us so much: not just the age of a tree, but how it grew, what kinds of weather and climate changes it endured, and more. With this project, you’re going to become a nature detective -- and all you need is a tree stump!

AGE

The easiest thing to do, once you’ve found a good tree trunk, is to count the tree’s rings to determine its age.

- A tree adds new layers of wood each spring and summer
  - Wood added in the spring grows faster and appears lighter
  - Wood added in the summer grows slower, and looks darker
- In order to date a tree, you should count the dark rings on a tree’s stump once it’s been cut down.

WEATHER AND CLIMATE

Tree rings can also tell you about the weather conditions a tree has lived through. Use the guides included in your kit to help you!

- Wider tree rings indicate years with more rainfall and lots of new growth.
- Narrow tree rings, especially ones that go on for a few years or more, could mean that the tree has lived through a drought, or a period of unusually low rainfall.
- Narrow tree rings could also indicate that a tree was infested by insects, resulting in lower growth.
- Scars or markings could mean that a tree was damaged in a forest fire.
- Rings that are stacked up or close together in one part of the trunk might indicate that something was leaning against the tree or shading it, resulting in uneven growth.

LIGHT AND DARK

See how the middle of this tree trunk is darker than the outside? That dark area is called the heartwood. It is actually made up of dead layers of the tree that serve as a pillar for the outer layers, which are called sapwood and represent newer growth.
GET OUTSIDE
October is a beautiful month to spend outside in New Hampshire. Grab a friend and some grown-ups, and head out on a Woodland Walk to see what the wild woods have to offer. We’ve included some activities to try while you’re out and about!

NATURE WRITING
Can you write your name, or the name of someone you love, using only objects found in nature? Go on a unique scavenger hunt to find materials, then see what you can do!

ALPHABET WALK
As you’re walking, can you find or name something that begins with each letter of the alphabet? Challenge a friend to play with you, and keep switching letters until you’re stumped! We’ll get you started: A is for acorn!

COLOR SCAVENGER HUNT
Go on a color scavenger hunt! Try to collecting something in nature from each color of the rainbow. At home, arrange them into a beautiful collage or make a rainbow mobile by hanging your items from yarn or string.

LEAF LABYRINTH
A labyrinth is a kind of maze: can you make your own using leaves? Rake and arrange the falling leaves in your backyard to create a pathway or maze, then see if you can make your way out!

LEAF ART
Can you create a picture from the leaves you find? Your imagination is the limit! Collect leaf in different shapes, colors and sizes, and then challenge yourself to make pictures from them. Can you make animals like owls, wolves or deer? What about a leaf person?
**WHY DO LEAVES CHANGE COLOR?**

As you saw in our newsletter, the lower temperatures and vanishing daylight hours of fall and winter cause a chemical reaction in leaves: they stop making chlorophyll, which makes leaves appear green. When they do, other pigments (that are always present in the leaves, but hidden by the chlorophyll) are allowed to shine.

Depending upon the tree and the chemicals inside it, green leaves might become red, orange, yellow or even purple. Did you know that, with a simple experiment, you can see all the pigments a leaf carries inside it? Keep reading to learn all about Chromatography, a technique that allows us to see all the colors hidden inside a leaf!

**MATERIALS NEEDED:**

- White coffee filters (PROVIDED IN KIT)
- Glasses or jars (1 for each type of leaf)
- Mortar and pestle, or spoon
- Isopropyl (rubbing) alcohol
- Leaves

**STEP 1:** Begin by collecting leaves. You can choose leaves that are still green, as well as any that have already turned color. Get a variety! Sort your gathered leaves by color, and choose one of each color to test.

**STEP 2:** Once you’ve chosen a leaf to test, tear it into pieces and crush the pieces using a mortar and pestle, or by pressing the pieces against a glass or jar with the back of your spoon. Repeat this process with all of the leaves you’re testing, using a different jar for each one.

*SUGGESTION:* Pick two of each leaf, so that you can crush and test one, and keep the other to mark the jar and remember what is inside it!

**STEP 3:** With a grown-up’s help, you’re going to pour a few tablespoons of rubbing alcohol into each jar, enough to cover the crushed bits of leaf. The rubbing alcohol will separate the pigments inside the leaf, but it takes some time. You can cover the glasses or jars with plastic wrap to speed things up.

**STEP 4:** Once you see that the leaves have changed the color of your rubbing alcohol (can take anywhere from 30 minutes to a few hours, depending upon heat conditions), you’re ready to test your leaves. You’ll need special paper for this part -- use the coffee filter strips provided for you. **TURN TO KEEP READING.**
**Science Exploration**

**Color-Changing Leaf Lab**

**STEP 5:** Using your **chromatography** paper, you’ll need one test strip for each jar. Place one end of the paper in your **solvent**, the rubbing alcohol. Drape the other end over the edge of your glass or jar. Leave your strips soaking for at least 1-2 hours, or overnight if you’d like.

**STEP 6:** Pull your strips out! By now, the alcohol has carried the pigments from the leaves up the paper, and separated them into bands.

- Which leaves made the most dramatic markings?
- Are you surprised to find different color bands in the leaves you picked?

**What Happened?**

During most of the growing season, leaves contain more of a chemical called **chlorophyll** than any other pigment, making them appear green.

In the fall, chlorophyll begins to break down, and the other pigments, which have been there all along, are finally revealed. Yellow leaves have pigments called **xanthophyll**, orange leaves have pigments called **carotenoids**. **Anthocyanins** give leaves red and purple pigments.

**Chromatography** is a technique that separates a dissolved mixture, by passing a through filter paper through it. The pigments move along the paper at different speeds, making bands as they move. The pigments that were more soluble in the solvent (alcohol) moved further up the paper than the less soluble pigments. Learn more by visiting [www.playdoughtoplato.com/leaf-chromatography](http://www.playdoughtoplato.com/leaf-chromatography!)

**MAKE A PREDICTION:** Did you test any green leaves, and notice other bands of color on the strip? Most likely, the second band of color represents what color that leaf will turn in the fall! Write down your ideas and see what happens as the weather cools.
If your yard is anything like mine, I bet you have a lot of pinecones lying around. This simple experiment will show you how to forecast (predict) the weather, using nothing but pinecones and your observation skills.

**STEP 1:** Gather pinecones in different shapes and sizes. You'll only need about 3-5 for this project.

**STEP 2:** Find a spot to keep your pinecones outside, where you can see them from inside the house. A window sill that is open to the air works best. You can use a bit of painter’s tape or modeling clay to stick your pinecones to the sill, so they don’t move or blow away.

**STEP 3:** Watch what happens! You’ll notice that the pinecones open and close together. Over time, you'll see a pattern: the pinecones open when the weather is sunny and dry, and close when it’s about to rain.

**What’s Happening?**
Pinecones open and close depending on how humid it is, to help spread seeds. Inside the pinecone there are lots of light seeds. When the weather is dry the pinecone opens up, and any wind will catch the seeds and allow them to be dispersed in the air.

When the humidity rises and rain is likely, the pinecone closes up to prevent the seeds escaping from escaping, as they will become waterlogged in the rain. This means they would travel only a short distance from the original tree, which would be shaded and have to fight the “parent” tree for resources.

### DAILY OBSERVATION CHART

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Autumn Coloring Contest!

To enter our coloring contest, color the included picture and bring it to the library with your name and age on written on the back.

You can also scan and email your completed entry to juliana@bakefreelib.org.

Prizes will be awarded to the best entries!
Please send in your completed picture by October 17, 2020.