

WHY DO LEAVES CHANGE COLOR?



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Grown-Up Guide

Everything you need to know before you start!

Recommended Age

- ★ Ages 3-6, with an adult Reading and guiding activities

Supplies

- ★ Crayons, scissors, glue stick.
- ★ A magnifying glass (optional).
- ★ Real fallen leaves, if possible.

Take a Nature Walk!

This pack works best alongside a real walk outside. Look up at the trees, look down at fallen leaves, and let your child lead the exploring.

Adult Supervision

Please supervise scissors, crayon rubbing, and any leaf collecting. Only collect leaves that have already fallen unless a grown-up says it's okay.

What Children Will Learn

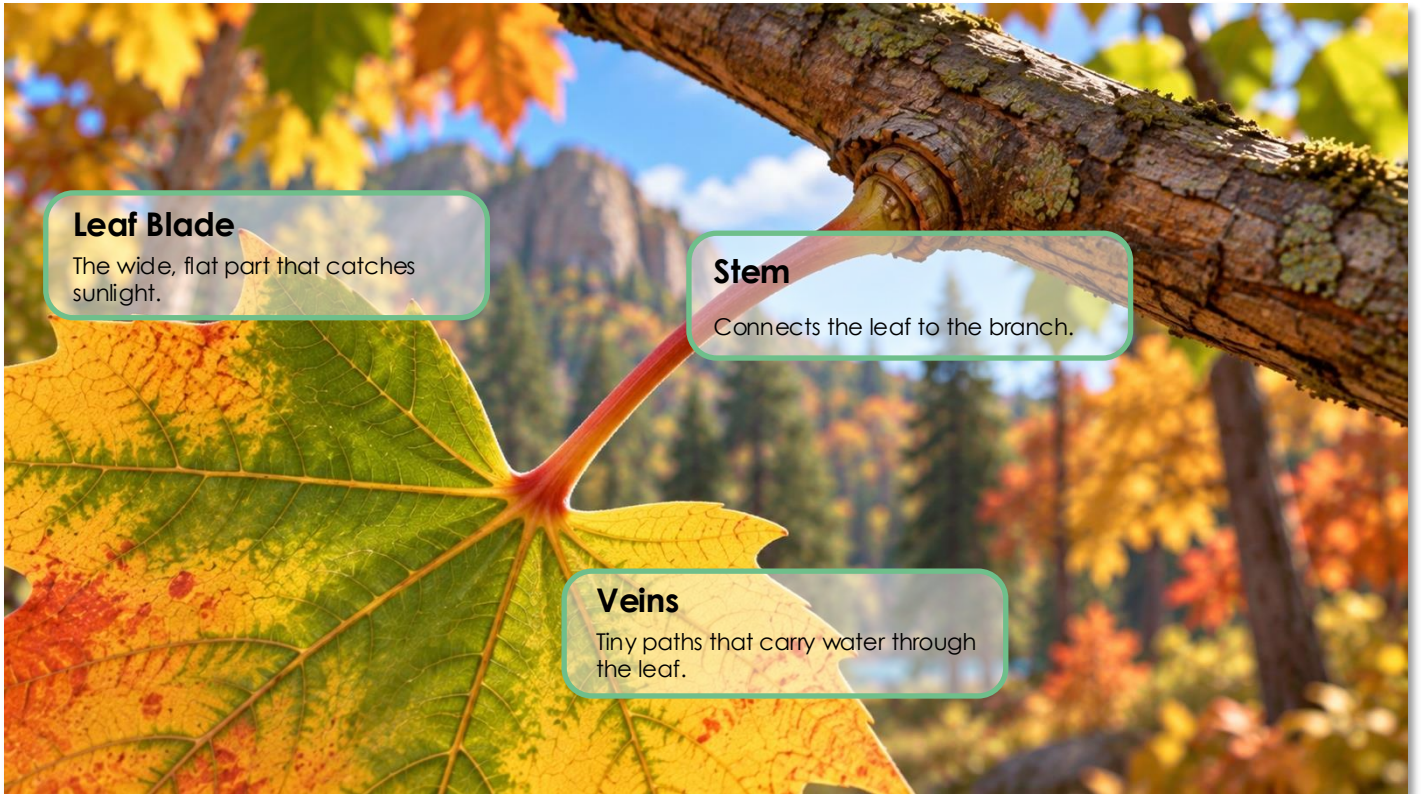
-  What a leaf is, and how it helps a tree make food
-  Why leaves look green (chlorophyll)
-  Why leaves change color in fall
-  Observation, sorting, prediction & simple investigation

Look for “Grown-Up Science” boxes throughout this pack

They offer extra information of accurate detail for curious grown-ups (or curious kids!) — completely optional to read aloud.

What Is a Leaf?

A leaf has three main parts. Can you find them?



Leaves help trees make food using sunlight.



Grown-Up Science

This food-making process is called photosynthesis — leaves use sunlight, water, and air to make sugar for energy.



Explore: Can you find a leaf blade, veins, and a stem outside?

What Makes Leaves Green?



CHLOROPHYLL

That's a BIG word!
Let's sound it out: KLORR-uh-fil

Leaves have something called chlorophyll inside them. Chlorophyll helps plants use sunlight to make food, and it makes many leaves look green.

Grown-Up Science

Chlorophyll is a pigment — a substance that gives something its color, the same way paint does.

During spring and summer, sunny days help trees make lots of chlorophyll — that's why leaves look so green!

What Happens in Fall?



- 1 Days become shorter, so there's less sunlight.
- 2 Many trees stop making as much chlorophyll.
- 3 The green color begins to fade.
- 4 Other colors become easier to see!



Grown-Up Science

Cooler temperatures and shorter days signal many trees to slow chlorophyll production heading into winter.

**Look at the leaves in the photo above.
Can you tell which one has the least chlorophyll?**

Colors Hiding Inside!



CAROTENOIDS

That's a BIG word!
Let's sound it out: Kuh-RAH-tuh-noydz

Carotenoids are pigments that help create the yellow and orange colors we see on fall leaves.

Grown-Up Science

Chlorophyll is a pigment — a substance that gives something its color, the same way paint does.

When the green fades, other colors that were already there — like yellow and orange — become easier to see!

What About Red?



ANTHOCYANINS

That's a BIG word!
Let's sound it out: An-thuh-sahy-uh-ninz

Some leaves make red pigments called anthocyanins in the fall. These pigments can make leaves look red or even purple!

Grown-Up Science

Unlike carotenoids, anthocyanins are freshly made in fall — red isn't simply hiding underneath the green.

Why Do Leaves Fall?



- 1 In fall, days get shorter, so trees get less sunlight.
- 2 The tree seals off each leaf's water supply — this seal is called the abscission layer.
- 3 Without water, the leaf dries out and can't hold on anymore.
- 4 The wind gives it a gentle push, and down it falls!

Grown-Up Science

The abscission layer is a row of special cells that seals off each leaf's connection to the branch, protecting the tree from losing water over winter.

Losing its leaves helps the tree rest and save energy, so it can grow bright new leaves again in spring!

Why Do Leaves Change Color?

1

Leaves have a green coloring called chlorophyll — it's what helps leaves turn sunlight into food, and it's what makes leaves look green all summer.

2

When fall comes, days get shorter and cooler, so trees start making less chlorophyll — and the green slowly begins to fade.

3

That's when other colors — yellows, oranges, even reds — that were hiding underneath the green the whole time finally get to shine through!



Discover with Cassie why leaves change color, why they fall, and what every tree needs to grow!





From Green to Fall Colors

Directions: Cut out the pictures below and glue them in order, from green to fallen.

1 2 3 4

Four empty rectangular boxes with dashed borders, numbered 1 through 4, for pasting the leaves in order.

Cut out these leaves:



Grown-Up Science

This shows one leaf changing over several weeks — not different leaves. The process happens gradually

Leaf Color Hunt

Directions: On your nature walk, look for leaves in each of these colors!



Green

☐

Yellow

☐

Orange

☐

Red

☐

Brown

☐

Two colors on
one leaf!

☐

Grown-Up Science

Different pigments (chlorophyll, carotenoids, and anthocyanins) combine in different amounts to create every shade you find.

Leaf Scientist Observation

Directions: Choose one real leaf and answer the following questions.

What color is the leaf? (circle all the colors present)



Green



Yellow



Orange



Red



Brown

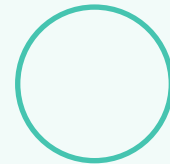
How big is the leaf?



Small



Medium



Big

What do the edges look like?



Smooth



Bumpy



Pointy



Look Closely!



Directions: Use a magnifying glass (if you have one) to look super close at your leave.

★ Veins

★ Spots

★ Color differences

★ Tiny holes

★ Smooth areas

★ Bumpy areas

Draw what you see up close:

Compare Two Leaves

Directions: Find two different leaves, place one in each box, then compare them!

Leaf A

Leaf B

Bigger

Smaller

Same Color

Different Color

Smooth

Bumpy

Same Shape

Different Shape



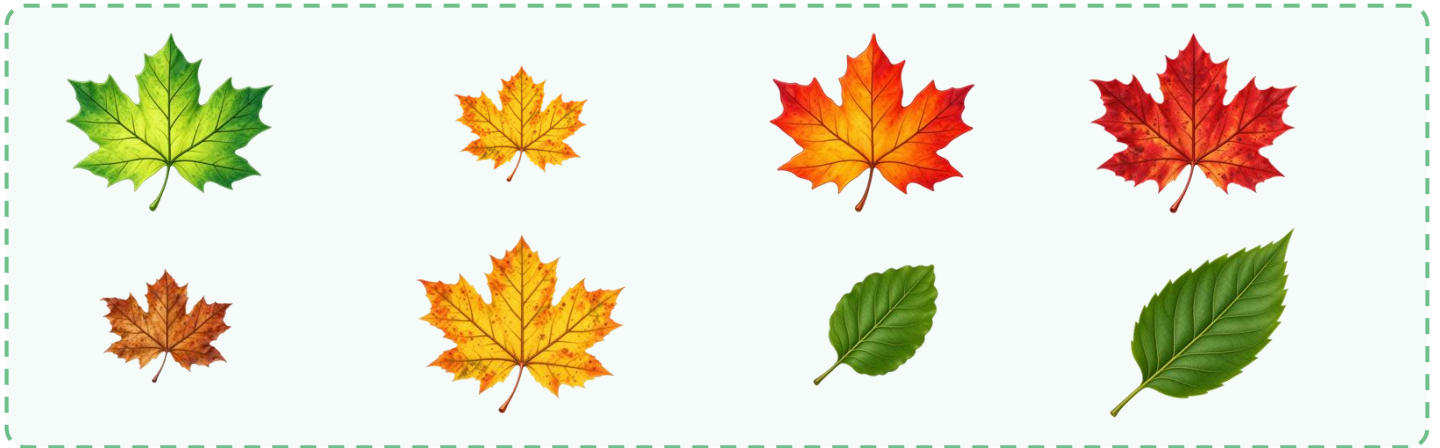
Grown-Up Science

Comparing objects side-by-side is one of the first scientific skills preschoolers can practice.



Sort the Leaves

Directions: Cut out the leaves below, then sort them by color, size and shape.



Sort by color

Sort by size

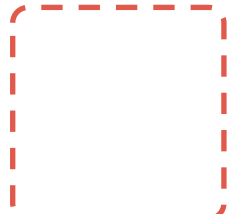
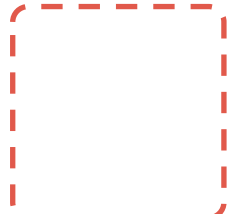
Sort by shape

Can you think of another way to sort them?



Finish the Leaf Pattern

Directions: What comes next? Cut out the leaves below and glue one in each empty box to finish the pattern.



Cut out the missing pieces:



Leaf Rubbing Science & Art

1

Place your leaf

Put a real leaf under a piece of paper, bumpy side up.

2

Rub gently

Rub the side of a crayon over the paper, nice and gentle.

3

Watch it appear!

The leaf's shape and veins will show up like magic.

What parts of the leaf can you see?

Do your leaf rubbing here!

Scratch-Away 'Chlorophyll' Model

1

Color

Color the leaf below yellow, orange and red first using colored markers or pencils

2

Cover

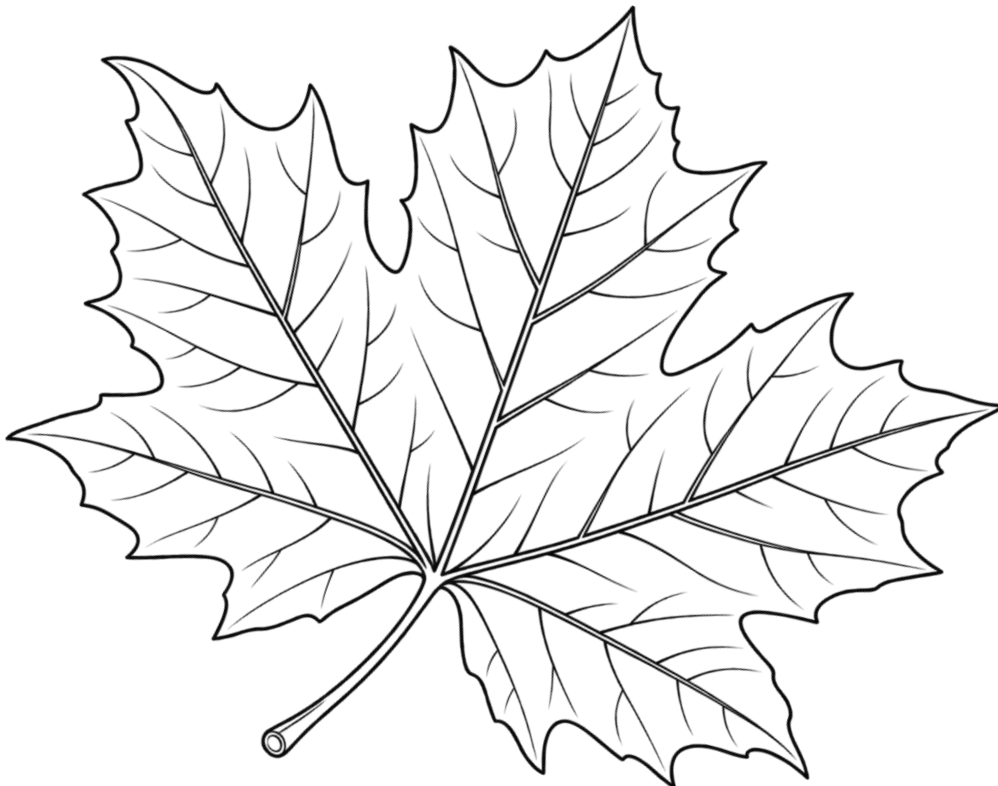
Cover the whole leaf with green crayon

3

Scratch

Scratch away parts of the green to reveal the colors underneath!

The colors underneath help us remember that other pigments can be present while a leaf still looks green.



What Does a Tree Need?



Sunlight



Water



Air

Leaves use sunlight, water, and air to make sugar — the tree's food! This is called photosynthesis.

Draw a tree getting sunlight, water and air

Fall Weather Watch

Directions: Pick one day to explore the outside. Circle what the weather is like, then look at the trees nearby and observe!

Sunny

Cloudy

Warm

Cool

Windy

Still

Now look at the trees nearby — what colors do you see?

Draw the trees you saw today:

Be a Leaf Scientist

Directions: Conduct a mini science investigation!

QUESTION

Are all the leaves outside the same color?

PREDICTION

Yes ☐ **No** ☐

COLLECT / OBSERVE

Look closely at 5 different leaves outside.

RESULT

Same ☐ **Different** ☐

CONCLUSION

What did you discover?

My Favorite Fall Leaf

Directions: Tape or glue a leaf you collected — or draw your favorite one!



Color: _____

Shape: _____

Size: _____

Fall Leaf Scientist Scavenger Hunt

Directions: Go on a nature walk and find each of the following leaves!



A tiny leaf

☐

A big leaf

☐

A yellow leaf

☐

A brown leaf

☐

A leaf with two colors

☐

A leaf with visible veins

☐

A smooth leaf

☐

A crunchy fallen leaf

☐

Remember: Only collect leaves that have already fallen, unless a grown-up says it's okay.

Junior Leaf Scientist

i OÙENŨPÒŨŨCEPOM

explored the science of fall leaves with Cassie and learned why leaves
leaves change colors!



Cassie

Date

Signature



Want to keep learning?

Watch with Cassie!



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Learn
with
Cassie