

# RISE TO THE SKY

HOW THE WORLD'S  
TALLEST TREES  
GROW UP

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**Lerner** 

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# Rise to the Sky



**Explore Trees!** The tallest trees grow in just a few parts of the world. They grow in places with mild climates, plenty of water, and not much wind. But you can explore the world of trees wherever you live.

## UP TO THE TOP!

**Growing trees are thirsty. They drink deeply through their roots.**

**They sip rain and fog and last winter's snow.**

**Inside, the water climbs through tubes in the wood, rising all the way to the leaves.**

**MATERIALS:** LEAVES OR CELERY, SCISSORS, GLASS, WATER, FOOD COLORING

**OPTIONAL MATERIALS:** MAGNIFYING LENS

**Explore how the leaves of trees suck up water.** Collect leaves from a few different trees, snipping them with scissors at the base of the stem. Don't take more than a few leaves from any tree. You could also try this activity with a celery stalk that still has its leaves.

Place the leaves or the celery in a drinking glass filled a third of the way with water. Add red or blue food coloring to the water. Observe the leaves closely over several days, using a magnifying lens if you have one. The color should gradually reach the leaves. The leaves are sucking the colored water up through xylem tubes in the stem.

# COUNT THE RINGS

Year after year, they grow wider, with new wood laid over old.

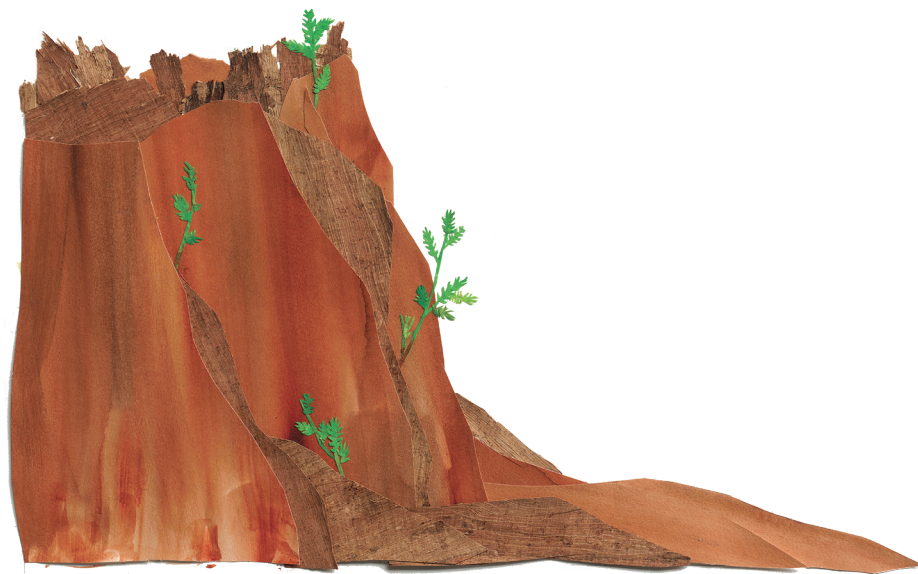
## MATERIALS: TREE STUMP, PINS

Find a tree stump or a cut log. Start from the center and count the rings. Mark every tenth ring with a pin. Don't worry if you can't count every single ring, but try to count most of them.

If one ring was formed each summer, how old was the tree when it was cut down? Was the tree's growth the same each year? A year of good growth will show up as a thicker ring. Which rings show good growth? Which rings show poor growth? What do you think caused the differences in the thickness of the rings?

The rings in tree stumps are layers of new wood. Every year, a tree grows wider with new wood laid on top of the old. In springtime, a tree grows quickly and the wood is light in color. In summer, the tree grows more slowly and the wood is darker. In tropical parts of the world, there are no growth rings because the tree grows the same all year round.

Tree rings can tell us about conditions in the past. A year of cold temperatures or not much rain can cause a narrow ring.



# WOODS WALK

## OPTIONAL MATERIALS: SOIL, POTS

Talk a walk along a woodland trail. The trail could be in a city park or a large state or national park. The trail could be in an arboretum or even a wooded backyard. As you walk through the woods, take a look at the trees.

First look up. What types of trees do you see? Do they have needle-shaped leaves, like redwoods and giant sequoias? Or do they have wide-flat leaves, like the yellow meranti?

Is one type of tree dominant in the forest? Dominant trees are usually the largest and most numerous ones.

**Their roots grow in an ever-wider circle**

**and intertwine with the roots of their neighbors.**

**Their roots become tough and hard and help hold the tree up.**

Look down at the base of a tree. Do you see any tree roots exposed above the soil? Can you find any roots of one tree intertwined with the roots of its neighbors?

**As the tallest trees tower over the world, they send down their seeds.**

**Inside each seed is a tiny tree waiting to grow tall.**

Take a close look at the forest floor. It is a nursery for young trees. Can you find any young trees just starting to grow? Remember, all of the tall trees in the forest were once tiny seedlings.

As you look at the ground, can you find any tree seeds, such as acorns, nuts, or winged maple seeds? If so, you can try to grow them. Collect a few seeds and plant them in pots. Many tree seeds need a spell of cold weather, so leave your pots outside in a sheltered spot through the winter. In spring and summer, keep the soil damp. Some trees take a long time to sprout so be patient.





# BREATHING LEAVES

**Growing trees need air.**

**They breathe through pinprick holes in their leaves.**

**In goes carbon dioxide! Out go oxygen and water!**

## MATERIALS: TREE, SMALL PLASTIC BAG, TWIST TIE

Try to collect the water that trees exhale. Find a healthy tree or shrub. Inflate a small plastic bag, such as a sandwich bag, to make sure it doesn't have any holes. Place the bag over a small twig that has a few leaves. Use a twist tie to secure the bag around the base of the twig.

Take a look at the bag after 24 hours. Can you see any water in the bag?

Trees breathe in and out through tiny holes in their leaves. These holes are called stomata. The water that collects in the bag is the water that leaves breathe out through these holes.



# TREE RUBBINGS

You can record bark patterns, stump patterns, and leaf shapes by making rubbings. Afterward, you can use the rubbings as fun notepaper or to send a colorful letter to a friend.

**MATERIALS:** WHITE OR LIGHT-COLORED PAPER, BRIGHT-COLORED CRAYONS WITH PAPER WRAPPERS REMOVED, A PIECE OF THIN CARDBOARD (EX: CEREAL BOX)

**OPTIONAL MATERIALS:** MASKING TAPE

**Stump rubbings** Place a sheet of paper across a cut stump. Hold the paper down with one hand or tape it in place. Using the full length of a crayon, rub across the paper in one direction. The rings will show up on your paper.

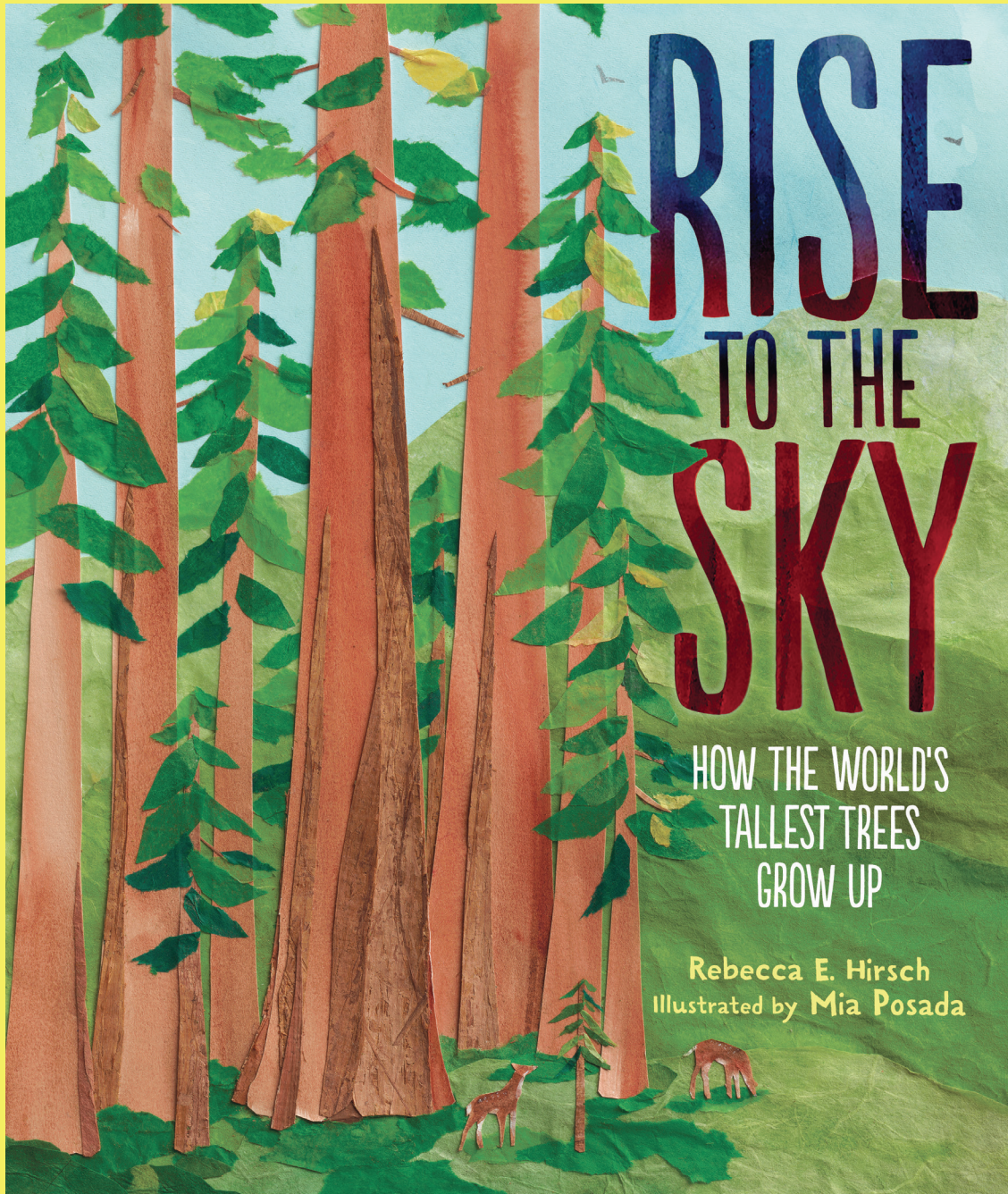
**Bark rubbings** Find a tree with flat or smooth bark. Tape a sheet of paper to the tree or hold the paper in place with one hand. Rub the full length of a crayon in one direction across the bark. The bark pattern will show up on your paper. Make a rubbing for a few different trees and compare the patterns.

**Leaf rubbings** Collect some different shaped leaves. Arrange the leaves on the piece of cardboard with their undersides up. The undersides have sturdier veins and will show up well in a rubbing. The veins are made of tiny tubes that move water and food inside the tree.

Place a sheet of paper over your arrangement. Press down on the paper with one hand or tape it in place. Rub the crayon over the leaf. The leaf and all of its veins will show up on your paper. Try a few different leaves to see which show up the best.







**Rise to the Sky: How The World's Tallest Trees Grow Up** Ages 5-10

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**Mia Posada** enjoys combining her love of art and interest in nature. Illustrating *Rise to the Sky* brought back memories of exploring the coast redwood forests during her time living in northern California. Her other picture books include *Plants Can't Sit Still* and *Guess What Is Growing Inside This Egg*. She lives in Golden Valley, Minnesota, with her husband and three kids.

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