

Marvelous and Magnificent Maples

#74

PRIMARY
SCIENCE, ARTS

LESSON SUMMARY

Students will learn about the diversity of Canada's native maple trees through observation and art.



Lesson Plan Information

Grade Level	Primary
Estimated Duration	2 class periods (1 outdoor, 1 indoor)
Materials	Sample leaves or printouts White paper (watercolour or sketch paper preferred) Crayons, paper removed Watercolour Paint brushes Masking Tape
Setting	Outdoor/indoor, best completed in autumn
Key Vocabulary	Native species, invasive species, maple, lobe, compound leaf, branching pattern, samara
Learning Goals	Observe and identify similarities and differences in local native maple trees. Learn about the environmental and social values of native maple trees. Understand how choosing native maples for planting promotes ecosystem health.
Curriculum Links	<i>Science & Technology, Grade 3, Growth & Change in Plants</i> B2. Demonstrate an understanding of characteristics and uses of plants and of plants' responses to the natural environment. <i>The Arts, Grade 3, Visual Arts</i> D3. Exploring Forms and Cultural Contexts: Demonstrate an understanding of a variety of art forms, styles, and techniques from the past and present, and their social and/or community contexts.



Educator Background

Native maple trees are a significant cultural and ecological feature in many Canadian forests and landscapes, standing tall in our communities and shining vibrantly in the autumn. These trees are also emblematic of Canada as a nation, as a stylized maple leaf dominates the Canadian flag, is Canada's arboreal emblem, and appears on Canada's Coat of Arms and Ontario's Coat of Arms.

Not all maple trees are the same, and many different species of maple can be found in communities and forests across the country. Given their unique shape and important ecological and cultural values, maples are an excellent introduction to tree identification.

Did You Know?

Many different species of maple can be found in communities and forests across the country, including 10 native in Canada.

Of those 10, seven can be found in Ontario:

Sugar Maple	Red Maple
Silver Maple	Black Maple
Manitoba Maple	Mountain Maple
Striped Maple	

Identifying Maple Trees

Spotting a maple is easy if you know what to look for! Two key features that are common across native maple species are the branching pattern – the pattern in which branches and leaves grow on a tree – and leaf shape:

- **Branching pattern:** Maple trees have an opposite branching pattern; the leaves grow directly across from one another on the twig.
- **Leaf shape:** with the exception of the Manitoba Maple, all maple leaves are palmately lobed. Lobes are the rounded or pointed leaf segments that are separated from the rest of the leaf. Palmate lobes are when leaf veins radiate out from a point in the leaf the same way fingers radiate from your hand.

Other unique maple characteristics, by species, include:

- **Sugar Maple** is the most iconic native maple and has bright green leaves with five lobes.
- **Red Maple** has a reddish leaf stalk connecting the leaf to the twig.
- **Silver Maple** is whitish/silvery on the underside of the leaf, with deep sinuses between lobes.
- **Black Maple** looks similar to Sugar Maple, but has darker bark, drooping leaves, and generally three lobes.
- **Manitoba Maple** is the only maple species with a compound leaf (single leaves are made up of multiple smaller leaflets) instead of lobes.
- **Mountain Maple** is found exclusively in the forest's understory and has three lobes with prominent teeth.
- **Striped Maple** is an understory tree as well, that has large "dinner plate" leaves and distinctive striped bark.

While they can be found throughout Ontario, each native maple tree species has its own geographical range and preferred environments. For detailed descriptions and images of native Ontario maple leaves, visit [Maple Leaves Forever: What is a Native Canadian Maple?](#)

The Value of Maple Trees

Native Ontario maple trees play an important ecological role on the landscape and also represent significant cultural and economic values to many Canadians. Some examples include:

- **Maple syrup:** Now a breakfast staple, maple syrup is a traditional Indigenous product with established links to many First Nations peoples. It is made by tapping maple trees in the spring to collect sap, which then needs to be boiled down into syrup. Red and Black Maple trees can also be tapped to produce maple syrup. The process of collecting and refining maple sap is explored in the Focus on Forests Lesson Plan, [Sweet Deal](#).
- **Wildlife:** Maple trees produce samaras; dry, winged fruit that are often called “helicopters” for the spinning motion they make as they fall. Samaras are an important food for wildlife such as squirrels, mice, cardinals, grosbeaks, and chipmunks.
- **Wood products:** Maple trees produce an eye-catching, light-coloured, and resilient hardwood that is popular for furniture, flooring, and woodworking.
- **Biodiversity:** Native maple trees are naturally adapted to the local climate, site conditions and other native species helping them to thrive locally and contribute to biological diversity.
- **Environmental services:** Maple trees aid in soil and water conservation by stabilizing soil to help prevent erosion, filtering water, and reducing temperatures.

Threats to Native Maple Trees

Despite being a common tree, it is not always easy being a maple. One of the largest threats facing native maple trees in Ontario is invasive species; plants, animals, and pathogens that are introduced to an area outside of their naturally occurring range and cause harm to the environment, economy, or society. Invasive species often succeed as they have high reproductive rates, lack predators, and can tolerate a wider range of environmental conditions. As a result, invasive species can often out-compete native species and, in time, dominate the landscape.

While many invasive species are accidentally introduced to new areas, their introduction can also be intentional. Norway Maple is a non-native invasive tree in Ontario. Selected for their fast growth and tolerance to urban growing conditions (i.e. pollution, highly shaded areas), Norway Maples can spread their seeds into the forest like any other tree, establishing themselves in environments where native Canadian maples would have been.

Students and schools can help to promote the health of native maple tree populations by selecting native species for any tree planting events. Students can also be good stewards of the environment by reducing stress on native maples and by staying on trails when hiking or in parks, leaving nature as they found it (not pulling bark or branches off of trees) and “adopting” or watering native maples in the summer.

Teacher Preparation

Activity 1 (Outdoors)

1. Look up what native maple trees can be found in your area. This will help you and your students identify the maple trees while outside as a class.
2. Scope out the site that you would like to take students to. This can be the school yard or a local park, somewhere that is easily accessible with many trees. At this site, you should make note of the maple trees that live there and identify them to the best of your ability. You may only be able to find two or three different species, but that is enough.
3. If your intended activity area only has one species of maple, adapt this lesson plan to compare maple leaves to the leaves of other tree species found in the area. Trees with broad leaves like oak, poplar, or birch are preferable to trees with needle or scale-like leaves (e.g. pines).

Activity 2 (Indoors)

1. Remove crayon wrappers, as this activity uses the sides of crayons to capture the grooves of leaves. You can soak the crayons in water for an hour to make this process easier.
2. Cut enough 5-inch squares of paper for each student to do at least two leaf rubbings. A heavier paper, like watercolour paper or paper from a sketchbook, will yield better results.

Materials:

- Leaf samples (to be collected by students)
- Crayons with wrappers removed
- Watercolour paints and brushes
- Masking tape
- 5-inch paper squares

Activity 1

Tree Identification and Leaf Observation

Step 1: Take the class to a nearby treed area with at least one maple tree. Have the students sit in a circle and either pass around or hold up a maple leaf or images of maple leaves. A Sugar Maple leaf, a Red Maple leaf, and a Silver Maple leaf should be included, as there are a lot of differences between the three of them. Red Maple has plenty of teeth, while Silver Maple has many wide gaps between its lobes. As students look at the images, ask them any of the following questions:

- Why are maple trees important?
- How do people and/or animals use maple trees?
- How can we tell maple leaves or trees apart?
- What makes each leaf unique?



Step 2: Break up the class into groups of three to five students. Each group will be tasked with finding maple leaves to compare, with each student collecting at least one leaf. Encourage students to pick leaves that have already fallen on the ground rather than those still attached to the branch. Groups should be given at least 15 minutes to find and collect one leaf per student. If no maple trees are at the location, students should collect other leaf samples for the artwork activity.

Step 3: After 15 minutes are up and each group has collected their leaf samples, head back inside. Have students label their leaves with their name written on a piece of masking tape around the stem so they do not lose their original leaves.

Step 4: Have each group identify the similarities and differences between the leaves that they have collected.

Step 5: Use an identification tool such as [Tree Bee](#) to help students identify found leaves. They can compare their leaves against sample images of native maples provided in the earlier discussion. This can be done as a class, as groups very likely found leaves from the same trees!

Activity 2

Leaf Art

Step 1: Give each student one piece of paper and have them place it over their leaf. Using the long side of a crayon, they will make a leaf rubbing by putting pressure on the paper and colouring in broad strokes across the surface. If time and supplies allow, have students experiment using different rubbing techniques, pressure, or colours of crayons to make multiple leaf rubbings.

Step 2: Paint around the leaf with watercolours in a different colour than the crayon. Fun combinations include a dark crayon colour and a lighter paint colour, or a white crayon with watercolour on top of the “invisible” leaf rubbing. The crayon wax will resist the watercolour paint, especially over the veins of the leaf where the wax will be thickest, to create a contrast between the outline of the leaf and the background of the paper. If your students have made multiple rubbings, encourage them to paint each of their rubbings in a different way to tell the different leaves apart.

Step 3: Label the bottom of each paper with the type of maple (or other tree species), the name of the student, and the date it was collected. This information can be found on the masking tape from the earlier activity.

Step 4: Display the complete artwork around the classroom and host a classroom gallery walk. Here, you can ask students to describe what they observe about the differences and similarities between their leaf rubbings. Then ask students the following questions:

- Is it easy to identify a maple leaf?
- Do the rubbings make them more or less difficult to identify?



Extensions

Press collected leaves to create a classroom herbarium. These can be stored with a thick piece of paper in a plastic binder sheet to protect the dried leaves from being crushed.

Have students take photos of different leaves they find to create an identification scrapbook of different trees. Students may opt to research the names of each tree, but the important skill is in identifying differences and similarities to form groups.

References

- [Maple Leaves Forever: What is a native Canadian Maple?](#)
- [The Riverwood Conservancy: You know maple trees for syrup, but what about samaras?](#)
- [Tree Canada: Tree killers – Norway Maple](#)



This lesson plan was made possible through the generous support of **Maple Leaves Forever (MLF)**, a charitable foundation that advocates and supports the planting of native Canadian maples in increasing numbers across the rural and urban landscape of southern Ontario.

MLF connects landowners and community partners interested in planting native maples with a network of Nursery Partners that grow seed-sourced native maple stock.

MLF currently offers a Thank-You Rebate for eligible purchases of native Canadian maple trees to be planted along rural roadsides, laneways, property boundaries and hedgerows.

For more information about native Canadian Maples and MLF visit mapleleavesforever.ca