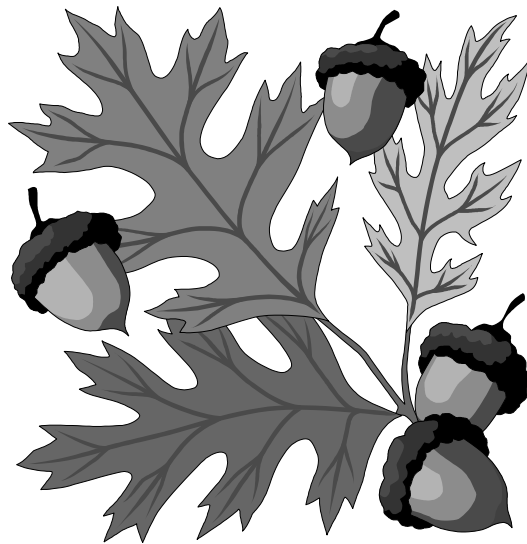


# *It's Alive!*

*A nature walk through Lake Compounce*

Students in Grades 4-7 will take a nature walk consisting of 18 stations throughout the park. Study focus will be on trees indigenous to the area, as well as those imported to the grounds from around the globe. Further applications can be made to Language/Writing, Science, Music, and Art on a pre or post-field trip basis.



## **Vocabulary:**

annual rings

**awl-shaped**

**borne singly**

**broad leaves**

**cambium**

**clefts**

**cluster**

**conifers**

**deciduous**

**evergreen**

**heartwood**

**key**

**lateral branches**

**leaves alternate**

**leaves opposite**

**lobes**

**needle-like**

**pith**

**sapwood**

**scale-like**

**spray**

**transpiration**

## Vocabulary:

**annual rings**

the layer of wood produced by a single year's growth of a woody plant



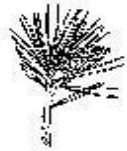
**awl-shaped**

long, narrow leaves which taper to a fine point



**borne singly**

each needle is attached to the stem by itself



**broad leaves**

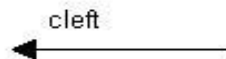
trees having broad leaves instead of needles, often called hardwoods



**cambium**

thin one cell thickness layer between bark and the sapwood of trees that gives rise to new cells and is responsible for secondary growth

**clefts**



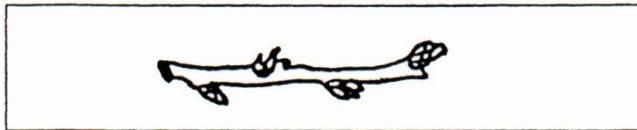
**cluster**

a number of similar things growing together

**conifers**

trees bearing cones, mostly evergreens

- deciduous** trees that lose their leaves in the fall
- evergreen** trees which retain their leaves during the winter having foliage that remains green and functional through more than one growing season
- heartwood** the older, harder, non-living, central portion of wood that is usually darker, denser, less permeable, and more durable than the surrounding sapwood
- key** a key is a scheme for easily and quickly identifying any unknown object under observation. Keys are based on most striking similarities and differences shown by various parts of the object.
- lateral branches** a bud that develops on the side of a stem



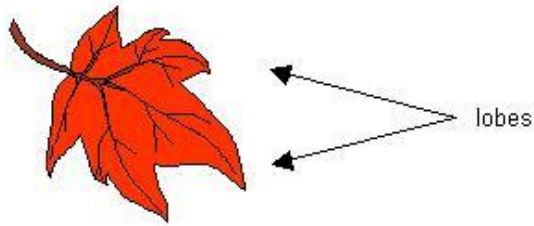
**leaves alternate**



**leaves opposite**



**lobes**



**needle -like**



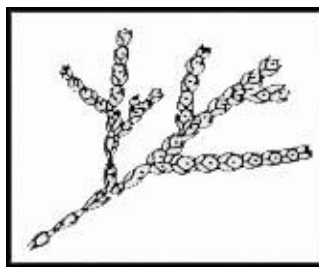
**pith**

**small core of soft, spongy tissue at the growth center of the stem**

**sapwood**

**younger, softer, living, outer portion of wood that lies between the cambium and heartwood and is more permeable, less durable, and usually lighter in color than the heartwood**

**scale-like**



**spray**

**flowering branch or shoot**

**transpiration**

**process of trees taking in carbon dioxide and giving off oxygen and water**

**Word Search**

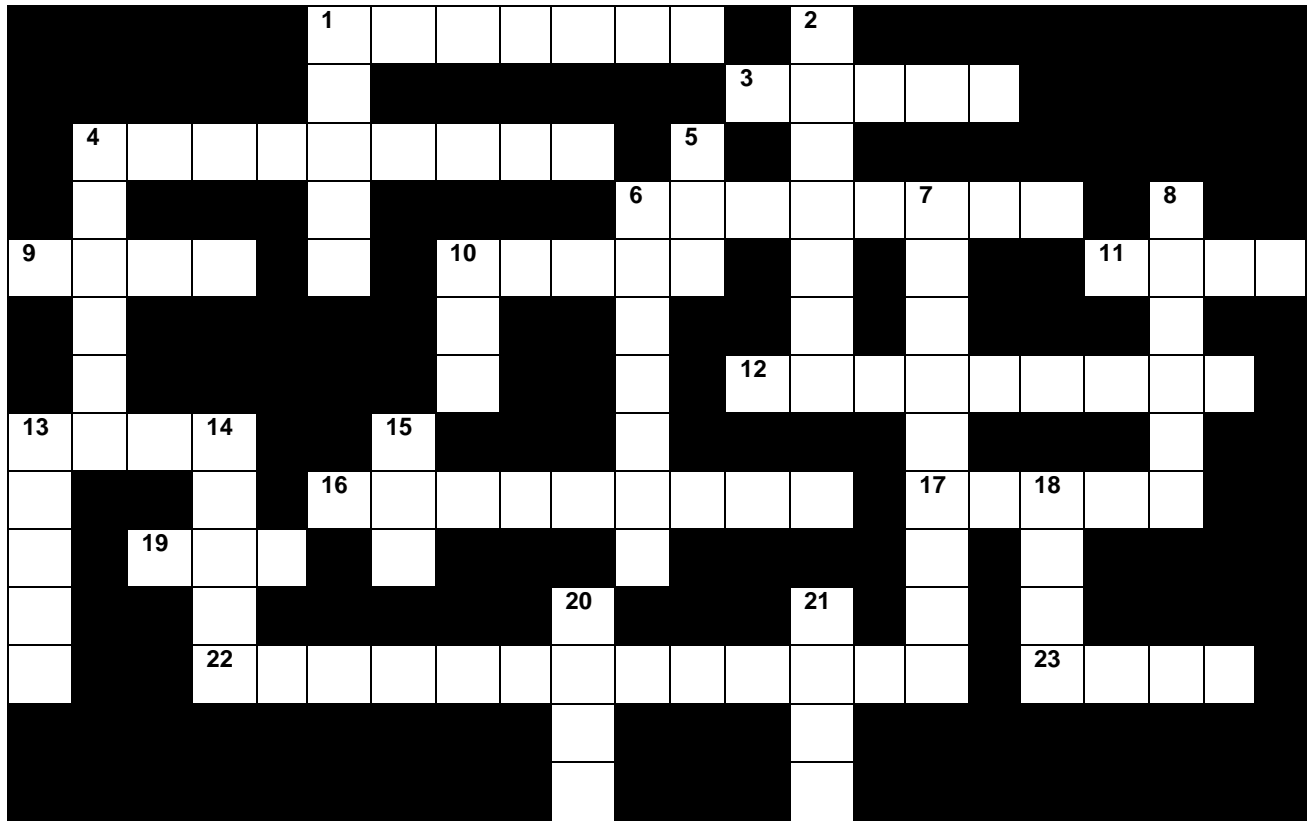
There are at least 28 words hidden in the puzzle. See if you can find them all! Words are hidden vertically, horizontally, diagonally, and some are spelled backwards.

L F O L I A G E A V T R E J K L I H B E S T C N L N P O S W C  
 A O L G B C A T F G E Q C L E F T S V B U R E C X D E F H I L  
 T A B E R N R D P B E M O L Y G T E S C D E C O A K N R T C U  
 E L L E N C A R M R O A D S T U T C A T R U G A R S T E E G S  
 R S A U S E R V I K E T T C E B E G N G A A R T S P T I L U T  
 A L B E R V I L G S A L W A Y S A G R O O N F O R N R E T F E  
 L I E D O T S N N G M Y L M O M H E S I T U N N E O S P M A R  
 B W H A R F I E A N I D G B O F V G H E H K D U P A O Y S R V  
 R A B E L G N E M I L A Y I N E O J T H U F E R A C O R N S O  
 A S E C S A T I O S A P N U W H O E A J W O P E P L N S E S A  
 N A T A R I N O O Z A M A M L K A R B E H D A C A B R B A E M  
 C O K E K I L E L D E E N S A U S A R E I N E E J B A I L S G  
 H S A W D N A L E A R H O M E T A M L L T E R T A N E L N E R  
 E C O V I N A K N T T H O M U N B E L I E R V S O I T G O G A  
 S L P A D A I L E O L O F M R O T S D E P A H S L W A T A F S  
 R H Y N A L N R A R E V E L S T O N E K I R E L L S E R F O V  
 U Q Y C E A O P S E F D I P E L Y R A Y N I N A S N I T A R A  
 S A U L H E M S H I C T E W A Y I T I S E C S T E P G R A M L  
 N A A W T E C A L F U R N I T U R E S T A L O G U O D A J B I  
 A C W A Y I A A L A W A T O B E O R I N O T T N O E R N B E K  
 S I N T W N O R A E S E R I M G A S U Q F M A N I T E S O G R  
 K A T A C P U L T R E V F E R A O L O N H B O U K F S P R U A  
 Y W O R K L S E N W L L A F S P N E L G T R N P H P E I M Y B  
 T R A V E K S N D S O O U R P I S M T I I S W H I S B R U E K  
 D W Y U I O P B S M A O P O A H D L U O P W E H T F O A T U O  
 R X C E R L C O J E H K D O P N B C D E G B E W V C X T B C D  
 S L A L T E R N A T E R E M N C R Y T I L K G P O E P I U O Y  
 P R A H N O T M R S A R R E N T A R E S T E R S A P W O O D J  
 O C W E T L I J E G E M I P M A P L E S Y R U P E L O N C I N  
 S U O U D I C E D L K R L U A H G O I N V U P J E T D O W N U

**Words to Look For:**

- |              |                  |               |           |            |
|--------------|------------------|---------------|-----------|------------|
| annual rings | lateral branches | white pine    | bark      | lobes      |
| maple syrup  | furniture        | acorns        | deciduous | cambium    |
| paper        | sapwood          | transpiration | heartwood | alternate  |
| evergreen    | conifer          | needlelike    | pith      | key        |
| stems        | foliage          | awl shaped    | cluster   | scale like |
| gingko       | clefts           | opposite      |           |            |

# A "Natural" Lake Compounce Crossword!



**Take the Challenge:***Across*

1. Outer wood between cambium and heartwood.
3. Structures that contain the seeds of the conifer.
4. Quality or property that aids in identification.
6. Cone bearing trees, such as pines, mostly evergreens.
9. Leaf characteristics: type, simple or compound.
10. Flowering branch.
11. Outer covering of a tree.
12. Older, harder, nonliving central part of wood.
13. Structure where sun's light energy is trapped and used to produce food and oxygen.
16. Trees that lose their leaves in the fall.
17. Wood layers from a single year's growth.
19. The sprout containing an unexpanded leaf, branch, or flower.
22. Process of tree taking in carbon dioxide and giving off oxygen and water.
23. Growth structure; contains a young plant, stored food, and seed coat.

*Down*

1. Leaf characteristic: outline, appearance.
2. A collection of leaves in general, leafage.
4. Tree slice showing annual rings.
5. Fun product made from wood.
6. Gives rise to new cells.
7. Trees with leaves that stay green and functional.
8. Often constructed with birch bark by Native Americans Indians.
10. Source of maple syrup and sugar.
13. Needed to help plants or trees manufacture food.
14. Edible product grown on trees.
15. Helps to identify unknown objects.
18. Edible product of trees often gathered by wildlife.
20. One of the ways seeds are dispersed or scattered.
21. Core of soft tissue at growth center of stem.



## Who Wants To Be A "Tree"llionaire?

For 100 leaves: Which leaf form is the most complicated in design?  
a. simple b. twice compound c. compound d. entire

(Is that your final answer?)

For 200 leaves: Trees that lose their leaves in the fall are called:  
a. conifers b. deciduous c. annuals d. evergreens

For 500 leaves: A ring is a layer of wood produced through the growth of a woody plant in what time frame?  
a. one month b. six months c. one year d. five years

For 1000 leaves: Which of the following is NOT a leaf shape?  
a. linear b. triangular c. oblique d. heart

For 5000 leaves: Which tree is described as a living fossil?  
a. Japanese Zelkova b. Austrian Pine c. Dawn Redwood d. Ginkgo

For 10,000 leaves: A seed contains all BUT ONE of these:  
a. seed coat b. stored food c. sap d. young plant

For 50,000 leaves: Which of the following describes pith?  
a. outer covering of a tree b. wood between cambium and heartwood.  
c. non living central part of wood d. soft tissue at growth center of stem

(Is that your final answer? Are you sure?)

For 100,000 leaves: Which of the following does NOT describe the apex of a leaf?  
a. blunt b. toothed c. sharp d. truncate

For 500,000 leaves: The process of taking in carbon dioxide and releasing oxygen and water is called:  
a. transpiration b. absorption c. conduction d. respiration

For 1,000,000 leaves: Which of these trees has ALL of the following characteristics:  
ancient tree, not persistent through winter, leaves in clusters or short lateral branches, and grows its own defense system?  
a. Japanese Maple b. Ginkgo c. Dawn Redwood d. Bradford Pear

(Is that your final answer? Have you thought this through? Are you positive?)  
If you've answered all of the questions correctly

**CONGRATULATIONS! You're officially a "TREE"LLIONAIRE!**

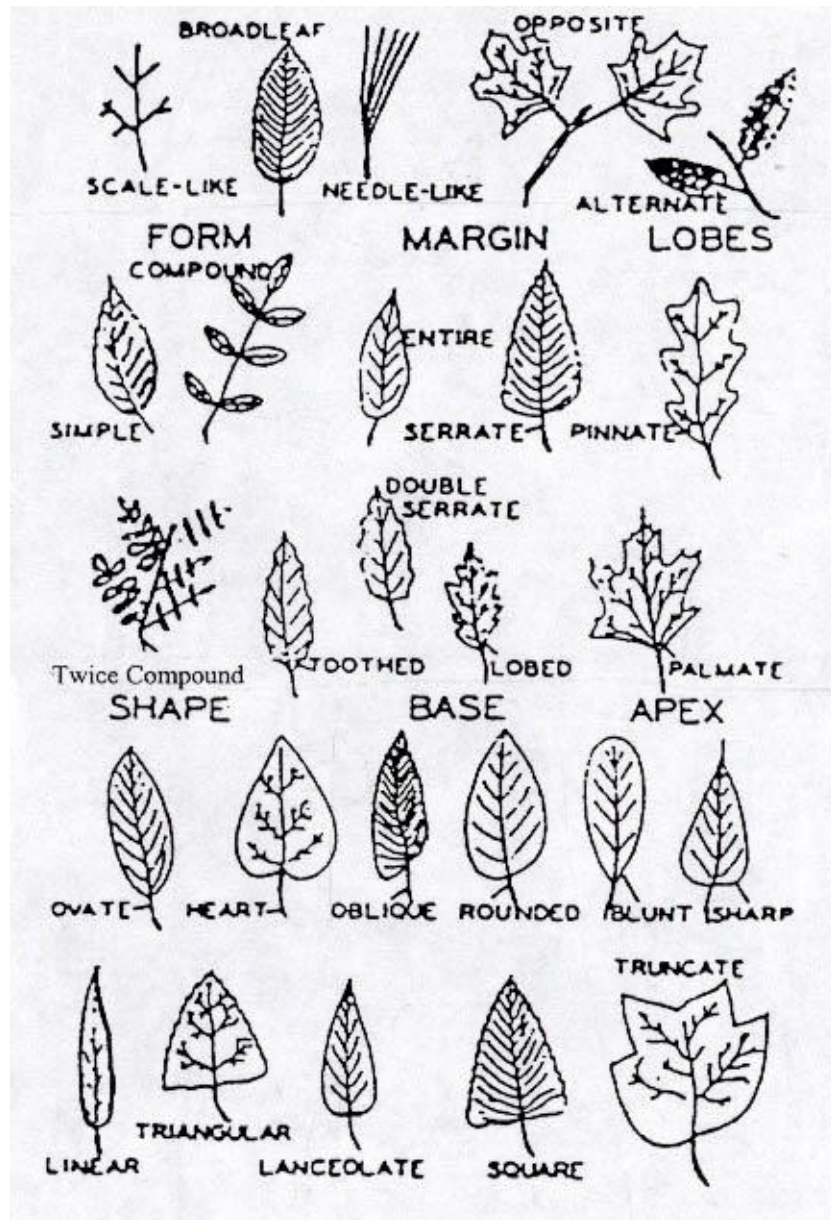
# *A Key to Identify Trees*



A key is like a road map using numbered statements to quickly identify any unknown tree. Keys are based on the most striking characteristic of the tree such as leaves, buds, and twigs. Use the Key and identify trees and tree characteristics.

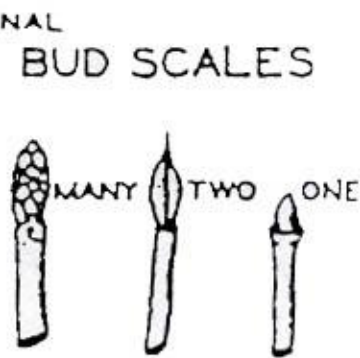
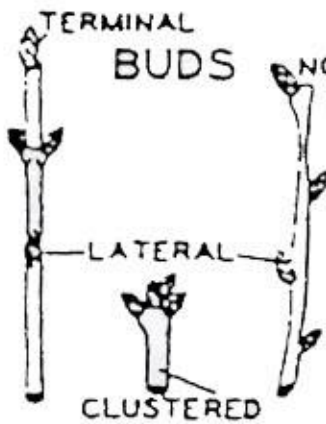
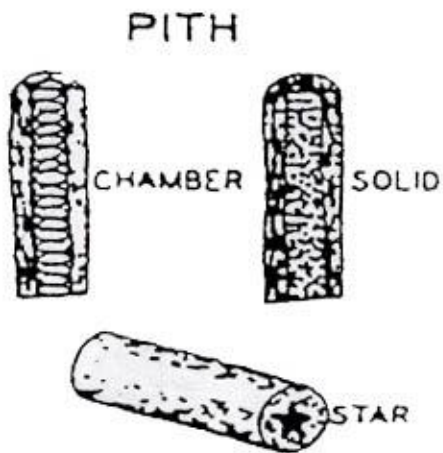
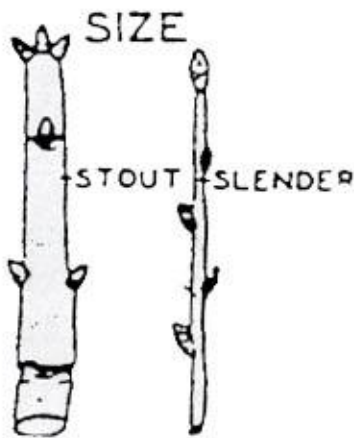
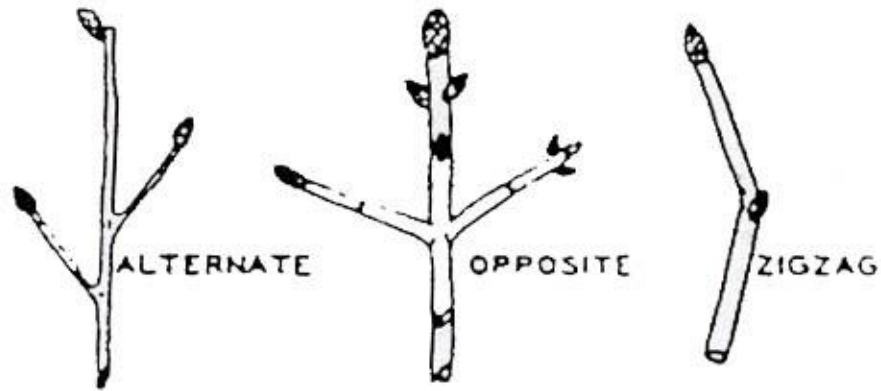
Two alternatives are presented in the Key, either a character is or is not present. These are the only choices possible. The two opposed characters are presented in the Key by the same number (1 and 1, or 2 and 2). If you find the desired character in the first group there is no need to look in the second group.

## Leaf Characters, Summer Key



## Twig and Bud Characters, Winter Key

# Arrangement



**Key**

1. Leaves needle-like, awl shaped or scale-like: usually evergreen (conifers).
2. Leaves needle-like
  3. Leaves in cluster
    4. Cluster containing 2-5 needles (pines)
      - a. needles in clusters of 5 [White Pine]
      - b. needles in clusters of 3
      - c. needles in clusters of 2
    4. Needles many (more than 5) in clusters or short spur like lateral branches: not persistent through winter, on vigorous shoots needles borne singly [Dawn Redwood]
  3. Leaves borne singly
    5. Needles without stems
      6. needles 4-sided in cross section, sharp pointed (Spruce)
        - a. needles dark, yellowish green
        - b. needles bluish green [Colorado Blue Spruce]
      6. needles flat, blunt-pointed
2. Leaves awl-shaped or scale-like
  7. Foliage both scale-like and awl-shaped, awl-shaped foliage particularly on young growth
  7. Foliage scale-like, spray distinctly flattened and fan-like [Arborvitae]

- 
1. Leaves broad, not needle-like or scale-like; not persistent through winter
    8. Arrangement of leaves opposite
      9. Leaves simple
        10. Leaves entire, not lobed or deeply cut
          - a. leaf shape ovate; bowed, pinnate venation [Japanese Kousa Dogwood]
          - b. leaf shape ovate; banchidodrome, pinnate venation  
[ 'Summer Snow ' Japanese Tree Lilac]
      10. Leaves lobed (Maples)
        - a. pale green underside, clefts rounded, lobed sparsely toothed [Sugar Maple]
        - b. darker underside, star-shaped, lobes incised, palmate veins  
[Crimson King Norway Maple]
        - c. whitish beneath, usually 3-lobed, clefts shallow and sharp-angled
        - d. silvery white beneath, usually 5-lobed, clefts deep (especially the middle

two)

9. Leaves compound (Ashes)
  - a. leaflet with stems
  - b. leaflet without stems
8. Arrangement of leaves alternate
  9. Leaves simple
    10. Leaves entire
      - a. broadleaf [Bradford Pear]
      - b. not heart shaped, widest toward tip or middle [Purple Beech]
    10. Leaves serrate
      - a. leaf shape ovate [Kwanzan Cherry]
      - b. leaf shape oblong ovate [Weeping Higan Cherry]
      - c. leaf shape cordate (heart) [Littleleaf Linden]
      - d. leaf shape oblique [Japanese Zelkova]
    10. Leaves double serrate [Paper Birch]
    10. Leaves lobed
      - a. leaf shape ovate [Sycamore]
      - b. leaf shape fan shaped [Ginkgo]

## **Station #1: Practice being a great detective!**

Let's try to identify this tree using the KEY.

Located on the side of the Fun & Games Building, across from La Fiesta.

**Step #1:** Which of the two number ones (1) in the Key most closely describes the leaves?

**Answer:** leaves needle-like, awl shaped or scale-like

**Step #2:** Which of the two number two's (2) most clearly describes the Leaves?

**Answer:** leaves needle-like

**Step #3:** Now read the descriptions for each of the number three's (3).

**Answer:** needles borne in clusters

**Step #4:** We are now off to the two number four's (4). Which of the statements most closely match the tree?

**Answer:** cluster containing 2-5 needles (Pines)

**Step #5:** Of the a, b and c choices, how many needles per cluster does our tree have?

**Answer:** 5

You got it! This tree is a White Pine. It's needles are persistent through winter, and it is not uncommon for them to turn yellow in the fall. But the tree is still very healthy. Although this is still a very young tree, eventually it will grow to a height of more than 100 feet! Its family is the largest conifer and formerly the most valuable tree of the Northeast. Their tall straight trunks were once prized for ship masts in the colonial period. Today their wood is used for construction, millwork, trim, and pulpwood.

Can you guess how old this tree is?



**Station # 2:** Located near the Main Gate Snack Shop.

As an oval shrub with upright branches, I am a very well known around the world. I was brought to America by the earliest Dutch, English, and French settlers. I'm cold-hardy, which is perfect for temperate and chilly zones. You can find me in parks and gardens, and even in your own backyard. My height can reach 8 to 18 feet, and I have dense clusters of fragrant flowers. You can call me Alba, which is a Latin word for "white" and also describes my showy color.

Answer: I'm a \_\_\_\_\_.

**Station # 3:**

An ornamental tree, I am a cultivated variety of a European beech tree, often planted as a shade tree in landscaping. I can reach a height of 40 to 60 feet and have smooth gray bark. My large purple leaves may fade a little to bronze green in the heat of summer, turn red brown in the fall, and hang on well into winter. My fruit is a nut in a thin spiny husk that is less than 2 inches in diameter.

**Fun Fact:** European beech nuts have been eaten by man, wildlife, and livestock for centuries – from prehistoric man to the present. Its hardwood has also been very important. Almost white, it is used most often in toys, cookware, furniture, and beer barrels. Since the wood is resistant to decay under water, the related American variety of the tree was used to make water wheels in Colonial times, as well as for wood handles, chairs cutting boards, and for making charcoal.

Find deciduous me near Thunder N' Lightning. I am a \_\_\_\_\_.

**Station # 4:** Located in front of the Pirate Ship ride.

I am among the few remaining "ancient trees" - - two of which you will find living right here at Lake Compounce. Japanese records tell us that this tree was selected over the eons for building houses, as the wood is very fire-resistant. Today, I am known as a *living fossil* related to conifers and am the sole survivor of my ancient and formerly widespread family. I am resistant to dust, wind, ice, insect pests, and disease.

My leaves are oddly fan shaped and turn a beautiful golden yellow in autumn. Nothing eats my leaves, and I know no pests or disease of any kind.

Answer: \_\_\_\_\_.

**Station # 5: Trees as Air Conditioners? Feel the difference!**

Located along the hill with the walkways for the Zoomerang and The American Flyers.

A vertical rectangular box with a black border and a white background. The words "Fun" and "Fact" are stacked vertically in a bold, black, serif font. The box is slightly offset to the right of the main text area.**Fun  
Fact**

That's right! As leaves manufacture food, they take in carbon dioxide and give off oxygen and water throughout the process of transpiration. Transpiration has a great cooling effect on the surrounding environment. A mature tree can transpire up to 100 gallons of water per day. It could take 5 air conditioners running 20 hours to have the same effect!

**What am I? (Use the Key):** My wood is used for furniture parts, millwork, flooring, and specialty products such as butcher blocks, as well as pulpwood, particle board, and fiber board. A shade tree, I grow to a larger trunk diameter than any other native hardwood. The hollow trunks of old, giant trees were used for chimney swifts in the earlier times.

Answer: \_\_\_\_\_

**Station # 6: How old am I?**

**Location:** Visit the historical display in the foyer above the Croc Pot Café for this investigation.

I am called a "Tree Cookie" by my forester friends because I was cut from a tree trunk. I grow in diameter (thickness) through the action of the cambium, a thin layer of material between my bark and the sapwood. The wood formed during the growing season is called an annual ring. I grow the most in spring. Count my annual rings and you will know how old the tree was from which I was cut.

Answer: \_\_\_\_\_



**Station # 7: Good Enough to Eat!**

Located across from the Boulder Dash exit. I am a very large tree with rounded, dense crown and striking multi-colored foliage in autumn!

Use the Key to find me. I am among the leading furniture woods. I am used for flooring, boxes and crates, and veneer. The boiled concentrated *sap* is the commercial source of maple sugar and syrup, a use the colonists learned from the Indians. Each sap harvested tree can yield between 5 and 60 gallons of sap per year; about 32 gallons of sap make 1 gallon of syrup or 4.5 pounds of sugar.

Answer: \_\_\_\_\_

**Station # 8:** Right now I am relatively small, but I can grow 20 to 30 feet tall and spread my graceful, drooping branches 15 to 25 feet wide. My leaves are glossy and green in summer and turn brilliant yellow in the fall. My thin, hanging branches and showy trunk even look interesting when bare in the winter. In spring, my one inch light pink flowers fill the branches before my leaves even come out. So it looks like a coat of

new

snow has fallen on me. My tiny oval fruit attract squirrels and other mammals.

I am located in the planter in the patio next to the Wildcat entrance.

Use the Key to help unlock my deciduous identity.

Answer: \_\_\_\_\_

**Station # 9:** I am not native to North American and grow to a height of 35 – 45 feet. My oval, rounded crown can spread 25 – 40 feet

and makes me eye-catching when I'm dressed in my purple-green star-shaped foliage in the summer. Many types of birds use my seeds as a food source. You can use me as a shade tree because of my dense crown or an accent tree because of my outstanding ornamental features.

Find me near Anchor Bay, in the area to the side of the Croc Pot portico entrance.

Answer: \_\_\_\_\_

**Station # 10:** I am located along the Main Street planters and will provide a beautiful canopy when fully grown. I am native to Japan and resemble my relatives, the elms, which have double saw-toothed leaf edges and winged fruits.

I am a substitute for the American Elm, as I am resistant to the Dutch Elm disease. In my native Japan, my wood is an important timber and valued for making furniture, lacquer ware, and trays; the plants are often used for bonsai.

You found me. I'm the \_\_\_\_\_

**Station # 11:** I am the well-known, naturalized fruit tree with a broad crown of shiny green foliage, white flowers in early spring and edible pears in autumn. Many varieties have been developed. I have been cultivated since the ancient times. My light brown wood has been prized for dressers, armoires, and other furniture.

I am located along the Wildcat Entrance & Exit, as well as near the Croc Pot Café and Theatre.

Use the Key to find me.

Answer: \_\_\_\_\_

**Station # 12:** When you hear part of my name, you may think that you know me. But I have a different appearance and fragrance that you might expect.

I can reach a height of 20 – 30 feet with my crown spreading 20 – 25 feet across. Large clusters of white flowers are my wow factor for about two weeks at the beginning of summer. In the fall my special arrangement of seed pods are my ornaments. My small elongated fruit does not attract wildlife.

My kin and I are located in the Kiddieland planters in the Coaster area.

Use the Key to find me.

Answer: \_\_\_\_\_

**Station # 13:** My cousins are from California and grow to amazing heights. I am an ancient tree that learned to survive by growing quickly, and I grow my lower branches higher than edible levels as a form of defense. Lower branches grow “up” along the underside of the tree. Once they have reached beyond the width of the tree, they leaf profusely. Leaves in the inner part die, though there are always sports along the trunk defended by dense branches with no leaves on them until the end of the tree. In this way, I prepare a “last defense” because, even if all my leaves are eaten by a predator, the sports along my trunk have a chance to gain photosynthesis while I concentrate on re-leafing and growing taller.

I am a deciduous tree. I am red in color. You can find me growing in front of the Pirate Ship pond, across from the Zoomerang.

Answer: I am a \_\_\_\_\_. Watch me grow!

**Station # 14:** Find me by The American Flyers!

I am located along the Green Building, and you may even have one like me bordering your yard. I am often trimmed into hedges. My leaves are distinctly flattened and fan-like.

Use the Key to find me.

Answer: \_\_\_\_\_



My cousin, The Eastern Arborvitae, was probably the first North American tree introduced into Europe. It was discovered by French explorers and grown in Paris about 1536. The year before, tea prepared from the foliage and bark (now known to be high in vitamin C) saved the crew of Jacques Cartier from scurvy. It was named the arborvitae, Latin for “tree of life,” in 1558. The trees grow slowly and reach an age of 400 years or more. The lightweight, easily split wood was preferred for canoe frames by Indians, who also used the shredded outer bark and the soft wood to start fires.

**Station # 15:** I am not native to North America. As a Japanese variety, I am grown mainly for my outstanding ornamental features. My upright-spreading, vase shaped crown has beautiful double pink flowers. It can spread 15 to 25 feet across. I can also grow 15 to 25 feet tall, but (surprise) sometimes I’m used for Bonsai. My family proudly flowers in Washington, D.C. for the Cherry Blossom Festival.

I am a deciduous tree and am located near the front of Saw Mill Plunge on the south side of the building.

Answer: \_\_\_\_\_

**Station # 16:** My four sided needles emerge as a soft clump but

become stiff, pointed and sharp to the touch. They can last for up to ten years and are borne on peg-like stalks. I am often shaped like a pyramid. Because of my shape, stiff horizontal branches, and blue foliage, I am frequently chosen for landscaping.

My strong wood is used in construction and for the manufacture of pulp and paper. Look for me near the Pirate pond.

Answer: \_\_\_\_\_

**Station # 17:** I am a cultivated shade tree. Bees are attracted to my small fragrant flowers, which, even once they are dried, stay on the tree for some time. Therefore, my flowers are a good source of honey. My wood is clear white and soft and is often used for drawer sides in inexpensive furniture. Though not as soft as balsa wood, it sands poorly and is difficult to finish.

You can find me across from the Wildcat Exit.

Answer: \_\_\_\_\_

**Station # 18:** Although my branches grow upright when I am young, they appear in horizontal layers when I am more “mature.” My crown will grow wider than it is tall overtime. I am known for my beautiful exfoliating bark and have showy white, pointed, petal like bracts (modified leaves) that surround each cluster of tiny, long lasting flowers. My red fruit looks like a big round raspberry. It attracts birds that devour it quickly.

As a deciduous tree, my autumn color is rich and varies from dull red to maroon. I am a great tree to use for landscaping!

Who am I? \_\_\_\_\_

Find me near the Ferris Wheel.

*Compounce Island Survivor*

Welcome to Compounce Island. You are about to embark on an unforgettable journey, where the thrills and chills are not for the faint of heart, where brains count as much as brawn, and where the fun may raise your laugh quotient to astronomical proportions. Your mission will be to survive the series of challenges that await your thoughts and actions. Will intelligence, cunning, boldness, observation, clear thinking, or just sheer endurance be the survivor's claim to fame? Only time will tell! Only you and you alone hold the answer! Good Luck!

*The Tribal Council*

Note: Challenge components vary in degree of difficulty. Your master leader is to determine whether you will attempt to meet any or all of the challenges as a team or individually, whether time restraints will be required, or whether other limitations will be imposed. Please proceed according to her/his directions. This most excellent teacher is authorized by The Tribal Council to make all decisions concerning the challenges and to determine who is the ultimate survivor.

### *Challenge 1: Notorious Nomenclature*

**Be careful as you stomp through unknown territory  
(Hint: Access all tree monikers in the entire program.)**

- A. Country cousin (4): e.g. Japanese Zelkova, \_\_\_\_\_
- B. City cousin (1): \_\_\_\_\_
- C. State of the Union (1): \_\_\_\_\_
- D. Color me green? (3): \_\_\_\_\_
- E. Foreign friend (3): \_\_\_\_\_
- F. Insect wannabe (1): \_\_\_\_\_
- G. Morning glory (1): \_\_\_\_\_
- H. Double crystalline (1): \_\_\_\_\_
- I. Latin roots (1): \_\_\_\_\_
- J. Hot and cold (1): \_\_\_\_\_
- K. Cry baby (1): \_\_\_\_\_

## Challenge 2: Growologies

How do your island relationships stack up?

(Hint: Relationships take many forms. Don't make snap judgments.)

e.g.      Fire is to hot as ice is to cold.      Hot is to fire as cold is to ice.  
             Ice is to cold as fire is to hot.      Cold is to ice as hot is to fire.  
             Hot is to cold as fire is to ice.      Cold is to hot as ice is to fire.  
             Fire is to ice as hot is to cold      Ice is to fire as cold is to hot.

- A. Sound is to ear as scent is to \_\_\_\_\_.
- B. Skin is to body as \_\_\_\_\_ is to tree.
- C. Butterfly is to bee as nectar is to \_\_\_\_\_.
- D. Broad is to awl shaped as wide is to \_\_\_\_\_.
- E. Flower is to petal as tree is to \_\_\_\_\_.
- F. Heartwood is to sapwood as old is to \_\_\_\_\_.
- G. Non living is to living as heartwood is to \_\_\_\_\_.
- H. Transpiration is to oxygen loss as respiration is to oxygen \_\_\_\_\_.
- I. Woody plant is to annual ring as a person is to \_\_\_\_\_.
- J. Male is to stamen as a female is to \_\_\_\_\_.
- K. Uncovered seeds are to gymnosperms as covered seeds are to \_\_\_\_\_.
- L. Phototropism is to light as geotropism is to \_\_\_\_\_.

## Challenge 3: Fractured Treelines

Id the trees using the clues. Beware of low hanging branches!

(Hint: Fractions are reduced to the lowest terms)

e.g.  $\frac{1}{2}$  of the place where a boat may settle (ashore) Answer: ash

- A.  $\frac{2}{3}$  of a grain used in cereal +  $\frac{1}{3}$  of a small cat: \_\_\_\_\_
- B.  $\frac{3}{4}$  of a feathered animal +  $\frac{1}{3}$  of a house of worship: \_\_\_\_\_
- C. 1 common quadruped of the same genus as the wolf +  $\frac{1}{2}$  of a forest dweller: \_\_\_\_\_
- D.  $\frac{1}{2}$  of a spasmodic cough-like sound +  $\frac{3}{5}$  of the sacred book of Islam +  $\frac{1}{3}$  of the opposite of no: \_\_\_\_\_

- E. 3/10 of the act of moving from place to place + 2/5 of ordinary + 1/4 of people working together for a common purpose: \_\_\_\_\_
- F. 1/3 of an arachnid + 1/3 of the sound of dry leaves rubbing + 2/9 of an essential part of wood, paper, cotton, and linen: \_\_\_\_\_
- G. 2/11 of to agree in time + 2/7 of a person in charge of money + 1/4 of a small weasel-like animal + 1/5 of to make young again: \_\_\_\_\_

### Challenge 4: The Sound of Silence

Silence can be golden. Do YOU know what you don't hear on the island? List in the given categories as many words with a silent first letter as noted. All are in some way currently found at or related to you or the park.

e.g. In ancient times, a pterodactyl (silent p) may have roamed the park lands. You may gnaw (silent g) on your pizza crust.

- A. Related to the body (3): \_\_\_\_\_
- B. Related to the mind (3): \_\_\_\_\_
- C. Soul (1): \_\_\_\_\_
- D. Things (10): \_\_\_\_\_

### Challenge 5: Crocodile Gulch

Do you know what's just around the bend? Triple match challenge. A keen eye for clues will keep you from slipping. Find me if you can. (Includes non-station trees.)

*First List*

*Second List*

*Third List*

- |   |   |   |
|---|---|---|
| <ul style="list-style-type: none"> <li>I. Water, water everywhere but not a drop to drink. Near front, south side of queue house</li> <li>II. Near tall, handsome circle maker</li> <li>III. Near pendulum's pond</li> <li>IV. Near a gourmet crocodile</li> <li>V. Near front of entrance to my logfriends' home</li> <li>VI. Watch for me near the parking area entrance</li> </ul> | <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> | <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> <p>_____</p> |
|---|---|---|



VII. Left of the entrance to the craziest  
cat in town

\_\_\_\_\_

VIII. Left of the entrance to the mountain  
runner

\_\_\_\_\_

IX. Some of us are on the left of the mill

\_\_\_\_\_

X. Not in your part of the park;  
maintenance crew gets my view;  
use clues to discover my name

\_\_\_\_\_

### *Second List*

- |                           |                     |
|---------------------------|---------------------|
| A. Colorado Blue Spruce   | F. Dogwood          |
| B. Kwanzan Cherry         | G. Locust           |
| C. Black Birch            | H. White Oak        |
| D. Japanese Kousa Dogwood | I. Shagbark Hickory |
| E. Cleveland Select Pear  | J. Pin Oak          |

### *Third List*

1. Deciduous hardwood; a.k.a. sweet, cherry, and name above; smooth bark that often peels off in thin, papery layers and becomes thick, deeply furrowed, and scaly; genus *Betula lenta*, family, Betulaceae.
2. Distributed throughout the eastern half of the US grows to 100 ft tall and 4 ft in diameter; leaves are 5 to 9 in. long and 2 to 4 in. wide with 7 to 9 rounded lobes separated by shallow to deep indentations; gray bark; used for flooring, wood trim, railroad ties, barrels, boats, furniture, fuel (including charcoal); genus *Quercus alba*, family, Fagaceae.
3. Deciduous hardwood; native to the eastern US; gray bark which peels in long, shaggy strips; yields edible nuts; wood used to make tool handles, skis, furniture, as firewood, and to smoke meat. *Carya ovata*, family Juglandaceae.
4. Japanese variety that is grown solely for ornamentation; highly valued for their beautiful wood; *Prunus serrulata*, family Rosaceae.
5. Characterized by pyramidal form; four angled needles last for up to 10 years and are borne on peg like stalks; can reach heights of 200 ft.; genus *Picea*, evergreen conifer in the pine family Pinaceae; strong wood, used in construction and the manufacture of pulp and paper; bluish green.
6. Genus *Quercus*, family Fagaceae; close relative to *Alba*; our uses are the same.
7. Genus *Cornus* of mostly small trees and shrubs in the family, Cornaceae; native to north temperate regions; can vary in height from 9 in. to 75 ft.

8. Native to North America; bear pinnately compound leaves, fragrant flowers in drooping cluster, and small, flat seed pods; heavy, hard, durable lumber used in fence posts, insulator pins, and railroad ties; genus Robinia, pea family, Leguminosae.
9. Showy, petal like bracts (modified leaves) surrounding each cluster of tiny flowers; valued for their flowers and rich autumn color and fruit; often used in landscaping; genus Cornus family, Cornaceae.
10. Cultivar that originated from the European variety of *Pyrus communis*; growth and flowering habits resemble those of the apple, although not as hardy.

### Challenge 6: Tame the Wild Things

Be forewarned. This is not a walk in The Park! It requires physical stamina, cunning and a spirit of adventure. (Hint: Enjoy!)

Completed ( X )

- |  |       |
|--|-------|
| A. Navigate the Saw Mill Plunge <i>without</i> getting soaked.   | _____ |
| B. Spin on the Revolution <i>without</i> tossing your cookies or developing a green facial hue.  | _____ |
| C. Bravely race through and between the dense vegetation and rugged rock facings on Boulder Dash <i>without</i> screaming or laughing raucously  | _____ |
| D. Travel up, up, up and yet farther up the famous hillside where the spirits of compowne, atumtuckoo, or patuchoos squaw may call your name <i>without</i> trembling, closing your eyes, or begging to come down. | _____ |

**Note:** If you *really* ( *r e a l l y* ), *truly*, *actually* were able to tame the wild things as suggested, you didn't follow the hint. **Go back and do it the right way!!!**

## ***KEEPING IT ALIVE!***

### ***Artistic Expression:***

1. All the world's a stage. Let your dramatic side shine. Create a young and vibrant "people tree." Add as much detail as possible from what you've learned. Here are some basics to get you started (adjust according to the number of students available.)
  - a. Heartwood: One student stands either with arms crossed over chest or with "muscle man" arms to indicate the strong and durable central part of a tree.
  - b. Taproot: One student sits on the floor in front of the heartwood to show it is anchoring the tree.
  - c. Lateral roots: Two students lie on the floor, one on each side of the heartwood with feet toward the center, to indicate the absorption of nourishment. To add a sound effect, make slurping sounds!
  - d. Sapwood: Two students stand, one on each side of the heartwood, and raise arms upward to indicate upward conduction of nourishment. Begin arms at waist, raise and repeat movement for an animated sapwood.
  - e. Cambium: Four students space themselves evenly around the sapwood, and holding their arms in front at waist level, make small forward circles with their hands (like chugging train wheels) to indicate that cell manufacturing is taking place.
  - f. Phloem: Eight students stand evenly around the cambium, extending their arms downward to indicate downward conduction. Begin arms at waist, lower and repeat movement for an animated phloem.
  - g. Outer Bark: Remaining students evenly circle the other layers, facing outward and joining hands (if possible) to indicate bark as protection.
  
2. Construct a 2 or 3 dimensional paper model that shows the different layers in a tree.
  
3. Find a fallen tree part on the ground such as a nut, piece of bark, or a leaf and study its color, texture, shape or other details for about 3 minutes. Now sketch the tree scrap from memory in one minute.

Repeat the activity, this time taking one minute to observe and 30 seconds to draw. Then try a third time with one minute to observe and only 5 seconds to draw. Review the sketches. What detail stood out most to you? Did you forget many of the details? You may notice that with less time you actually started to better organize your drawing, giving more importance to certain details. Perhaps your last sketch was even the best!

4. Choose a tree to draw. Consider an older, more mature tree whose structure will offer richness in detail that you might not expect. Notice how the shape of the tree trunk gives it perfect "balance" (wider on the bottom, thinner as it branches up and out.)

**Language:**

1. Imagine retreating to a special treehouse that's all your own, you may even have one! Describe the sights, sounds and feelings you experience in this leafy home high above the rest. Use "sense" words to paint a picture that "draws" your listeners into the scene and lets them share your adventure.
2. If you were a tree, what kind would you be? In what type of location would you want to be growing and why? Write a story sharing your thoughts.
3. Choose an interesting tree at the park and list five or six adjectives, nouns and verbs to describe it. Now think of someone you know who the tree brings to mind by the characteristics that your words suggest. Write a poem or descriptive essay to highlight the comparison.
4. Take a ride on Boulderdash, Lake Compounce's mountain coaster. What part does the natural terrain with its many trees and boulders play in filling the journey with surprise and excitement? Compare your ideas with those of your classmates.

**Music:**

1. All kinds of trees have been immortalized in songs over the ages. Make a list of songs in which a tree has a featured role in the lyrics (examples include Rock-a-bye Baby and Oh Christmas Tree.)
2. Compose your own song lyrics about an interesting tree in the park. Set your work to the music of a favorite tune or create your own melody.

**Science:**

1. After observing the trees at Lake Compounce, can you determine a relationship that might exist between the diameter and the height of a tree? Are the tallest trees the widest in diameter? Explain your conclusion.
2. Look for signs of how the trees at Lake Compounce have adapted to life in a fun park (ex. leaning away from or toward a building.) Do you notice any ways in which man helps them adapt (ex. fencing?)

Until we meet again - Happy Trails!  
I'll be in the treehouse!