



# SHAPES OF THE SEASON

**SUBJECTS:** Science, Math, and Art

**GRADES:** K-3

**KERA GOALS:** Meets KERA goals 1, 2, 3, 4, 5 and 6

**LEARNER OUTCOMES:** observing, quantifying, visualizing, measuring, classifying, visual arts, patterns, change, resourcefulness and creativity, rights and responsibilities for self and others, creative thinking, conceptualizing, and expanding existing knowledge.

**DURATION:** One hour-long session, or two 30-minute sessions

**GROUP SIZE:** One classroom of 25-35 students (or fewer)

**SETTING:** Indoors

**KEY VOCABULARY:** Oak, maple, tulip poplar, seasons, graph

**ANTICIPATORY SET:** Fall is a season full of shapes and color. Today we are going to look at a few shapes and colors that come from trees

**OBJECTIVES:** The students will be able to: 1. use basic math skills to observe, visualize, and measure leaf shapes; 2. develop their creativity using their knowledge of patterns and shapes.

**MATERIALS:**

- ◆ The students will need to bring in 3 leaves each (if possible try to have at least two different kinds of leaves)
- ◆ bar graph activity sheets
- ◆ leaf shape activity sheets
- ◆ wax paper
- ◆ tissue paper - shades of yellow, red, orange, and brown (cut into small pieces)
- ◆ string
- ◆ small bowls (old margarine tubs, etc)
- ◆ white glue
- ◆ water

**BACKGROUND:** Mammoth Cave National Park has a variety of plants on the surface. A few of the most common trees include oaks, maples, and tulip poplars. These trees, like any other deciduous tree, lose their leaves in the fall. A common use for oak trees by Indians and pioneers was grinding the acorns to make flour. Today these trees are used for building sturdy furniture. Not all oaks are alike. The white oak has rounded leaves and the red oak has pointed leaves. Maples trees are used to make maple syrup and furniture. Tulip poplars were often used for log cabins and floors in homes. All of these trees provide homes and food for countless animals, birds, and insects. These trees are found commonly in Kentucky and have been used and enjoyed by many generations.

In the fall you may notice that oaks tend to turn shades of reds and browns. Maples change to various shades of reds, yellows, and a few shades of orange. Tulip poplars tend to turn a bright yellow.

**PROCEDURE:**

1. The students get out the three leaves they were asked to bring to school. The teacher asks the students to look at their leaves.
2. The teacher holds up drawings (copies of the four activity sheets) of the oaks, maple, and tulip poplar leaves. The teacher asks the students to see if any of their leaves match the pictures of the oaks. If it does then they can put their leaf in the oaks pile. Then they do the same thing for the maple leaf and the tulip poplar.
3. The teacher asks if anyone has any leaves that did not match. The students put the remaining leaves in the "other" leaves pile.
4. The teacher puts the students into small groups and has them count the number of leaves in each pile. The teacher writes the numbers on the blackboard.
5. The teacher, along with the students, counts out bars to make a vertical bar graph on the blackboard. (The teacher can use the bars found at the back of this lesson.)

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6. From the bar graph the students should be able to understand which tree is most common. You may find that there are not as many tulip poplars as there are oaks and maples. The teacher may want to talk about why it is important to have a national park nearby to protect these plants that are not found as easily near our homes.
7. The teacher explains that we are going to make leaves that match the shape of the four leaves we just talked about. The instructor may ask, "Did anyone notice anything about our leaves? What color are the oak leaves?" The teacher may want to write "oak" and the colors the students have observed on the board. Then do the same for the maple and poplar.
8. The teacher then asks the students to pick one leaf that they would like to make. The instructor passes out a leaf shape sheet to each student (Note: there are 4 leaves they can choose from so they either receive a red oak, white oak, maple, or poplar leaf.)
9. Now each student needs a piece of wax paper, a piece of string (roughly 3.5 feet), white glue diluted with water, and tissue paper (that has been cut into small pieces) in the color or colors of their leaf.
10. The student should place the wax paper over their leaf shape sheet (It may help to tape the shape sheet to the wax paper). Then the students are to dip the string in the glue mixture and get it coated with the mixture. Beginning at the stem, they place the string on the wax paper, outlining the leaf with their string. They bring the end around to touch the stem again. Students can also use smaller pieces of string to outline the veins of the leaf (Extra string can extend off to the side and be cut off when it dries).
11. The students then take small pieces of the tissue paper that matches the color of their leaf and dip them one or two at a time into the glue mixture and then place them on the inside of their string. The entire inner surface area should be covered and it is **very important** that the edge pieces of tissue touch the string. Excess tissue will be trimmed later. The string acts as a frame to support the tissue on the inside.
12. When the students are finished they can place their pieces of wax paper on a table, window sill or the floor to dry. It usually takes over night to dry. When the leaves are dry they can carefully be pulled off the wax

paper and hung on a window to allow the light to shine through them.

**CLOSURE:** Today we have taken a look at a few common leaf shapes. Who can name one of those leaves for me? Maybe the next time we go outside for recess we can look around the playground to see if we can find any of these leaves.

**EVALUATION:** The teacher is able to evaluate the students as they separate their leaves into categories and as they pick the shape they would like to make.

**EXTENSIONS:**

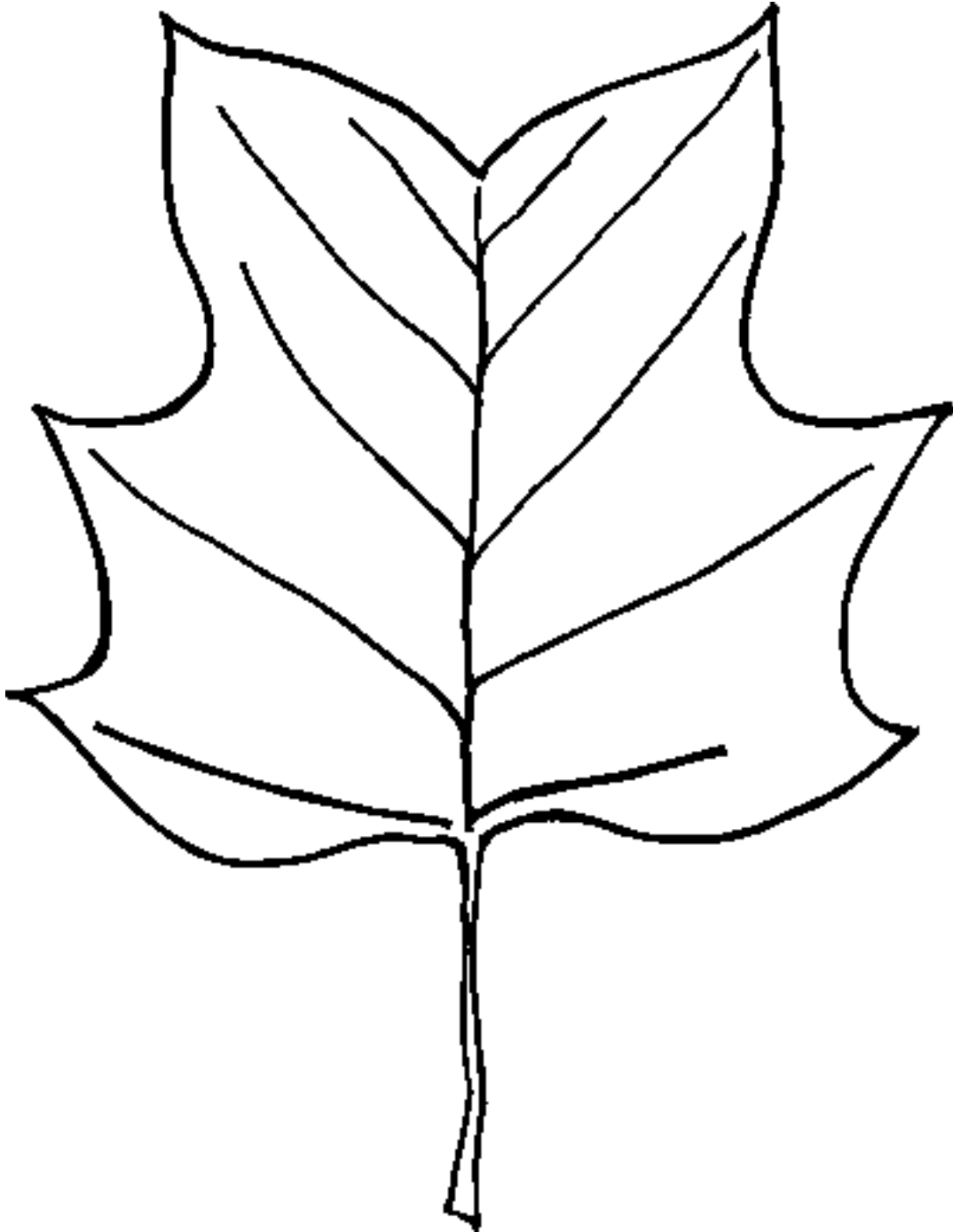
1. One follow-up activity may be to sort the leaves the students made into the three different kinds of leaf shapes and make a bar graph showing how many students chose to make a certain leaf. Or you may want to put the leaves in piles according to color and make a bar graph related to the colors found in fall leaves.
2. Go on a fall walk and look at the different leaves outside to observe different colors during the fall season.
3. The class could go out into the school yard and see if they can find any oak, maple or tulip poplar leaves.



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TULIP POPLAR LEAF

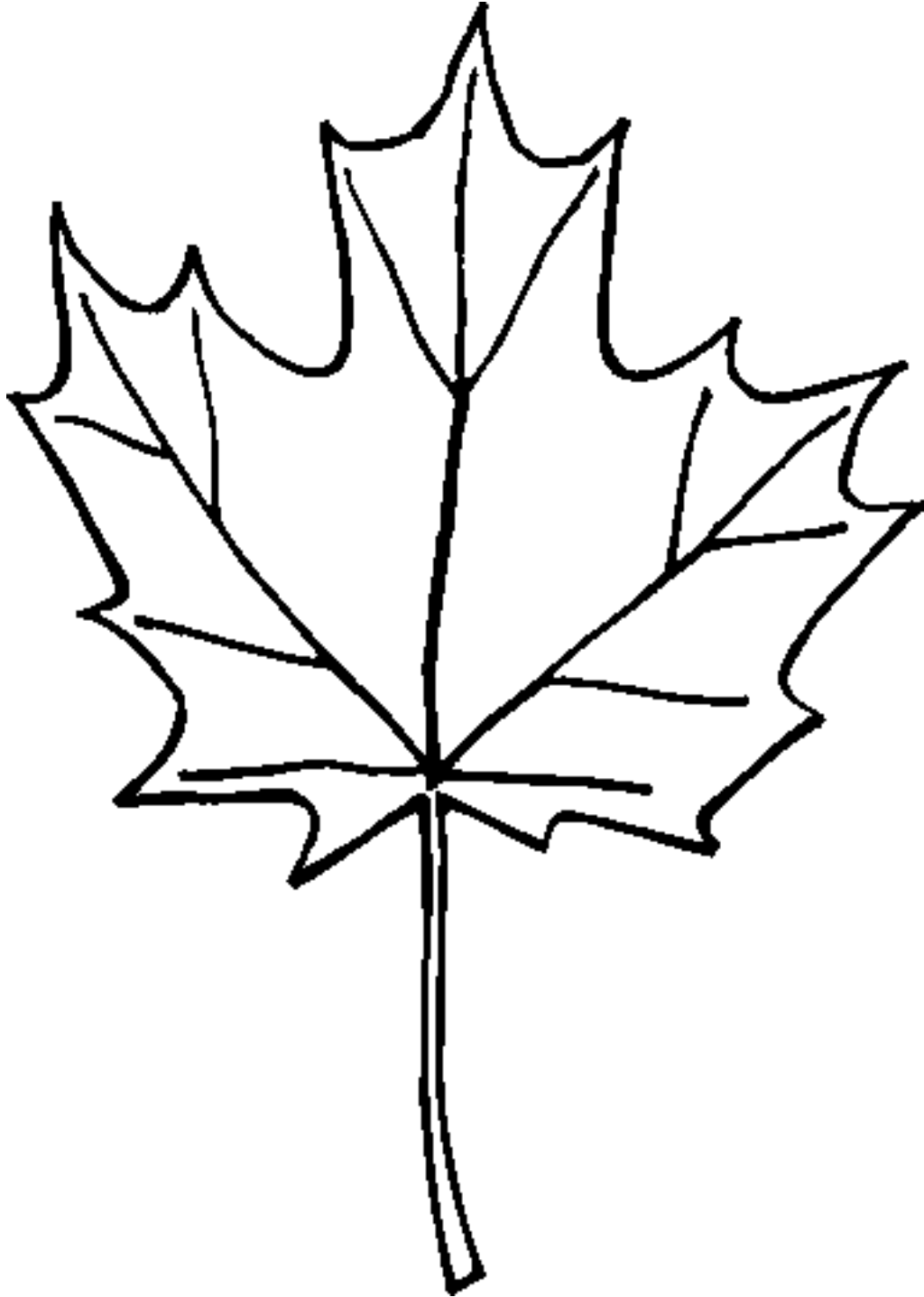
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MAPLE LEAF

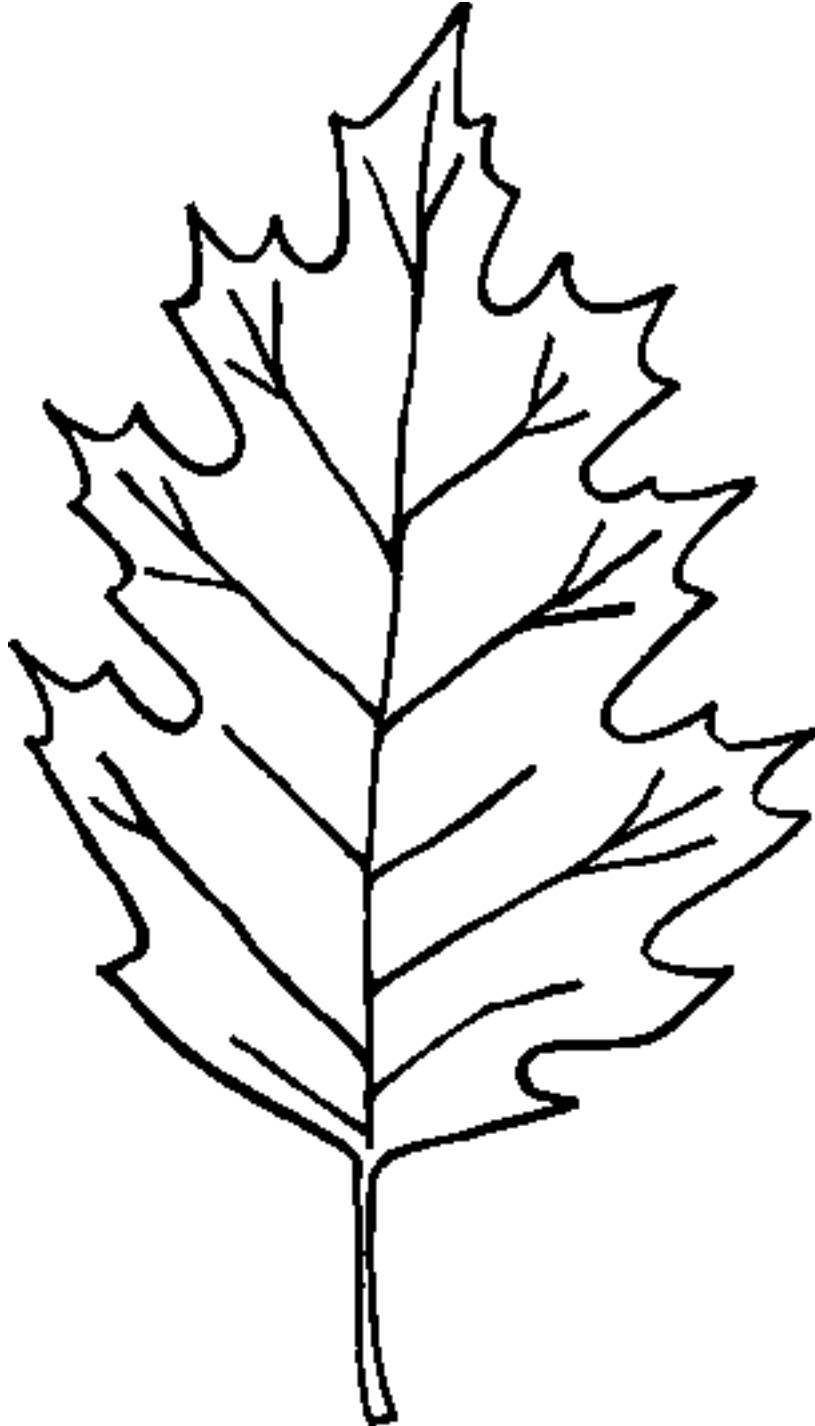
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RED OAK LEAF

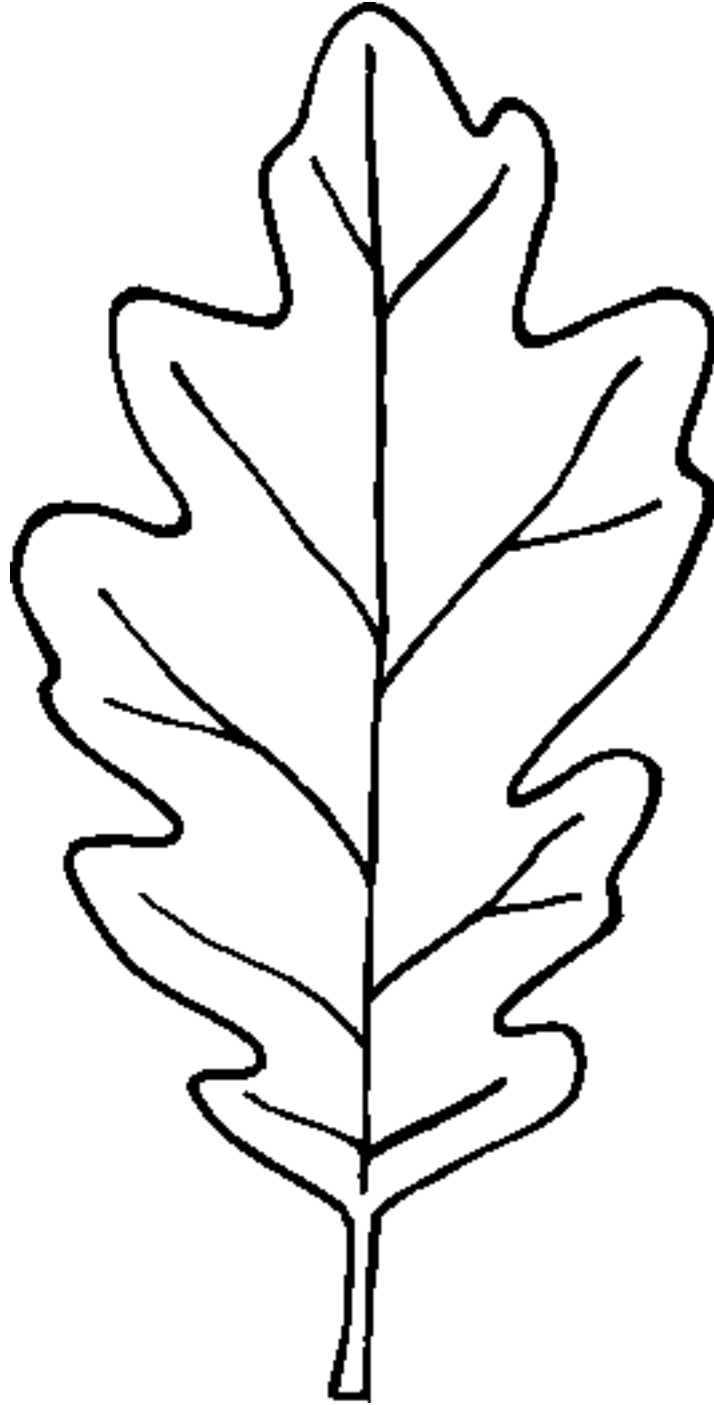
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WHITE OAK LEAF

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BAR GRAPH ACTIVITY SHEET

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10 LEAVES	10 LEAVES
9 LEAVES	9 LEAVES
8 LEAVES	8 LEAVES
7 LEAVES	7 LEAVES
6 LEAVES	6 LEAVES
5 LEAVES	5 LEAVES
4 LEAVES	4 LEAVES
3 LEAVES	3 LEAVES
2 LEAVES	2 LEAVES
1 LEAF	1 LEAF