

[Adapting the lesson for asynchronous | Independent Learning at Home]

This Teacher Leader Guide for the “Plant Classification: Monocots and Dicots” Jr. Master Gardener lesson is supported by the Jr. Master Gardener Program including the Jr. Master Gardener Handbook and the Junior Master Gardener Teacher/Leader Guide. You can source these books as well as learn more about the national JMG program by visiting the jmgkids.us website. (Link: <https://jmgkids.us>) However the Extension Master Gardeners – Hennepin County have provided a great deal of teaching information and background as well as support material for the students teachers and youth leaders most likely will be able to deliver these lessons with just a few modifications without the JMG resources.

Teachers/Leaders can send home the JMG Plant Classification Student Lesson Packet either electronically (students would need to source materials at home) or in a Lesson Kit including the documents and the following materials:

Leaf-and-Seed-Sort Plant Classification

Printed Worksheets and Activity Directions (Found in the JMG Plant Classification Student Lesson Packet)

Several monocot seeds (popcorn, corn kernels)

Several dicot seeds (dried kidney beans, navy beans, peanuts: Note – beans need to be soaked in water for several hours so that they can break apart.)

Supplies needed from home:

Markers/colored pencils

Paper

Crayons

Glue

Scissors

Extended Learning Activity: Leaf Rubbing Rainbow Activity (JMG Handbook p. 6)

Paper

Different types of leaves (monocots: lilies, hosta, Iris etc. dicots: rose, geranium, marigold, etc.)

Monocot-Dicot Plant Classification Lesson Video Suggestions and Options

We have included two video links: One done by Master Gardeners (Lisa and Randy) and a few others. We feel all are valuable but, if you feel the lesson will take too long, you can decide if one is better than the other in meeting the learning targets.

Leaf-Seed-Sort Video (13 minutes): Master Gardener Lisa (assisted by MG Randy) presents a lesson on plant classification: Monocots and Dicots. This video was originally presented live to a virtual Jr. Master Gardener Club over the summer of 2020. You will note there were some “technical difficulties” but the video does a good job of hitting the main concepts of plant classification. Students may want to end the video at about minute 13 as the ending to the video pertains to the summer program.

Facebook Live video: <https://www.facebook.com/juniormastergardener/videos/235328870915765>

AND/OR

YouTube Monocots and Dicots: (2.5 minutes)

<https://www.youtube.com/watch?v=7DqsZbSdbrk>

Difference Between Monocots and Dicots by MooMoo Math and Science

<https://www.youtube.com/watch?v=5E1gtU2K3xQ>

Extended Learning: In the student lesson packet there are two optional activities: Aa Leaf Rub activity (may be hard if the season does not allow leaf collection outdoors) and a *JMG Kid Zone Website Lesson: Monocot vs Dicot*. Visit the website (Link: <https://jmgkids.us/kids-zone/jmgkidsweb/monocotvsdicot/>) and complete the *Junior Master Gardener Web Activities worksheet*.

On the following pages [4, 5, 6, 7] you will find the material in the Plant Classification Student Lesson Packet: Introduction and Directions, Leaf-and-Seed Sort Information Chart Worksheet, Plant Illustration Sheet to use if real plants are not available, and an extended learning worksheet for the JMG Kids Zone web activity.

We hope you and your students enjoy these lessons either in the classroom, online or at home!

Sincerely, Extension Master Gardeners, Hennepin County

JMG LESSON: PLANT CLASSIFICATION - MONOCOTS & DICOTS

Student Introduction and Directions:

Why do we classify? If you took all of the clothes in your room and threw them on the floor, it would be hard to find anything! But if we organize our clothes so that socks are together, shirts are together, and pants are together, it is easy to find the clothes we want! In the same way, scientists have ways of organizing plants. They look at different plant parts, such as flowers, leaves, stems and fruits, and group together the plants that are similar. Scientists divide plants into two main groups:

Monocots: *Mono means one!*

Leaves have veins that all go the same direction or parallel

Seed is one piece (corn kernel)

Monocot flower petals come in multiples of 3

Monocot stems have scattered vascular bundles

Dicot: *Di means two!*

Leaves have veins that go in different directions or are netted

Seed comes in two pieces (peanut, kidney bean)

Dicot flower petals come in multiples of 4 and 5

Dicot stems vascular bundles are in rings (example: tree rings)

Important Words: The words Mono-COT and Di-COT come from the word Cotyledon, the part of the seed that will grow into the leaves. VASCULAR BUNDLES are made of plant tissue found in the stem that moves water and nutrients, like veins move blood in our bodies. These words will be used in the lesson videos too!

- Read JMG Handbook Chapter One's section on Plant Classification, p. 5.
- Watch the Plant Classification Video (13 minutes): Texas Master Gardener Lisa presents a lesson on how to classify plants
Facebook Live link: <https://www.facebook.com/juniormastergardener/videos/235328870915765>

AND/OR • Watch other videos on Plant Classification:

1. YouTube Monocots and Dicots: (2.5 minutes)

<https://www.youtube.com/watch?v=7DqsZbSdbrk>

2. Difference Between Monocots and Dicots by MooMoo Math and Science

<https://www.youtube.com/watch?v=5E1gtU2K3xQ>

- Get out all the materials you will need and lay them on a work surface:
Popcorn seeds or corn kernels (Just a few!)
Bean seeds (Just a few!) such as dried kidney or navy (soak them for several hours in water so you can easily break them apart)
Leaves for rubbing (if the weather and season permits! Otherwise, use the Flower and Leaf Illustration sheet)
- Follow the directions and complete the Plant Leaf-and-Seed Sort Information Chart worksheet.
- Extended Learning Opportunity: JMG Kid Zone Website Lesson: Monocot vs Dicot. If you want to explore this subject more, visit the jmgkids website (Link: <https://jmgkids.us/kids-zone/jmgkidsweb/monocotvsdicot/>) and complete this Junior Master Gardener Web Activities worksheet found at the end of this packet.

MONOCOTS

SEED: *Glue a monocot seed here or draw a picture!*

LEAF: *Glue a monocot leaf here or draw a picture or glue an example from the attached sheet of plant drawings!*

FLOWER: *Draw a picture of a monocot flower (count the petals) or glue an example from the attached sheet of plant drawings!*

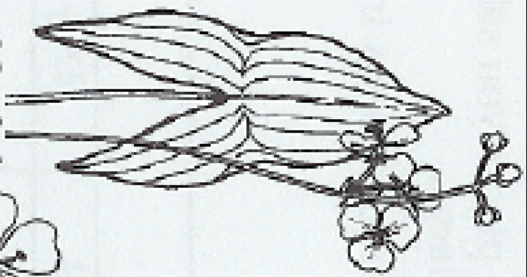
DICOTS

SEED: *Glue a dicot seed here or draw a picture!*

LEAF: *Do the same for a dicot leaf!*

FLOWER: *Do the same for a dicot flower (count the petals)!*

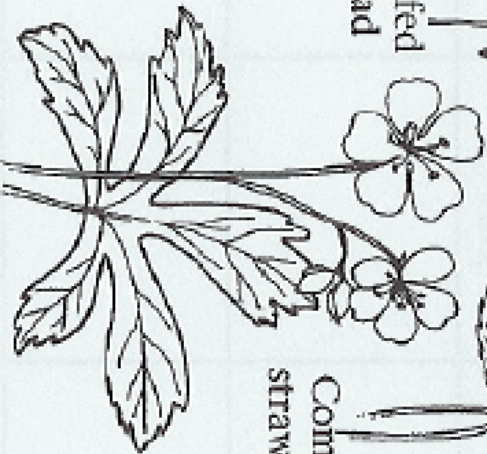
MONOCOT AND DICOT PLANTS: LOOK AT THE SEVEN PLANTS ON THIS SHEET. DECIDE WHICH ONES ARE MONOCOTS or DICOTS. REMEMBER TO LOOK AT THE LEAVES (Monocots have parallel veins and Dicots have netted veins) AND FLOWER PETALS (count the petals on each: Monocots have petals in multiples of 3, Dicots have petals in multiples of 4 & 5). ONCE YOU HAVE CLASSIFIED THESE PLANTS YOU CAN CUT THEM OUT AND GLUE THEM ONTO YOUR LEAF-AND-SORT INFORMATION CHART WORKSHEET!



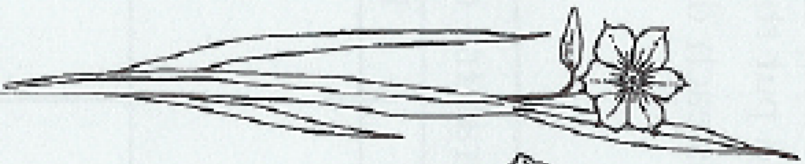
Broad-leaved
arrowhead



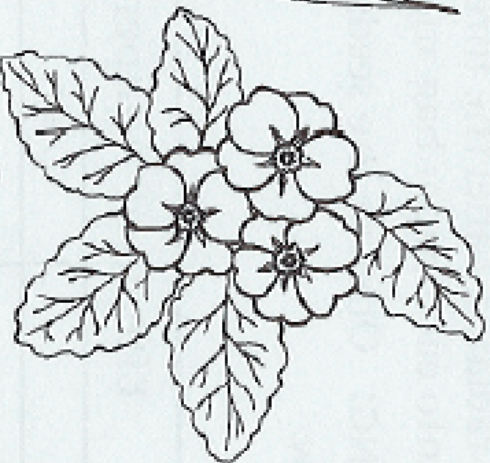
Common
strawberry



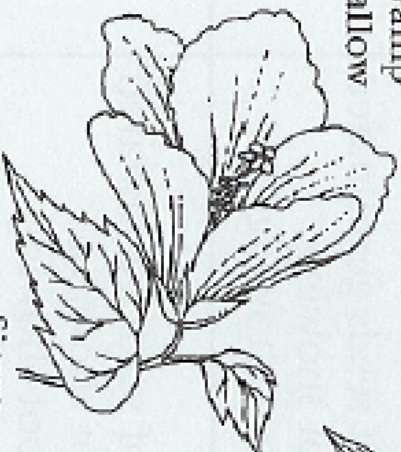
Wild
geranium



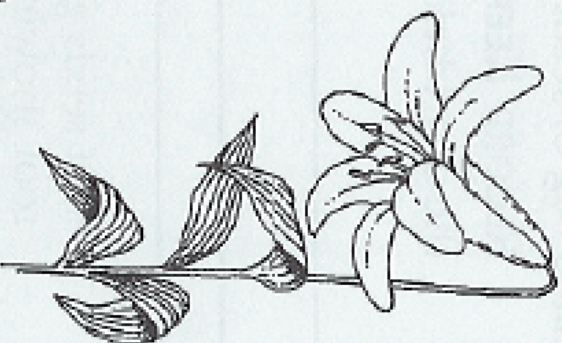
Blue-eyed
grass



Swamp
mallow



Sierra
Primrose



Lemon
fawn lily

Extended Learning Opportunity: JMG Kid Zone Website Lesson: Monocot vs Dicot. Visit the website (Link: <https://jmgkids.us/kids-zone/jmgkidsweb/monocotvsdicot/>) and complete this Junior Master Gardener Web Activities worksheet.

Name: _____



Web Activities

Chapter 1 - Classification: Monocot vs. Dicot

Directions: Use what you learned from the Monocot vs. Dicot web page to draw a picture of each plant in the boxes below.

MONOCOT	DICOT

Now that you know what monocot and dicot plants look like, go collect any part (leaf, petals, seed, stems) of each and glue them in the squares below or you can draw them!

MONOCOT	DICOT