Magnify It!

Activity Overview

Students will work together to identify parts of plants (including root structures, leaf shapes, and flower parts) using correct scientific terminology. They will learn the function of these plant parts, and how plants are classified according to shared characteristics.

Science Subjects: biology, botany, environmental science, and life science

Grade Levels: 4th - 12th
There are separate materials for upper elementary/middle school and high school

Time Estimate: 1 hour
(4 plants at about 15 minutes each)

Materials

- Magnify it! Cards - two versions available depending on grade level.
- Plant samples (4-6 real or artificial). Real plants are best as they have the most detail for students to complete the cards.
- Magnifying glasses as a class set or enough for each group.
- Illustrated plant structures handout

Preparation

- Gather enough samples for each group to have one of each of the plants and a flower.
  Flower Plant Suggestion: Potted lily plants or tulips work well.
- Download the illustrated plant structures handout and Magnify it! cards (answer keys also available).

Learning Objectives

- Identify plants' leaf shapes, leaf arrangements, structures, and habits.
- Use scientific terminology to identify plant characteristics.
- Describe why correctly describing plant parts/characteristics helps us to identify plant species.

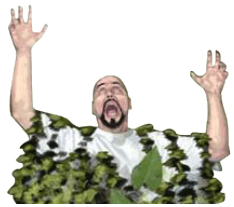
Key Questions

- What characteristics are needed to describe or identify a plant?
- How would you describe various plant characteristics?
- Why is it useful to use botanical terminology?

Instructions

1. Separate the class into several work groups.
2. Pass out magnifying glasses, Magnify it! cards, and the illustrated plant structures handout.
3. Go over the vocabulary on the illustrated plant structures handout.
4. Pass out the plant samples to the groups. Examine one of the plant samples with the class and start discussing the plant parts.
5. As a class, go through the process of filling out on of the Magnify it! cards identifying: leaf shape, root structures, stem, habitat, and flowers (if applicable).
6. Continue filling out the cards as a class or in groups, depending on the grade level.

Magnify It! Answer Key (air potato)



STEMS & ROOTS: Use magnifier and *Illustrated Plant Structures - Stems and Roots* to complete the card.

Common name: air potato

Scientific name: Dioscorea bulbifera

Type of stem: Diameter of stem: _____

___ crown (short)
___ simple (no branches)
___ branched (has branches or sidegrowths)
__x__ climbing (needs support; a vine)
___ creeping (rests on ground; roots at nodes)
___ rhizome (roots below ground)
___ stolon (along surface; roots at node)

Are there nodes on the stem? If yes, then describe:

_____

Are there buds? _____ Describe: _____

Find midrib on the blade (leaf). Is it in the center? yes

Does the leaf have a sheath? _____ Yes __x__ No

Circle type of root: **tuber** bulb bulblet bulbil corm
Other/describe: fibrous roots grow from tuber and often product additional tubers on those roots

To check answers refer to individual plant information cards: *Invasive and Non-Native Plants You Should Know--Recognition Cards (or Flash Cards)* **~ plants.ifas.ufl.edu/education**

LEAVES: Use magnifier and Illustrated Glossary of Leaf Shapes to complete the card.

Common name: air potato

Scientific name: Dioscorea bulbifera

Circle one: native **non-native** **invasive**

leaf (blade) shape: ovate or heart shaped

leaf tip: acuminate

leaf margin: smooth

leaf base: cordate

leaf attachment: long stalked

leaf arrangement: alternate

plant habit: herbaceous high climbing vine

Field Notes: The stem twins counterclockwise aerial tubers occur in the leaf axils

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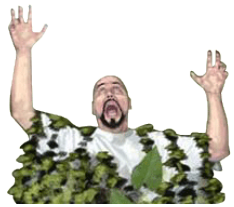
Magnify It! Answer Key (coral ardisia)



STEMS & ROOTS: Use magnifier and *Illustrated Plant Structures - Stems and Roots* to complete the card.

Common name: coral ardisia

Scientific name: Ardisia crenata

Type of stem: Diameter of stem: _____

___ crown (short)
___ simple (no branches)
x branched (has branches or sidegrowths)
___ climbing (needs support; a vine)
___ creeping (rests on ground; roots at nodes)
___ rhizome (roots below ground)
___ stolon (along surface; roots at node)

Are there nodes on the stem? If yes, then describe:

_____

Are there buds? _____ Describe: _____

Find midrib on the blade (leaf). Is it in the center? Yes

Does the leaf have a sheath? _____ Yes x No

Circle type of root: tuber bulb bulblet bulbil corm

Other/describe: tuberously thickened roots

To check answers refer to individual plant information cards: *Invasive and Non-Native Plants You Should Know--Recognition Cards (or Flash Cards)* **~ plants.ifas.ufl.edu/education**

LEAVES: Use magnifier and Illustrated Glossary of Leaf Shapes to complete the card.

Common name: coral ardisia

Scientific name: Ardisia crenata

Circle one: native **non-native** **invasive**

leaf (blade) shape: elliptic

leaf tip: acute

leaf margin: crenate (blunt-toothed), wavy

leaf base: acute, tapered

leaf attachment: stalked

leaf arrangement: alternate

plant habit: small woody shrub

Field Notes: Blades leathery, very shiny green on upper surface, pale underneath, with a scalloped margin.

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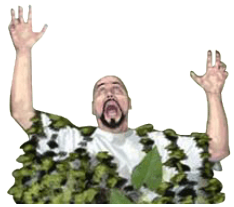
Magnify It! Answer Key (Chinese tallow tree)



STEMS & ROOTS: Use magnifier and *Illustrated Plant Structures - Stems and Roots* to complete the card.

Common name: Chinese tallow tree

Scientific name: Sapium sebiferum

Type of stem: Diameter of stem:_____

___ crown (short)
___ simple (no branches)
x branched (has branches or sidegrowths)
___ climbing (needs support; a vine)
___ creeping (rests on ground; roots at nodes)
___ rhizome (roots below ground)
___ stolon (along surface; roots at node)

Are there nodes on the stem? If yes, then describe:

_____

Are there buds? _____ Describe:_____

Find midrib on the blade (leaf). Is it in the center? Yes

Does the leaf have a sheath? _____ Yes x No

Circle type of root: tuber bulb bulblet bulbil corm

Other/describe: fibrous

To check answers refer to individual plant information cards: *Invasive and Non-Native Plants You Should Know--Recognition Cards (or Flash Cards)* **~ plants.ifas.ufl.edu/education**

LEAVES: Use magnifier and Illustrated Glossary of Leaf Shapes to complete the card.

Common name: Chinese tallow tree

Scientific name: Sapium sebiferum

Circle one: native non-native invasive

leaf (blade) shape: diamond shaped to oval

leaf tip: acuminate

leaf margin: smooth

leaf base: acute to rounded (obtuse)

leaf attachment: stalked

leaf arrangement: alternate

plant habit: small to medium woody tree

Field Notes: Leaves are deciduous,with a pair glands just below the blade on the stalk. It has milky sap.

To check answers refer to individual plant information cards: *Invasive and Non-native Plants You Should Know – Recognition Cards (or Flash Cards)* **~ plants.ifas.ufl.edu/education**

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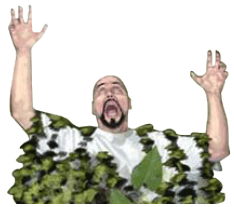
Magnify It! Answer Key (Japanese climbing fern)



STEMS & ROOTS: Use magnifier and *Illustrated Plant Structures - Stems and Roots* to complete the card.

Common name: Japanese climbing fern

Scientific name: Lygodium japonicum

Type of stem: Diameter of stem: _____

The actual stem is below ground. What students may confuse as the stem above ground is really just a single long leaf.

___ crown (short)
___ simple (no branches)
___ branched (has branches or sidegrowths)
___ climbing (needs support; a vine)
x creeping (rests on ground; roots at nodes)
x rhizome (roots below ground)
___ stolon (along surface; roots at node)

Are there nodes on the stem? If yes, then describe:

_____

Are there buds? _____ Describe: _____

Find midrib on the blade (leaf). Is it in the center? x

Does the leaf have a sheath? _____ Yes x No

Circle type of root: tuber bulb bulblet bulbil corm

Other/describe: fibrous

To check answers refer to individual plant information cards: *Invasive and Non-Native Plants You Should Know--Recognition Cards (or Flash Cards)* **~ plants.ifas.ufl.edu/education**

LEAVES: Use magnifier and Illustrated Glossary of Leaf Shapes to complete the card.

Common name: Japanese climbing fern

Scientific name: Lygodium japonicum

Circle one: native non-native invasive

leaf (blade) shape: Leaflet:lanceolate to triangular

leaf tip: Leaflet: acute,obtuse,emarginate

leaf margin: Leaflet: lobed, lobes leaflet-like

leaf base: Leaflet: various

leaf attachment: Frond: long stalked Leaflet: short stalked

leaf arrangement: Frond: alternate Leaflet: alternate

plant habit: Herbaceous and climbing

Field Notes: Fronds can reach 90ft. long; many times divided(compound; numerous, short, alternate branches; each branch with several short-stalked,divided leaflets(pinnae).

To check answers refer to individual plant information cards: *Invasive and Non-native Plants You Should Know – Recognition Cards (or Flash Cards)* **~ plants.ifas.ufl.edu/education**

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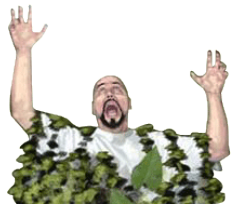
Magnify It! Answer Key (tuberous sword fern)



STEMS & ROOTS: Use magnifier and *Illustrated Plant Structures - Stems and Roots* to complete the card.

Common name: tuberous sword fern

Scientific name: Nephrolepis cordifolia

Type of stem: Diameter of stem: _____

___ crown (short)
___ simple (no branches)
___ branched (has branches or sidegrowths)
___ climbing (needs support; a vine)
___ creeping (rests on ground; roots at nodes)
__x__ rhizome (roots below ground)
__x__ stolon (along surface; roots at node)

Are there nodes on the stem? If yes, then describe:

_____

Are there buds? _____ Describe: _____

Find midrib on the blade (leaf). Is it in the center? __x__

Does the leaf have a sheath? _____ Yes __x__ No

Circle type of root: tuber bulb bulblet bulbil corm

Other/describe: fibrous with tubers that form from stolons

To check answers refer to individual plant information cards: *Invasive and Non-Native Plants You Should Know--Recognition Cards (or Flash Cards)* **~ plants.ifas.ufl.edu/education**

LEAVES: Use magnifier and Illustrated Glossary of Leaf Shapes to complete the card.

Common name: tuberous sword fern

Scientific name: Nephrolepis cordifolia

Circle one: native non-native invasive

leaf (blade) shape: Frond: eliptical
Leaflets:oblong-lanceolate,lobe at base

leaf tip: Leaflet: bluntly acute to obtuse

leaf margin: Leaflet: smooth or toothed

leaf base: Leaflet: oblique

leaf attachment: Frond: long stalk

leaf arrangement: Frond: alternate
Leaflet: alternate

plant habit: herbaceous and ascending

Field Notes: Fronds are once-divided (pinnately compound). Stalks are covered with two-tone scales. Has an ascending rhizome. Tubers form from the roots and stolons.

To check answers refer to individual plant information cards: *Invasive and Non-native Plants You Should Know – Recognition Cards (or Flash Cards)* **~ plants.ifas.ufl.edu/education**

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