What is a plant?

- A plant is a eukaryotic, photosynthetic organism with cell walls made of cellulose

Why are plants important?

- They are primary producers in the food web
- They produce oxygen
- They provide food, medicine, shelter, and fibers used by people

How many kinds of plants are there?

- More than 300,000 species are described
- More than 3,000 species occur in Mississippi

How are plants related?

- Plants are classified into five major groups, from evolutionarily primitive to advanced
- An evolutionary tree, such as this one, shows how these groups are related

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Questions

Grades K-2:
1. Are plants alive? How do you know?
2. How are plants different than animals?
3. What are the parts of a plant and what is each part used for?

Grades 3-5:
1. Why do plants need water? carbon dioxide?
2. What are the inputs and outputs of photosynthesis?
3. How do plants disperse their spores and seeds?

Grades 6-8:
1. What is the difference between a vascular and a non-vascular plant?
2. What is wood made of?
3. How do plants deal with pests they encounter in their habitats?

Grades 9-12:
1. Do all plants use photosynthesis?
2. How do fossils tell us about the evolution of plants?
3. In what ways do plants living in dry habitats adapt to their surroundings?

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Algae
~44,000 species

Identifying Features

- Algae is a general term for free-living aquatic plants
- Algae may be unicellular or multicellular
- There are red, green, brown, and other algae
- Found in freshwater and saltwater habitats

A: Green algae often grows on the surface of freshwater lakes; B: microscopic view of the filaments of a green alga.
Questions

Grades K-2:
1. What shape are algae?
2. What color are algae?
3. Are algae like trees? In what ways are they the same. In what ways are they different?

Grades 3-5:
1. What is the difference between unicellular and multicellular?
2. Do algae have roots?
3. Do other plants that live in the water need roots?

Grades 6-8:
1. Are algae producers or consumers?
2. Where do algae get the carbon dioxide they need for photosynthesis?
3. What organisms eat algae?

Grades 9-12:
1. What different adaptations do algae living in saltwater habitats have compared to freshwater algae?
2. How big can unicellular algae grow? What limits the growth of unicellular algae?
3. How are algae different than lichens?
Bryophytes
~20,000 Species

Identifying Features

- Bryophytes are small plants lacking vascular tissue
- Mosses, liverworts, and hornworts
- Found in moist habitats, such as stream banks and shady forests

A: Moss with sporophytes; B: Leafy liverwort; C: Thalloid liverwort

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Questions

Grades K-2:
1. Do Bryophytes have leaves?
2. Are the leaves on a Bryophyte more similar to leaves on a pine tree or to algae?

Grades 3-5:
1. How do Bryophytes transport materials in their leaves and stems?
2. Why are they considered to be non-vascular plants?
3. Why do mosses need to live in damp habitats?

Grades 6-8:
1. How could other organisms use Bryophytes?
2. What types of habitats in Mississippi can you find Bryophytes?

Grades 9-12:
1. What is the sporophyte of a moss?
2. How have mosses, liverworts, and hornworts evolved to be different?
3. How do Bryophytes live with other organisms in their environment? Give examples of symbiotic and parasitic relationships.
Ferns & Lycophytes
~14,000 Species

Identifying Features

- Contain vascular tissue
- Reproduction by spores on the undersides of leaves or in specialized structures at the ends or axils of leaves
- Found in wet and dry habitats

A: Lycopodium digitatum with upright sporangia; B: Equisetum; C: Botrychium dissectum; D: Salvinia minima; E: Sporangia on the underside of a fern leaf
Questions

Grades K-2:
1. What other plants do ferns look like to you?
2. What are spores?
3. What are the dark spots on the leaves of some ferns?

Grades 3-5:
1. What is a spore used for?
2. How are spores dispersed?
3. Do ferns have vascular tissue?

Grades 6-8:
1. Do ferns need pollinators?
2. Can ferns grow to be trees?
3. Do ferns provide food to any animals?

Grades 9-12:
1. Why can ferns grow larger than Bryophytes?
2. What different adaptations do ferns living in wet and dry habitats have?
3. Coal is a fossil fuel made from ferns. What is a fossil fuel?
Gymnosperms
~1,000 Species

Identifying Features

• All Gymnosperms are woody trees or shrubs
• Reproduction by seeds in cones; some cones are woody and large, while others are much softer and may be brightly colored
• Common in forested areas of Mississippi

A: Needles of Pinus; B: Female cones of Bald Cypress; C: Scale-like needles and cones of Red Cedar

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Questions

Grades K-2:
1. What is the cone on a pine tree used for?
2. What is inside of a cone?

Grades 3-5:
1. What parts of a gymnosperm photosynthesize?
2. How is a cone different than a flower?

Grades 6-8:
1. How do gymnosperms make wood?
2. How are gymnosperms useful to people?
3. How do animals use gymnosperms in their habitats?

Grades 9-12:
1. In the coldest habitats on earth, gymnosperms are often the only plants growing. What adaptations do these plants have for growing in the cold?
2. Could a gymnosperm from Mississippi grow in Alaska?
3. What species of pine are important for the economy of Mississippi?
Angiosperms ~350,000 Species

Identifying Features

- Woody and non-woody forms
- Reproduction by flowers and seeds contained in fruits
- Angiosperms are the most diverse of all plants and are found in all habitats throughout Mississippi

Flowers of A: Spigelia marilandica; B: Chrysanthemum leucanthemum; C: Passiflora incarnata; D: Asclepias viridis

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Questions

Grades K-2:
1. What is a flower?
2. What is the difference between a fruit and a vegetable?
3. Identify the following as vegetable or fruit and explain why: carrot, apple, tomato, potato

Grades 3-5:
1. Do all angiosperms make fruits?
2. How do angiosperms use flowers?
3. How do angiosperms disperse their seeds?

Grades 6-8:
1. Why do angiosperms and insects need each another?
2. Why are flowers important to bees?

Grades 9-12:
1. Why are there so many more angiosperms than any other group of plant?
2. Does wood in angiosperms grow in the same way as wood of gymnosperms?
3. What adaptations would you find in an angiosperm that lives in a desert?