

# Animal Phyla and Plant Divisions

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<b>Strand</b>	Life Systems
<b>Topic</b>	Investigating major animal phyla and major plant divisions
<b>Primary SOL</b>	LS.4 The student will investigate and understand how organisms can be classified. Key concepts include a) the distinguishing characteristics of domains of organisms; b) the distinguishing characteristics of kingdoms of organisms; c) the distinguishing characteristics of major animal phyla and plant divisions; and d) the characteristics that define a species.
<b>Related SOL</b>	LS.2 The student will investigate and understand that all living things are composed of cells. Key concepts include b) similarities and differences between plant and animal cells.

## Background Information

Organisms are divided into three domains and six kingdoms. This lesson focuses on the Eukarya domain and the plant and animal kingdoms. The major divisions of the plant kingdom are the mosses, ferns, conifers (gymnosperms) and flowering plants (angiosperms). The major phyla of the animal kingdom are the cnidarians, mollusks, annelids, arthropods, echinoderms, and chordates.

A species can be defined as a group of similar-looking organisms that can interbreed under natural conditions and produce offspring that are capable of reproduction.

## Materials

- Pictures of organisms from the major animal phyla: cnidarians, mollusks, annelids, arthropods, echinoderms, and chordates
- Pictures of the major plant groups: mosses, ferns, conifers, and flowering plants
- Research sources such as books, Internet, and other reference materials
- Plant Divisions and Animal Phyla handout (attached)
- Animal Phyla Graphic Organizer (attached)
- Plant Divisions Venn Diagram (attached)

## Vocabulary

*angiosperm, annelids, arthropods, chordates, classification, cnidarians, conifer, echinoderms, Eukarya, gymnosperm, invertebrate, mollusks, nonvascular, phyla, phylum, species, vascular, vertebrate*

## Student/Teacher Actions (what students and teachers should be doing to facilitate learning)

1. Review with students the six kingdoms of organisms. Tell students that the lesson's focus will be on the animal and plant kingdoms. Introduce the lesson by presenting photos of plants and animals. Brainstorm with students on the characteristics that can be observed.

2. Give each student a copy of the “Plant Division and Animal Phyla” handout. Discuss attributes for each of the groups on the handout. Introduce or review the vocabulary term *species*. Explain that a species is a group of similar-looking organisms that can interbreed under natural conditions and produce offspring that are capable of reproduction. Discuss plant species and animal species.
3. Give each student a copy of the “Plant Divisions-Venn Diagrams” handout. With textbooks or other resource information, have students work in pairs to compare mosses with ferns, and conifers with flowering plants. Discuss as a class the similarities and differences.
4. For the “Animal Phyla Graphic Organizer,” decide whether students will be working individually or in groups. Each student or group will need six copies of the graphic organizer, one for each of the major animal phyla: cnidarians, mollusks, annelids, arthropods, echinoderms, and chordates. Direct students to write the particular phylum name in the center of the diagram and then, using resource materials, fill in the other sections. Discuss as a class the major characteristics, habitats, adaptations, and examples of each of the phyla.

### Assessment

- **Questions**
  - Why do scientists further divide kingdoms into smaller groups?
  - Why are the plant and animal kingdoms members of the Eukarya domain?
  - Why is it important that members of a species be similar?
- **Journal/Writing Prompts**
  - Referring to the plant divisions, describe the type of environment/ecosystem where you might find these types of plants.
  - Select one of the phyla that is listed on the “Plant Division and Animal Phyla” handout, and write a fictional or nonfictional story, entitled “A Day in the Life of a \_\_\_\_\_.”

### Extensions and Connections (for all students)

- Symmetry is another characteristic used to subdivide animals. Have students investigate animals that have radial or bilateral symmetry. Ask students to determine whether a particular phylum contains animals with a certain type of symmetry.

### Strategies for Differentiation

- Provide a reversed graphic organizer; reveal the information and have students identify the appropriate phylum.
- Have students create an illustrated foldable of the plant divisions and animal phyla.
- Have students create picture posters based on information from the “Plant Divisions and Animal Phyla” handout.
- Create a sorting activity: Print picture of plants and animals and have students place them into appropriate categories. This could be used as an alternative assessment.

# Plant Divisions and Animal Phyla

## PLANT DIVISIONS

<p><b>Mosses</b></p>  <p>low-growing nonvascular plants</p>	<p><b>Ferns</b></p>  <p>vascular plants that reproduce by spores</p>
<p><b>Conifers (Gymnosperms)</b></p>  <p>plants that grow seeds inside cones</p>	<p><b>Flowering Plants (Angiosperms)</b></p>  <p>plants that produce seeds that are enclosed in fruit</p>

## ANIMAL PHYLA

<p><b>Cnidarians</b></p>  <p>jelly-like animals that have a bell or umbrella shape; use stinging cells to capture prey and for defense</p>	<p><b>Mollusks</b></p>  <p>soft-bodied animals that usually have a shell</p>
<p><b>Annelids</b></p>  <p>long animals divided into segments</p>	<p><b>Arthropods</b></p>  <p>animals with three body parts, jointed legs, and an exoskeleton</p>
<p><b>Echinoderms</b></p>  <p>marine animals that have plates with a spiny internal skeleton</p>	<p><b>Chordates</b></p>  <p>animals with a notochord (or backbone) that supports the body</p>

# Animal Phyla Graphic Organizer

Name: \_\_\_\_\_ Date: \_\_\_\_\_

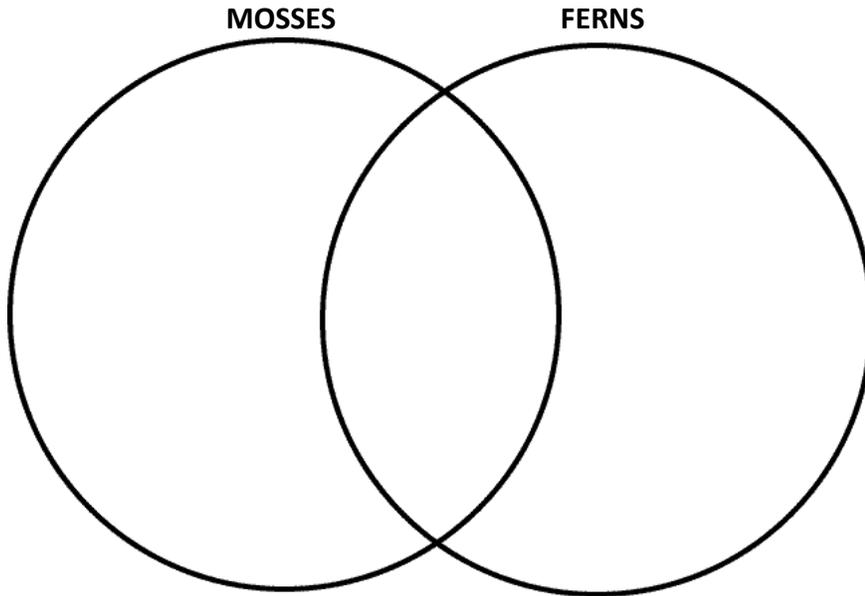
The graphic organizer is a large rounded rectangle divided into four quadrants by a vertical and a horizontal line. In the center, a smaller rounded rectangle overlaps the lines, containing a label for the phylum. The quadrants are labeled as follows:

- Top-left: Major Characteristics:
- Top-right: Habitat:
- Bottom-left: Adaptations:
- Bottom-right: Examples:
- Center: Phyla: \_\_\_\_\_

# Plant Divisions Venn Diagrams

Name: \_\_\_\_\_ Date: \_\_\_\_\_

1. Compare mosses and ferns.



2. Compare conifers and flowering plants (gymnosperms and angiosperms).

