**HONORS BIOLOGY**

**Chapters 22-25: PLANTS**

 Plants are **multi-cellular \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**that have cell walls made of**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

 Plants go through an **Alternation of Generation** in which the **\_\_\_\_\_\_\_\_\_\_\_\_**stage (**sporophyte**) produces the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**stage (gametophyte) which produces the haploid stage. (Drawing page 552: on handout).

 Name three things that plants need to survive:

 1.

 2.

 3.

 They must also exchange **\_\_\_\_\_\_\_\_\_\_\_\_\_**to survive.

How different plants meet these needs is the key to understanding plant evolution.

Draw the cladogram on page 554 ( on handout).

 The first plants evolved from multi-cellular **green algae** living in **freshwater** (not the oceans)**.**

**How do we know this?**

 These eventually produced enough \_\_\_\_\_\_\_\_\_to change the planet's atmosphere.



 They were still **dependent upon water** to spread their gametes (much like amphibians). The most advanced plants today ( \_\_\_\_\_\_\_of plants) are **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_plants**.

 The simplest plants are the \_\_\_\_\_\_\_\_\_\_\_\_\_(**Bryophytes**) that lack **vascular tissue**.



As a result they cannot get very \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_because they have no way to move \_\_\_\_\_\_\_\_\_\_\_\_\_\_and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_through the plant. Because they **lack \_\_\_\_\_\_\_\_\_\_\_\_**they remain dependent upon \_\_\_\_\_\_\_\_\_\_\_\_\_\_to reproduce.

**Section 22-3: Seedless Vascular Plants**

 The evolution of **vascular tissues** has been critical in the development of plants. Name the two types of vascular tissue and what each transports through the plant:

 1.

 2.

 (much like veins and arteries move material through most animals).



 The first vascular plants were**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**. Like other plants ferns they have**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, **leaves** (called**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**), and **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**plus **lignin** (a substance that makes cell walls rigid). These structures allow most plants to get much \_\_\_\_\_\_\_\_\_\_\_\_than mosses. Ferns still need water for their gametes to reach each other (**fertilization**).

**22-4: Seed Plants**

 Eventually plants evolved**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.**

**Why is the evolution of seeds important?**

**Gymnosperms** (pine trees) hold their seeds on \_\_\_\_\_\_\_while **angiosperms** (flowering plants) cover their seeds with a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_tissue (**fruit**).

 The male gamete in seed plants is the tiny **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_grain** that must reach the female gamete (wind, pollinators).

 A **seed** is a plant **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**surrounded by a supply of\_\_\_\_\_\_\_.

What is the function of the seed coat?

Draw a picture of a seed (page 565: on handout)

 **Flowers** are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_organs which attract pollinators and increase the **Darwinian Fitness** of the angiosperms. After fertilization the fruit helps \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of angiosperms.

Chapter 23

**23-4: Leaves**

 Leaves are where a plant conducts **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**(sugar production). Leaves are covered with a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**to prevent them from losing water. **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**are located on the underside that open and close to allow gasses to move in and out of the leaf.



 Water moving through the vascular tissue in a plant evaporates from the leaves (**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**).

**24-2 Seeds and Fruit**

 Some of the leaves in the angiosperms have been modified into reproductive structures (flowers).

 **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**are the outermost ring of leaves around a flower and are usually green. The colored leaves are called **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**are typically used to attract pollinators.

 The most modified leaves are the **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**(male parts: anther and filament) and **pistils or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**(female: ovary, style, and stigma).



 In biological terms a **fruit** is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Fruit is used to help disperse the seeds.

 **Germination** refers to the early\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Many plants require very specific conditions for their seeds to germinate properly.

**Chapter 25 Plant Hormones and Growth**

 What are **Hormones**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Plant growth, development, and responses are controlled by hormones.

 How plants respond to light (**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**: direction or amount) and gravity (**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**) are controlled by hormones called**\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

