**Basics of a Plant:** (Kingdom Plantae)

\_\_\_\_\_\_\_\_\_\_\_\_, Multicellular, Cell Wall Made of \_\_\_\_\_\_\_\_\_\_\_\_\_\_, and Carry out \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ using Chlorophyll (Autotrophs).

**Reproduction**: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of Generations between \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (2N-diploid) and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (1N-haploid)

**Requirements for Survival:** Water and Minerals, Sunlight, Gas Exchange, and a Movement System for Water and Nutrients

Photosynthesis Equation:

**Plant Parts:**

Vascular Tissue (Adaptation #1) - Transport system to move \_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_ throughout the plant. This allowed the plant to grow taller.

**(Terms to Know: Root, Leaves, Stems, Veins)**

\_\_\_\_\_\_\_\_\_ (Adaptation #2)- Allowed plants to reproduce without water.

**(Terms to Know: Cones, Flowers, Pollen Grain, Pollination, Seed, Embryo, Seed Coat)**



**Flower and Fruit (**Adaptation #3) – Fruit is protection for the seed and enticement for animals, providing another method of seed dispersal. Flowers are fragrant and colorful to encourage pollination.



**Evolution of Plants:**

*Green Algae*

*Moss and Their Relatives*

*Cone-bearing Plants: Pine Tree*

*Ferns and Their Relatives*

*Flowering and Fruiting Plants: Apple Tree*

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

The ancestor to modern plants was \_\_\_\_\_\_\_\_\_\_, kingdom \_\_\_\_\_\_\_\_\_\_.

Plants can be categorized into four different divisions:

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Pterophyta, \_\_\_\_\_\_\_\_\_\_\_\_, and Lycophyta
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Gymnosperms)
4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ (Angiosperms)



1. List the adaptations from earliest to most recent:
2. What are the different types of gymnosperms?
3. How many groups of vascular plants are there?
4. What is the common ancestor to modern day plants?
5. Based on this cladogram all plants can be found living on

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Key Characteristics of each group:

|  |  |  |
| --- | --- | --- |
| Category | Characteristics | Examples |
| Bryophytes | Seedless and \_\_\_\_\_\_\_\_\_\_\_Depend on \_\_\_\_\_\_\_\_ for reproductionNo \_\_\_\_\_, rhizoids instead | \_\_\_\_\_\_\_\_\_, Liverworts, and Hornworts |
| Pterophyta, Arthrophyta, and Lycophyta | Seedless, but do have \_\_\_\_\_\_\_\_\_\_\_\_\_ tissue (xylem and phloem) | Club Moss, Horsetails, and \_\_\_\_\_\_\_\_\_\_ |
| Coniferophyta (Gymnosperms) | \_\_\_\_\_\_\_\_\_\_\_\_ Tissue and seeds \_\_\_\_\_\_\_\_ for reproduction “Naked Seeds” | Gnetophytes, Cycads, Ginkgoes, and \_\_\_\_\_\_\_\_\_ |
| Anthophyta (Angiosperms) | \_\_\_\_\_\_\_\_ Tissue and seeds \_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_ for reproduction\_\_\_\_\_\_cots or \_\_\_cotswoody or herbaceous\_\_\_\_\_\_\_\_\_, biennials, \_\_\_\_\_\_\_\_\_\_\_\_\_\_ | Apple treeAzalea BushLilySunflowers |

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**Other Plant Adaptations and Tropisms:**

**\_\_\_\_\_\_\_\_\_\_** – Opens just enough to exchange gases, closes to

ensure that they do not lose excess water.

**\_\_\_\_\_\_\_\_\_\_\_\_** – Does not grow due to poor temperature and water conditions.

**Hormones**

 Auxins – Stimulates cell \_\_\_\_\_\_\_\_\_\_\_

 Cytokinins – determines plant \_\_\_\_\_\_\_\_\_\_\_

 Gibberelins – increases the \_\_\_\_\_\_\_ of plants (flowers and fruits)

 Ethylene – Stimulates \_\_\_\_\_\_\_\_\_\_\_ of fruits.

**Tropisms**

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – Plant grows and bends towards the sun

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – Roots grow down no matter the direction they

 leave the seed.

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ - Plant response to touch

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ – Short v. Long Day Plants (Seasonal plants)