

# Scientific Classification & Nomenclature of Plants - Student Notes

*Directions:*

Fill in the blanks.

## ***Importance of Plants Segment***

### **1. The Plant Patent Act**

- Was \_\_\_\_\_ in 1930
- Allowed the patenting of asexually reproduced \_\_\_\_\_
  - excluded tubers

### **2. The Plant Variety Protection Act**

- Was enacted on December 24, 1970
- Has a purpose to “encourage the \_\_\_\_\_ of novel varieties of sexually reproduced plants”
- Provides owner of new plant cultivars with exclusive \_\_\_\_\_ rights in the United States

### **3. The Plant Variety Protection Act**

- Allows \_\_\_\_\_ to recover the costs of research and development by obtaining exclusive \_\_\_\_\_ rights
- Requires the plant variety to be:
  - uniform
  - stable
  - distinct from all other varieties

### **4. The Plant Variety Protection Act**

- Gives owner a Certificate of Protection
  - remains in effect for 18 years from date of \_\_\_\_\_
  - the owner may specify the variety be sold only as a class of \_\_\_\_\_ seed
    - cannot be reversed

### **5. The Plant Variety Protection Act**

- Gives owner a Certificate of Protection
  - two \_\_\_\_\_ to the rights granted:
    - farmers are allowed to save seed for use on their farm or to sell to neighbors
    - research may be \_\_\_\_\_ using the variety

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## 6. Plants

- Are the backbone of life because they \_\_\_\_\_ and provide many aspects of life
- Are essential to humans and animals
- Regulate the \_\_\_\_\_
  - store carbon which reduces fossil fuels in the air

## 7. Plants

- Provide:
  - food: all food comes directly or \_\_\_\_\_ (i.e. feed for livestock) from plants
  - air: produce oxygen as a byproduct of \_\_\_\_\_
  - habitat: humans and animals depend on plants for shelter from elements

## 8. Plants

- Regulate the water cycle
  - \_\_\_\_\_ and purify water through \_\_\_\_\_

## 9. Plants

- Are used in medicine
  - twenty-five percent of all \_\_\_\_\_ drugs come directly from or are derived from plants
  - four out of five people rely on plants for primary \_\_\_\_\_ care

## 10. Ecosystems

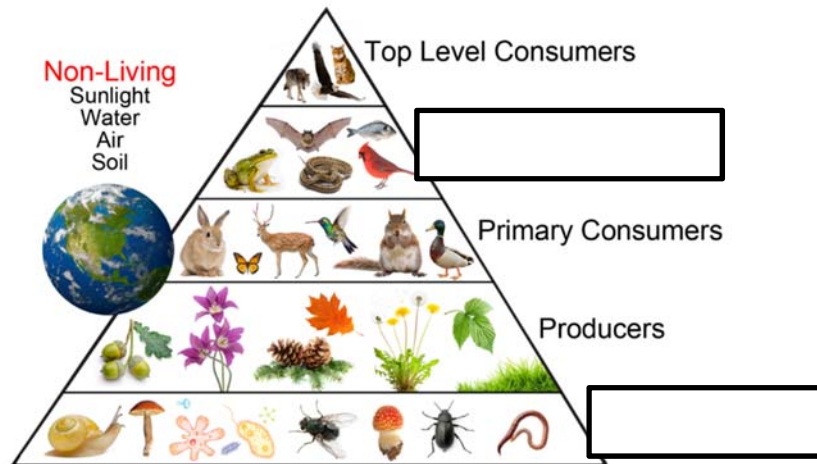
- Are made up of \_\_\_\_\_ which are classified as:
  - producers
  - consumers
  - \_\_\_\_\_

## 11. Producers

- Are photosynthesizing organisms
  - any kind of green plant which produces its own food known as glucose
- Provide food for consumers and \_\_\_\_\_
- Are mainly made up of organisms from the Plantae kingdom
  - include some from the \_\_\_\_\_ kingdom

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## 12. Producers



## 13. Consumers

- Are any organisms which \_\_\_\_\_ make their own food
- Have to feed on producers or other consumers to survive
- Are mainly made up of organisms from the \_\_\_\_\_ kingdom
  - include some from the Protista and Plantae kingdom

## 14. Consumers

- Include:
  - herbivores: eat only producers
  - omnivores: eat producers and \_\_\_\_\_ consumers
  - \_\_\_\_\_: eat only consumers

## 15. Decomposers

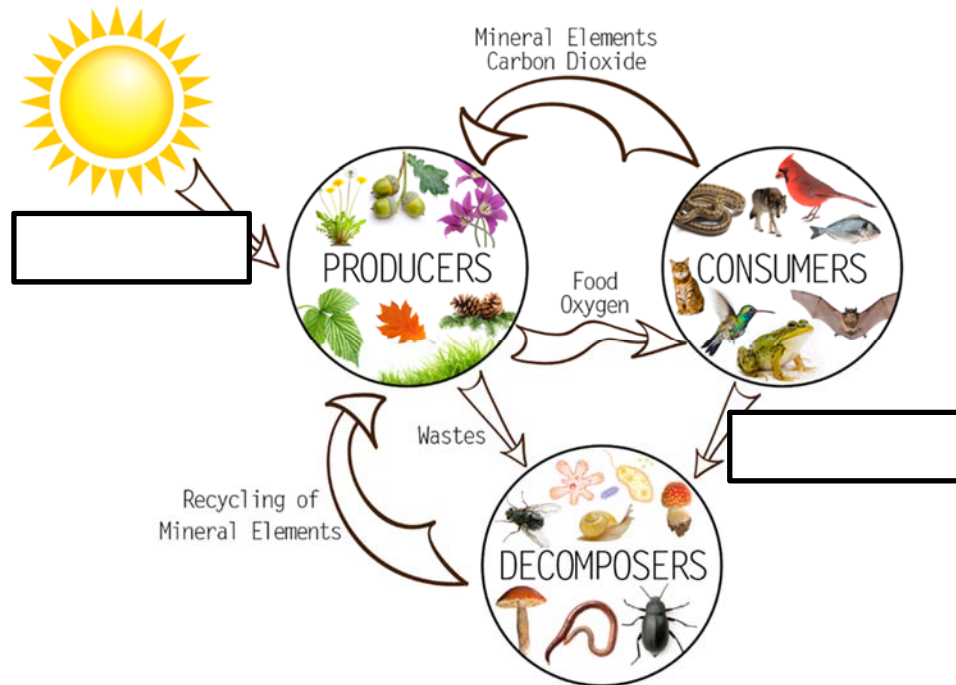
- Are any organisms which \_\_\_\_\_ feed on dead organisms or waste from living organisms
- Break down dead plants and animals into \_\_\_\_\_ components so plants can use them to make food

## 16. Decomposers

- Are found in many shapes and sizes
- Are mainly made up of organisms from the Fungi and \_\_\_\_\_ kingdom
  - include some from the \_\_\_\_\_ kingdom

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## 17. Nature Cycle



## 18. Crops

- Produce food and fiber which is used by the consumer
- Are highly dependent on humans for \_\_\_\_\_
- Are closely related to weeds
- In the U.S. today have been selected for particular \_\_\_\_\_

## 19. Weeds

- Are plants which are out of place and not \_\_\_\_\_ sown
- Are plants which are growing where they are not wanted
- Are typically \_\_\_\_\_ but can be beneficial
- Are competitive and persistent

## 20. Characteristics of Weeds

- Include:
  - abundant seed production and seed \_\_\_\_\_
  - rapid population establishment
  - adaptation for seed dispersal
    - i.e. wind, animals, etc.
  - presence of \_\_\_\_\_ reproductive structures

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## 21. Benefits of Weeds

- Include:
  - soil \_\_\_\_\_
  - habitat and feed for wildlife
  - add organic matter
  - \_\_\_\_\_ qualities
  - human consumption

## 22. Disadvantages of Weeds

- Include:
  - reduction of crop yield
    - compete for water, light, soil nutrients and space
  - serve as hosts for crop diseases
  - provide shelter for \_\_\_\_\_ pests
  - production of chemical substances which are toxic to crops, animals or humans
  - \_\_\_\_\_ with harvest

## *Types of Plants Segment*

### 1. Native Plants

- Are plants which evolved in a \_\_\_\_\_ area over a period of time
- Are able to adapt to the climate, hydrology and \_\_\_\_\_ of their region

### 2. Native Plants

- Are found in communities
  - co-exist with other plant species to \_\_\_\_\_ habitats for wildlife
- Have a \_\_\_\_\_ impact on the surrounding environment and ecosystem

### 3. Native Plants

- Are better for the environment because they:
  - are low \_\_\_\_\_ and have low costs to maintain
  - do not need additional fertilizers or \_\_\_\_\_
  - provide food and habitat for wildlife

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## 4. Non-Native Plants

- Are also known as \_\_\_\_\_ plants
- Are plants which were introduced to an environment where they did not evolve
  - occurs deliberately or accidentally
- Have a negative impact on the local \_\_\_\_\_ and ecosystem

## 5. Impact of Non-Native Plants

- Includes:
  - \_\_\_\_\_ of an area due to no natural enemies or predators
  - invade native communities which support wildlife
    - causes the native plants to \_\_\_\_\_
  - Wildlife disappears as well due to lack of food or habitat

## 6. Two Classes of Flowering Plants

- Includes:
  - \_\_\_\_\_
  - dicots

## 7. Classification of Monocots or Dicots

- Is based on:
  - number of \_\_\_\_\_
  - pollen structure
  - number of flower parts
  - leaf veins
  - stem \_\_\_\_\_ arrangement
  - root development
  - secondary growth

## 8. Cotyledons

- Are the “\_\_\_\_\_” produced by the embryo
- Absorb nutrients in the seed until the seedling can produce its true leaves and begin \_\_\_\_\_

## 9. Cotyledons

- Are the \_\_\_\_\_ of the names for flowering plants
  - monocotyledonae: one cotyledon
  - \_\_\_\_\_: two cotyledons

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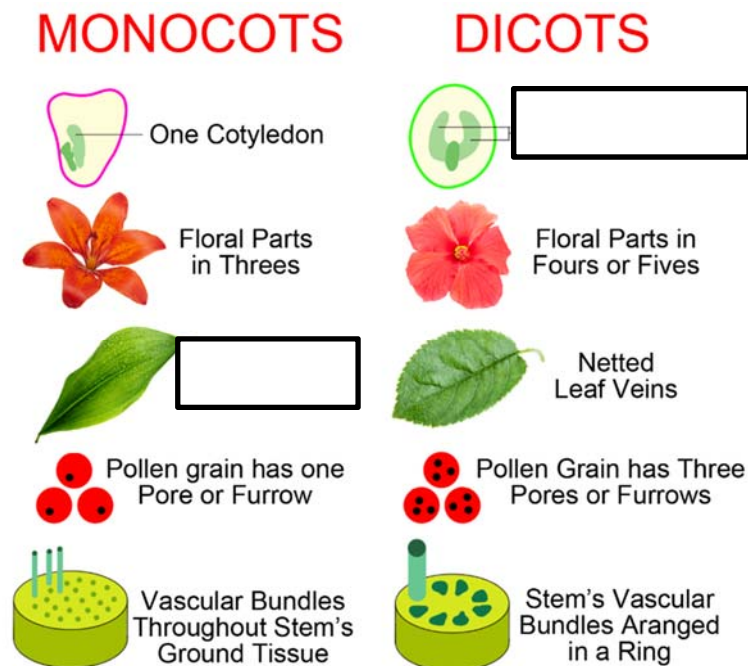
## 10. Monocot Characteristics

- Include:
  - embryo with single cotyledon
  - pollen with single \_\_\_\_\_ or pore
  - flower parts in multiples of three
  - major leaf veins parallel
  - stem vascular bundles scattered
  - \_\_\_\_\_ roots
  - absence of secondary growth

## 11. Dicot Characteristics

- Include:
  - embryo with two cotyledons
  - pollen with three furrows or pores
  - flower parts in multiples of four or five
  - major leaf veins \_\_\_\_\_
  - stem vascular bundles in a ring
  - roots develop from \_\_\_\_\_
  - presence of secondary growth

## 12. Monocots vs. Dicots



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## 13. Vascular Plants

- Make up about 80 percent of all plants
- Contain vascular systems which \_\_\_\_\_ from the roots through the stem and branches and into leaves
  - efficiently \_\_\_\_\_ water and nutrients through the plant

## 14. Vascular Plants

- Are able to store water in cells \_\_\_\_\_
- Grow to a large size
- Have:
  - roots
  - stems
  - leaves
  - \_\_\_\_\_
    - can transport water

## 15. Vascular Plants

- Reproduce through \_\_\_\_\_
- Include:
  - gymnosperms
  - \_\_\_\_\_

## 16. Gymnosperms

- Are plants with seeds which are not \_\_\_\_\_ by an outer layer
  - also known as naked seeds
- Produce pollen grains and ovules in \_\_\_\_\_
- Include:
  - conifers
  - cycads
  - ginkgoes

## 17. Angiosperms

- Produce pollen grains and ovules in flowers
- Produce seeds which are encased by an \_\_\_\_\_ layer (fruit)
- Include:
  - flowering plants
  - grasses
  - \_\_\_\_\_



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## 18. Seedless Vascular Plants

- Reproduce through \_\_\_\_\_ instead of seeds
- Have a dominant \_\_\_\_\_ stage
- Include:
  - ferns
  - lycopods
  - horsetails

## 19. Non-Vascular Plants

- Are also called \_\_\_\_\_
- Are considered to be the most primitive of plants
- Are small, short plants
- Reproduce through \_\_\_\_\_, not seeds

## 20. Bryophyte

- Needs to live in damp conditions or where water is \_\_\_\_\_ available
- Has a larger \_\_\_\_\_ stage than sporophyte stage
- Lacks a vascular system

## 21. Bryophyte

- Includes:
  - \_\_\_\_\_ Not all plants which are called mosses are bryophytes
    - i.e. Spanish moss (flowering)
    - i.e. Club moss (lycopod)
    - Liverworts
    - Hornworts

## 22. Vascular Plants vs. Non-Vascular Plants



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## ***Plant Classification Segment***

### **1. Plant Classification**

- Is the process of categorizing plants
- Is the systematic arrangement of plants into groups and \_\_\_\_\_ based on common characteristics
- Is useful because it accurately describes plants and creates \_\_\_\_\_ and structure to clarify distinctions between plants

### **2. Plant Taxonomy**

- Was developed by Carl Linnaeus
  - known as the father of \_\_\_\_\_
- Is the science of systematically naming and organizing organisms into similar groups
  - uses physical and structural \_\_\_\_\_ to name and organize plants

### **3. Plant Taxonomy**

- Is based on structural similarities and common \_\_\_\_\_
- Is a type of plant \_\_\_\_\_ which uses a hierarchy system for classification
  - each rank is interpreted differently by different taxonomists

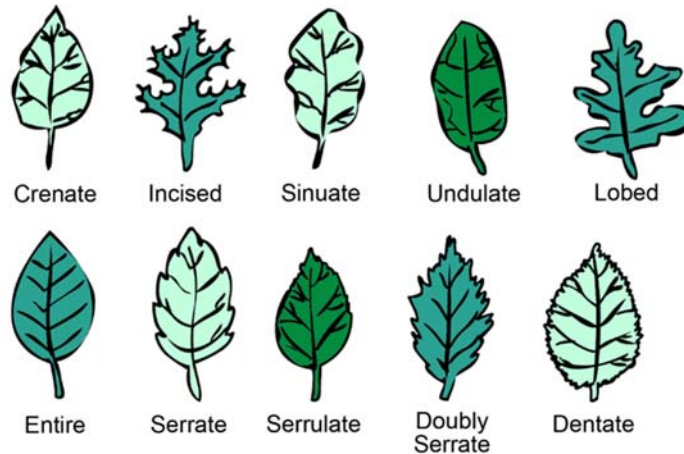
### **4. Plant Parts**

- Are physical \_\_\_\_\_ which are used to \_\_\_\_\_ plants more easily
- Include:
  - leaves
  - flowers
  - fruit
  - stems
  - seeds

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## 5. Leaves

- Are one of the most common parts which help \_\_\_\_\_ plants
  - allows for easy identification
- Include:
  - edges
  - \_\_\_\_\_
  - veins
  - arrangements



## 6. Leaf Edges

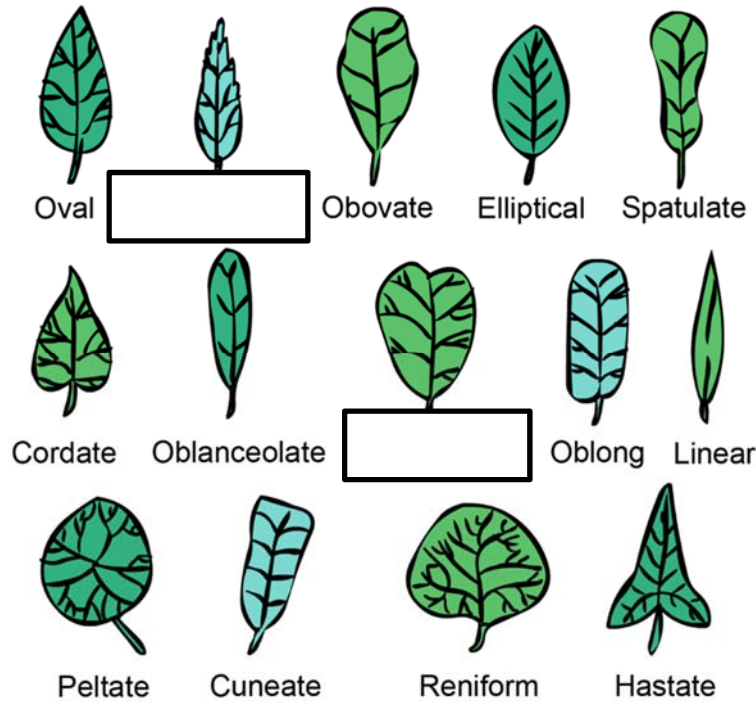
- Are also known as leaf \_\_\_\_\_
- Vary in texture and appearance
- Are a major characteristic in the \_\_\_\_\_ of plant type

## 7. Leaf Shape

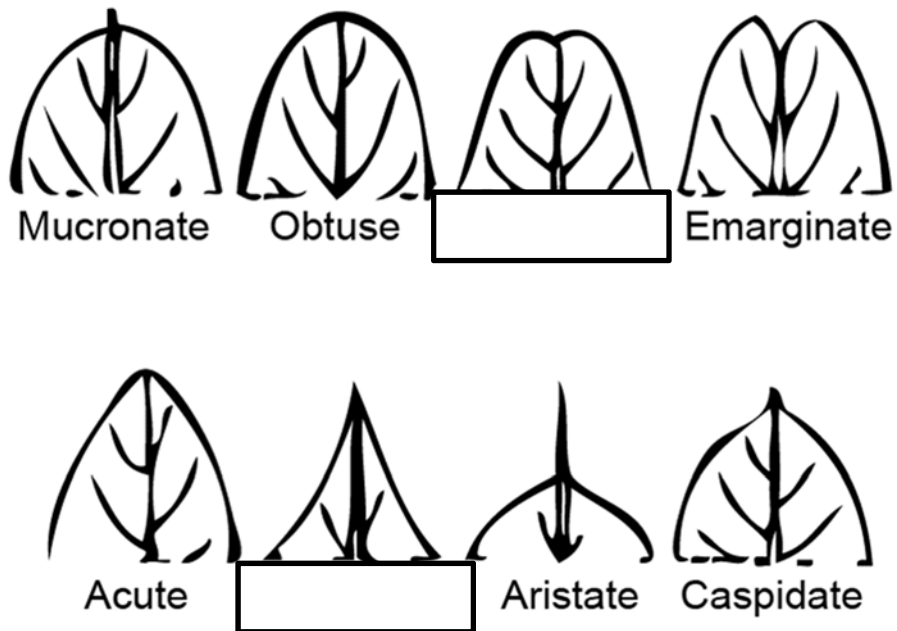
- Is of major \_\_\_\_\_ in identifying plants
- Includes:
  - blade shape: shape of the entire leaf
  - leaf apex shape: tip of the leaf
  - leaf base shape: base of the leaf where it \_\_\_\_\_ to the node

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## 8. Blade Shapes

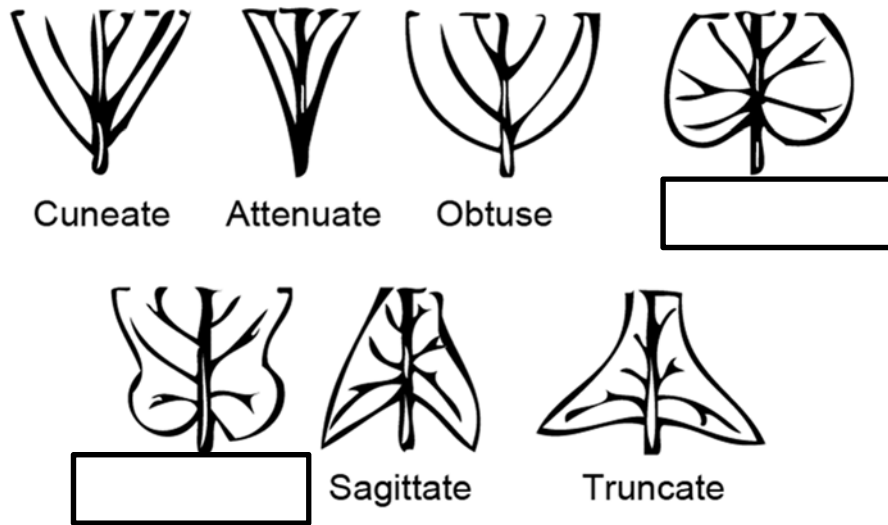


## 9. Leaf Apex Shapes



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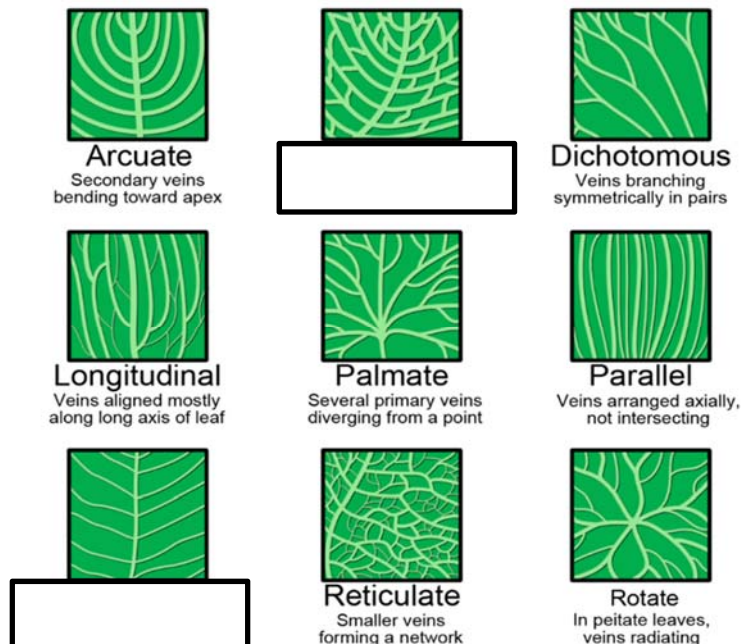
## 10. Leaf Base Shapes



## 11. Leaf Venation

- Is a term used to describe the \_\_\_\_\_ in which leaf veins are organized
- Is split into two principal types:
  - \_\_\_\_\_ leaves: numerous veins run parallel to each other
  - net-veined leaves: veins branch from main midrib(s) and subdivide into a complicated network of veins

## 12. Leaf Venation



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## 13. Leaf Arrangement

- Is a \_\_\_\_\_ used in identifying plants
- Describes the position and location of leaves on the stem of the plant
- Occurs on the stem and on \_\_\_\_\_



Opposite



Alternate



Whorled



Rosulate

## 14. Leaf Arrangement on Stems

- May be broken down into four types:
  - alternate: \_\_\_\_\_ arrangement along stem
  - opposite: leaf pairs arranged directly across from each other
  - rosette: leaves located at base; arranged in a \_\_\_\_\_ cluster
  - whorled: leaves are arranged in a ring

## 15. Leaflet Arrangement on Petioles

- May be broken down into two types:
  - compound: many leaflets arise from the same petiole
    - pinnately compound: \_\_\_\_\_ arranged on both sides of a stem
    - palmately compound: leaflets radiate from a central point
    - double \_\_\_\_\_ compound: double set of compound leaflets



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## 19. Flower Structure

- Refers to the presence of the stamen or pistil
  - imperfect: flower only contains one reproductive organ
    - pistillate (\_\_\_\_\_): having one or more pistils but no stamens
    - staminate (\_\_\_\_\_): having one or more stamens but no pistils
  - perfect: flower contains both reproductive organs

## 20. Fruit

- Varies by plant but tend to be similar in families
  - i.e. the \_\_\_\_\_ family includes:
    - apples
    - pears
    - \_\_\_\_\_

## 21. Stems

- Are most useful in identifying \_\_\_\_\_ plants
- Include characteristics such as:
  - bud arrangement
  - size
  - \_\_\_\_\_
  - bark

## 22. Seeds

- Have similar \_\_\_\_\_ characteristics in each family
- Include similarities such as:
  - color
  - shape
  - \_\_\_\_\_

## 23. Plant Life Cycles

- Describe the longevity of the plant and when it is likely to \_\_\_\_\_
- Are another way to categorize plants
- Include:
  - annual
  - \_\_\_\_\_
  - perennial



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## 24. Annual Plants

- Have a life cycle which occurs in one growing season
  - from seed \_\_\_\_\_ to seed production
- Can be divided into subcategories:
  - winter annuals
  - \_\_\_\_\_ annuals

## 25. Winter Annuals

- Begin life cycle in late \_\_\_\_\_ or fall
- Are in a \_\_\_\_\_ state through winter
- Flower in the spring, then quickly die back

## 26. Summer Annuals

- Begin \_\_\_\_\_ cycle in spring or summer
- Complete life cycle before \_\_\_\_\_ or winter

## 27. Biennial Plants

- Begin from seeds
- Produce vegetative structures and \_\_\_\_\_ organs during first full season
- Complete life cycle in \_\_\_\_\_ season with flowers, fruit and seed
  - plant dies and reseeds itself

## 28. Biennial Plants

- Can complete their life cycle in one year due to:
  - conditions of \_\_\_\_\_
  - \_\_\_\_\_ variations in temperature
  - climatic changes

## 29. Perennial Plants

- Live for several years
  - mother \_\_\_\_\_ does not die after producing seed
- Produce flowers and seeds each year after reaching \_\_\_\_\_

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## 30. Perennial Plants

- Are classified in various ways:
  - \_\_\_\_\_: die each winter, new stems grow from roots each spring
  - woody: top persists such as shrubs or trees
  - deciduous: shed leaves and are \_\_\_\_\_ for a portion of the year

## 31. Perennial Plants

- Are classified in various ways:
  - evergreen: have leaves which \_\_\_\_\_ throughout the year
  - \_\_\_\_\_: do not survive cold winters; often grown as annuals
  - hardy: tolerate cold temperatures

## 32. Cladistics

- Was developed by Willi Hennig in 1950
- Is a form of \_\_\_\_\_ in which taxa are grouped based on the branching pattern of evolution
- Is a common method used by evolutionary \_\_\_\_\_
- Uses a branching diagram called a cladogram to show relationships

## 33. Cladistics

- Has an underlying principle which \_\_\_\_\_ organisms should be classified according to evolutionary relationships
  - relationships are determined using primitive and derived characters
    - \_\_\_\_\_: attributes which all members of the group possess
      - also called plesiomorphy

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## 34. Cladistics

- Has an underlying principle which declares organisms should be classified according to evolutionary relationships
  - relationships are determined using primitive and derived characters
    - derived: advanced traits which only appear in some members of the group
      - also called \_\_\_\_\_
      - if the traits belong to only the one group, they are called autapomorphic
      - if the traits unite two groups, it is called \_\_\_\_\_

## 35. Cladistics

- Includes three basic assumptions:
  - any group of organisms are related by descent from a common ancestor
    - all organisms are related in some way or another
  - a bifurcating pattern of \_\_\_\_\_ exists
    - new organisms may arise when species or populations divide into exactly two groups
  - change in characteristics occur over time in \_\_\_\_\_

## 36. Disadvantages of Cladistics

- Include:
  - determining whether character states are advanced or derived in plants is difficult because they are \_\_\_\_\_ plastic
  - naming problems arise due to sister groups needing to have the same taxonomic \_\_\_\_\_
  - it is difficult to determine which characters to use

## 37. Disadvantages of Cladistics

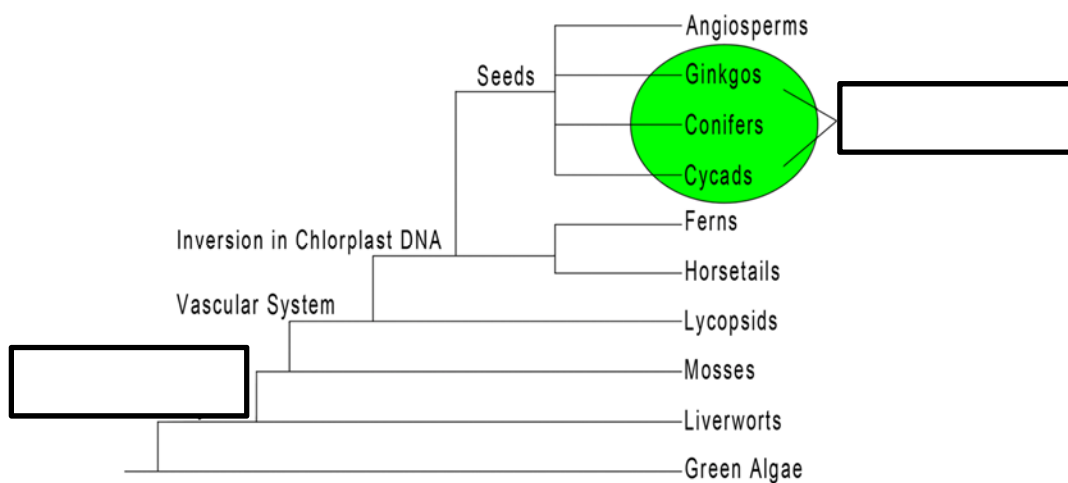
- Include:
  - parallel and \_\_\_\_\_ evolution
    - parallel: evolutionary changes which occur in unrelated organisms with similar \_\_\_\_\_ characteristics even though there is no common ancestor

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## 38. Disadvantages of Cladistics

- Include:
  - parallel and convergent \_\_\_\_\_
    - convergent: results in plants which are morphologically very similar in overall appearance when parallel evolution occurs under similar \_\_\_\_\_ conditions in distantly-related organisms

## 39. Cladogram

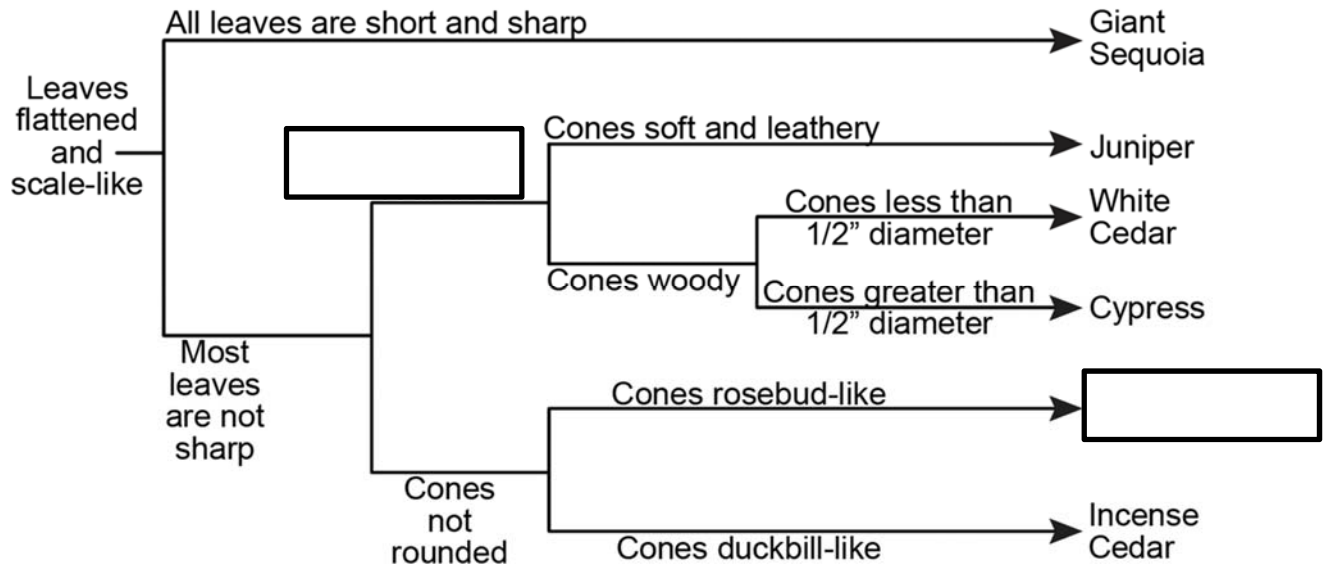


## 40. Dichotomous Keys

- Are used to identify plants by a series of choices between pairs of \_\_\_\_\_
- Determine the genus and species of a plant once the choices which best describe the plant are chosen
- Include pairs of alternatives which refer to a specific plant characteristic such as:
  - arrangement of leaves
  - type of leaf margin
  - type of \_\_\_\_\_

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## 41. Dichotomous Key



## Taxonomic Hierarchy Segment

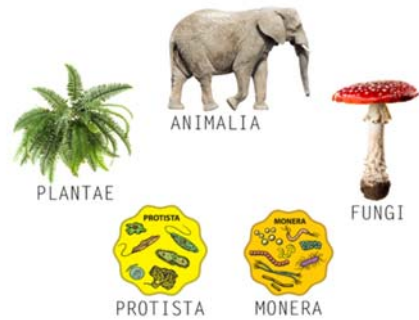
### 1. Taxonomic Hierarchy

- Includes:
  - Kingdom
  - \_\_\_\_\_
  - Class
  - Order
  - Family
  - Genus
  - Species

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## 2. Kingdoms

- Are the most general taxon used in classifying organisms
- Include:
  - \_\_\_\_\_
  - Protista
  - Fungi
  - Plantae
  - Animalia



## 3. Monera Individuals

- Are single-celled \_\_\_\_\_ which may or may not move
- Absorb nutrients through the cell wall or produce their own by photosynthesis
- Are very tiny, \_\_\_\_\_ and long

## 4. Monera Individuals

- Are \_\_\_\_\_ which have a cell wall but do not have:
  - chloroplasts
  - organelles
  - a \_\_\_\_\_

## 5. Protista Individuals

- Are single-celled
- Include members such as algae, amoeba and many others
- Move by cilia, \_\_\_\_\_ or by amoeboid mechanisms
- Are small but may still be viewed through a \_\_\_\_\_ or magnifying glass

## 6. Protista Individuals

- Acquire nutrients by photosynthesis, \_\_\_\_\_ of other organisms or both
- Are \_\_\_\_\_ which have organelles including a nucleus
  - may or may not have chloroplasts
  - usually no cell wall, however some forms may have a cell wall

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## 7. Fungi Individuals

- Are mainly multicellular, however some are unicellular
- Include members such as \_\_\_\_\_, toadstool and many others
- Have no chloroplasts but do have:
  - a cell wall
  - organelles including a \_\_\_\_\_

## 8. Fungi Individuals

- Have no \_\_\_\_\_ for locomotion
- Vary in size
  - may be microscopic or very large
- Acquire \_\_\_\_\_ by absorption
  - mostly from decaying material

## 9. Plantae Individuals

- Are multicellular and most do not \_\_\_\_\_
  - gametes of some plants move using cilia or flagella
- Include all plants
- Have \_\_\_\_\_, a cell wall and organelles including a nucleus
- Acquire nutrients through photosynthesis

## 10. Animalia Individuals

- Are \_\_\_\_\_
- Include all animals, insects and humans
- Acquire \_\_\_\_\_ by ingestion

## 11. Animalia Individuals

- Move by cilia, \_\_\_\_\_ or muscular organs
- Have organelles including a nucleus but do not have:
  - \_\_\_\_\_
  - cell walls

## 12. Divisions

- Have the standard suffix -phyta or -phytina
- Are indicative of \_\_\_\_\_ modes of reproduction and morphology of plants
- Are the \_\_\_\_\_ categories in the plant kingdom
- Are used when referring to plants
  - typically phylum

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## 13. Divisions

- Are broken up into \_\_\_\_\_ main groups
  - bryophytes: three divisions
  - ferns and allies: four divisions
  - \_\_\_\_\_: four divisions
  - angiosperms: one division

## 14. Classes

- Have the \_\_\_\_\_ suffix -opsida or -idae
- Are included in divisions
  - many \_\_\_\_\_ are in each division

## 15. Orders

- Have the \_\_\_\_\_ suffix –ales or –ineae
- Are included in classes
  - many orders are in \_\_\_\_\_ class

## 16. Families

- Share common characteristics seen in:
  - plant appearances
    - some families may have great \_\_\_\_\_ in appearance
  - seed location and appearance
  - \_\_\_\_\_ habit

## 17. Families

- Have the standard suffix -aceae
- Share many \_\_\_\_\_ factors such as:
  - cultural requirements
  - insect problems
  - \_\_\_\_\_ problems

## 18. Genera

- Refers to groupings whose members have more common characteristics than they do with any other \_\_\_\_\_ in the same family
- Is the plural form of genus
  - is analogous to the last name of the plant
  - is always capitalized and comes \_\_\_\_\_ the species name



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## 19. Genus

- Is sometimes followed by:
  - sp.: \_\_\_\_\_ a single unidentified species
  - spp.: refers to multiple species within a genus
    - neither are underlined or \_\_\_\_\_
    - i.e. *Acer* sp.

## 20. Species

- Is **analogous** to the first name of the plant
  - more specific than genus
- Refers to groupings of plants which \_\_\_\_\_ produce plants of the same types

## 21. Botanical Nomenclature of Plants

- Is a binomial naming system developed by Carl Linnaeus using \_\_\_\_\_ terms
  - gives plants \_\_\_\_\_ names using the genus and species of the plant

## 22. Botanical Nomenclature of Plants

- Is a \_\_\_\_\_ naming system developed by Carl Linnaeus using Latin terms
  - allows plant names to be precise despite \_\_\_\_\_ differences
    - identifies a specific plant whereas a common name might vary between language barriers
      - many different plants can have the same common name
        - i.e. creeping jenny: most people call any small vine-like plant a creeping jenny even though they are all very different

## 23. Botanical Nomenclature of Plants

- Is also known as the \_\_\_\_\_ name of a plant
- Is \_\_\_\_\_ underlined or italicized and the genus is capitalized but the species is not
  - i.e. *Helianthus annuus*

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## 24. Botanical Nomenclature of Plants

- Is always underlined or \_\_\_\_\_ and the genus is capitalized but the species is not
  - may include the name of the \_\_\_\_\_ which is seen as a letter or last name
    - i.e. *Solanum tuberosum* Linnaeus
    - i.e. *Solanum tuberosum* L.
  - may include additional words which indicate the variety or cultivar

## 25. Common & Scientific Names

- Are determined more easily if the \_\_\_\_\_ of the plant are known
  - scientific name: *Helianthus annuus*
  - common name: sunflower
- Can be \_\_\_\_\_ using this website:
  - <http://plants.usda.gov/classification.html>

## Cells, Tissues, Organs & Organ Systems Segment

### 1. Multicellular Organisms

- Include \_\_\_\_\_ from the Animalia, Plantae and Fungi kingdoms
- Are made up of:
  - organ systems
  - organs
  - \_\_\_\_\_
  - cells

### 2. Organ Systems

- Are made up of organs which act together to achieve a common \_\_\_\_\_
- Consist of \_\_\_\_\_ and shoot systems in plants

### 3. Organ Systems

- Allow multicellular organisms to:
  - obtain \_\_\_\_\_ amounts of energy
  - process large amounts of materials
  - respond to \_\_\_\_\_ in environment
  - reproduce

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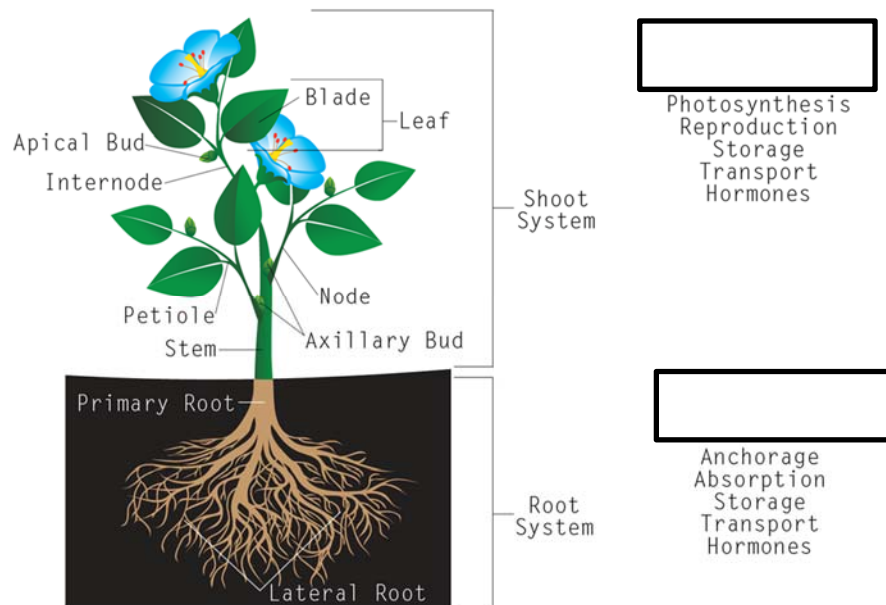
## 4. Root System

- Includes plant parts below the ground such as:
  - roots
  - \_\_\_\_\_
  - rhizomes

## 5. Shoot System

- Elevates the plant above the soil
- Is above ground and include plant parts such as:
  - leaves
  - buds
  - \_\_\_\_\_
  - flowers
  - fruits

## 6. Plant Body



# Scientific Classification & Nomenclature of Plants - Student Notes

## 7. Organs

- Are each made up of different \_\_\_\_\_ to perform a specific task
- Have \_\_\_\_\_ functions
- Include:
  - roots
  - stems
  - leaves

## 8. Roots

- Anchor the plant
- Absorb and \_\_\_\_\_ water and minerals
- Store nutrients

## 9. Stems

- Are structures which \_\_\_\_\_ buds and leaves
- Serve as channels for carrying water, minerals and food
- Include the xylem, \_\_\_\_\_ and vascular cambium

## 10. Leaves

- Are the main \_\_\_\_\_ organs of plants
  - create food and energy for the plant
- Are supported by \_\_\_\_\_

## 11. Tissues

- Are made up of specialized cells which work \_\_\_\_\_ to carry out a specific job
- Include systems such as:
  - vascular tissue
    - xylem and phloem
  - \_\_\_\_\_ tissue
  - ground tissue

## 12. Vascular Tissue

- Is made up of xylem and phloem tissues
- Transports food, water, hormones and \_\_\_\_\_ throughout the plant
- Contains cells such as:
  - xylem tissue cells
  - \_\_\_\_\_
  - parenchyma cells

# Scientific Classification & Nomenclature of Plants - Student Notes

## 13. Xylem Tissue

- Is involved in the \_\_\_\_\_ of water and ions in the plant
- Is composed of:
  - non-living conductive cells
    - tracheids
    - \_\_\_\_\_
  - parenchyma cells

## 14. Phloem Tissue

- Transports sucrose, other \_\_\_\_\_ compounds and some ions
- Contains endwalls which are known as sieve plates
  - contain sieve plate \_\_\_\_\_

## 15. Phloem Tissue

- Allows for movement of \_\_\_\_\_
- Is composed of living conductive cells:
  - \_\_\_\_\_ members
  - companion cells

## 16. Dermal Tissue

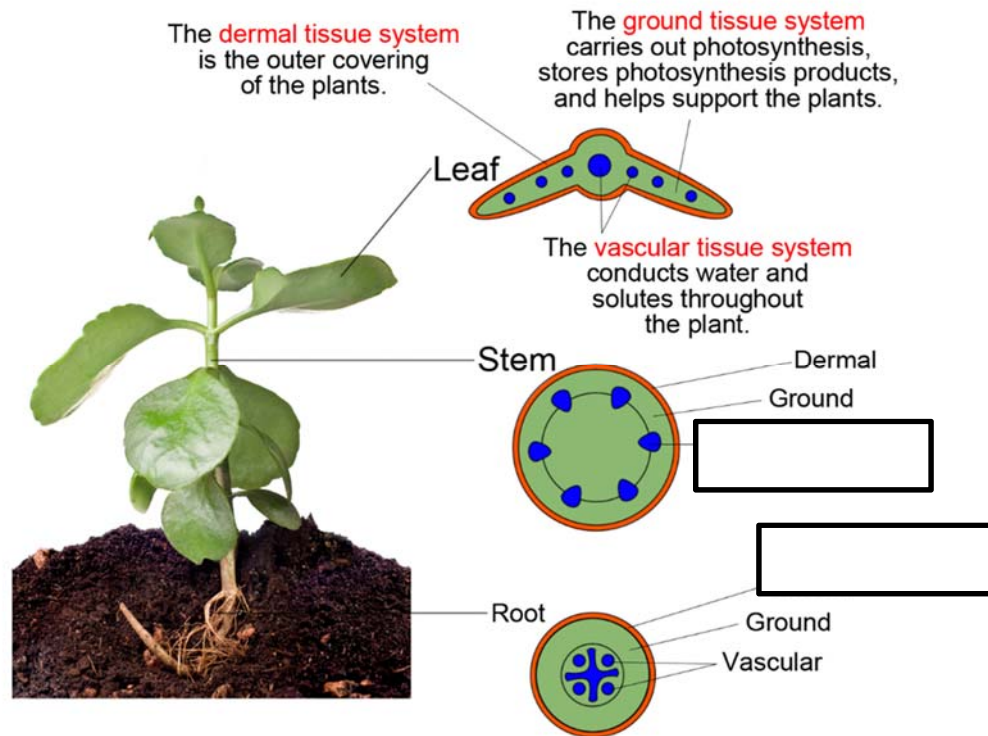
- Is made up of \_\_\_\_\_ cells
- Provides a protective covering for the plant
- Is made up of a \_\_\_\_\_ layer of cells

## 17. Ground Tissue

- Comprises the majority of the \_\_\_\_\_ plant body
- Specializes in storage, photosynthesis and support
- Is made up of cells such as:
  - parenchyma cells
  - \_\_\_\_\_ cells
  - sclerenchyma cells

# Scientific Classification & Nomenclature of Plants - Student Notes

## 18. Tissues



## 19. Cells

- Are the smallest living unit of an \_\_\_\_\_
- Are \_\_\_\_\_ for a specific function
- Are organized into tissue

## 20. Cells

- Are totipotent within plants
  - totipotency is the unique ability of plants cells to divide, grow and differentiate into new cells which hold the same \_\_\_\_\_ identity as the mother cell
  - parenchyma cells are some of the least \_\_\_\_\_ and most likely to remain totipotent

# Scientific Classification & Nomenclature of Plants - Student Notes

## 21. Cells

- Include:
  - parenchyma cells
  - sclerenchyma cells
  - \_\_\_\_\_
  - xylem tissue cells
  - phloem tissue cells
  - epidermal cells

## 22. Parenchyma Cells

- Are the least specialized plant cells
- Are living at \_\_\_\_\_
- Contain thin, flexible cell walls
- Have a large central \_\_\_\_\_

## 23. Parenchyma Cells

- Are found in the roots, leaves and stems of plants
- Are found in ground \_\_\_\_\_ and vascular tissues
- Are involved in most of the plant's \_\_\_\_\_ functions

## 24. Parenchyma Cells

- Have the ability to separate into other cells under \_\_\_\_\_ conditions
  - occurs after \_\_\_\_\_ to repair and replace organs

## 25. Collenchyma Cells

- Contain thicker primary cell walls
  - have uneven \_\_\_\_\_
- Are living at maturity
- Are found in \_\_\_\_\_ tissue

## 26. Collenchyma Cells

- Are used in support of \_\_\_\_\_ plants
  - i.e. strings in celery
- Provide \_\_\_\_\_ in young plants

# Scientific Classification & Nomenclature of Plants - Student Notes

## 27. Sclerenchyma Cells

- Contain thick secondary cell walls which harden to \_\_\_\_\_ the plant
- Are dead at functional maturity
- Cannot increase in length
- Are found in ground \_\_\_\_\_

## 28. Sclerenchyma Cells

- Include:
  - fibers: long, slender cells with a secondary cell wall
    - i.e. hemp fibers in \_\_\_\_\_
  - \_\_\_\_\_: shorter cells with an irregular shape
    - i.e. stone cells in pears

## 29. Xylem Tissue Cells

- Make up the \_\_\_\_\_ walls of plants
- Contain thick secondary cell walls
  - deposited unevenly in a coil-like pattern to enable \_\_\_\_\_
- Are dead at functional maturity

## 30. Xylem Tissue Cells

- Are found in vascular tissue
- Include parenchyma cells and non-living \_\_\_\_\_ cells such as:
  - tracheids: long, slender cells connected by pits
  - vessels: shorter, larger diameter cells with perforated cell wall ends
    - found only in \_\_\_\_\_

## 31. Phloem Tissue Cells

- Are alive at functional \_\_\_\_\_
- Are found in vascular tissue

## 32. Phloem Tissue Cells

- Include conductive cells such as:
  - sieve-tube members: conduit for sucrose transport
  - companion cells: contain a nucleus which may control the sieve-tube \_\_\_\_\_ and may aid in \_\_\_\_\_ loading



# Scientific Classification & Nomenclature of Plants - Student Notes

## 33. Epidermal Cells

- Prevent water loss and provide a \_\_\_\_\_ against fungi and other invaders
- Are closely packed, contain little \_\_\_\_\_ space
- Are found in dermal tissue

## 34. Epidermal Cells

- Are located under a \_\_\_\_\_ cuticle layer which aids in prevention of water loss
- Include:
  - guard cells: cover \_\_\_\_\_ openings
    - regulate exchange of water vapor, oxygen and carbon dioxide

Stomata: series of openings which facilitate gas exchange between inner parts of plant organs