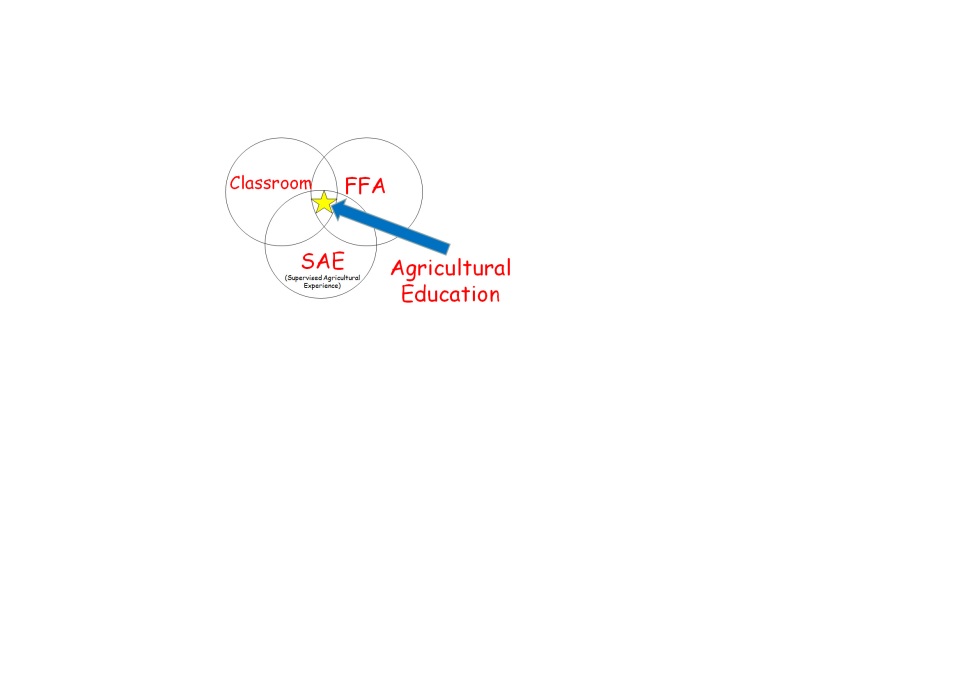
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Plant & Soil Science

Year End Skills Test Review

**STANDARD 1**

**Students will explain the role of FFA in agricultural education.**

*Describe how, when, and why FFA was organized.*

1. What year and wear was FFA started?

*Identify key FFA historical events.*

1. Identify 1 major thing that happened in each year below:
   1. 1917
   2. 1928
   3. 1930
   4. 1944
   5. 1950
   6. 1965
   7. 1969
   8. 1971
   9. 1984
   10. 1988

*Identify the mission and strategies, colors, motto, emblem and parts of the emblem, and organizational structure of FFA.*

1. FFA Mission:
2. FFA Motto:
3. Label the parts of the emblem



**STANDARD 2**

**Students will explain the role of supervised agricultural experience (SAE) programs in agricultural education.**

*Explain the meaning and benefits of supervised agricultural experience.*

1. Describe 3 or more benefits of having a productive SAE

*Determine the types of SAE programs*

1. Distinguish the differences in each of the following types of SAE’s
   1. Placement
   2. Entrepreneurship
   3. Agriscience/Research
   4. Improvement
   5. Exploratory

**STANDARD 3**

**Students will explain the history, importance, and scope of plant science.**

*Explain how the science of agriculture helped develop civilization, including agronomic, horticultural, and forestry plants.*

1. Describe how agriculture and its advancements drove the development of civilizations through time.

*Identify the major innovators and milestones in the advancement of agriculture.*

1. Determine & describe 3 major inventions that became milestones to advance plant based agriculture.

*Identify the various roles of plants in everyday life.*

1. List 5 ways that plants effect your everyday life

*Identify agriculturally important plants, and explain their uses.*

1. Describe 5 major plant crops and list it’s use

*Identify and describe the major areas of plant science.*

1. Define the following vocabulary used in Plant Science:
   1. Ornamental Horticulture
   2. Olericulture
   3. Floriculture
   4. Pomology
   5. Agronomy

**STANDARD 4**

**Students will explain soil science concepts.**

*Explain the importance of soil as a life-supporting layer.*

1. Describe how soil is crucial to sustaining life

*Explain soil components.*

1. List some components (ingredients) that make up soil.
2. What is the difference between an ORGANIC soil component and an INORGANIC soil component?
3. What are examples of ORGANIC soil components?
4. What are examples of INORGANIC soil components?

*Describe the physical characteristics of soil and soilless media.*

1. Describe the 3 particle sizes soil is composed of

*Describe the biological activity within soil and soilless media.*

1. What living organisms are found in soil? What is their purpose?
2. Besides living organisms, what other biologic (live) activity takes place?

*Describe the chemical properties of soil and soilless media.*

1. Describe what Cation Exchange Capacity (CEC) in soil is
2. How can you increase the CEC in soil?

*Explain the characteristics of water movement in soil and soilless media.*

1. Describe how the following factors effect a soil’s ability to absorb water:
   1. Soil Texture
   2. Slope
   3. Soil Temperature
   4. Plant Growth

*Describe the meaning and importance of soil fertility.*

1. Define soil fertility
2. List the 3 MACRONUTRIENTS found in soil
3. Describe why water is considered a soil nutrient. (How does it effect nutrient availability?)
4. List 3 MICRONUTRIENTS found in soil
5. What macronutrient turns leaves green?
6. What macronutrient feeds the roots and encourages cell division?
7. What macronutrient develops chlorophyll and increases disease resistence?

*Explain the role of organic matter, soil depth, surface slope, soil organisms, and nutrient balance in soil productivity.*

1. What organic substances can be added to soil to increase it’s available nutrients?
2. How does the depth of topsoil affect a soil’s ability to produce quality plants?
3. How does slope effect the growth of plants?

**STANDARD 5**

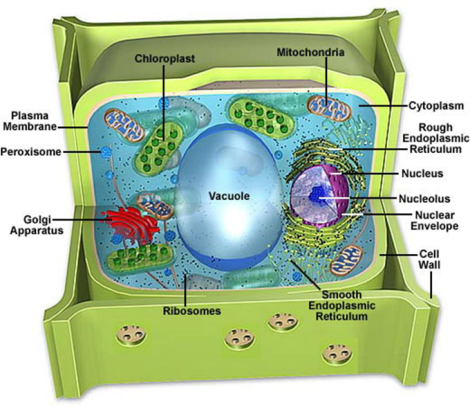
**Students will describe plant anatomy and physiology concepts.**

*Explain systems used to classify plants.*

1. What is binomial nomenclature & who developed it?
2. Why are scientific names of plants used instead of common names?
3. What is a ‘cultivar?’

*Classify plants according to life cycles, plant use, and status as monocotyledons or dicotyledons.*

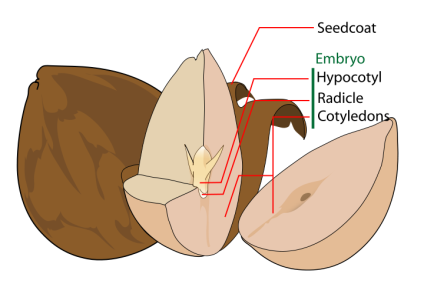
1. Define the following plants by their life cycle:
   1. Annual
   2. Biennial
   3. Perennial
2. Label the following characteristics as monocot or dicot:
   1. \_\_\_\_\_\_\_\_\_\_\_Parallel veins in leaves
   2. \_\_\_\_\_\_\_\_\_\_\_1 cotyledon
   3. \_\_\_\_\_\_\_\_\_\_\_Netted Veins in leaves
   4. \_\_\_\_\_\_\_\_\_\_\_2 Cotyledons on leaves
   5. \_\_\_\_\_\_\_\_\_\_\_
   6. \_\_\_\_\_\_\_\_\_\_\_
   7. \_\_\_\_\_\_\_\_\_\_\_
   8. \_\_\_\_\_\_\_\_\_\_\_lillies, onions, corn, grass
   9. \_\_\_\_\_\_\_\_\_\_\_trees & flowers

*Describe the structures of a typical plant cell and their functions.*

1. What do plant cells have that animal cells DON’T?
2. What cell organelle packages and sorts proteins?
3. What cell organelle manufactures protein?
4. What is the most exterior portion of the plant cell?
5. What organelle controls the function of the cell?

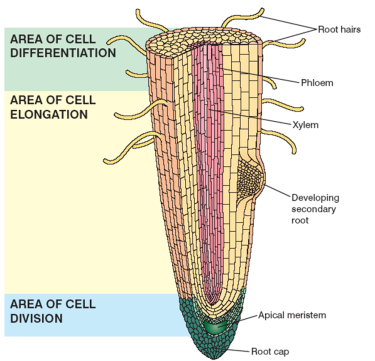
*Compare and contrast mitosis and meiosis.*

1. What is the difference between mitosis and meiosis?
2. Where in the plant does meiosis take place?



*Describe the structures of a seed, the types of seeds, and the function of seeds.*

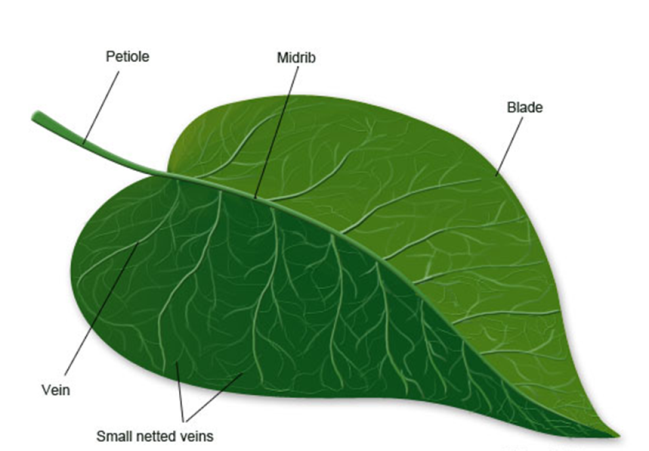
1. What is the purpose of the seed coat?
2. Which portion of the seed will develop into the new plant?

*Describe the components of a root, the types of roots, and the functions of roots.*

1. Which portion of the root absorbs water and moisture through osmosis?
2. What type of root has 1 single dominant root that tapers downward? (carrot)
3. What type of root has NO primary root, but does have many secondary roots that spread through the soil?

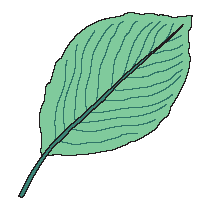
*Describe the structures of a stem, the types of stems, and the functions of stems.*

1. Define & describe the following modified stems
   1. Rhizome
   2. Tuber
   3. Tendril
   4. Bulb or Corm



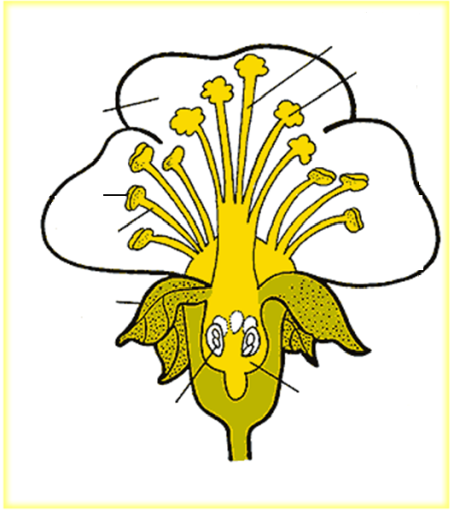
*Describe the structures of a leaf, the types of leaves, and the functions of leaves.*

1. What is the purpose of a leaf?
2. Label the following leaves as simple, compound, or whorled



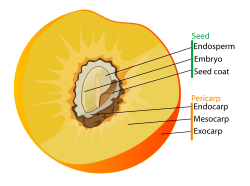
1. What is a petiole?

*Describe the major parts of a flower, their functions, and the types of flowers and flower forms.*



1. Label the parts of a flower on the diagram to the right
2. What is the difference between a complete flower and an incomplete flower?
3. What is the difference between a perfect flower and an imperfect flower?

*Describe the structures of fruit, the types of fruit, and the purpose of fruit.*

1. What fruit structure is the skin of a fruit considered?
2. Give an example of a fruit with a fleshy pericarp.
3. Give an example of a fruit with a dry pericarp.
4. What is an example of a berry fruit?
5. What is an example of an aggregate fruit?
6. Besides eating, what is the purpose of the fruit of a plant?

*Describe the functions of water in plant growth.*

1. List 3 functions that water plays in plant growth

*Explain plant responses to a shortage or excess of water.*

1. What symptoms does an OVERwatered plant show?
2. What symptoms does an UNDERwatered plant show?

*Explain the qualities of light that affect plant growth, including color, intensity, and duration.*

1. What is the difference between light color and light intensity?
2. Define or describe what a “photoperiodic” plant is.
3. What is the difference between a “short day” plant and a “long day” plant?

*Describe the effects of temperature on plant growth.*

1. What is the definition of “thermoperiod?”
2. What does the word “vernalization” describe in plant science?
3. The United States is divided into 13 areas called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. These zones use average minimum and maximum temperatures to determine what plants can grow there.
4. The temperature of different seasons provides a different stage of growth and development for a plant. Describe them:
   1. Spring
   2. Summer
   3. Fall
   4. Winter

*Describe plant responses to temperature extremes.*

1. In extreme heat, what do plants do to regulate temperature?

*Describe the effect of diseases and insects on plant growth.*

1. What effect do diseases and/or insects have on a growing plant?
2. What is IPM? Describe it.
3. Label the following as a pest or disease:
   1. \_\_\_\_\_\_\_\_\_Aphids
   2. \_\_\_\_\_\_\_\_\_Fungus Gnat
   3. \_\_\_\_\_\_\_\_\_Leaf Miner
   4. \_\_\_\_\_\_\_\_\_Mealy Bug
   5. \_\_\_\_\_\_\_\_\_Spider Mite
   6. \_\_\_\_\_\_\_\_\_Mosaic Virus
   7. \_\_\_\_\_\_\_\_\_Black Spot
   8. \_\_\_\_\_\_\_\_\_Botrytis
   9. \_\_\_\_\_\_\_\_\_Iron Chlorosis
   10. \_\_\_\_\_\_\_\_\_Scale

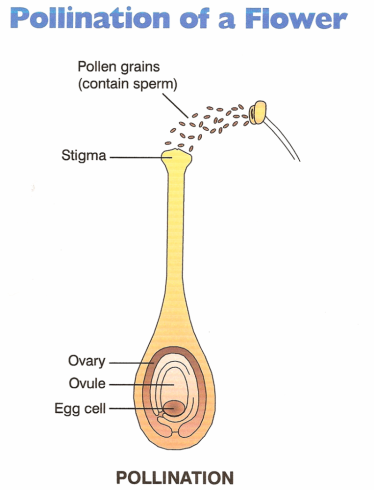
*Explain the basic process of photosynthesis and its importance to life on Earth.*

1. What purpose does photosynthesis have to a plant?
2. How does photosynthesis effect our environment?

*Explain requirements necessary for photosynthesis to occur, and identify the products and byproducts of photosynthesis.*



1. Where does a plant get its energy? (as shown in photosynthesis equation)
2. What does a plant take IN to conduct photosynthesis?
3. What is a byproduct of photosynthesis?

*Explain cellular respiration and its importance to plant life.*

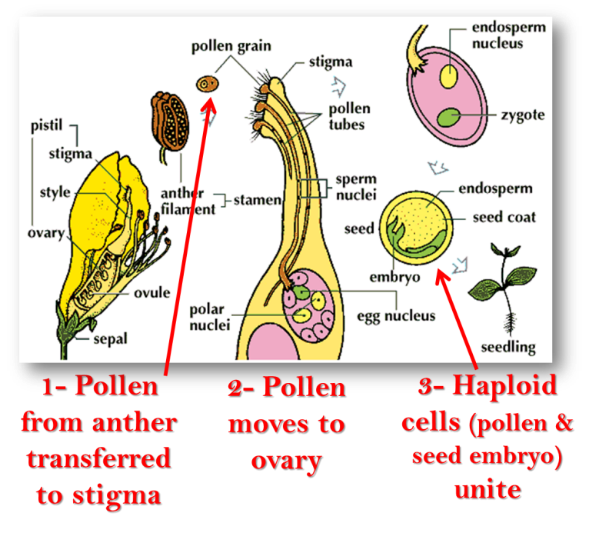
1. What is the difference between respiration and photosynthesis?

*Compare and contrast sexual and asexual reproduction.*

1. What is the difference between sexual and asexual plant reproduction?
2. What are 3 methods of asexual plant reproduction?
3. What is the primary method of sexual plant reproduction?

*Explain pollination, cross-pollination, and self-pollination of flowering plants.*

1. During pollination, pollen transfers from the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the flower.
2. What’s the difference between cross-pollination and self-pollination?
3. If a flower is NOT pollinated, what is the result on a plant used for a food crop?

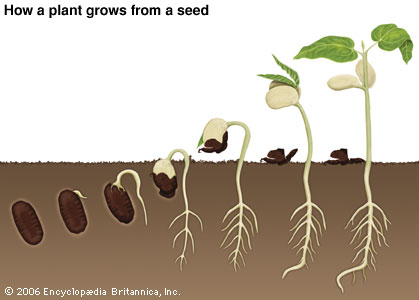


*Diagram the process of plant fertilization.*

1. Review the fertilization process

*Describe the process of seed germination & explain the conditions required for seed germination*

1. A seed can be stored for years. What environmental conditions trigger a seed to germinate?



1. Use the diagram below to describe each step of seed germination.

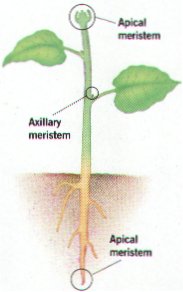
*Demonstrate techniques used to propagate plants by cuttings, division, separation, and layering.*

1. In a couple of sentences, describe the process of the following methods of asexual propagation:
   1. Cuttings:
   2. Division
   3. Separation
   4. Layering

*Describe grafting techniques.*

1. What is the purpose of grafting?
2. List & describe 3 methods of grafting (look at Plant Propagation Unit Notes)



[](http://www.google.com/url?sa=i&rct=j&q=apical+meristem&source=images&cd=&cad=rja&docid=yteGUQHUuJv0yM&tbnid=x9-lP6hXv6x0GM:&ved=0CAUQjRw&url=http://www.biologyjunction.com/plant_structure_bi1.htm&ei=vhiVUcioEofiiALDo4DACA&bvm=bv.46471029,d.cGE&psig=AFQjCNG8k-SeBTQ6A5vL0j8qZT0u_EI-wQ&ust=1368812074269015)

*Describe the role of the apical meristem in plant growth.*

1. What are the 2 locations of the apical meristem?
2. What role do they play in plant growth?

**STANDARD 6**

**Students will explain principles of horticulture.**

*Plan and prepare a vegetable/herb garden.*

1. What are 3 benefits of growing your own vegetable/herb garden?

*Describe the important techniques in producing tree fruits and small fruits.*

1. List 3 fruits that grow on trees
2. List 3 vine fruits

*Explain the techniques involved in producing small grain and oil crops.*

1. List 3 examples of oil crops
2. List 3 examples of small grain products
3. Are oil and small grain crops used for human consumption or animal feed?

*Discuss the importance of hay and forage production to the overall food system.*

1. What are some common forage plants used to produce hay?
2. How does the production of hay and forage effect our human food system?

*Describe lawn establishment and care & describe the important techniques of landscape maintenance.*

1. Describe the purpose of the following lawn maintenance procedures:
   1. Fertilizing
   2. Weed Control
   3. Aerating

*Plan and prepare a flower garden.*

1. Using your knowledge of plants, list 3 principles you should consider and follow when planning a flower garden.

*Describe the elements of growing plants indoors.*

1. List 5 common houseplants