

| Tue                     | 4/4  | Activities        |
|-------------------------|--|-------------------|
| <b>Learning Target</b>  | Summarize alternation of generations in plants. (22.1) Compare and contrast the life cycles of mosses, ferns, and conifers. (22.1) |                   |
| <b>Class Activities</b> | SUB  |                   |
|                         | *22.1 notes*   |                   |
|                         | *22.1 Study Guide WS *   | (Pd 8 in Theatre) |
|                         | -Water plants/ chart growth  |                   |

\*attached below (scroll down)\*

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Biology – Sec. 22.1 Notes

## Sec. 22.1 KEY CONCEPTS

**All plants alternate between two phases in their life cycles.**

### ➤ **Plant life cycles alternate between producing spores and gametes.**

- A two-phase life cycle is called alternation of generations.
  - haploid phase
  - diploid phase
  - alternates between the two
- The spore-producing plant is the mature sporophyte.
  - sporophyte phase is diploid
  - begins with fertilized egg
  - spores produced through meiosis
- The gamete-producing plant is the mature gametophyte.
  - gametophyte phase is haploid
  - begins with spore
  - gametes produced through meiosis

- **Life cycle phases look different among various plant groups.**
- Nonvascular plants have a dominant gametophyte phase.
    - moss gametophytes look like green carpet
    - moss sporophytes shoot up as stalklike structures
  - The sporophyte is the dominant phase for seedless vascular plants.
    - Fern spores form in sacs, sori, on underside of mature sporophytes (fronds).
    - A fern gametophyte, or prothallus, produces sperm and eggs.
    - A zygote forms on the prothallus, growing into the sporophyte.
  - The sporophyte is the dominant phase for seed plants.
    - pine trees are typical seed plant sporophytes
    - female spores produced in female cones
    - male spores produced in male cones
    - male spores develop into pollen grains, the male gametophytes
    - female spores develop into female gametophytes that produce eggs
    - sperm from pollen travel down pollen tube toward egg
    - fertilized egg develops into embryo
    - ovule develops into protective pine seed

## Study Guide

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**MAIN IDEA:** Plant life cycles alternate between producing spores and gametes.

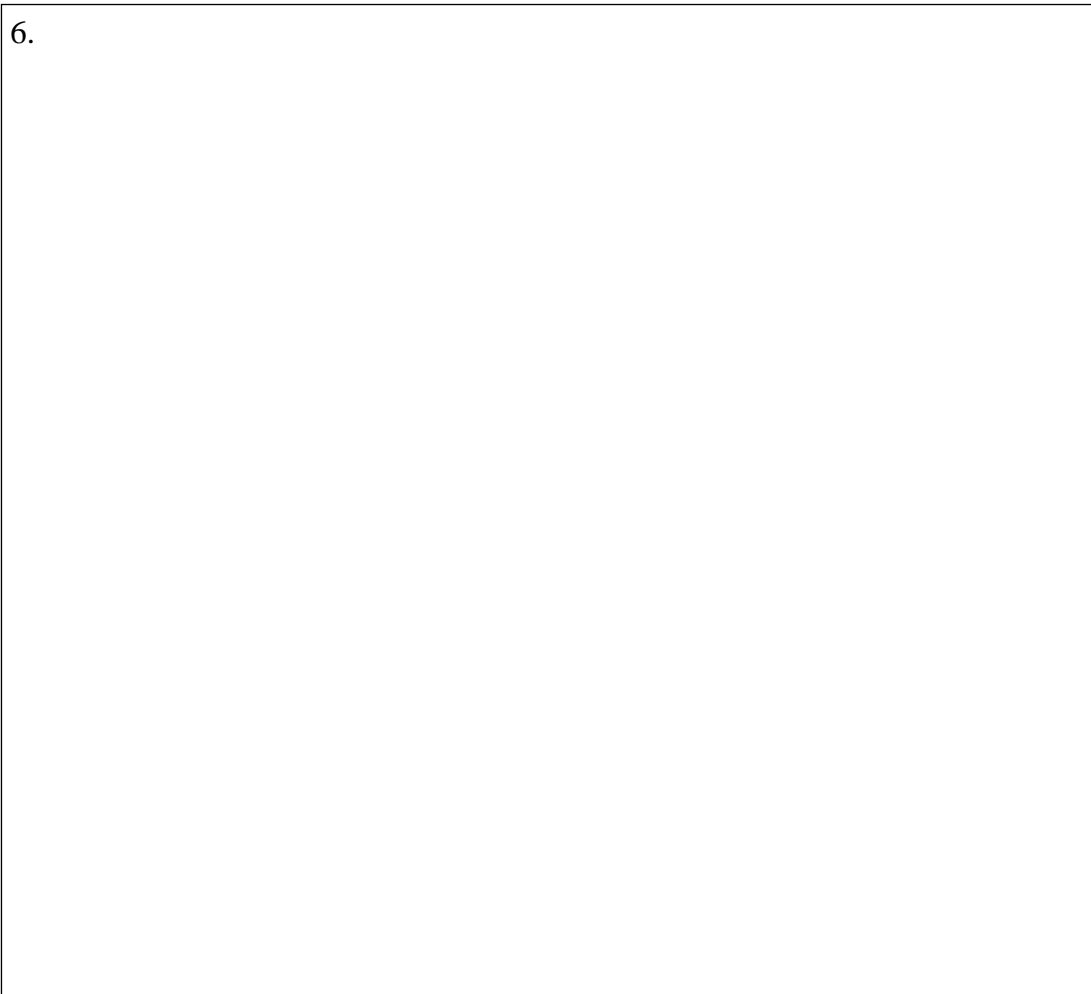
**Circle the letter of the phrase that best completes the sentence.**

1. A life cycle that alternates between diploid and haploid generations is called \_\_\_\_\_.  
a. sporophyte  
b. gametophyte  
c. alternation of generations  
d. meiosis
2. A zygote divides by mitosis and grows into a mature \_\_\_\_\_.  
a. sporophyte  
b. gametophyte  
c. alternation of generations  
d. meiosis
3. A spore divides by mitosis and grows into a mature \_\_\_\_\_.  
a. sporophyte  
b. gametophyte  
c. alternation of generations  
d. meiosis
4. Meiosis leads to the \_\_\_\_\_ generation of a involved in the plant life cycle.  
a. sporophyte  
b. gametophyte  
c. alternation of generations  
d. meiosis
5. Fertilization leads to the \_\_\_\_\_ generation of a involved in the plant life cycle.  
a. sporophyte  
b. gametophyte  
c. alternation of generations  
d. meiosis

Use Figure 1.1 to draw a diagram illustrating the alternation of generations in plants. Use all of the words in the box as labels in your diagram:

|               |             |         |
|---------------|-------------|---------|
| fertilization | sporophyte  | spores  |
| meiosis       | gametophyte | gametes |
| zygote        | $2n$        | $1n$    |

6.



**MAIN IDEA:** Life cycle phases look different among various plant groups.

Fill in the table below with the name of the plant group.

| Plant Group           | Example  | Sporophyte (2n)    | Gametophyte (1n)   |
|-----------------------|----------|--------------------|--|
| 11.<br>_____<br>_____ | Mosses   | Stalk with capsule | Very small, low-growing green carpetlike plants                            |
| 12.<br>_____<br>_____ | Ferns    | Leafy fronds       | Prothallus   |
| 13.<br>_____<br>_____ | Conifers | Tree               | Pollen grains (male gametophyte)<br>Female cone scale (female gametophyte) |

## Vocabulary Check

Fill in the blank with the word that best completes the sentence.

14. The two phases that alternate, or pass back and forth, in the alternation of generations are sporophyte and \_\_\_\_\_.
15. A haploid plant body is called a \_\_\_\_\_.
16. A diploid plant body is called a \_\_\_\_\_.

