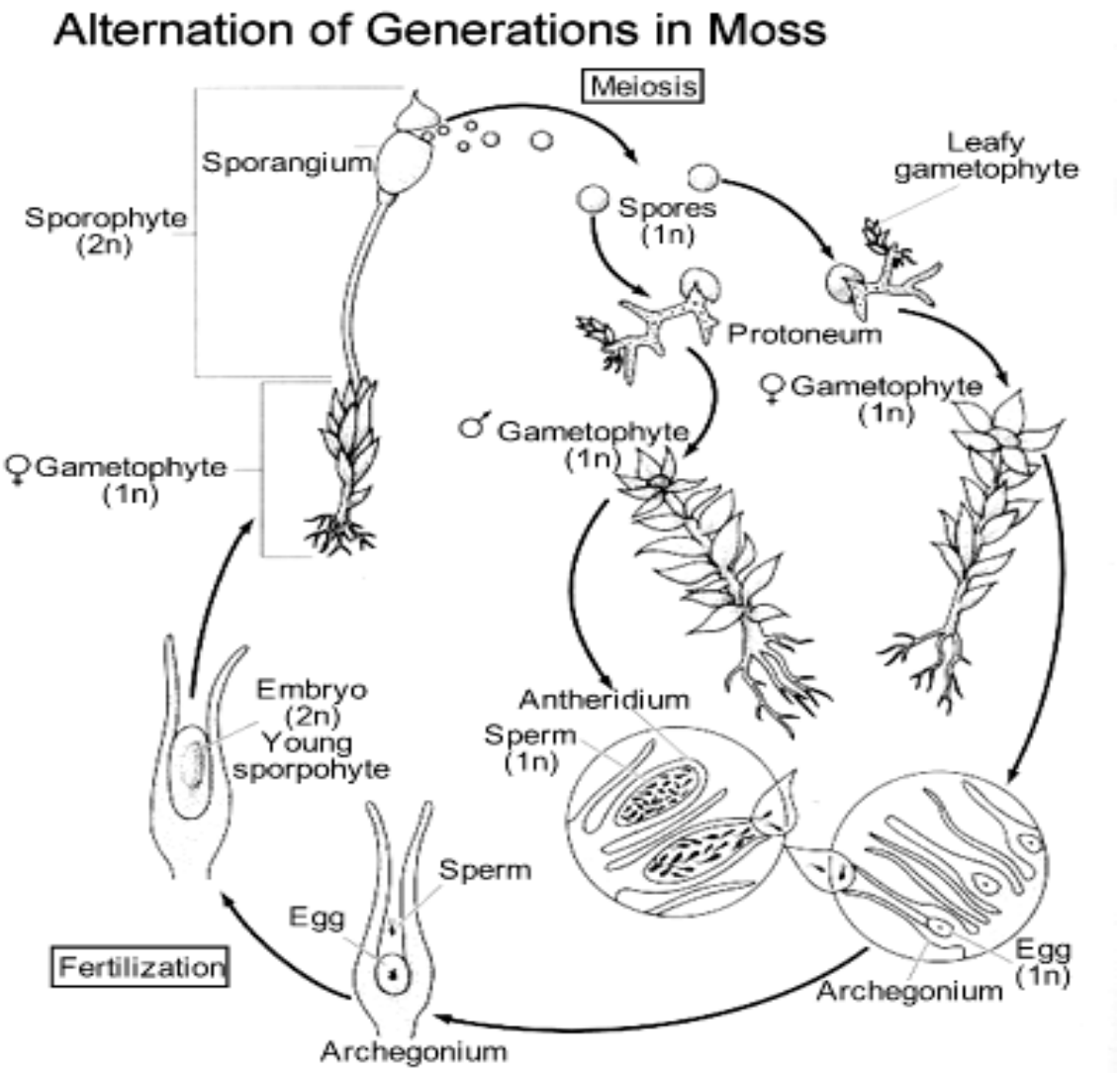
Land Plants: Bryophytes



Identify and label these structures

- sporophyte
- spores
- gametophyte
- archegonium
- antheridium
- rhizoids
- sperm
- egg
- protonema

1. Are the gametes in mosses haploid or diploid?
Gametes in Mosses are haploid (1n)

2. Which generation produces the gametes?
The Gametophyte generation produces the gametes.

3. Is the sporophyte haploid or diploid?
The Sporophyte is diploid (2n).

4. Are the spores haploid or diploid?
Spores are haploid.

5. What is the name of the generation that a germinating spore gives rise to? Is it haploid or diploid?
The generation that the spores give rise to is the Gametophyte generation. It is Haploid.

6. (a) What are two of the problems that the first land plants had to overcome?
Problems land plants encounter:

- O_2/CO_2 exchange
- Prevention of water loss/dehydration
- Water transport from one part of plant to another
- Support structures to hold leaves up to get sunlight for photosynthesis
- Ways to merge gametes for reproduction

(b) How did bryophytes overcome these problems?
- Bryophytes grow in moist areas that still have lots of water where gametes can be dispersed and mixed
- They also don't grow very tall so that water can still be passed from cell to cell through osmosis.
- They grew 'rhizoids' to anchor them into the soil

7. Which stage is dominant in the life cycle of bryophytes?
The Gametophyte generation is most dominant.

8. Discuss two reasons why bryophytes must live in wet habitats
- They lack a protective surface covering to keep from losing water – their 'leaves' are very thin, so they get water to their cells through diffusion and osmosis
- Their gametes need water in order to meet.

9. (a) How do bryophytes avoid being blown away?
Bryophytes have 'rhizoids' – root like structures that anchor them into the ground.

(b) Do the structures in part (a) aid in water transportation?
No – Rhizoids do not work for water transportation – they are not true roots.

10. Can the sporophyte of mosses live independently? Why or why not?

No, the sporophyte of mosses cannot live independently – it needs the gametophyte to supply it with nutrients and water.

11. What type of relationship exists between the sporophyte and the gametophyte? (What is it called) Explain the relationship.

There are two possible answers for this…

a. **The type of relationship could be considered 'Parasitism' – the sporophyte gains nutrients and water from the gametophyte and gives nothing in return.**
b. **The relationship could also be considered 'Mutualism' – the sporophyte gets nutrients and water, and in return, it continues the species by producing spores.**

12. How do liverworts reproduce asexually? Does this process increase or decrease genetic variation?

Liverworts can reproduce vegetatively – Leaves can break off and start a new plant. This decreases genetic variation.