

Biology 11 pages 464/65 Answers:

Section 1 – Multiple Choice:

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|------|------|
| 1. A | 5. C |
| 2. B | 6. C |
| 3. D | 7. B |
| 4. D | 8. A |

Section 2 – True/False

1. F – Mosses are Bryophytes
2. F – Moss Gametophytes are the most obvious stage
3. T
4. F – Fern leaves are called 'Fronds'
5. T
6. T
7. F – There are Few fossils of early land plants (tissue is too soft).
8. F – In mosses, the Archegonium produces the eggs.

Section 3 – Word Relationships

1. Sperm does not belong – the others are parts of the 'sporophyte' plant.
2. Cuticle does not belong – the other words have to do with vascular tissue
3. Spore does not belong – egg + sperm = zygote.
4. Sporophyte doesn't belong – the others are all part of the gametophyte
5. Frond doesn't belong – the others are made from vascular tissue
6. The opposite of 'Archegonium' is 'Antheridium' – one produces egg cells, the other sperm
7. The opposite of 'Gametophyte' is 'Sporophyte'
8. The opposite of 'gametes' is 'spores'.

Concept Mastery

1. Water is needed for reproduction in mosses because water is needed for the sperm to swim to meet the egg and for fertilization to occur.
2. The moss sporophyte is a stalk with a 'pepper' shaker on the top – called a 'capsule'. When the top of the capsule pops off, the spores are released.
3. When the antheridia are mature, sperm are released. Fertilization can take place when the ground and the prothallia are covered with a thin film of water. The sperm swim to the archegonia to fertilize the eggs. The diploid zygote produced by fertilization immediately begins to grow into a new sporophyte plant which can live for several years.
4. Two uses of mosses and ferns: Mosses are used as soil additives to retain water in the soil, decorative gardening, treating burns and bruises, adding flavor to Scotch Whiskey, some young fiddlehead ferns can be eaten.
5. Ferns can survive in drier areas because they have a vascular system to transport nutrients and water, and they also have a cuticle coating on their leaves to prevent water loss.
6. Moss life cycle:
Starting with the Gametophyte stage: the antheridium produces sperm, the archegonium produces the eggs. When the sperm swim to the archegonium and meet with the egg, the resulting fertilized zygote grows into a diploid sporophyte which has a foot, stalk, and 'capsule' on the top. When the spores (produced by meiosis) inside the capsule are ripe, the top pops off and the released spores grow into a

'protonema', which then grows into the gametophyte which produce the egg and sperm and the whole process starts again.

Critical and Creative thinking - points to consider:

1. Moss plants cannot grow very tall because they have no vascular system – they pass water from cell to cell through osmosis and this limits their size.
2. In order to grow mosses in your backyard, you need a wet/damp area with lots of sunlight.
3. The gametophyte stage of the fern needs more water because in order for the sperm and egg to meet, water must be present.
4. The structure is a young sporophyte fern – fiddlehead.
5. Mosses will probably not live too well in a desert area – they will probably dry out and die unless she has a good irrigation system.
6. Your story should include some ideas that would show that mosses growing in one direction (with the prevailing winds) would now grow in the opposite direction as the spores are spread by the change in wind direction.