Fungi Guided Notes

**General Characteristics**

1. There are \_\_\_\_\_\_\_\_\_\_\_\_\_\_ species of fungi.
2. Fungi play an important role in ecosystems doing a vast variety of jobs including:
3. Fungi are vital components of recycling \_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_ back into the environment.
4. All fungi are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and feed by external digestion.
5. Fungi acquire nutrients in three different ways
   1. Saprobic-
   2. Parasitic-
   3. Mutualistic-
6. Fungi have the most surface area to volume ratio of any organism on the planet. As a byproduct they are subject to quickly \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
7. Fungi are vital components to plants success providing \_\_\_\_\_\_\_\_\_\_\_\_\_ for the use of \_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_.
8. Humans usage of fungi include:
9. Fungi are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and share common characteristics. They are closest relatives to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Morphology**

1. The part of the mushroom we see at the store is the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Fungi cells are made of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ while plant cell walls are made of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. Fungi digest their food externally by the use of a class of enzymes known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. The body of most fungi is a multicellular structure known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. Mycelium is then made up of dozens/hundreds of filaments known as \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
6. Much like an iceberg, much of the fungi’s mycelia is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
7. Hyphae grow from their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and often have cross walls called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that allow \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to cross.
8. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are specialized hyphae that penetrate cell walls of plants for the purpose of extracting nutrients from plants.
9. The fruiting body of mushrooms produce reproductive cells called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Fungi Reproduction**

1. Fungi can reproduce sexually and asexually via specialized spores.
2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are sexual spores produced by meiosis
3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are asexual spores produced by mitosis
4. Asexual spores are more specifically called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. Sexual reproduction of fungi has a two-step fertilization process
   1. Plasmogamy-
   2. Karyogamy-
6. Draw the general outline of fungi fertilization
7. The \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is when the hyphae cells have two genetically unique nuclei in the same cell.
8. Draw the general fungi reproduction cycle showing both asexual and sexual (you may want a separate sheet to draw the cycle).

*Exemplar Rhizopus*

**Fungi Phylogeny**

**Chytridomycetes**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the simplest fungi and evidence suggest they may have evolved from the protist \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ about 670 mya.
2. Chytridomycetes are the only fungi to produce \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ spores called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. Chytrid’s flagellated zoospores are best adapted to suit their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. Chytrids are common in many animals, but the chytrid \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ also known as *Bd* has greatly affect \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ populations around the world.
5. *Bd* is found on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of frogs and affects the ability of the frog to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
6. *Bd* has decimated an estimated \_\_\_\_\_\_\_\_\_\_ species of frogs in the past 30 years alone.

**Zygomycetes**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ fungi are fast-growing and some of the most well-known fungi to date.
2. Zygomyctes are named for their \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. Zygo means \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. Zygomycetes can reproduce by both asexual and sexual, but the life cycle is mostly spent as a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. Zygomycets typically produce few \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ but many \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. Thus explaining their ability to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Life Cycle of Rhizopus

\*See life cycle above\* May want to write out steps though to help with visual drawing\*

**Glomeromycetes**

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ or \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are a small group of fungi consisting of about 230 species of fungi.
2. AM fungi stands for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
3. Arbuscules are \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ that the fugus makes when it invades \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and is where the exchange of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ occur.
4. Glomeromycetes only live in association with \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
5. A fungus-plant root combination is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
6. The mycorrhizae play a critical role in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ with their roots.
7. These a prime example of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
8. The fungal hyphae absorb \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ from the soil and share them with the plant, while the plant makes \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ for the fungi to use for its energy.

**Ascomycetes**

1. Ascomycetes are a large group of fungi (64,000 species) called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
2. Ascomycete are named for the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ meaning \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_develops during sexual reproduction
3. Multicellular \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and single-celled \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are the most common morphological sac fungi.
4. Sac fungi are instrumental decomposing and recycling materials and can even decompose materials that are not easily decomposed including: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. Some sac fungi can even be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
6. Yeast reproduce by \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, where small cells forms and pinches off as it grows to full size.
7. Mold tends to produce asexual spores called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ which vary in size and shape.
8. Conidia can develop at tips of aerial hyphae called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ resulting in \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. Sexual reproduction takes place in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
10. The fruiting body is an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ evolutionary advantage as it is formed to produce and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
11. A finger like sac called an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ forms during sexual reproduction and houses \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
12. Write the 5 steps of Ascomycete reproduction cycle.