

Science 8 Topic 1.3 Checking Your Understanding Questions #1-5

1.
  - a. The nucleus controls the functions of the cell.
  - b. The cell membrane supports and protects the outside of the cell. It controls what substances enter or exit the cell.
  - c. The cell wall supports and protects some cells (plants, some prokaryotes)
  - d. The mitochondria converts sugar and oxygen into carbon dioxide, water, and useable energy for cellular processes.
  - e. Chloroplasts are only in plant cells. They convert sunlight energy, water, and carbon dioxide into sugar and oxygen.
  - f. Vacuoles are involved in storage of different substances in eukaryotic cells.
2. This is likely to be an archaea. The absence of a nucleus tells me it is a type of prokaryote. The third and fourth bullet points describe many archaea.
3.
  - a. Eukaryotic cells are more complex than prokaryotic cells. This is because they are larger and have many more types of structures inside them that are specialized for various functions.
  - b. Prokaryotic cells make up unicellular organisms, whereas eukaryotic cells make up unicellular or multicellular organisms. Multicellular organisms are much more complex, often with different populations of cells being specialized for certain functions. Because multicellular organisms are made of eukaryotic cells, this also supports the argument that eukaryotic cells are more complex than prokaryotic ones.
4. Eventually, animal life will cease to exist. Animals rely on photosynthesis to produce oxygen and sugar, which animal cells need for cellular respiration to produce energy that they can use for different processes.
5. A nucleus tells us that this is an eukaryotic cell. The large vacuole suggests that it is likely a plant cell, since plant cells have large vacuoles (vs. animal cells which have many smaller vacuoles). I would also look for chloroplasts and cell walls, structures that are present in plant cells but absent in animal cells.