

**Mitosis and Meiosis****What is the role of mitosis?**

1. What is the overall purpose of mitosis?  
To make identical copies of a cell.
2. In what types of organisms does mitosis occur? What type of cell division occurs in bacteria?  
The stages of mitosis we talked about happen in eukaryotic cells. Bacteria divide by binary fission, a more simple version of mitosis.
3. How many cells are produced at the end of a single mitotic division? How many different kinds of cells are produced?  
Two cells. One kind of cell. Both cells are exactly the same.

**What is the role of meiosis?**

4. What is the overall purpose of meiosis?  
To make cells with half as many chromosomes as the original cell.
5. In what types of organisms does meiosis occur?  
Meiosis happens in eukaryotic cells that are diploid.
6. How many cells are produced from one cell at the end of meiosis?  
Four cells.
7. How many chromosomes and which chromosomes does each of the daughter cells contain? Which stage is called the reduction division? Meiosis I or meiosis II?  
Daughter cells have half as many chromosomes (they are haploid cells). One copy of each chromosome is found in each cell. Meiosis I is the reduction division.

**Sexual Reproduction**

8. Explain the current hypothesis for the purpose of sexual reproduction.  
Sexual reproduction happens instead of asexual reproduction in order to mix up the genes in the offspring. This is important if the environment is changing or if the environment contains a lot of diseases and parasites. If the offspring are all different genetically, hopefully at least one will be able survive the changing environment or parasites, reproduce and give the parents flowers.