Cell Cycle and Cell Division
Mitosis and Meiosis

- What is meant by diploid and haploid?
- How many unique chromosomes are there in the human genome?
- How many total chromosomes are there in the human genome? Diploid or haploid?
- Where do the chromosomes come from?
- Where are the chromosomes in humans located?
- What is the cell cycle?
- What is interphase?
- What are the stages of interphase and what happens in each stage?
- How is the cell cycle controlled?
- What is apoptosis?
- There are two methods of division between the G_2 phase and the G_1 stage of the cell cycle. What are they? What types of cells does each occur in? What does each of them do in the end?
- What is a neoplasm? What is cancer? When is it benign or malignant?
- What are the characteristics of cancer?
- How does cancer occur?
- What is mitosis?
- What types of cells does mitosis occur in?
- How does a cell prepare for mitosis?
- How many unique chromosomes enter mitosis?
- How many total chromosomes enter mitosis? How do you account for this?
- What is mitosis designed to do? How is this done?
    - What 4 events occur in Prophase of Mitosis?
    - What structure is formed in Metaphase of Mitosis? How are the chromosomes arranged?
    - What 2 processes occur/begin in Anaphase of Mitosis?
    - What 4 events occur in Telophase of Mitosis?
- What is the difference between karyokinesis and cytokinesis?
- How many cells are formed as a result of mitosis?
- How unique chromosomes are found in each daughter cell?
- How many total chromosomes are found in each daughter cell? Haploid or diploid?
- What is the difference in cytokinesis between plant cells and animal cells?
- As a result of mitosis, how different are the daughter cells from the parental cell that produced them?
- What is meiosis?
- What types of cells does meiosis occur in?
- How does a cell prepare for meiosis?
- How many unique chromosomes enter meiosis?
- How many total chromosomes enter meiosis? How do you account for this?
- What is meiosis designed to do?
- What happens in Meiosis I overall?
    - What 6 events occur in Prophase I of Meiosis I?
    - What structure is formed in Metaphase I of Meiosis I? How are the chromosomes arranged?
    - What 2 processes occur/begin in Anaphase I of Meiosis I?
    - What 4 events occur in Telophase I of Meiosis I?
- Does cytokinesis occur between Meiosis I and Meiosis II?
- Does synthesis of new DNA occur between Meiosis I and Meiosis II?
- How many cells result from Meiosis I?

- How many chromosomes are in each cell as a result of Meiosis I? Haploid or diploid?
- What happens in Meiosis II overall?
    - What 4 events occur in Prophase II of Meiosis II?
    - What structure is formed in Metaphase II of Meiosis II? How are the chromosomes arranged?
    - What 2 processes occur/begin in Anaphase II of Meiosis II?
    - What 4 events occur in Telophase II of Meiosis II?
- Does cytokinesis occur after Telophase II of Meiosis II?
- How many cells result from Meiosis?
- How many chromosomes are in each cell as a result of Meiosis? Haploid or Diploid?
- How does cells produced as a result of Meiosis differ from the parent cell that produced them?
- If a cell, like an egg were to be haploid, then how would a fertilized egg restore it's diploid number to form a diploid embryo?
- Compare and contrast mitosis and meiosis on the following features:
    - How many nuclear divisions occur in each?
    - How many daughter cells are formed as a result of each?
    - Are the daughter cells identical to the parent cell?
    - Are the daughter cells diploid or haploid?
    - Does crossing over occur?
    - What types of cells are produced as a result of each process?
- In plants, what is meant by the alteration of generations?
- How do prokaryotes produce daughter cells? Haploid or diploid?
- How do prokaryotic daughter cells differ from the parent cell that produced them?
- What is meant by nondisjunction? What occurs to an organism as a result of most cases of nondisjunction?
- What is primary nondisjunction? How many chromosomes would occur in the daughter cells?
- What is secondary nondisjunction? How many chromosomes would occur in the daughter cells?
- Why does the absence of, or the presence of too many, chromosomes matter?