Cell Division Worksheet

Name _____________________

Background information
1. What type of cells have chromosomes?
2. How many chromosomes are in all human cells (except eggs and sperm)?

3. True/False – Humans have more chromosomes than any other plant or animals?
4. What is chromatin?
5. Distinguish among a chromosome, a DNA molecule, nucleus, and a gene.
6. What is a karyotype?
7. What are diploid cells? How many chromosomes do diploid human cells have?
8. What are haploid cells? How many chromosomes do haploid humans cells have?
9. What are homologous chromosomes?
10. What are sister chromatids?

Interphase: preparation for mitosis
1. Which stages of the cell cycle constitute interphase?

Mitosis
1. True/False – In humans, cells spend more time in mitosis than any other phase of the cell cycle.
2. Describe the major events in each phase of mitosis.

3. The spindle is composed of ______________.
4. Sister chromatids are joined by the ______________.
5. What happens to sister chromatids during anaphase?

Control of the cell cycle
1. Describe 3 checkpoints in the cell cycle which control cell division.
2. __________ is a disease that occurs when cells divide uncontrollably.

Sexual reproduction requires meiosis
1. What is the difference between gametes and somatic cells?
2. Two gametes fuse to form a single diploid cell called a(n) ____________.
3. The process of gametes fusing to form a new cell is called ____________.

Meiosis
1. What is synapsis?
2. Describe crossing over.
3. In what stage of meiosis does crossing over occur?
4. ____________ hold homologous chromosomes together in metaphase I.
5. What is produced during meiosis?

**Summing up: meiosis vs. mitosis**

1. Why is sex an evolutionary advantage for a population?

2. (circle one) The daughter cells and parent cells contain the same/different genetic information.

3. Distinguish between sexual and asexual reproduction.

4. What types of eukaryotic cells undergo mitosis?

5. What are similarities and differences between mitosis and binary fission?

6. What are the major events occurring in each of the following phases of mitosis?
   a. Prophase
   b. Metaphase
   c. Anaphase
   d. Telophase

7. What is the purpose of meiosis?

8. What types of cells undergo meiosis? In humans, where are these cells located?

9. How many cell divisions occur during meiosis? What are these divisions called?
   a. How do the products of meiosis differ from each other and the parent cell?

10. A normally diploid cell containing 8 chromosomes undergoes meiosis. How many chromosomes would the daughter cells have?

11. Define each of the following terms.
   a. homologous chromosomes
   b. tetrad
   c. crossing over
   d. sister chromatids
   e. gamete
   f. zygote

12. List four ways in which meiosis differs from mitosis?

13. Distinguish between oogenesis and spermatogenesis.