**Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per \_\_\_\_\_\_**

**Reproduction**

1. Differentiate asexual and sexual reproduction and give an example of each.
2. Differentiate somatic cells and gametes and give an example of each.
3. Compare the chromosomes of the parent and offspring in asexual reproduction.
4. Differentiate internal reproduction and external reproduction.
5. How do prokaryotes and single celled eukaryotes reproduce?

**Meiosis**

1. What type of cell undergoes meiosis? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Drawing:

Draw a single chromosome: Draw a chromosome as it appears

as it appears before S after S. Be sure to label the chromatids & centromere

1. If half of your chromosomes come from your biological father and half come from your biological mother, why don’t you have 92 chromosomes?
2. What are homologous chromosomes?
3. What is a tetrad?.
4. What is the difference between haploid and diploid?
5. If the diploid number of a mushroom cell is 52, how many chromosomes are there in and egg of this organism? \_\_\_\_\_\_
6. When a haploid sperm and haploid egg fuse what is the name of the resulting fertilized egg?
7. Is a fertilized egg diploid or haploid?

**State if the cell is haploid or diploid.**

1. Sperm cell =\_\_\_\_\_\_\_\_\_\_\_
2. Liver cell =\_\_\_\_\_\_\_\_\_\_\_
3. Ovum =\_\_\_\_\_\_\_\_\_\_\_
4. Stomach cell =\_\_\_\_\_\_\_\_\_\_\_\_
5. Broccoli cell =\_\_\_\_\_\_\_\_\_\_\_\_
6. **After the end of meiosis, the chromosome number:**
   1. is double the number in the parent cell
   2. is half the number of the parent cell
   3. remains the same as the parent cell
   4. becomes diploid
7. **Which of the following best describe the term “crossing over”?** 
   1. An exchange of information between two homologous chromosomes
   2. A molecular interaction between two sister chromatids
   3. A molecular interaction between two non-sister chromatids
   4. A separation of two sister chromatids
   5. Genetic recombination
   6. Both a and e
8. Meiosis produces haploid reproductive cells called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
9. Name the 2 human gametes & their chromosome number. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
10. Why do sex cells divide twice during meiosis?
11. Give the name of the stage between meiosis 1 and meiosis 2 and explain what happens during that time.

1. What type of material is exchanged during crossing-over?
2. Crossing-over can be found in what the stage of meiosis?
3. How does meiosis differ from mitosis?
4. Is DNA copied before Meiosis II? Why or why not?
5. Describe the cells formed at the end of oogenesis.
6. Compare oogenesis to spermatogenesis
7. Is a zygote diploid or haploid?

**Questions 33 – 39. A hypothetical organism has 10 chromosomes in each of its somatic cells.**

1. Skin cells are continuously being rubbed off and replaced. How many chromosomes will be contained in each new skin cell that is replaced? \_\_\_\_\_\_\_\_
2. The replacement of skin cells occurs through the process of \_\_\_\_\_\_\_\_\_\_
3. The diploid number (2N) for this organism is \_\_\_\_
4. Each gamete of this organism would have how many chromosomes? \_\_\_\_
5. This organism would have how many homologous pairs of chromosomes? \_\_\_\_
6. The female of this organism has an ovary. The number of chromosomes in each of the mature reproductive cells that are made in ovary would be. \_\_\_
7. How many ovum would this organism make each time it undergoes meiosis? \_\_\_\_\_\_

**Phases of Meiosis**

|  |  |
| --- | --- |
| **Name of Phase** | **Description** |
|  | Homologous chromosomes pair up and form tetrad |
|  | Spindle fibers move homologous chromosomes to opposite sides |
|  | Nuclear membrane reforms, cytoplasm divides, 4 daughter cells formed |
|  | Chromosomes line up along equator, not in homologous pairs |
|  | Crossing-over occurs |
|  | Chromatids separate |
|  | Homologous pairs line up along the equator |
|  | Cytoplasm divides, 2 daughter cells are formed |