**Mitosis vs. Meiosis Comparison Assignment**

***Directions:*** *Create the charts for #1 and #2 on a separate sheet of paper and complete them thoroughly and accurately. The more detail you include in each chart, the better. You can fill in the information for Chart #3 on this page.*

1. What events occur during each phase of mitosis and meiosis? (You do not have to write the same thing twice, just say “see \_\_\_\_\_\_\_\_\_\_”)

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Interphase | Prophase | Metaphase | Anaphase | Telophase / Cytokinesis |
| Mitosis |  | Ex: chromatin coils into chromosomes, nuclear membrane and nucleolus break down, and the mitotic spindle is built.  |  |  |  |
| Meiosis I |  |  |  |  |  |
| Meiosis II | Note: this only occurs in some species, and if it does, there is no S phase. |  |  |  |  |

2.If the amount of DNA in a somatic cell equals X during G1 of interphase, how much DNA is present in the cell during each of the phases of mitosis and meiosis? Be sure to provide an explanation of your answer in each chart box

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | Interphase (after the S stage, if applicable)  | Prophase | Metaphase | Anaphase | Telophase / Cytokinesis |
| Mitosis | Ex: 2X (during the S stage, DNA is replicated) |  |  |  |  |
| Meiosis I | Ex: 2X (during the S stage, DNA is replicated) |  |  |  |  |
| Meiosis II |  |  |  |  |  |

3. Complete the chart below to identify the main differences between mitosis and meiosis.

|  |  |  |
| --- | --- | --- |
| **Difference** | **Mitosis** | **Meiosis** |
| 1. How many times does the original parent cell divide? (In other words, how many “rounds” of cell division take place?) |  |  |
| 2. How many daughter cells are created? |  |  |
| 3. Are the daughter cells diploid (2n) or haploid (n)? |  |  |
| 4. Are the daughter cells body cells (aka somatic cells) or sex cells (aka gametes)? |  |  |
| 5. Are the daughter cells identical to each other and the parent cell or different? |  |  |
| 6. Is this process used for growth, tissue repair, and asexual reproduction OR sexual reproduction? |  |  |