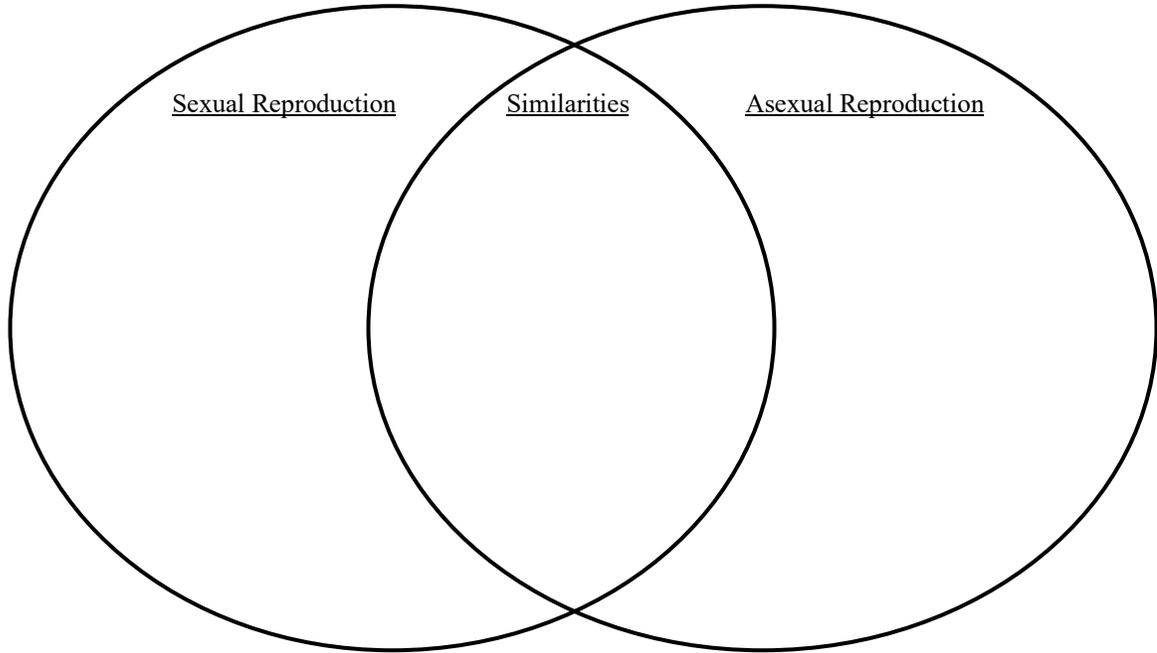
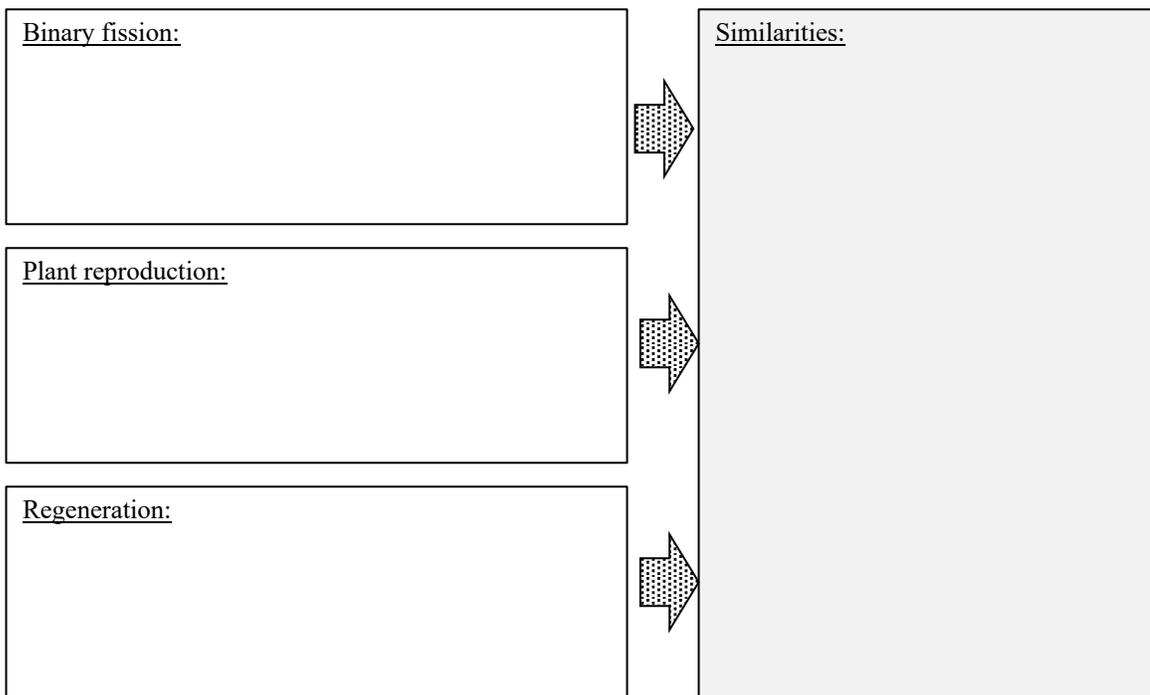


**Assignment 5 - Cell Division: Mitosis & Meiosis**

1. Compare and contrast characteristics of sexual and asexual reproduction. Use the Venn diagram to briefly show how these are similar, and how are they different.



2. Use the graphic below to compare and contrast the similarities and differences of types of asexual reproduction.



3. Contrast cell types by explaining the difference between somatic cells and gametes.

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4. Genes are found in \_\_\_\_\_, located in the nucleus of eukaryotic cells.

5. Analyze the structure of a chromosome by creating a diagram of a single chromosome with two sister chromatids. Label ALL of the following: chromosome, sister chromatids, centromere, and gene.



6. Contrast the packed structure of DNA in the nucleus by completing the table below.

|   | <b>Chromatin</b> | <b>Condensed Chromosomes</b> |
|---|------------------|------------------------------|
| <b>What is it?</b>                      |                  |                              |
| <b>Where is it located in the cell?</b> |                  |                              |
| <b>When is it present in the cell?</b>  |                  |                              |

7. Comprehend the cell cycle by creating an illustration of the steps of the cell cycle. Include all of the following in your illustration: interphase, G<sub>1</sub>, S, G<sub>2</sub>, mitosis, prophase, metaphase, anaphase, telophase, and cytokinesis



8. Using the illustration you created above, evaluate the following sentences by explaining why each is incorrect.

“Chromosomes are replicated during the G<sub>1</sub> phase of the cell cycle.”

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“Cells spend most of their time in the mitotic phase of the cell cycle.”

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“The cytoplasm of the cell is divided during interphase of the cell cycle.”

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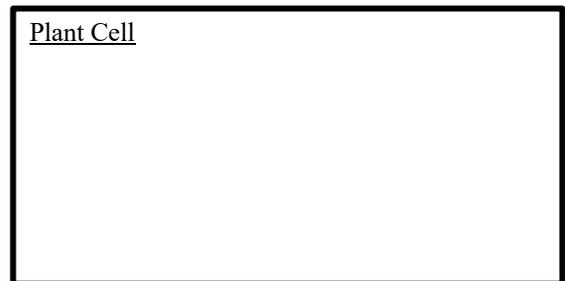
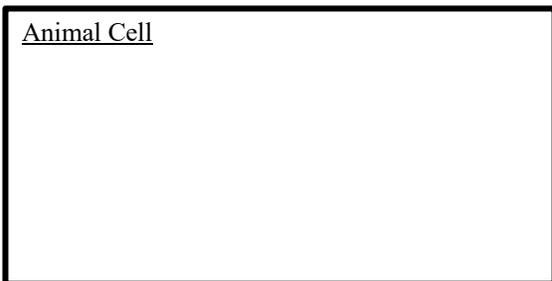
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9. Comprehend the activities that occur during each part of **mitosis** by listing the events taking place and illustrating what an animal cell looks like under a microscope during that particular phase.

| Mitotic Phase | Activities   | Illustration |
|---------------|--|--------------|
| Prophase      | <ul style="list-style-type: none"> <li>• Nuclear envelope breaks down</li> <li>• DNA condenses</li> <li>• Mitotic spindle forms</li> </ul> |              |
| Metaphase     |  |              |
| Anaphase      |  |              |
| Telophase     |  |              |

10. Contrast the differences in cytokinesis between plant and animal cells by illustrating.



Using your illustrations, explain the differences in cytokinesis between plant and animal cells.

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11. Comprehend the function of **meiosis** by completing the table below.

| <b>Meiosis</b>   |  |
|--|--|
| <b>What cells are produced as a result of meiosis?</b>                                     |  |
| <b>Where does meiosis occur in males?</b>  |  |
| <b>Where does meiosis occur in females?</b>  |  |
| <b>How many cells are produced as a result of meiosis?</b>                                 |  |
| <b>Human somatic cells have 46 chromosomes. How many chromosomes are found in gametes?</b> |  |

12. Comprehend the activities that occur during each part of mitosis by listing the events taking place and illustrating what an animal cell looks like under a microscope during that particular phase.

| <b>Meiosis I</b>     |   |                     |
|----------------------|---|---------------------|
| <b>Meiotic Phase</b> | <b>Activities</b>   | <b>Illustration</b> |
| Prophase I           | <ul style="list-style-type: none"> <li>• Nuclear envelope breaks down</li> <li>• DNA condenses</li> <li>• Mitotic spindle forms</li> <li>• <b><u>Crossing over</u></b></li> </ul> |                     |
| Metaphase I          |   |                     |
| Anaphase I           | <ul style="list-style-type: none"> <li>• Homologous chromosomes are pulled to opposite sides of the cell</li> </ul>   |                     |
| Telophase I          |   |                     |

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| <b>Meiosis I</b>     |  |                     |
|----------------------|--|---------------------|
| <b>Meiotic Phase</b> | <b>Activities</b>  | <b>Illustration</b> |
| <b>Prophase II</b>   | <ul style="list-style-type: none"><li>• Nuclear envelope breaks down</li><li>• DNA condenses</li><li>• Mitotic spindle forms</li></ul> |                     |
| <b>Metaphase II</b>  |  |                     |
| <b>Anaphase II</b>   | <ul style="list-style-type: none"><li>• Sister chromatids are pulled to opposite sides of the cell</li></ul>                           |                     |
| <b>Telophase II</b>  |  |                     |