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Unit 4: Cell Division Study Guide

1. NUMBER the stages of the cell cycle in order from 1→6 in the spaces below.

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1. LABEL the names of the phases of mitosis in the spaces above. Include the key word for each stage below the name.
2. What occurs in Interphase?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What is mitosis? How many daughter cells are produced? What type of cells?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What are the 4 steps of Mitosis? List and describe the 4 steps of Mitosis.

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1. What is cytokinesis?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Draw sister chromatids/homologous chromosomes. Label the centromere, chromatids, & sister chromatids.
3. What do sister chromatids represent?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. What are spindle fibers and what do they do in cell division?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What organelle involved in mitosis is only found in animal cells?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the difference between a plant and animal cell in regards to cytokinesis?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. List the 3 phases of interphase and describe what occurs in each.

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1. In mitosis, how are the daughter and the parent cells related regarding their chromosome numbers?

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1. Why is mitosis important to multicellular organisms?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What kind of traits do homologous chromosomes/sister chromatids code for, SAME or DIFFERENT?

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1. How many chromosomes are in an adult organism? Haploid or Diploid?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. How many chromosomes are in a gamete? Haploid or Diploid?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Where does meiosis happen in females and males?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. How many egg cells produced by meiosis can actually be used for fertilization? Explain why. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Sketch and color the chromosome displaying crossing over between C and D segments on the sister chromatids.
5. In meiosis, how are the daughter and the parent cells related regarding their chromosome numbers?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
6. What is fertilization? Draw a picture of it on the cellular level.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What is fertilized egg cell called?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is crossing over? What is its purpose? When does it occur?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What is meiosis? How many daughter cells are produced? What type of cells?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. NUMBER the stages of meiosis in order from 1→8 in the spaces below.

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1. LABEL the phases of meiosis in the spaces above. Include cell division I or II.
2. What is the difference between haploid and diploid?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What is cancer? What causes it? What does it do to normal cells?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Sketch a graph showing a normal cell’s growth versus a cancerous cell’s growth.
2. What is a stem cell? How is it useful in medicine?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. What is the process in which bacteria/prokaryotes reproduce? Describe the shape of their DNA.\_\_\_\_

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1. What is the goal of sexual reproduction?\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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1. Compare and contrast Asexual reproduction (mitosis & binary fission) with Sexual reproduction (meiosis) using a Venn diagram. Include the advantages and disadvantages of each process.