

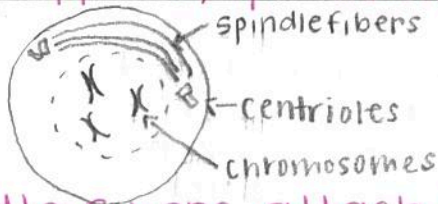
Unit 6 Test Review

Name: Answer Key Date: _____ Hour: _____ Test #: _____

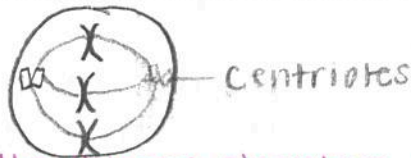
1. Define each of the following words:
 - a. Chromatids: duplicate halves of a chromosome, found after DNA replication but before cell division
 - b. Centromere: structure that attaches two chromatids to each other in a chromosome
 - c. Binary Fission: process by which bacteria reproduce
 - d. Spindle Fiber: specialized form of a microtubule that assists in cell division
 - e. Mitosis: process by which a cell's nucleus divides
 - f. Synapsis: pairing of homologous chromosomes during meiosis (maternal and paternal chromosomes)
 - g. Tetrad: group of 4 chromatids that form during synapsis
 - h. Spermatogenesis: production of mature sperm cells
 - i. Oogenesis: production and maturation of an egg, ovum
 - j. Zygote: diploid fertilized egg from fusion of gametes
 - k. Crossing Over: exchange genetic material between chromosomes
 - l. Meiosis: process in cell division during which the # of chromosomes decreases to half (haploid), produces sex cells and increases genetic diversity through reproduction
 - m. Asexual reproduction: production of offspring from one parent, offspring are genetically identical to the parent
2. What are the differences between chromosomes in eukaryotes and prokaryotes? eukaryotes: rod-shaped, in nucleus, more than 1 chromosome prokaryotes: circular shape, attached to cell membrane, 1 chromosome
3. Human Chromosome Numbers?
 - a. Diploid Number: 46
 - b. Haploid Number: 23
 - c. Sex chromosomes: 2 (XX or XY) → 2 + 44 = 46
 - d. Autosomes: 44
4. What is a karyotype? What can it be used for? pictorial display that shows the number of chromosomes present in a body cell, the sex of an organism, potential chromosomal abnormalities
5. What is diploid? What symbol is used to represent it? Which cells in an organism are diploid? Total chromosome number in a body (somatic) cell, has 2 homologous chromosomes, chromosomes are in pairs, 2n
6. What is haploid? What symbol is used to represent it? Which cells in an organism are haploid? chromosome number in a sex cell, only 1 chromosome from each homologous pair, 1n
7. Briefly state the steps of binary fission. DNA is copied, cell grows to 2x original size, a new cell membrane forms between DNA copies, and the cell splits into 2 cells

8. What are the four steps of mitosis? And what happens in each? List them in the correct order. Draw a picture of each stage below your description. You will have to recognize pictures of each phase on your test.

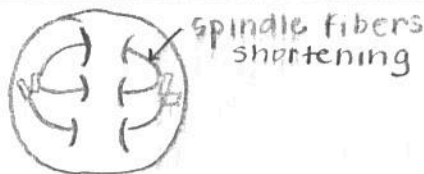
a. PROPHASE - centrioles begin to move to opposite sides, chromatin coils into chromosomes, nuclear membrane and nucleolus disappear, spindle fibers form



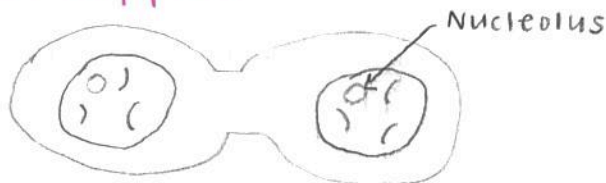
b. METAPHASE - spindle fibers attach to paired sister chromatids, chromosomes move to the middle of the cell



c. ANAPHASE - spindle fibers shorten and pull the chromosomes away to opposite poles of the cell



d. TELOPHASE - centrioles and spindle fibers disappear, two distinct nuclei, nuclear membrane and nucleolus reappear



9. Write out the correct order of events in the cell cycle. Briefly summarize G₁, S, and G₂

- a. Interphase
 - i. G₁ - cell grows, DNA is in chromatin form
 - ii. S - Synthesis, DNA is copied
 - iii. G₂ - cell grows, prepares for cell division
- b. Mitosis
 - i. Prophase
 - ii. Metaphase
 - iii. Anaphase
 - iv. Telophase
- c. Cytokinesis

10. Which stage of the cell cycle does the cell spend most of its life in? Interphase

11. What is the difference between animal and plant cells in cytokinesis? Animal → forms a cleavage furrow; Plant → cell plate forms

12. What are the steps of Meiosis I? Briefly explain main events that happen within each phase. You will have to recognize pictures of each phase on your test.

- a. PROPHASE I - pairing of maternal and paternal chromosomes (synapsis), chromatids twist and crossing-over occurs
- b. METAPHASE I - homologous chromosomes line up in the middle
- c. ANAPHASE I - homologous chromosomes move AWAY to opposite poles and independent assortment occurs
- d. TELOPHASE I / CYTOKINESIS - cell separates into 2 cells that are not genetically identical

13. What are the steps of Meiosis II? Briefly explain main events that happen within each phase. You will have to recognize pictures of each phase on your test.

- a. PROPHASE II - spindle fibers form
- b. METAPHASE II - chromosomes move to the middle of the cell
- c. ANAPHASE II - chromatids separate and move AWAY to opposite poles
- d. TELOPHASE II / CYTOKINESIS - nuclear membrane reforms, results in 4 haploid different cells

14. How do Meiosis I and Meiosis II differ? Meiosis I separates homologous chromosomes, Meiosis II separates sister chromatids

15. How many cell divisions are in mitosis? Meiosis? Mitosis - 1, Meiosis - 2

16. Fill in the chart below.

	Meiosis	Mitosis
Type of Reproduction (Sexual or Asexual)	Sexual	Asexual
Does crossing over occur?	Yes (prophase I)	NO
Pairing of Homologous Chromosomes	Yes	NO
# of Divisions	2	1
# of Daughter Cells	4 haploid	2 diploid
Are daughter cells genetically identical or different?	Different	Identical

