

Name \_\_\_\_\_ Date \_\_\_\_\_ Period \_\_\_\_\_

# Worksheet: Unit 4 Test Review

HONORS BIOLOGY: UNIT 4 (DNA & CELL DIVISION)

**Directions:** Answer the following questions using your notes (Unit 4) and textbook (Chapter 6).

1. Draw a diagram of the **Cell Cycle** and identify **Interphase**, **G<sub>1</sub>**, **S**, **G<sub>2</sub>**, and **M** phase, and describe what takes place in each phase.

2. Define the following terms:

a. **chromosome-**

b. **chromatid-**

c. **sister chromatids-**

d. **centromere-**

e. **autosomes-**

f. **sex chromosomes-**

e. **homologous chromosomes-**

f. **karyotype-**

g. **diploid (2n)-**

h. **haploid (n)-**

i. **chromatin-**

j. **fertilization-**

k. **zygote-**

l. **mutation-**

m. **monomer-**

n. **polymer-**

o. **eukaryote-**

p. **prokaryote-**

3. Describe and diagram the process of **Mitosis** and include the following terms: Somatic/Body cells, diploid, chromosomes, centrosomes, spindle fibers, prophase, metaphase, anaphase, telophase, cytokinesis, genetically identical daughter cells.

4. Describe and diagram the process of **Meiosis** and include the following terms: Germ cells, diploid (2n), haploid (n), gametes, Meiosis I, Meiosis II, genetically unique egg and sperm cells.

5. What contribution did **Griffith**, **Avery**, and **Hershey & Chase** provide concerning a cell's genetic material?

6. What contribution did **Erwin Chargaff** provide that helped determine the structure of the DNA molecule?
7. What contribution did **Rosalind Franklin** and **Maurice Wilkins** provide to Watson and Crick concerning the physical structure (shape) of the DNA molecule?
8. What contribution did **Watson** and **Crick** make concerning DNA?
9. Describe and diagram the process of **DNA replication** and include the following terms: complementary bases, enzymes, original strand, new strand, adenine, guanine, cytosine, and thymine.
10. Describe why the **surface area to volume ratio** helps determine when a cell needs to divide.

11. Describe how **cancerous cells** differ from normal cells and include the following terms: mutation, benign, malignant, tumor,
12. What are **telomeres** and how does it affect the aging of cells?
13. What is a **nucleotide** and how does one nucleotide vary from another?
14. What is **crossing-over**, where and when does it occur, and how does it affect the genetic diversity of gametes produced during meiosis? Include a diagram.
15. What is the significance of **DNA** being a two-stranded molecule?
16. What is **binary fission** and how is it similar and different from **mitosis**?

17. **DNA** is said to control all of the cells structure and function. How does it accomplish this?

18. What would result if the genetic code in **DNA** used to produce a particular protein was mutated and altered?

19. If one side of a DNA molecule contains the following sequence of nucleotides, **GCCATACAT**, the **complementary** sequence on the other side would be:

20. What are the advantages and disadvantages of **asexual** and **sexual reproduction**?