Honors Biology – Unit 8 Objectives

1. Vocabulary: cell cycle, mitosis, interphase, G1, R, S, G2, G0, restriction point, nuclear division, cytokinesis, replication, 3', 5', replication origin, DNA polymerase, helicase, primase, ligase, replisome, primer, Okazaki fragment, leading strand, lagging strand, chromosome, mutation, mutagen, excision repair, base pair, sister chromatids, centromere, chromosome segregation, mitotic spindle, spindle poles, kinetochore, prophase, metaphase, metaphase plate, anaphase, telophase, cell plate, microtubule, cyclin, kinase, checkpoint, cell cycle arrest, protooncogene, oncogene, tumor suppressor gene, cancer, & metastasis.

2. Differentiate between interphase, mitosis, and cell cycle.

3. Sketch a model of the cell cycle, label each significant point/stage, and briefly describe their function(s).

4. Replicate a given sequence of DNA:
   a. indicate the location of one or more replisomes;
   b. label the 3' and 5' ends of the old and/or new DNA;
   c. sketch in an appropriate leading and lagging end (inc. fragments);
   d. describe the roles played by the enzymes involved.

5. From scratch, sketch a short section of DNA depicting its full nucleotide structure so hydrogen bonds and the 3'/5' ends are convincingly displayed and labeled.

6. Label (pictures and/or indicated cells on a 'scope), describe, and / or sketch a cell in any stage of mitosis and briefly explain the significance of that stage.

7. Describe the experiments that lead to the discovery of the actions of kinetochores, the semi-conservative model of DNA replication, and cyclin-kinase control of the cell cycle. What were the results? What did the evidence prove / disprove?

8. Explain the relationship between cyclins, kinases, and their control of the cell cycle. Tie this into the activity levels of tumor suppressor proteins, proto-onco proteins, and checkpoint proteins.

9. Use the terms protooncogene and tumor suppressor gene to explain how cancer can develop. Explain what a tumor is, how it interferes with the body, and what metastasis is.

http://www.biology.arizona.edu/cell_bio/activities/cell_cycle/cell_cycle.html

	Interphase	Prophase	Metaphase	Anaphase	Telophase
Cell Count					
% of Cell Cycle					