DNA and Mitosis Objective Sheet

**Tested Objectives**

Bio 1.2.2 Analyze how cells grow and reproduce in terms of interphase, mitosis, and cytokinesis

Bio.3.1.1 Explain the double-stranded, complementary nature of DNA as related to its function in the cell.

**Essential Vocabulary (ALL TERMS MUST BE DEFINED FOR FULL CREDIT)**

DNA, chromosomes, heredity, trait / phenotype, double helix, nucleic acid, nucleotide, deoxyribose sugar, phosphate, nitrogen bases, adenine, guanine, cytosine, thymine, complementary base pairing, hydrogen bonds, 5’-3’ Direction, DNA replication, Helicase, DNA Polymerase III, Ligase, cell cycle, interphase, Growth1(G1), Synthesis(S), DNA replication, chromatin, sister chromatids, centromere, doubled chromosome, Growth2(G2), Mitosis, nuclear membrane, spindle fibers, Cytokinesis, asexual reproduction, clone, binary fission, budding, vegetative propagation, regeneration, sporulation

**Questions to Master (ALL MUST BE ANSWERED FOR FULL CREDIT)**

1. Identify reasons why cells divide
2. List and illustrate several types of asexual reproduction
3. Explain the need for a process of nuclear division in eukaryotic cells
4. Describe what is occurring in each stage of the cell cycle, including changes in the DNA as it is replicated (chromatin, chromatid, doubled chromosome)
5. Sequence the following diagrams of cells in various stages of the cell cycle and explain what is happening in each
6. 
7. Draw and label a molecule of DNA with 4 Nucleotides
8. Explain the rule of complementary base pairs
9. Explain why we see such diversity between living organisms with only 4 bases (A, T, C, G) being used
10. Explain the stages of DNA replication