**Semester 2 (Biology) Review Booklet**

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|  | Title | What should be on each page |
| Page 1 | DNA | * Draw a DNA molecule and label the following structures   Nucleotide  Deoxyribose sugar  Nitrogenous base  Adenine, thymine, guanine, cytosine  Hydrogen bond  Phosphate |
| Page 2 | DNA Replication | * Draw a DNA molecule and show how it replicates by drawing the replication fork. Include and label the following structures   Replication fork  DNA polymerase  Helicase  New complimentary bonding pairs  Nitrogenous bases  Adenine, thymine, guanine, cytosine |
| Page 3 | Mitosis | * Draw each stage of mitosis and label what the DNA is called in each stage * Label each stage of mitosis * What’s the goal of mitosis? |
| Page 4 | Meiosis | * Draw each stage of meiosis. Include independent assortment, law of segregation, crossing over. * Identify homologous pairs, chromatids, and single and double stranded chromosomes throughout. * What’s the goal of Meiosis I? Meiosis II? (think about diploid (2n) and haploid (n). |
| Page 5 | Genetics | * Monohybrid cross (punnett square) of a heterozygous mom and homozygous recessive dad. * Give phenotypic and genotypic ratio of offspring (from above cross). * Brown eyes and red hair are dominant traits over blue eyes and blond hair. Perform a dihybrid cross between one heterozygous and one homozygous recessive parent. * Give phenotypic ratio of offspring (from above cross). |
| Page 6 | Protein Synthesis | * Take the template DNA strand 🡪 ATGCCGTAATCGGAGTCT   demonstrate   * transcription and * translation. Give final amino acid sequence. * Using the above DNA sequence, write the point mutations that would give a nonsense, silent, and missense mutation. * This means that you should have three DNA sequences that are different from the one above |
| Page 7 (back of booklet) | Evolution | * State the 3 requirement for evolution * One example of Natural selection * One example of artificial selection * Give three pieces of evidence that support the theory of evolution |