**Unit 3: Genetics Review**

***Mitosis & Meiosis***

* Why do cells divide?
* What are the stages of the cell cycle? How is it different than mitosis?
* What are the three phases of interphase?
* List and describe each of the stages of meiosis.
* What is the role of spindle fibres? Centrioles?
* How many chromosomes in a human diploid cell? How many in a human haploid cell?
* List and describe each of the stages of meiosis.
* Describe the process of crossing over and why it is important. At what stage does crossing over happen?
* How many divisions happen in meiosis? How many cells are produced?
* Between meiosis and mitosis, which one is considered asexual reproduction? Sexual?

***Mistakes in Meiosis***

* What is meant by the term aneuploidy?
* What is aneuploidy caused by? Explain this process.
* Name the three types of aneuploidy and give an example of a disorder associated with each. Be able to describe REAL examples of each.
* Name and describe the four types of mistakes in crossing over. Be able to provide REAL examples for each.
* What causes Down Syndrome?

***DNA***

* Describe the structure of DNA
* What small subunits make up DNA? What three components make up these subunits? What forms the backbone of DNA?
* What forms the rungs?
* Name the four kinds of nitrogenous bases.
* Use what you know about complementary base pairing to predict the corresponding strand of DNA to: A - C - T- G - G - C - A - T -G - T

***Heredity***

* Who was the father of modern genetics?
* What is the law of segregation?
* What is a pedigree?
* Brown eyes (B) are dominant to blue eyes (b). An individual is homozygous recessive for eye colour. What is their phenotype?
* Curly hair (C) is dominant to straight hair (c). A purebred curly haired individual mates with a purbred straight haired individual. What is the genotype of their offspring?
* Now pretend two of their offspring (the F1 generation) mate. What would the possible phenotypes of their children be?
* How are co-dominance and incomplete dominance different then the regular pattern of inheritance?
* Snapdragons exhibit incomplete dominance. All heterozygous snapdragons have a pink phenotypes. A red (RR) and white (WW) breed. Describe the phenotype and genotype of their offspring.

***Reproductive Technologies***

* Describe one type of reproductive technology. Be able to argue strongly for or against that technology.
* What is a karyotype? How are they created? What are they used for?

***Inherited Disorders***

* What are the three categories of inherited disorders?
* If you suffer from a dominant disorder, is it possible that your parents DO NOT have the disorder?
* What is meant by the term carrier?
* Why can recessive disorders lay ‘dormant’ in the bloodline?
* Who is more likely to suffer from an X-linked disorder? Explain.
* Provide three REAL examples of inherited disorders.

Terms to know: Somatic, Gamete, Haploid, Diploid, Genetics, Inheritance, Homologous,

Phenotype, Genotype, Karyotype, Purebred, Hybrid, Homozygous, Heterozygous