Genetics Review Name_____

The following topics will be on your upcoming test. There are practice problems that demonstrate the type of questions you will be asked on your test so make sure you review your notes, vocabulary sheets, and any other resources to prepare yourself. Good Luck!

Vocabulary to be familiar with:

- Dominant
- Recessive
- Homozygous
- Heterozygous
- Phenotype
- Genotype
- Gregor Mendel
- Incomplete Dominance
- Co-Dominance
- Sex-linked Traits
- Polygenic traits
- Pedigree
- Carrier
- Law of Segregation
- Law of Independent Assortment
- Selective Breeding

Make sure you understand how to set up and interpret a Punnett square, you will also have to analyze pedigree charts and interpret inheritance patterns. For this section, it is crucial that you understand your vocabulary terms!

Practice Problems:

1. In certain species of snakes, large scales (S) are dominant to small scales (s). A snake that is heterozygous for the trait is crossed with a snake that has small scales. What would the **expected phenotypes** be for the offspring?
   a. 50% large scales, 50% small scales
   b. 50% Ss, 50% ss
   c. 50% Ss, 50% SS
   d. 25% small scales, 75% large scales

2. A father is homozygous dominant for a particular trait. If his spouse is homozygous recessive for the same trait, what is the probability that their offspring will have the homozygous dominant genotype?
   a. 0
   b. 1/2
   c. 1/4
   d. 3/4

3. In snapdragon flowers, red color (BB) is **incompletely dominant** over white flowers (WW). The heterozygous condition produces pink flowers (BW). In a cross between a white colored flower and a pink flower, what percentage of the offspring will have pink flowers?
   a. 0%
   b. 25%
   c. 50%
   d. 100%

4. The genotype for females is _____? For males _____?

5. In horses, a red coat is **co-dominant** to a white coat. When a horse is heterozygous for this trait it has both red and white hair which is called a roan coat. If a roan horse was bred with a horse with a red coat, what are chances of getting roan offspring?

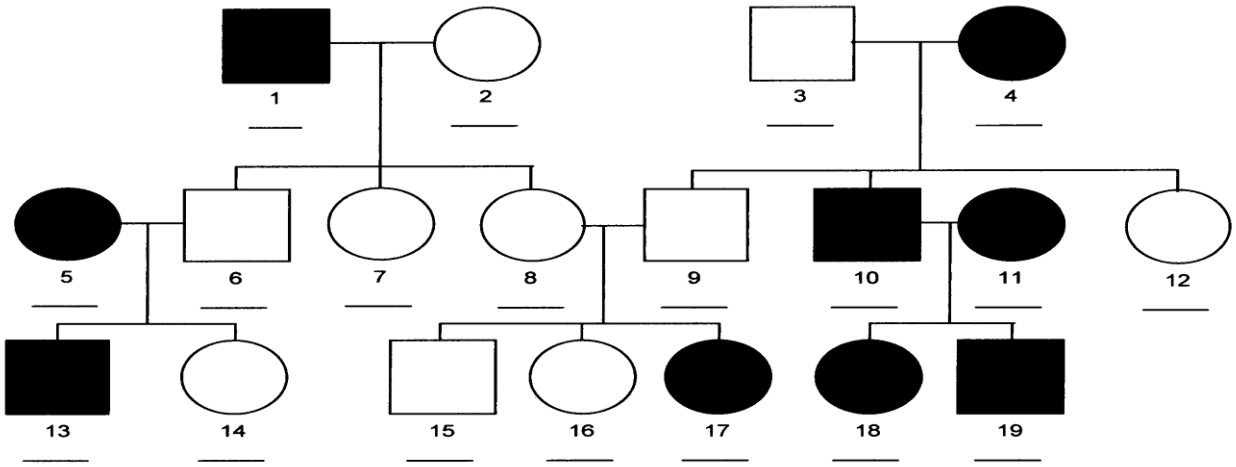
6. Hemophilia is a recessive, sex-linked disease (X^h). If a woman is heterozygous (X^HX^h), she will be a carrier for the disease, but will not have hemophilia. If a woman who is a carrier for hemophilia marries a man that does not have hemophilia, how many of the offspring would have hemophilia?

Use the pedigree chart to answer questions 7-12:

Individuals that are shaded in have the condition Tay-Sachs which is inherited through a **homozygous recessive** genotype. Go through the pedigree and write in the probable genotypes for each individual and then answer 7-12:

7. How many generations are shown in this pedigree?
8. How is individual #16 related to #2?
9. How many children did individual #11 have?
10. What is the genotype of individual #6?
11. What are the genotypes of individuals #8 and #9 based on the information in the pedigree?
12. If #14 mated with an individual that is homozygous dominant for the trait, what percent of their offspring would have Tay-Sachs?

AUTOSOMAL RECESSIVE



Protein Synthesis (Transcription and Translation)

1. Changing DNA into mRNA is called _____
2. Changing mRNA into proteins is called _____
3. _____are the monomers of proteins. They bond together to form a protein.
4. Transcription happens in the _____, while translation happens in the _____.
5. The organelles that read the mRNA code to make proteins are called _____.

6. A change in the DNA sequence which may alter the protein being built is called a _____.