Name: _____ UID: _____ Section#: _____

By signing below, I pledge that the answers written here are my own, and have not been copied from my classmates, textbook, or other resources.

Signature: _____

Directions: Answer the following questions completely but in no more than 3 sentences. Remember that these questions are representative of the *types* of questions you may be asked on the exam as well as *common misconceptions* among BSCI222 students. A hard copy of this worksheet is due on or before **September 27, 2017 at 2:00 pm**. Late assignments will not be accepted.

1. Among unicorns, both males and females have horns but male horns are always larger than female horns. Is this a sex-linked, sex-limited, or sex-influenced trait? Explain your reasoning. (1 pt)

2. Your neighbor, a "crazy cat lady", has two white cats with the genotype WwBb. You learned in genetics that the W alleles shows dominant epistasis over the B gene, and the B allele (black) is dominant over the b allele (brown). If your neighbor crosses her two white cats, what phenotypic ratio would you expect in the litter? Make sure to include the phenotypes in the ratio! (1 pt)

3. In mallard ducks, plumage is under the control of a single gene with three alleles – M, which codes for wildtype mallard plumage, M^R which codes for restricted plumage, and M^D which codes for dusky plumage. All types of plumage breed true. Based on the crosses in the table, determine the dominance series for these three alleles and complete the parental genotypes necessary in the cross to produce the offspring observed. Express the dominance series in the box using ">" to indicate dominance and "=" to indicate codominance (1.5 pts).

Dominance series:

CROSS	OFFSPRING	PARENTAL GENOTYPES
Dusky x mallard	½ dusky; ½ mallard	
Dusky x restricted	½ dusky; ½ restricted	
Mallard x mallard	¾ mallard; ¼ dusky	
Mallard x restricted	½ restricted; ¼ mallard; ¼ dusky	

4. A mapping experiment in strawberries shows that the genes for color and plant height are separated by 16 cM. In a cross between a heterozygous plant (CcHh) and a homozygous recessive plant, what percent of offspring would inherit a chromosome carrying cH from the heterozygous parent…. (1 pt)

….if the heterozygous parent's alleles are in coupling? _____

….if the heterozygous parent's alleles are in repulsion? _____

5. Briefly explain how heterogenic and polygenic traits are different and why a BSCI222 student might be confused by these terms. (1 pt)

6. In Drosophila, the genes ct (cut wing margin), y (yellow body), and v (vermilion eye color) are X-linked. Females heterozygous for all three markers were mated with wildtype males and the following male progeny were obtained. As is conventional in Drosophila genetics, the wild-type allele of each gene is designated by a "+" sign in the appropriate column. For each phenotypic group, complete the table with either P for parental, SR for single recombinant, or DR for double recombinant (2 pt).

Alleles			#	Type?
ct	y	v	4	
ct	y	+	93	
ct	+	v	54	
ct	+	+	349	
+	y	v	331	
+	y	+	66	
+	+	v	97	
+	+	+	6	

Use the data to create a genetic map of the genes. Show your work. (2.5 pts)