**Station 1**

**VOCABULARY!**

Directions: Look up and define as many words as you can – write them in your own words on your unit vocab sheet and *start with the words you know least well.*

**Station 2**

**Monohybrid Crosses!**

**(Punnett Squares)**

Directions: Answer the following questions – make sure to label your answers with the station and question number*.*

1. What are monohybrid crosses?
2. What do monohybrid crosses show you?
3. If Jeff in homozygous dominant for freckles and Jill does not have freckles, what are the possible genotypes, phenotypes, and percentages for their future children?
4. In pea plants, spherical seeds (S) are dominant to dented seeds (s). In a genetic cross of two plants that are heterozygous for the seed shape trait, what fraction of the offspring should have spherical seeds?
5. In dogs, wire hair (S) is [dominant](http://www.ksu.edu/biology/pob/genetics/defin.htm#dom) to smooth (s). In a cross of a [homozygous](http://www.ksu.edu/biology/pob/genetics/defin.htm#hom) wire-haired dog with a smooth-haired dog, what will be the [phenotype](http://www.ksu.edu/biology/pob/genetics/defin.htm#phen) of the [F1 generation](http://www.ksu.edu/biology/pob/genetics/defin.htm#f1)?
6. Woodrats are medium sized rodents with lots of interesting behaviors. You may know of them as packrats. Let's assume that the trait of bringing home shiny objects (H) is controlled by a single [locus](http://www.ksu.edu/biology/pob/genetics/defin.htm#loc) gene and is [dominant](http://www.ksu.edu/biology/pob/genetics/defin.htm#dom) to the trait of carrying home only dull objects (h). Suppose two [heterozygous](http://www.ksu.edu/biology/pob/genetics/defin.htm#het) individuals are crossed. What are the possible genotypes, phenotypes, and percentages for their offspring?

**Station 3**

**Dihybrid Crosses!**

**(Punnett Squares)**

Directions: Answer the following questions – make sure to label your answers with the station and question number*.*

1. What are dihybrid crosses?
2. What do dihybrid crosses show you?
3. Determine the gametes:
	1. FfGG x ffGg
	2. AABB x AaBb
	3. CcTt x cctt
4. Wolves are sometimes observed to have black coats and blue eyes. Assume that normal coat color (N) is [dominant](http://www.ksu.edu/biology/pob/genetics/defin.htm#dom) to black (n) and brown eyes (B) are dominant to blue (b). Suppose the alpha male and alpha female of a pack (these are the dominant individuals who do most of the breeding) are black with blue eyes and normal colored with brown eyes, respectively. The female is also [heterozygous](http://www.ksu.edu/biology/pob/genetics/defin.htm#het) for both traits. How many of the offspring (assume 16) living in the pack will have each of the resulting genotypes?
5. A heterozygous short hair, heterozygous folded ear cat with a heterozygous short hair, heterozygous folded ear cat. Be sure to show the phenotypes, genotypes, and ratio (\_\_/16) of each.

**Station 4**

**Incomplete Dominance**

**vs. Codominance!**

Directions: Answer the following questions – make sure to label your answers with the station and question number*.*

1. What is incomplete dominance?
2. What is codominance?
3. Compare and contrast incomplete dominance and codominance by making a Venn diagram.



Codominance

Incomplete Dominance

Similarities

1. A homozygous white rabbit is bred with a homozygous black rabbit. All the offspring come out grey.
	1. What type of inheritance does this show?
	2. If the F1 generation is bred, what would the genotypes, phenotypes and percentages of the F2 generation be?
2. A cross between a three-eyed alien and a one-eyed alien produces offspring that have two eyes.
	1. What type of inheritance does this show?
	2. If the F1 generation is bred, what would the genotypes, phenotypes and percentages of the F2 generation be?

**Station 5**

**X-Linked Traits**

Directions: Answer the following questions – make sure to label your answers with the station and question number*.*

1. What are x-linked traits? How are they different from autosomal traits?
2. What are the chances of having a boy vs. a

girl? Hint: do a Punnett square 🡪 Mom=XX Dad=XY

1. Suppose that an allele, *b*, of a sex-linked gene is recessive and lethal. A man marries a woman who is heterozygous for this gene. If this couple had four girls and 2 boys explain why this would be expected?
2. A boy, whose parents had normal vision, is color-blind. What are the [genotypes](http://www.ksu.edu/biology/pob/genetics/defin.htm#gen) for his parents?
3. A recessive sex-linked gene (n) located on the X chromosome increases memory. A normal woman marries a forgetful man. They have 3 children. A normal girl and boy and a forgetful girl. The boy marries a normal woman and they have a forgetful son.
	1. Draw a pedigree of this family.
	2. Indicate the genotypes of the individuals in the family.
	3. What is the probability that the first man and woman will have a son who is a forgetful? (Show your work.)

**Station 6**

**Pedigrees**

Directions: Answer the following questions – make sure to label your answers with the station and question number*.*

1. What are pedigree diagrams and what do they show?
2. How are they used in real life?
3. Create a foldable by:
	1. Take a piece of paper and fold it like a hotdog so that the two side meet in the middle.
	2. Fold the paper in half again, the hamburger way.
	3. Cut along the crease between the two halves you just made.
	4. Label each flap as shown in the example.
	5. Underneath each flap write how you would determine this type of trait by looking at a pedigree and draw an example.