Genetics Review…
Where are You?

Let's use Mendel's Traits to practice:

Pea trait	Dominant trait		Recessive trait	
Seeds				
Seed shape	Round		Wrinkled	
Seed colour	Yellow		Green	
Whole plants				
Flower colour	Purple		White	
Flower position	Axial		Terminal	
Plant height	Tall		Short	
Pod shape	Inflated		Constricted	
Pod colour	Green		Yellow	

Monohybrid: Problems where you are looking at one trait at a time. SHOW ALL WORK

1. Cross a heterozygous tall plant with a short plant and determine the likelihood of this parental cross producing offspring that are tall.

2. Cross a purple flowering plant that had one white flowering parent with a white flowering plant. Determine the likelihood that this parental cross will result in purple flowering offspring.

Dihybrid: Problems where you are looking at two traits at a time, don't forget to use two Punnett Squares!

1. Cross a heterozygous tall white flowering plant with a short plant that is heterozygous for purple flowers. Determine the fraction of offspring that are expected to be tall plants with white flowers.

2. Cross a heterozygous round seeded plant that is homozygous for tallness with a wrinkled seeded short plant. What is the probability that this cross will produce short offspring with round seeds?

Sex-Linked Traits: Genes for these traits exist on the sex chromosomes for biological males those are are XY for biological females they are XX.

1. A color-blind man and a woman with normal color vision have two children – one color-blind son and a normal vision daughter. What are the **genotypes** of:

    a. Mom _____

    b. Dad _____

    c. Daughter _____

    d. What can be said about the color vision of any son of a color-blind woman? Why?

Incomplete Dominance:

1. Cats have the T and t genes for tail length. A dominant allele of T makes a long tail (TT). A single dominant allele makes a short tail (Tt). No dominant alleles (tt) results in no tail. These cats have another gene with two alleles that determines coat color. One version of the gene causes the production of brown hairs. The other version of the gene causes the production of white hairs. When both varieties are present (heterozygous) the cat has a wonderful mixture of <u>both</u> brown and white hairs (let's call that color "mix").

    a. What type of inheritance pattern does the cats' tail length show?

    b. What type of inheritance pattern does the cats' hair color show?

2. Create one problem involving Codominance and one problem involving Incomplete Dominance involving the cats described above and solve them…even though I hate cats….