Name: _____ Block: _____ Date: _____

Alternate Forms of Inheritance Practice - Classwork Grade

1. Explain the difference between incomplete and codominance.

Co-Dominance Problems

2. In some chickens, the gene for feather color is controlled by codominance. The allele for black is B and the allele for white is W. The heterozygous (BW) phenotype is known as erminette (black and white spotted).

a. What is the genotype for black chickens? _____

b. What is the genotype for white chickens? _____

c. What is the genotype for erminette chickens? _____

3. If two erminette (BW) chickens were crossed, what is the probability that:
   a. They would have a black chick? _____%
   b. They would have a white chick? _____%

Parents: _____ X _____

4. A black (BB) chicken and a white (WW) chicken are crossed.
   a. What is the probability that they will have erminette chicks? _____%

Parents: _____ X _____

Incomplete Dominance Problems

5. In snapdragons, flower color is controlled by incomplete dominance. The two alleles are red (R) and white (R'). The heterozygous (RR') genotype is expressed as pink.
   a. What is the phenotype of a plant with the genotype RR? _____

   b. What is the phenotype of a plant with the genotype R'R'? _____

   c. What is the phenotype of a plant with the genotype RR'? _____

5. A pink-flowered (RR') plant is crossed with a white-flowered (R'R') plant.
   a. What is the probability of producing a pink-flowered plant? ____%

Parents: ____ X ____

6. What cross will produce all pink-flowered (RR') plants? Show a punnett square to support your answer.

Parents: ____ X ____

Multiple Alleles (Blood types)

Human blood types are determined by multiple alleles. There are two codominant alleles (I^A and I^B) and one recessive allele (i).

Blood Type (Phenotype)	Genotype	Can donate blood to:	Can receive blood from:
O	ii	A, B, AB and O (universal donor)	only O
AB	I^AI^B	only AB	A, B, AB and O (universal receiver)
A	I^AI^A or I^Ai	AB, A	O, A
B	I^BI^B or I^Bi	AB, B	O, B

1. Write the genotype for each person based on the description:

    a. Homozygous for the "B" allele _____
    b. Heterozygous for the "A" allele _____
    c. Type O _____
    d. Type "A" and had a type "O" parent _____
    e. Type "AB" _____
    f. Blood can be donated to anybody _____
    g. Can only get blood from a type "O" donor _____

2. Pretend that Jay-Z is homozygous for the type B allele, and Beyonce is type "O." **What are all the possible blood types of their baby?** (show your work)

3. Two parents think their baby was switched at the hospital. Its 1968, so DNA fingerprinting technology does not exist yet. The mother has blood type "O," the father has blood type "AB," and the baby has blood type "B."
    a. Mother's genotype: _____
    b. Father's genotype: _____
    c. Baby's genotype: _____ or _____
    d. Punnett square showing all possible genotypes for children produced by this couple
    e. Was the baby switched for sure?

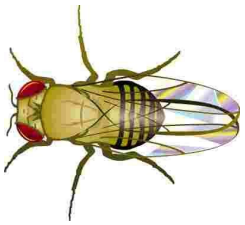
X-linked Traits

In fruit flies, eye color is a sex linked trait. Red (X^R) is dominant to white (X^r).

1. What are the sexes and eye colors of flies with the following genotypes:
   a. $X^R X^r$ _____
   b. $X^R Y$ _____
   c. $X^R X^R$ _____
   d. $X^r Y$ _____

2. What are the genotypes of these flies:
   a. white eyed, male _____
   b. red eyed female (heterozygous) _____
   c. white eyed, female _____
   d. red eyed, male _____

3. Show the cross of a white eyed female $X^r X^r$ with a red-eyed male $X^R Y$.



4. Show a cross between a homozygous red eyed female and a white eyed male.
   a. What are the genotypes of the parents _____& _____
   b. How many are white eyed, male___
   c. How many are white eyed, female ___
   d. How many are red eyed, male ____
   e. How many are red eyed, female ____

5. Show the cross of a red eyed female (heterozygous) and a red eyed male.
   a. What are the genotypes of the parents? _____ & _____
   b. How many are white eyed, male___
   c. How many are white eyed, female ___
   d. How many are red eyed, male ____
   e. How many are red eyed, female ____