Name _____ **Period** _____

AP Biology **Date** _____

GENETICS PRACTICE 3: PROBABILITY PRACTICE

1. In humans, curly hair is dominant over straight hair. A woman heterozygous for hair curl marries a man with straight hair and they have children.

   a. What is the genotype of the mother? _____

   b. What gametes can she produce? _____

   c. What is the genotype of the father? _____

   d. What gametes can he produce? _____

   e. What is the probability that the 1st child will have curly hair? _____

   f. What is the probability that the 2nd child will have curly hair? _____

2. List all the gametes that are possible with each of the following genotypes.

   a. Aabb _____ d. AABb _____

   b. AaBB _____ e. AAbb _____

   c. AaBb _____ f. aabb _____

3. What is the probability of getting the gamete (**ab**) from each of the following parents?

   a. Aabb _____

   b. aaBb _____

   c. AaBb _____

   d. AABb _____

   e. AAbb _____

4. In a certain strain of mice, black coat (B) is dominant over white coat (b). Describe what you would do to determine the genotype of a male with a black coat and how this would enable you to choose between the genotypes BB or Bb.

   _____

   _____

   _____

5. What is the probability of each of the following sets of parents producing the given genotypes in their offspring?

Parents Genotype	Offspring Genotype	Probability
Aa x Aa	**Aa**	
Aa x aa	**Aa**	
AaBb x AaBB	**AABB**	
AaBb x AABb	**aabb**	
AaBb x AaBb	**AaBb**	

6. If an offspring has the genotype Aa, what possible combinations of parental genotypes could have produced this offspring?

_____

7. In corn, the trait for tall plants (*T*) is dominant to the trait for dwarf plants (*t*) and the trait for colored kernels (*C*) is dominant to the trait for white kernels (*c*). In a particular cross of corn plants, the probability of an offspring being tall is 1/2 and the probability of a kernel being colored is 3/4. Which of the following most probably represents the parental genotype? Include your work to show how you derived your solution.
    a. TtCc x ttCc
    b. TtCc x TtCc
    c. TtCc x ttcc
    d. TTCc x ttCc
    e. TTCc x TtCC

8. In humans, the allele for albinism (lack of pigment) is recessive to the allele for normal skin pigmentation.
    a. If two heterozygous parents have children what is the chance that a child will be albino? _____
    b. If the child is normal, what is the chance that it is a carrier (heterozygous) for the albino allele? _____
    c. If normal parents have an albino child, what is the probability that their next child will be normal for pigment? _____

EXTRA CREDIT

In a cross between a female **AaBbccDdee** and a male **AabbCcDdee**, what proportion of the progeny will be the same ***phenotype*** as the female parent? (Assume independent assortment of all genes and complete dominance).