

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 .

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?
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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.

- TtCc x ttCc
- TtCc x TtCc
- TtCc x ttcc
- TTCc x ttCc
- TTCc x TtCC

8. In humans, the allele for albinism (lack of pigment) is recessive to the allele for normal skin pigmentation.

- If two heterozygous parents have children what is the chance that a child will be albino? _____
- If the child is normal, what is the chance that it is a carrier (heterozygous) for the albino allele? _____
- 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).