

Name _____ Period ____ Date _____

Mendelian Genetics – Punnett Square

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 four children. Predict their childrens' genotype and phenotype.
2. A woman who is homozygous normal for vision and a man who is homozygous for glaucoma have children. What is the probability that any of their children will have glaucoma? Glaucoma is dominant to normal vision.
3. Two brown-eyed parent have two children with blue eyes. Give the genotypes of each family member.
4. Albinism (lack of pigment) in humans is caused by a recessive gene. If normal parents have an albino child, what is the probability that their next child will be normal for pigment color?
5. Free ear lobes are dominant to attached ear lobes in humans. If a homozygous, recessive male marries a homozygous dominant female, what will be the phenotypic and genotypic ratios of their offspring?

If one of these female children were to marry a man with her genotype, what would be the phenotypic ratio of their children?

6. A homozygous, dominant individual for long eyelashes is crossed with a heterozygous individual. What is the probability that they will produce offspring without long eyelashes? Long lashes is dominant; short lashes is recessive.

7. The ability to taste the drug phenylthiocarbamide (PTC) is due to a dominant gene. A non-taster man marries a taster woman whose father was non-taster. What would be the expected genotypes of their four children?

What would be the expected phenotypes for ten children?

8. The gene for yellow coat color in mice is lethal in a homozygous condition. Yellow coat is dominant to gray coat. What will be the ratio of viable (those that are born and survive) phenotypes in a cross between two yellow-coated mice?

9. In a certain strain of mice, black coat is dominant over white coat. Describe what you would do to determine the genotype of a male with a black coat.

10. In humans, brown eyes are dominant over blue eyes. What are the possible genotypes of children who have a heterozygous father for eye color and a mother who has homozygous brown and blue-eyed parents?