

Name _____ Date _____ Block _____

Genetics Problems

SHOW WORK FOR EACH PROBLEM.

1. In radishes, the shape may be long (RR), round (rr), or oval (Rr). What offspring would you expect from a cross between two oval radishes?
2. The allele for astigmatism (a type of eye problem where the eye or lens is oblong) is dominant over normal eyes (lacking astigmatism). If two people, one that is heterozygous and the other homozygous recessive, have children, what are the chances that their children will have astigmatism?
3. In humans, the allele for farsightedness is dominant to normal vision. A man and a woman who are both heterozygous for the trait, have children. What are the chances of their children being farsighted?
4. In humans, normal skin pigmentation is due to a dominant allele. The recessive allele causes albinism. A normal skinned man and an albino woman have children. Their first child is an albino.
 - a. What is the father's genotype?
 - b. What is the mother's genotype?
 - c. What is the albino child's genotype?
 - d. What are the chances of these parents having albino children?
 - e.
5. In four o'clocks, the allele for red flowers is incompletely dominant to the allele for white flowers. The heterozygote is pink. A gardener crosses a red four o'clock with a pink four o'clock. What are the expected genotypes and phenotypes? (Give as percentages.)
6. In a type of chicken (Andalusian fowl), the allele for black feathers is incompletely dominant to the allele for white feathers. The heterozygote has bluish feathers. Determine the genotype of the parents of the following crosses, and the phenotypes of their offspring. (Give as fractions.)
 - a. Black x blue
 - b. Blue x blue
 - c. Blue x white

7. In some types of cattle, red coat color is codominant with white coat color. The heterozygote is a color mixture called roan where both red and white hairs are mixed together. Determine the genotypes of the parents and the coat color of the offspring in the following crosses.
 - a. Red cow x white bull
 - b. Roan cow x roan bull
 - c. Roan cow x red bull

8. What are the possible genotype and phenotypes of children of the following couples?
 - a. Mother AB x Father AB
 - b. Mother AB x Father O
 - c. Mother O x Father O
 - d. Mother AO x Father BO

9. Cross a woman who is colorblind with a man who has normal vision. Describe their expected offspring.

10. Cross a woman who is heterozygous for hemophilia with a normal man. Describe their expected offspring.