

PREDICTING THE INHERITANCE OF 1 TRAIT WHEN MULTIPLE ALLELES ARE INVOLVED!!

1. In rabbits, there are four alleles that determine coat color:

- F= fully colored
- C= chinchilla colored
- H= Himalayan colored
- A= albino

The alleles listed above are in order of dominance. For example, F is dominant over C, H, and A. C is dominant over H and A. H is dominant over A. A is recessive to all. Use this information in order to answer the questions that follow. Provide a punnet square as evidence for your answers!!

a) What genotypes and phenotypes would you expect if two Himalayan rabbits with heterozygous genotypes were mated?

GENOTYPIC RATIOS/PERCENTAGES
PHENOTYPIC RATIOS/PERCENTAGES

b) For the example above, what is the probability that these rabbits will produce a litter of 5 himalayan colored rabbits? What is the probability that they will produce a litter of 5 albino colored rabbits? Provide mathematical evidence to support your answer!!

c) In a litter of 8 rabbits, 4 have chinchilla colored coats and 4 have Himalayan colored coats. Neither parent is of a pure breed!! What are the possible genotypes for these two parents?? Provide a punnet square to support your answer!

DRAW YOUR PUNNET SQUARE BELOW!

PARENT GENOTYPES

2. Hair color in humans is represented by multiple alleles.

BB= brown

bb= blond

RR= red

BR= auburn

Bb= light brown

Rb= carrot red

In a cross between a father with auburn hair and a mother with light brown hair, what percentage have the phenotypes listed below?? Use a punnet square to support your answer!

BROWN HAIR
BLOND HAIR
CARROT RED
AUBURN HAIR