Multiple Alleles – Hierarchy Dominance

In mice, there are several alleles that control intensity of pigmentation in the hair. The designations for alleles and phenotype are:

C Full color
c^{ch} Chinchilla
c^{h} Himalayan (pigment restricted to extremities)
c^{p} Platinum
c Albino

The alleles are listed in order of dominance with C most dominant.

1. What 5 genotypes would produce a full color mouse?

2. What 3 genotypes would produce a Himilayan mouse?

3. What is the only phenotype with 1 genotype?

4. In a cross between Cc^{ch} and $c^{ch}c^{p}$ what are the genotypes of the offspring?

5. In a cross between Cc^{h} and $c^{ch}c^{p}$ what are the phenotypes of the offspring?

6. A heterozygous platinum mouse is mated with a heterozygous himalayan/albino mouse. What are the genotypes and phenotypes of the offspring?

7. If a cross produces 3 offspring that are chinchilla and 1 that is albino what must be the parents genotype?

8. If platinum mice were most popular/profitable as pets, and as a pet store owner you have the following 3 mice on hand: 1 $c^{p}c$, 1 cc, & 1 $c^{h}c^{p}$. Which would you combine to produce the greatest number of platinum offspring? If each (3) crosses were made, how many total platinum mice would you have?