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**Genetics Problems Worksheet**

1. In guinea pigs, black coat color is dominant over white. Cross a homozygous black male guinea pig with a white female guinea pig. What will be the appearance of the F1 generation?

2. If the F1 guinea pigs from question #1 are crossed among themselves, what proportion of the F2 would be expected to be white?

3. In pea plants, round seeds are dominant to wrinkled seeds. If two heterozygous plants for this characteristic are crossed, and 160 offspring are produced, how many organisms will there be for each phenotype?

4. In humans, normal skin pigmentation is due to a dominant factor (C,) and albinism is the recessive allele (c.) A man with normal skin pigmentation marries an albino woman. Their first child is an albino. What are the genotypes of the man, woman, and child?

5. If the man and woman in question #4 have more children, what type of skin pigmentation will they most likely have?

6. In cattle, the hornless condition (H) is dominant and the horned condition (h) is recessive. A bull without horns is crossed with a cow with horns. Of the four offspring, 1 is horned and 3 are hornless. Determine the genotype of the bull and cow.

 7. In fruit flies, long wings (L) is dominant over vestigial wings (l). If a vestigial winged fly is crossed with a true-breeding long winged fly, what genotype and phenotype possibilities are expected in the F1 generation?

8. In frogs, dark spots are due to a dominant factor, and light spots is a recessive trait. If you have a dark spotted male frog and want to know if it is homozygous or heterozygous, which type of frog should he be mated with? Explain how the results of this cross will answer your question.

9. In tomatoes, fuzzy skin (F) is dominant over smooth skin (f). A cross between a fuzzy skinned tomato and a smooth skinned tomato resulted in 69 fuzzy skinned tomatoes and 58 smooth skinned tomatoes. Determine the genotypes of the parents and double check with a cross.

10. In some flowers, red flowers crossed with white flowers always produces pink colored offspring. What is the term for this pattern of inheritance? Cross two pink flowers and give me the genotypes and phenotypes for the offspring.