

Complex Inheritance Patterns Worksheet

1. A cross between a purebred animal with red hairs and a purebred animal with white hairs produces an animal that has both red hairs and white hairs. What type of inheritance pattern is involved? Draw the Punnet square.
2. A woman with type AB blood is married to a man with type O blood. She has a child with type A blood. In a divorce suit, the man claims that the child cannot be his biological child because neither he nor the woman has type A blood. Based solely on the information stated here, does the science of genetics support the man's claims? Draw the Punnet square to support your answer.
3. A red-flowered sweet pea plant is crossed with a white-flowered sweet pea plant. All of the offspring are pink. What is the inheritance pattern being expressed? Draw the Punnet square.
4. An ecologist observes that a population of plants in a meadow has flowers that may be red, yellow, white, pink, or purple. Hypothesize what the inheritance pattern might be.
5. Suppose you mate a black rooster with a white hen. The feathers of all the offspring are "blue," a color that is intermediate between black and white. Identify the inheritance pattern in these chickens.

6. Julia purchased a puppy from a breeder. The breeder explained that the puppy should never be bred with another dog because it was a carrier. What did the breeder mean by this statement?

7. Inheritance of the palomino coat color in horses is a result of incomplete dominance. White horse is DD, a chestnut horse is dd, and a palomino horse is Dd. What is the expected ratio of coat colors in the offspring of two palomino horses? Draw the Punnet square.

These involve a pattern we haven't covered yet called *sex linkage*. Do some research on sex linkage, complete these and show your work for extra credit.

8. In a cross between individuals of a species of tropical fish, all of the male offspring have long tail fins, and none of the females possess the trait. Mating two of the resulting offspring fails to produce females with the trait. Draw the Punnet square for this.

9. In cats, the allele for fur color is sex linked. The allele for black fur is X^C , and the allele for orange fur is X^c . From this information, explain why calico cats, $X^C X^c$, are always female.