SBI3U INCOMPLETE DOMINANCE AND CODOMINANCE PRACTICE WORKSHEET

1. Explain the difference between incomplete and codominance.

2. If flower colour is inherited by incomplete dominance, which of the following is a genotype for a purple flower whose one parent had blue flowers and the other parent had red flowers? **Explain why your choice was correct and the other two are incorrect.**

a. Bb b. BR c. C^BC^R

3. A black rooster and white hen mate. All their offspring are barred. Barred means rows of alternating white and black feathers. Which of the following is the correct genotype for their offspring? **Explain why your choice was correct and the other two are incorrect.**

a. Bb b. BW c. C^BC^W

Incomplete Dominance Practice Problems

2. In flowers called snapdragons, flower colour is controlled by incomplete dominance. The two alleles are: red (C^R) and white (C^W).

a. Is one allele dominant over the other? Explain.
b. What is the genotype of a plant with red flowers?
c. What is the genotype of a plant with pink flowers?
d. What is the genotype of a plant with white flowers?

3. A pink-flowered snapdragon is crossed with a white-flowered snapdragon.
a. Show the Punnett square for this cross.
b. What is the probability of producing a pink-flowered plant?
_____%

4. Two pink snapdragons are crossed.
a. Show the Punnett square for this cross.
b. Show the genotypic ratio for this cross in whole numbers:

_____: _____: _____
c. Complete the phenotypic ratio for this cross in percentages:

_____ % chance of _____, _____ % chance of _____, _____ % chance of _____

4. In Andalusian fowls, black feathered individuals and white feathered individuals are homozygous. Feather colour in these birds is controlled by incomplete dominance. A black fowl is crossed with a white fowl. Show the Punnett square, phenotypic ratio in percentages, and genotypic ratio in whole numbers for this cross.

5. A black Andalusian fowl is crossed with a grey one. Show the Punnett square, phenotypic ratio in percentages, and genotypic ratio in whole numbers for this cross.

Co-Dominance Practice Problems

1. In a certain fish, the colour of its scales is inherited by codominance . When a fish has the hybrid genotype, it has a patchwork of blue and red scales.

a. Is one allele dominant over another allele in this case? Explain.
b. Circle the appropriate symbol of the allele for blue scales: B C^B b R C^R r
c. Circle the appropriate symbol of the allele for red scales: B C^B b R C^R r
d. What is the genotype for blue fish?
e. What is the genotype for red fish?
f. What is the genotype for patchwork fish?

2. What happens if you breed a patchwork fish with a fish that only has blue scales? Show the Punnett square, phenotypic ratio in percentages, and genotypic ratio in whole numbers for this cross.

3. Two patchwork fish are crossed. Show the Punnett square, phenotypic ratio in percentages, and genotypic ratio in whole numbers for this cross.

4. A purple flowered plant is crossed with a yellow flowered plant. All their offspring have petals with purple and yellow splotches in them, in equal amounts, but random patterns. Let's called these splotched. Show the Punnett square, phenotypic ratio in percentages, and genotypic ratio in whole numbers for the cross between a splotched plant and a yellow plant.

Mystery Problem – Which form of inheritance is it?

Two short-tailed (Manx) cats are bred together. They produce three kittens with long tails, five short tails, and two without any tails.

a. From these results, how do you think tail length in these cats are inherited? Choose from either dominance, incomplete dominance or codominance. Why is your choice correct and the other two incorrect?

b. Show the Punnett square, phenotypic ratio in percentages and genotypic ratio in whole numbers for this cross.
