



Students at Hogwarts School of Witchcraft and Wizardry have been investigating the genetic makeup of the organisms in their community. Use the information provided and your knowledge of genetics to answer each question.

1. For each genotype below, indicate whether it is a heterozygous (He) OR homozygous (Ho).

TT _____ Bb _____ DD _____ Ff _____ tt _____ dd _____
 Dd _____ ff _____ Tt _____ bb _____ BB _____ FF _____

Which of the genotypes in #1 would be considered purebred?

Which of the genotypes in #1 would be hybrids?



2. Determine the phenotype for each genotype using the information provided about Buckbeak the Hippogriff.

Yellow talon color is dominant to blue talon color.

YY _____ Yy _____ yy _____

Silver feathers are dominant to brown feathers.

SS _____ Ss _____ ss _____

3. For each phenotype, give the genotypes that are possible for Dobby the House Elf.



Tall Ears (B) is dominant to short (b).

Tall = _____ Short = _____

Grey body color (G) is dominant to yellow (g).

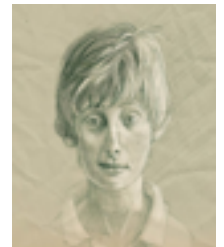
Grey body = _____ Yellow body = _____

4. The Weasleys are known for their bright red hair, which is a recessive trait. Arthur and Molly Weasley; who both have red hair, have seven children. Create a Punnett Square that shows the possibilities of hair color for Arthur and Molly's Children.

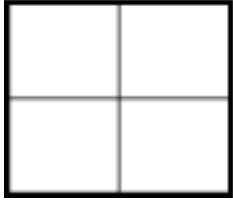
A. List the possible genotypes and phenotypes for their children.

B. What are the chances of a child with red hair? ____ out of ____ or ____%

C. What are the chances of a child with without red hair? ____ out of ____ or ____%



5. Professor Lupin is breeding grindylows for his Defense Against the Dark Arts Class. Grindylows are dominant for their Green body color, over a blue body color which is recessive. Create a Punnett square to show the possibilities that would result if Professor Lupin had bred two heterozygous grindylows.



A. List the possible genotypes and phenotypes for offspring.

B. What are the chances of an offspring with a green body?

____ out of ____ or ____%

C. What are the chances of an offspring with a blue body?

____ out of ____ or ____%



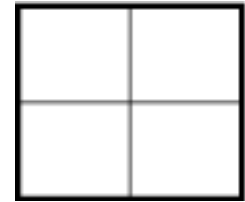
6. Everyone in the Ron Weasley's family is purebred for their magical abilities, which is the dominant trait. He recently wed Hermione Granger, who is a "mudblood" or heterozygous for her magical abilities. Create a Punnett square to show the possibilities that would result if Ron and Hermione had children. Use M to represent the dominant gene and m to represent the recessive gene.

A. List the possible genotypes and phenotypes for their children.

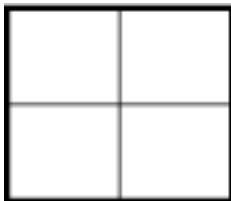
B. What are the chances of a child with magical abilities? ____%

C. What are the chances of a child with nonmagical abilities? ____%

D. Would Ron & Hermione's children still be considered purebreds? Explain!



7. Assume that one of Ron's sons, Hugo is heterozygous for his magical ability, married a girl that was also heterozygous. Create a Punnett square to show the possibilities that would result if they had children.



A. List the possible genotypes and phenotypes for their children.

B. What are the chances of a child with magical abilities? ____%

C. What are the chances of a child with nonmagical abilities? ____%

8. Draco Malfoy and his wife recently had a son, but it has not been a happy occasion for them. Draco's wife has been upset since she first saw her new baby who has no magical ability. She claims that the hospital goofed and mixed up her baby with someone else's baby. Draco is homozygous for his magical ability, while his wife is heterozygous for her magical ability. Some members of her family are muggle (nonmagical), which is the recessive trait. Create a Punnett square using T for the dominant gene and t for the recessive one.

A. List the possible genotypes and phenotypes for their children.

B. Did the hospital make a mistake? Explain your answer.

