**Name:** **Class Period:**



Fantastic Beast Genetics Workshop

1. **Incomplete Dominance:** Groots are a tree-like species (*Flora colossus*) from the Planet X. Everyfew years, Groots reproduce – like other plants, Groots produce flowers. Flower color is governed by incomplete dominance; RR produce red flowers, WW produce white flowers, while RW produces pink flowers.
	1. Two pink flowered Groots are crossed. What was the genotypic and phenotypic ratios of their offspring?
	2. If the 2 pink flowered Groots produce 500 offspring, how many of them should have red flowers? Explain your answer and show your work.
		1. **Codominance:** Diricrawls are plump, fluffy-feathered, flightless birds. Feathercolor is co-dominant; FAFA have pink feathers, FBFB have purple feathers and mottled diriclaws (FAFB) have both pink and purple feathers. Pink feathered diricrawls are very rare and prized by collectors. If you breed 2 mottled diricrawls, what percentage of their offspring will be pink feathered? (show all of your work and use a Punnett square).



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1. **Blood types:** House elves have the same basic blood types that human have; A,B, AB and O.
	1. If a male house elf with blood type O has children with a female house elf who is blood type AB, what will the phenotypic ratios of their offspring be? (show your work).
	2. A male house elf with blood type A (but whose mother was blood type O) has children with a female elf who is type B (whose mother was type A and whose father was type AB). What percentage of their offspring should be blood type B?
	3. Dobby is blood type A and Harry Potter is blood type AB. Is it possible for Dobby to give blood to his master? Can Harry give blood to Dobby? Explain.
		1. **Pedigree:** Graphorns are dragon-like creature native to Europe. They’re prizedfor their skin which is thicker than a dragon’s. However, the other form of their skin is thin and scaly. Use the pedigree below to answer the following question – thick skinned Graphorns are indicated with a solid symbol:



1. What is the genotype of I,4?
2. What is the genotype of II,6?
3. What is the genotype of II,2?
4. Is solid skin dominant or recessive? Us specific references to the pedigree to support your answer.

**Name:** **Class Period:**



1. **Sex-linked:** Presence of horns in erumpents is a sex-linked trait; presenceof horns is dominant while the absence of horns is recessive.



1. Of the male offspring, what percentage of them should be hornless? Use a Punnett square to support your answer.
	1. **Cross #2:** A hornless male erumpent was crossed with a horned female (but whose fatherwas hornless). What is the probability of getting 3 female erumpents with horns? Use a Punnett square to support your answer.
2. Hagrid has been breeding his pets again. He is breeding his pet Fluffy (a large 3-headed, slobbering dog) in an attempt to get 4 headed drooling dogs. Hagrid knows that having 3 heads is dominant (H), while the presence of 4 heads is the result of a recessive allele (h). Drooling is a dominant trait (D), while dry mouth is a recessive trait (d). What is the expected frequency of drooling, 4-headed dogs in if Hagrid crosses 2 dogs that are heterozygous for both traits?



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1. **Challenge Question:** color in eumpents is incompletely dominant; black color (BB), white color(WW) or grey (BW). Remember that presence or absence of horns is sex-linked. What is the probability of getting a grey, horned erumpent of either sex from the following cross:

XHY BW crossed with XHXh BW



