Name: _____

Phantastic Phoenix Phenotypes
Genetics of a Fantastic Beast

The phoenix is a famous creature, know for its beautiful feathers. Long ago, the phoenix was associated with the color purple but a red form, like the famous Fawkes of Dumbledore fame. Using the information provided, solve the genetic problems below.
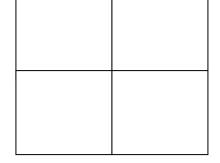
1)   A purple phoenix was paired with a red form and produced all purple
        chicks. Explain how this occurred by providing the information below.
        Use upper and lowercase 'F/f' to represent color alleles.

        Purple parent genotype: _____   Red parent genotype: _____

        Genotype %: _____

        Phenotype %: _____

        Phenotypic ratio: _____

2)   A purple phoenix was paired with another purple phoenix and they produced purple
        chicks as well as some red chicks. Explain how this occurred by providing the information below.
        Use upper and lowercase 'F/f' to represent color alleles.

        Purple parent genotype: _____   Purple parent genotype: _____

        Genotype %: _____

        Phenotype %: _____

        Phenotypic ratio: _____

3)   Can a red phoenix mate with a red phoenix and produce purple chicks? _____
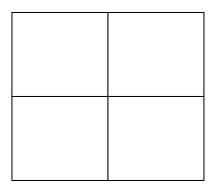   Cross two reds to illustrate your answer.

        Red parent genotype: _____   Red parent genotype: _____

        Genotype %: _____

        Phenotype %: _____

        Phenotypic ratio: _____

4)   Cross a purple phoenix with a purple phoenix, each of which had a red parent.

Purple parent genotype: _____   Purple parent genotype: _____

Genotype %: _____

Phenotype %: _____

Phenotypic ratio: _____

5)   Cross a red phoenix with a heterozygous phoenix.

Red parent genotype: _____   Purple parent genotype: _____

Genotype %: _____

Phenotype %: _____

Phenotypic ratio: _____

6)   A purple phoenix was found injured in the Forbidden Forest and brought to Hogwarts for treatment. This creature was kept in the Magical Creatures classroom and Hagrid was curious as to whether this bird was heterozygous for the red phenotype or not. What could he pair this purple phoenix in order to test whether it is heterozygous or homozygous?   Do the cross below.

Purple parent genotype: _____   Test cross parent genotype: _____

Genotype %: _____

Phenotype %: _____

Phenotypic ratio: _____