Punnett Square Practice Worksheet

1) For each of the genotypes (AA, Aa or aa) below determine what the phenotype would be.

   Purple flowers are dominant to white flowers.
   PP  purple  Pp  purple  pp  white

   Hairy knuckles are dominant to non-hairy knuckles in humans.
   HH  hairy  Hh  hairy  hh  non-hairy

   Boxtails in cats are recessive. Normal tails are dominant.
   TT  normal  Tt  normal  tt  boxtails

   Round seeds are dominant to wrinkled seeds in pea plants.
   RR  round  Rr  round  rr  wrinkled

   No-cleft chin is dominant. Cleft chin is recessive.
   CC  no  Cc  no  cc  cleft

2) For each of the following write whether it is homozygous dominant, heterozygous or homozygous recessive.

   AA - HD  Ff - Hetero  Aa - hetero  gg - HR
   GG - HD  Pp - Hetero  Ff - hetero  tt - HR
   TT - HD  Tt - Hetero  aa - HR  Oo - Hetero

Use the following information for questions 3-5:
In dogs, the gene for fur color has two alleles. The dominant allele (F) codes for grey fur and the recessive allele (f) codes for black fur.

3) The female dog is heterozygous. The male dog is homozygous recessive. Figure out the phenotypes and genotypes of their possible puppies by using a Punnett Square.

   Genotypes:
   FF: Ø  Ff: 1:2  ff: 1:2
   Phenotypes:
   Black fur: 1:2  Grey fur: 1:2

4) The female dog has black fur. The male dog has black fur. Figure out the phenotypes and genotypes of their possible puppies by using a Punnett Square.

   Genotypes:
   FF: Ø  Ff: Ø  ff: 4:4
   Phenotypes:
   Black fur: 100%
   Grey fur: Ø
The female dog is heterozygous. The male dog is heterozygous. Figure out the phenotypes and genotypes of their possible puppies by using a Punnett Square.

Genotypes:  
FF: 1:1  
Ff: 1:2  
ff: 1:4  

Phenotypes:  
Black fur: 1:3  
Grey fur: 2:4

Use the following information for questions 6-8:  
In fruit flies, red eyes are dominant (E). White eyes are recessive (e).

6) If the female fly has white eyes and the male fly has homozygous dominant red eyes, what are the possible phenotypes and genotypes of their offspring?

Genotypes:  
EE:  
Ee: 4:4  
ee: 0  

Phenotypes:  
Red Eyes: 100%  
White Eyes: 0%

7) If the female fly has EE and the male fly has EE, what are the possible phenotypes and genotypes of their offspring?

Genotypes:  
EE: 4:4  
Ee: 0  
ee: 0  

Phenotypes:  
Red Eyes: 100%  
White Eyes: 0%

8) If both flies are heterozygous, then what are the possible phenotypes and genotypes of their offspring?

Genotypes:  
EE: 1:4  
Ee: 2:4  
ee: 1:4  

Phenotypes:  
Red Eyes: 75%  
White Eyes: 25%