MENDELIAN GENETICS
MONOHYBRID CROSSES

Answer the questions in the space provided. For all questions about crosses, regardless of the wording, use full genetic problem solving format.

Read pages 202-212 and the Power Point, your notes, sample problems on page 210 - 211 to help you answer these questions.

I. A homozygous red dragon is crossed with a homozygous purple dragon. This resulted in an F1 generation of all red dragons.

   a) What is the dominant trait for colour in dragons?

   b) Show the cross using a Punnett square.

   c) Show using a Punnett square, a cross between two individuals of the F1 generation.
2. In squirrels, black fur colour is the dominant colour trait. White fur colour is the contrasting trait. How can two black squirrels produce white offspring?

3. Grey colour is dominant over white in mice. Trace the offspring for two generations following a cross between a purebred gray, and a white mouse.

4. Determine the genotypic and phenotypic ratios of the following crosses:
   a) a pure tall plant and a hybrid tall plant.

   b) a tall hybrid plant and a homozygous short plant.
5. Which of the following descriptions does not make sense regarding pea plants? (refer to chart on page 204 of text -- the first trait in each pair is the dominant one)

a) A heterozygous yellow pod pea.

b) A homozygous axial flower position pea plant

c) A heterozygous axial flower pea plant

d) A homozygous wrinkled pea.

Explain here. Include the genotype letters in your explanations.

6. Which of the following phenotype descriptions do not contain enough information to be able to tell the genotype? (refer to chart on page 204 of text-- the first trait in each pair is the dominant one)

a) A purple pea flower.

b) A short pea plant.

c) A green pea.

d) An inflated pod shape

Explain here. Include the genotype letters in your explanations.

7. Explain how a test cross is used to determine the likelihood that an organism exhibiting a dominant trait is homozygous or heterozygous for that trait.