Punnett Square Notes

Essential Question: How can Punnett squares be used to predict the heredity of offspring?

**Study the Genetics Vocabulary document before you get started with Punnett squares. This is really important!!

1. Patterns of heredity can be predicted.

2. A Punnett square shows how parents' alleles might combine in offspring.

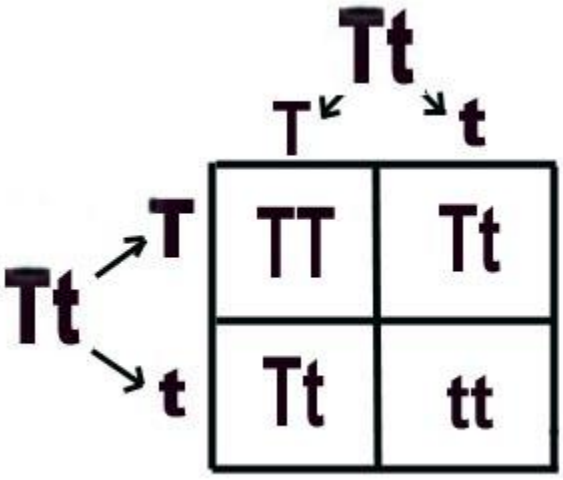
3. Each parent has two alleles for a particular gene. An offspring receives one allele from each parent. A Punnett square shows how the parents' alleles may be passed on to potential offspring.

4. Genetic problems can be easily solved using a tool called a Punnett square. You start a Punnett square by drawing a table like this:

5. Completing a Punnett square is a several step process. You need to know the parents' alleles. Here is an example problem:

   - Tallness (T) is dominant over shortness (t) in pea plants. A heterozygous tall plant (Tt) is crossed with another heterozygous tall plant (Tt). What are all the possible allele combinations of the offsring?

- First, take each possible allele of each parent, separate them, and place each allele either along the top, or along the side of the punnett square.



- Second, write the letter for each allele across each column or down each row. The alleles that then are shown in each box are the possible allele combinations the offspring might inherit. In this case, the possible allele combinations are: TT (homozygous dominant; offspring will be tall), Tt (heterozygous dominant; offspring will be tall), Tt (heterozygous dominant; offspring will be tall), and tt (homozygous recessive; offspring will be short). ***In other words, there is a 75% chance offspring will be tall and a 25% chance offspring will be short.***

6. Work the following Punnett Square problem:

   - Tallness (T) is dominant over shortness (t) in pea plants. A homozygous dominant plant is crossed with a heterozygous dominant plant. 1) Determine all the possible allele combinations offspring might inherit. 2) What is the percentage chance offspring will be tall and the percentage chance offspring will be short?