Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Punnett Squares

A Punnett square is a probability tool used to show the 4 possible offspring of a genetic cross. A single trait cross shows possibilities of the genetic combinations of 4 alleles – 2 alleles from each parent.

In this example T = Tall allele and t = the short allele.

TT = dominant tall individual (Genotype = TT; Phenotype = tall)

Tt = hybrid tall individual (Genotype = Tt; Phenotype = tall)

tt = recessive short individual (Genotype = tt; Phenotype = short)

Using the Punnett Squares below, cross the two individuals and show the resulting Genotype and Phenotype ratios for the possible offspring.

|  |  |  |
| --- | --- | --- |
|  | **T** | **t** |
| **T** |  |  |
| **t** |  |  |

|  |  |  |
| --- | --- | --- |
|  | **T** | **T** |
| **T** |  |  |
| **T** |  |  |

|  |  |  |
| --- | --- | --- |
|  | **T** | **T** |
| **T** |  |  |
| **t** |  |  |

Both parents are dominant tall. Both parents are hybrids.

Genotype Ratio: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Genotype Ratio: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Phenotype Ratio: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Phenotype Ratio: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

|  |  |  |
| --- | --- | --- |
|  | **T** | **t** |
| **t** |  |  |
| **t** |  |  |

One parent is dominant tall, one is hybrid. One parent is hybrid, one is recessive short

Genotype Ratio: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Genotype Ratio: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Phenotype Ratio: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Phenotype Ratio: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

New Terminology

* Homozygous – refers to the same allele
* Heterozygous – refers to two different alleles
* TT and tt individuals are said to be Homozygous
* Tt individuals are said to be Heterozygous

**Part A: Vocabulary practice**

Circle the choices that are examples of each of those words.

1. **Homozygous dominant** AA Gg KK mm uu Rr TT

2. **Homozygous recessive** ee Ff HH Oo qq Uu ww

3. Genotypes in which dominant gene must show

AA Dd EE ff Jj RR Ss

4. Genotypes in which recessive gene must show

aa Gg Ff KK rr Oo Tt

\_\_\_\_ 5. genotypes made of the same alleles A. alleles

\_\_\_\_ 6. different forms of genes for a single trait B. dominant

\_\_\_\_ 7. gene that is always expressed C. heterozygous

\_\_\_\_ 8. gene that is expressed only in the homozygous state D. homozygous

\_\_\_\_ 9. genotypes made of two different alleles E. recessive

**Part B: Punnett Squares**

10. Examine the following Punnett squares and circle those that are correct.

