

Introduction to Genetics Problems & Punnett Squares

Name: _____

1. Heterozygous round seeded pea plants are crossed with wrinkle seeded pea plants.

R = round seeds, r = wrinkled

- a. What is the genotype of the round seeded plant?
- b. What is the genotype of the wrinkle seeded plant?
- c. Round and Wrinkled are how the seeds appear... this is their _____.
- d. R and r are different forms of the same gene (in this case the gene for seed shape).
R and r are referred to as _____.
- e. Draw a Punnett square for this cross.
- f. What are the possible genotypes (and their % probabilities) of the offspring?
- g. What are the possible phenotypes (and their % probabilities) of the offspring?

2. A homozygous male for widow's peak marries a heterozygous female for the same trait. They have 3 children, all of which have a widow's peak. Use a Punnett square to show their first 4 offspring. (Remember: Punnett squares show probability, so it does not matter that they only have 3 children). (Choose symbols for the allele's for widow's peak and not widow's peak.)

- a. How did you decide which allele was dominant?
- b. What is the probability they will have a child that does **not** have widow's peak?

3. A man with free earlobes marries a woman with attached earlobes. 2 of their children are heterozygous for the dominant trait (Free Earlobe, F) and 2 are homozygous for the recessive trait (f).

- a. What is the genotype of the 2 children with free earlobes?
- b. What is the genotype of the 2 children with with attached earlobes?
- c. Is the father homozygous or heterozygous for Free earlobes? How can you be sure?

4. A heterozygous male for tongue rolling marries a heterozygous female for the same trait. What percent of their offspring will show the dominant trait?