

Anatomy of a Punnett Square (H)

Directions: for the Punnett squares below, answer the questions about the genetic analysis to better understand the terms for the unit.

1. What type of **cross** is seen in the diagram? _____

2. The **parental (P) generation** cross is: _____ x _____

3. **Genotypes** for **homozygous** conditions in the parents: _____ & _____

4. **Phenotype** of the homozygous **dominant** genotype is _____

5. Phenotype of the homozygous **recessive** genotype is _____

6. The genotypic ratio of the **F1 generation** is _____ : _____ : _____

7. Phenotype of the offspring in the F1 generation is _____

8. The phenotypic ratio of the F1 generation is _____ : _____

9. What are two words we use to describe the offspring in the F1 generation: _____ &

10. The result of a cross between two F1 offspring would give what **genotypic and phenotypic ratio**? Show work below.

11. What is the probability that an F2 offspring will be BOTH green and **heterozygous**?

12. What is the **probability** that an F2 offspring will not be green?

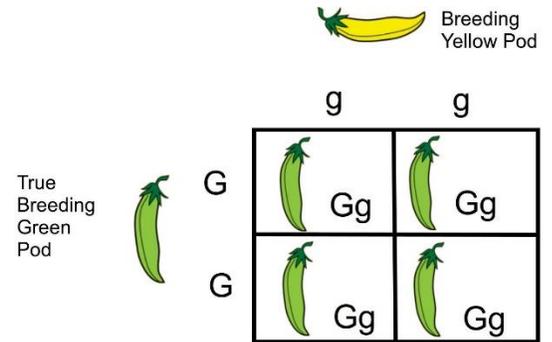
13. What potential **gametes** will an F1 offspring give to the F2 offspring? _____ or _____

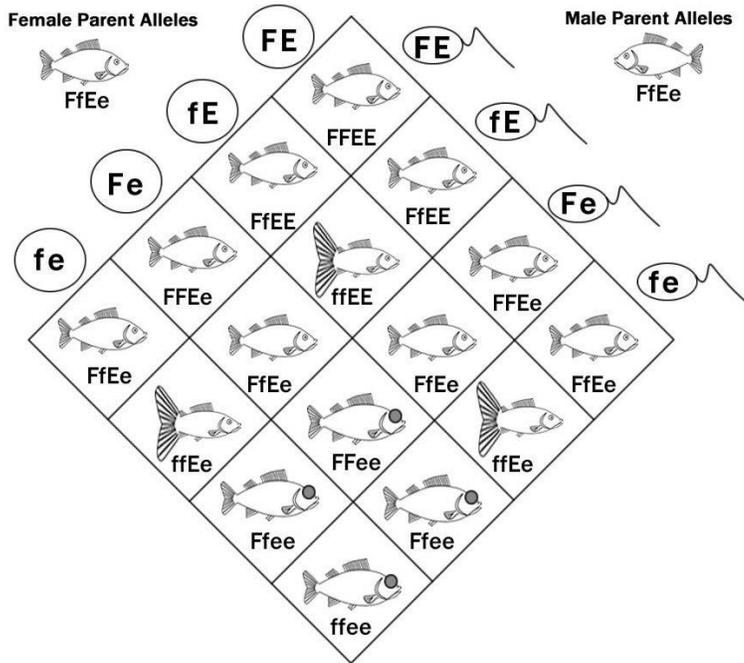
14. Differentiate between the following pairs of terms:

(a) **gene** and an **allele**

(b) number of chromosomes in a **body cell** and a **gamete**

(c) **phenotype** and **genotype**





15. What type of cross is seen in the diagram to the left? _____

16. Indicate the trait that each allele below represents

(a) F: _____

(b) f: _____

(c) E: _____

(d) e: _____

17. Why do so few potential offspring have the “ff” coded phenotype?

18. Can you think of any advantage, or disadvantage it would give fishes to receive one “f” allele from each parent?

19. The phenotypic ratio of the F1 generation above would be _____ : _____ : _____ : _____

20. Why do we only provide the phenotypic ratio from dihybrid crosses?

21. What would the probability be of producing offspring with a smaller caudal fin (aka tail fin)? *Be sure to indicate the different genotypes that would code for this trait (give both alleles of the genotype).*

22. If 50 offspring were produced in the F1 generation, how many would have a large, showy tail?

23. *Challenge question (and yes, you must do it!).* What is the probability of having an offspring in the F1 generation with only homozygous genotypes for both traits?