

# Biology Notes

## Lesson: Dihybrid Crosses

**Objective:** \_\_\_\_\_

\_\_\_\_\_

**Instruction:**

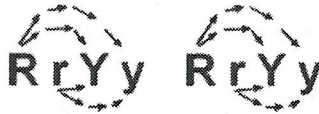
**Dihybrid Crosses:** Crosses that involve 2 traits.

A pea plant that is heterozygous for round, yellow seeds is self-fertilized. What are the phenotypic ratios of the resulting offspring?

**Step 1:** Determine the parental genotypes from the text above. The word "heterozygous" is the most important clue. You would also need to understand that self-fertilized means you just cross it with itself.

**RrYy x RrYy**

**Step 2:** Determine the gametes. USE the "FOIL" method you learned in math class. Combine the R and Y alleles of each parent to represent the egg and sperm. Do this for both parents.



Gametes after "FOIL"  
RY, Ry, rY, ry (parent 1) and RY, Ry, rY, ry (parent 2)

**Step 3:** Set up a large 4x4 Punnet square and place one gamete set from the parent 1 on the top and the other set from parent 2 down the side of the square.

F1 Gametes ↓	RY	Ry	rY	ry
RY	RRYY	RRYy	RrYY	RrYy
Ry	RRYy	RRyy	RrYy	Rryy
rY	RrYY	RrYy	rrYY	rrYy
ry	RrYy	Rryy	rrYy	rryy

**Results**  
round-yellow : round-green : wrinkled-yellow : wrinkled-green  
**9 : 3 : 3 : 1**

**Step 4:** Write the genotypes of the offspring in each box and determine the number of each phenotype. In this case you will have 9 round, yellow; 3 round, green; 3 wrinkled, yellow; and 1 wrinkled, green.

**Shortcut:**

In any case where the parents are heterozygous for both traits (AaBb x AaBb) you will always have a 9:3:3:1 ratio.