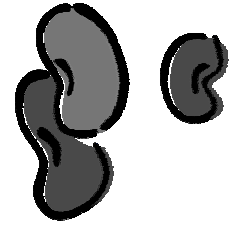


Name \_\_\_\_\_



## Bean Genes

**QUESTION:** What kind of genotypes and phenotypes will result from crosses of dominant red and recessive white flowers?

### BACKGROUND INFORMATION:

- ✓ A **gene** is a section of DNA that holds hereditary information. It is a code for traits & characteristics. Genes come in pairs.
- ✓ The two genes in a pair are called **alleles**.
- ✓ When the two alleles are the same, an organism is said to be **homozygous**.
- ✓ When the two alleles are different, an organism is said to be **heterozygous**.
- ✓ If an allele expresses a trait no matter what the other allele is, it is said to be **dominant**.
- ✓ If a trait can only be expressed when both alleles are the same, it is said to be **recessive**.
- ✓ If both genes are expressed to some degree, they are **co-dominant**. Co-dominant traits are a blend or combination of the two.

**PREDICTION:** I predict that

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### MATERIALS:

1 "mother" cup with 25 red beans and 25 white beans
1 "father" cup with 25 red beans and 25 white beans

### PROCEDURE:

1. Work with your partner.
2. The beans represent alleles for flower color. Red is dominant to white.
3. Without looking, take one bean from each cup. Record the type of alleles (Red = R, White =r) in the data chart.
4. Set the beans aside after you have record the data.
5. Continue until all beans have been taken from the cup.



**DATA:**

Trial	Allele Combination
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	

**DATA ANALYSIS:**

Totals for Each Combination of Alleles	
<b>RR</b>	
<b>Rr</b>	
<b>rr</b>	

How many genotypes did you get in this investigation? \_\_\_\_\_

How many phenotypes did you get in this investigation? \_\_\_\_\_

**QUESTIONS:**

1. What are the genotypes for this cross?
2. What is the genotypic ratio for this cross?
3. What are the phenotypes for this cross?
4. What is the phenotypic ratio for this particular cross?

**APPLICATION:**

Draw a Punnett Square to show a cross between two heterozygous flowers with incomplete or co-dominance:

What is the *probability* of the offspring being red?

White?

Pink?