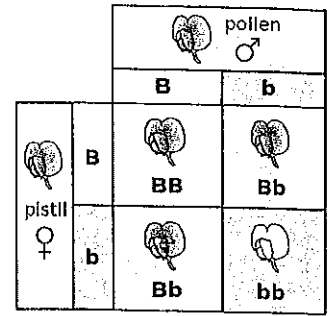


Name \_\_\_\_\_ Period \_\_\_\_\_

## Genetics Practice Problems



1. For each genotype, indicate whether it is heterozygous (HE) or homozygous (HO)

- |          |          |          |          |
|----------|----------|----------|----------|
| AA _____ | Ee _____ | li _____ | Mm _____ |
| Bb _____ | ff _____ | Jj _____ | nn _____ |
| Cc _____ | GG _____ | kk _____ | Oo _____ |
| Dd _____ | HH _____ | Ll _____ | Pp _____ |

2. For each of the genotypes below, determine the phenotype.

*Purple flowers are dominant to white flowers*

- PP \_\_\_\_\_  
 Pp \_\_\_\_\_  
 pp \_\_\_\_\_

*Brown eyes are dominant to blue eyes*

- BB \_\_\_\_\_  
 Bb \_\_\_\_\_  
 bb \_\_\_\_\_

*Round seeds are dominant to wrinkled*

- RR \_\_\_\_\_  
 Rr \_\_\_\_\_  
 rr \_\_\_\_\_

*Bobtails are recessive (long tails dominant)*

- TT \_\_\_\_\_  
 Tt \_\_\_\_\_  
 tt \_\_\_\_\_

3. For each phenotype, list the genotypes. (Remember to use the letter of the dominant trait)

*Straight hair is dominant to curly.*

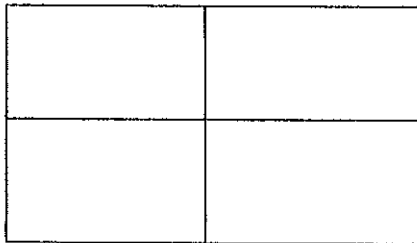
- \_\_\_\_\_ straight  
 \_\_\_\_\_ straight  
 \_\_\_\_\_ curly

*Pointed heads are dominant to round heads.*

- \_\_\_\_\_ pointed  
 \_\_\_\_\_ pointed  
 \_\_\_\_\_ round

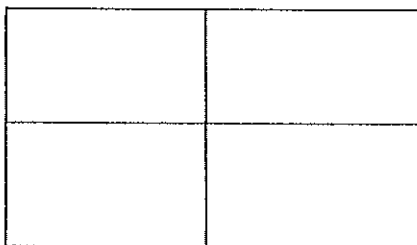
4. Set up the square for each of the crosses listed below. The trait being studied is round seeds (dominant) and wrinkled seeds (recessive)

Rr x rr



What percentage of the offspring will be round? \_\_\_\_\_

Rr x Rr

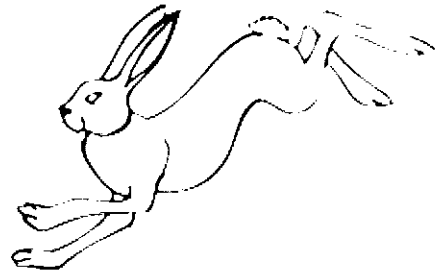


What percentage of the offspring will be round? \_\_\_\_\_

## Genetic Crosses that Involve 2 Traits

In rabbits, grey hair is dominant to white hair.  
Also in rabbits, black eyes are dominant to red eyes.

GG = gray hair      BB = black eyes  
Gg = gray hair      Bb = black eyes  
gg = white hair     bb = red eyes



1. What are the phenotypes (descriptions) of rabbits that have the following genotypes:

Ggbb \_\_\_\_\_      ggBB \_\_\_\_\_

ggbb \_\_\_\_\_      GgBb \_\_\_\_\_

2. A male rabbit with the genotype GGbb is crossed with a female rabbit with the genotype ggBb. The square is set up below. Fill it out and determine the phenotypes and proportions in the offspring.

	Gb	Gb	Gb	Gb
gB				
gB				
gb				
gb				

How many out of 16 have grey fur and black eyes? \_\_\_\_\_

How many out of 16 have grey fur and red eyes?  
\_\_\_\_\_

How many out of 16 have white fur and black eyes? \_\_\_\_\_

How many out of 16 have white fur and red eyes? \_\_\_\_\_

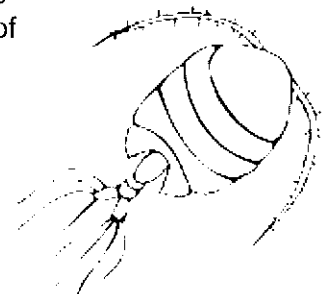
3. A male rabbit has the genotype GgBb. Determine the gametes produced by this rabbit (the sperm would have these combinations of alleles) *Hint there are 4 combinations.*

4. Use the gametes from #3 to set up a Punnett square on a separate sheet of paper. Put the male's gametes on the top and the female's gametes down the side. Assume the female has the same genotype. Then fill out the square and determine what kind of offspring would be produced from this cross **and in what proportion.**

5. An aquatic arthropod called a Cyclops has antennae that are either smooth or barbed. The allele for barbs is dominant. In the same organism, resistance to pesticides is a recessive trait. Make a "key" to show all the possible genotypes (and phenotypes) of this organism. Use the rabbit key (just prior to Question 1) as an example.

6. A Cyclops that is resistant to pesticides and has smooth antennae is crossed with one that is heterozygous for both traits. Show the genotypes of the parents.

\_\_\_\_\_ x \_\_\_\_\_



7. Set up a Punnett square for the cross **and show the phenotypic ratios.**