Name:_____

# Simple Genetics Practice Problems

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

| | | | |
|---|---|---|---|
| AA ____<br>Bb ____<br>Cc ____<br>Dd ____ | Ee ____<br>ff ____<br>GG ____<br>HH ____ | Ii ____<br>Jj ____<br>kk ____<br>Ll ____ | Mm ____<br>nn ____<br>OO ____<br>Pp ____ |

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

| | |
|---|---|
| *Purple flowers are dominant to white flowers*<br>PP _____<br>Pp _____<br>pp _____ | *Brown eyes are dominant to blue eyes*<br>BB _____<br>Bb _____<br>bb _____ |
| *Round seeds are dominant to wrinkled*<br>RR _____<br>Rr _____<br>rr _____ | *Bobtails are recessive (long tails dominant)*<br>TT _____<br>Tt _____<br>tt _____ |

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

| | |
|---|---|
| *Straight hair is dominant to curly.*<br>_____ straight<br>_____ straight<br>_____ curly | *Pointed heads are dominant to round heads.*<br>_____ pointed<br>_____ pointed<br>_____ round |

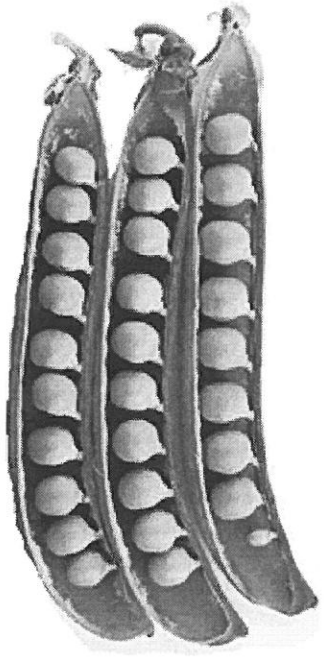
4. Set up the square for each of the crosses listed below. The trait being studied is round seeds (dominant) and wrinkled seeds (recessive)

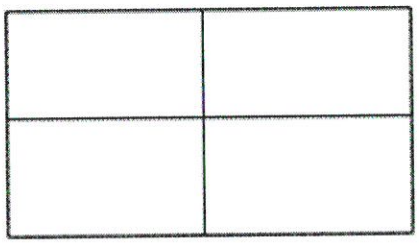
**Rr x rr**

| | |
|---|---|
| | |
| | |

What percentage of the offspring will be round? _____

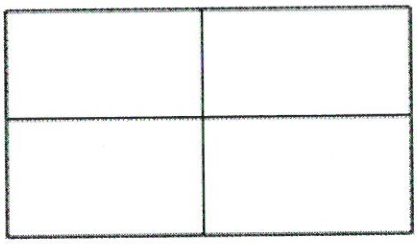
**Rr x R r**





What percentage of the offspring will be round? _____

## RR x Rr



What percentage of the offspring will be round? _____

**Practice with Crosses. Show all work!**

5. A TT (tall) plant is crossed with a tt (short plant).
What percentage of the offspring will be tall? _____

6. A Tt plant is crossed with a Tt plant.
What percentage of the offspring will be short? _____

7. A heterozygous round seeded plant (Rr) is crossed with a homozygous round seeded plant (RR).
What percentage of the offspring will be homozygous (RR)? _____

8. A homozygous round seeded plant is crossed with a homozygous wrinkled seeded plant. What are the genotypes of the parents? _____ x _____

What percentage of the offspring will also be homozygous? _____

9. In pea plants purple flowers are dominant to white flowers.
If two white flowered plants are cross, what percentage of their offspring will be white flowered? _____

10. A white flowered plant is crossed with a plant that is heterozygous for the trait. What percentage of the offspring will have purple flowers? _____

11. Two plants, both heterozygous for the gene that controls flower color are crossed. What percentage of their offspring will have purple flowers? _____
What percentage will have white flowers? _____

12. In guinea pigs, the allele for short hair is dominant.
What genotype would a heterozygous short haired guinea pig have? _____
What genotype would a purebreeding short haired guinea pig have? _____
What genotype would a long haired guinea pig have? _____

13. Show the cross for a pure breeding short haired guinea pig and a long haired guinea pig.
What percentage of the offspring will have short hair? _____

14. Show the cross for two heterozygous guinea pigs.
What percentage of the offspring will have short hair? _____
What percentage of the offspring will have long hair? _____

15. Two short haired guinea pigs are mated several times. Out of 100 offspring, 25 of them have long hair. What are the probable genotypes of the parents? _____ x _____ Show the cross to prove it!