Name _____

Genetics Practice Problems

1. For each genotype below, indicate whether it is heterozygous **(He)** or homozygous **(Ho)**

AA _____	Ee _____	Ii _____	Mm _____
Bb _____	ff _____	Jj _____	nn _____
Cc _____	GG _____	kk ____	OO _____
Dd _____	HH _____	Ll ____	Pp _____

2. For each of the **genotypes** below determine what **phenotypes** would be possible.

Purple flowers are dominant to white

PP _____
Pp _____
pp _____

Brown eyes are dominant to blue

BB _____
Bb _____
bb _____

Round seeds are dominant to wrinkled

RR _____
Rr _____
rr _____

Bobtails are recessive (to long tails)

TT _____
Tt _____
tt _____

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

Straight hair is dominant to curly

_____ straight
_____ straight
_____ curly

Tail spikes are dominant to plain tails

____ spikes
____ spikes
____ plain

4. Set up the Punnet squares for each of the crosses listed below. **Round seeds are dominant to wrinkled**.

Rr x rr

What percentage of the offspring will be round? _____

Rr x Rr

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? _____ What percentage is tall? _____

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? _____
   What is the genotype of all of the offspring? _____

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? _____
    What is the genotype of the offspring? _____

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!**