Name:_____

Simple Genetics Practice Problems

1. For each genotype, 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 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 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!