

Genetics Practice Problems

1. For each genotype below, indicate whether it is heterozygous (**He**) or homozygous (**Ho**). If the genotype is homozygous, indicate whether it is dominant (**D**) or recessive (**r**).

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 flowers.

PP _____

Pp _____

pp _____

Round seeds are dominant to wrinkled seeds.

RR _____

Rr _____

rr _____

Brown eyes are dominant to blue eyes

BB _____

Bb _____

bb _____

Bobtails in cats are recessive.

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

Pointed heads are dominant to round heads.

_____ pointed

_____ pointed

_____ round

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

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?

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 pure-breeding 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? **Show the cross to support your answer.**