

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Life Science

Period: \_\_\_\_\_

Genetics

---

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 flowers.*

PP \_\_\_\_\_

Pp \_\_\_\_\_

pp \_\_\_\_\_

*Brown eyes are dominant to blue eyes*

BB \_\_\_\_\_

Bb \_\_\_\_\_

bb \_\_\_\_\_

*Round seeds are dominant to wrinkled seeds.*

RR \_\_\_\_\_

Rr \_\_\_\_\_

rr \_\_\_\_\_

*Bobtails in cats 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

*Pointed heads are dominant to round heads.*

\_\_\_\_\_ pointed

\_\_\_\_\_ pointed

\_\_\_\_\_ round

4. Set up the Punnet 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 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!**