

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 _____

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 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!