

Genetics Practice Problems

1. For each genotype, indicate whether it is heterozygous (A) or homozygous (B).

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

2. For each of the genotypes below, determine the phenotype.

A) Purple flowers are dominant to white flowers

C) Round seeds are dominant to wrinkled

QQ _____

RR _____

Qq _____

Rr _____

qq _____

rr _____

B) Brown eyes are dominant to blue eyes

D) Bobtails are recessive (long tails dominant)

BB _____

TT _____

Bb _____

Tt _____

bb _____

tt _____

3. For each phenotype, list the genotypes. (Use the letter of the dominant trait)

Straight hair is dominant to curly.

Pointed heads are dominant to round heads.

_____ straight

_____ pointed

_____ straight

_____ pointed

_____ curly

_____ round

4. Set up the Punnett square for each of the crosses listed below. The trait being studied is round seeds (dominant) and wrinkled seeds (recessive).

A) Rr x rr

What percentage of the offspring will be round?

_____%

B) Rr x Rr

What percentage of the offspring will be round?

_____%

C) RR x Rr

What percentage of the offspring will be round?

_____%

5. Practice with crosses and Punnett squares. Show all work!

A) A TT (tall) plant is crossed with a tt (short plant).
What percentage of the offspring will be tall?

B) A Tt plant is crossed with a Tt plant.
What percentage of the offspring will be short?

C) A heterozygous round seeded plant (Rr) is crossed with a homozygous round seeded plant (RR). What percentage of the offspring will be homozygous (RR)?

D) A homozygous round seeded plant is crossed with a homozygous wrinkled seeded plant. What are the genotypes of the parents? What percentage of the offspring will also be homozygous?

E) In pea plants yellow flowers are dominant to white flowers. If two white flowered plants are crossed, what percentage of their offspring will be white flowered?

F) A white flowered plant is crossed with a plant that is heterozygous for the trait. What percentage of the offspring will have yellow flowers?

G) Two plants, both heterozygous for the gene that controls flower color are crossed. What percentage of their offspring will have yellow flowers? What percentage will have white flowers?

H) In guinea pigs, the allele for long hair is dominant.
What genotype would a heterozygous longhaired guinea pig have?
What genotype would a pure breeding longhaired guinea pig have?
What genotype would a shorthaired guinea pig have?

I) Show the cross for a pure breeding longhaired guinea pig and a shorthaired guinea pig. What percentage of the offspring will have long hair?

J) Show the cross for two heterozygous guinea pigs. What percentage of the offspring will have long hair? What percentage of the offspring will have short hair?