

Genotype and Phenotype Practice

Name : _____

Introduction: Recall that each organism inherits one **allele** for a gene from each parent. The combination of genes the organism has is called **genotype**. If the organism inherits two of the same gene, the genotype is **homozygous**. If it inherits two different genes, it is **heterozygous**. According to Mendel, one of these will be **dominant** and will be expressed if it is present. It can mask the **recessive** trait. An organism can only express a recessive trait if it possesses two recessive traits. When recording genotype, two letters are used, a capital letter (D) for the dominant trait and a lower case (d) letter for a recessive. By knowing the genotype of an organism, you can identify its **phenotype**, how it looks.

Homozygous dominant: XX Homozygous recessive: xx heterozygous: Xx

Task: Use the available information to identify the genotype and phenotype in each example.

1. For each genotype below, indicate whether it is heterozygous (**He**) or homozygous (**Ho**)

AA _____	Ee _____	li _____	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.

- a. Purple flowers are dominant to white flowers.

- PP _____
- Pp _____
- pp _____

- c. Brown eyes are dominant to blue eyes

- BB _____
- Bb _____
- bb _____

- b. Round seeds are dominant to wrinkled seeds.

- RR _____
- Rr _____
- rr _____

- d. Bobtails in cats are recessive.

- TT _____
- Tt _____
- tt _____

3. For each phenotype below, list the genotypes

a. Straight hair is dominant to curly.

- ____ straight
- ____ straight
- ____ curly

b. Pointed heads are dominant to round heads.

- ____ pointed
- ____ pointed
- ____ round

Table 1: Mendel's Traits and Symbols for Pea Plants

Traits	Dominant Allele	Symbol	Recessive Allele	Symbol
Seed Shape	Round	R	Wrinkled	r
Seed Color	Yellow	Y	Green	y
Seed Coat Color	Colored	C	White	c
Pod Shape	Smooth	S	Constricted	s
Pod Color	Green	G	Yellow	g
Stem Height	Tall	T	Short	t
Flower Position	Axial	A	Terminal	a

Phenotype

Genotype

1. Heterozygous for height

2. Homozygous dominant for seed shape

3. Heterozygous colored seed coat

4. Homozygous green pod

5. Homozygous short

6. Homozygous tall

7. Homozygous axial

8. Homozygous terminal

9. Heterozygous flower position

10. Heterozygous seed color

11. Homozygous smooth pod

12. Homozygous constricted pod

13. Homozygous recessive for seed coat color

14. Heterozygous for pod color

15. Homozygous round seed
