

Fun with Punnett's (Mono / Complete)

Inheritance (Unit 4) – Biology

Name: _____

Block: _____ Date: _____

This worksheet will help you practice Monohybrid (one-trait) Crosses that follow the pattern of Complete Dominance.

Important Terms

Basics

- Allele:** A version of a gene. For each gene, organisms get one allele from bio mom and one from bio dad. For example, if the gene is hair color, you might have gotten the allele for brown hair from bio mom and the allele for red hair from bio dad.
- Dominant:** This allele is always expressed in the phenotype if present; written with a capital letter (example: G).
- Recessive:** This allele is only expressed in the phenotype if there's no dominant allele present; written with a lower-case letter (example: g).
- Genotype:** The two alleles an organism has for a trait. Written as a two-letter code (example: GG or Gg or gg).
- Phenotype:** The organism's physical expression of their genotype. For example, if you have the genotype Bb (one allele for brown hair and one for red), you'd have the brown hair phenotype (brown hair is dominant).

Genotype Descriptions

- Heterozygous:** This genotype has one dominant allele and one recessive allele (example: Gg).
- Homozygous dominant:** This genotype has two dominant alleles (example: GG)
- Homozygous recessive:** This genotype has two recessive alleles (example: gg)

Below is an example that's been completed for you. Refer back to it if you have questions as you work!

Plant with Green Leaves vs Purple Leaves

Parent 1

Genotype: Gg

Genotype description: Heterozygous

Phenotype: Green leaves

Parent 2

Genotype: gg

Genotype description: Homozygous recessive

Phenotype: Purple leaves

	G	g
g	Gg	Gg
g	gg	gg

Phenotypic ratio: 2:2

Genotypic ratio: 0:2:2

Offspring		
Genotypes	Genotype descriptions	Phenotypes
<u>Gg</u>	<u>heterozygous</u>	<u>green leaves</u>
<u>gg</u>	<u>homozygous recessive</u>	<u>purple leaves</u>

This row has been left blank because there are only two genotypes that the offspring of this cross could have.

Sometimes you'll need to use all three rows. It's possible you could only need to use one.

Now you try!

For each of the Punnett Squares below, we're going to give you some but not all of the information. You'll need to use the information we give you to fill in the rest.

Key reminder: If an organism has the recessive phenotype, they must have the homozygous recessive genotype! But if they have the dominant phenotype, they could have either the homozygous dominant genotype OR the heterozygous genotype.

1. Plant with Green Leaves vs Purple Leaves

Parent 1

Genotype: Gg

Genotype description: Heterozygous

Phenotype: Green leaves

Parent 2

Genotype: GG

Genotype description: Homozygous dominant

Phenotype: Green leaves

Offspring

Genotypes

Genotype descriptions

Phenotypes

Phenotypic ratio: ___ : ___

Genotypic ratio: ___ : ___ : ___

2. Plant with Green Leaves vs Purple Leaves

Parent 1

Genotype: GG

Genotype description: _____

Phenotype: _____

Parent 2

Genotype: gg

Genotype description: _____

Phenotype: _____

Offspring

Genotypes

Genotype descriptions

Phenotypes

Phenotypic ratio: ___ : ___

Genotypic ratio: ___ : ___ : ___

3. Plant with Green Leaves vs Purple Leaves

Parent 1

Genotype: _____

Genotype description: Homozygous dominant

Phenotype: _____

Parent 2

Genotype: _____

Genotype description: Heterozygous

Phenotype: _____

Offspring

Genotypes

Genotype descriptions

Phenotypes

Phenotypic ratio: ___ : ___

Genotypic ratio: ___ : ___ : ___

4. Plant with Green Leaves vs Purple Leaves

Attention!!! We gave you an offspring's genotype on this one. You'll need that info to figure out the rest of it :)

Parent 1

Genotype: _____

Genotype description: Heterozygous

Phenotype: _____

Parent 2

Genotype: _____

Genotype description: Homozygous _____

Phenotype: _____

Phenotypic ratio: ___ : ___

Genotypic ratio: ___ : ___ : ___

Offspring

Genotypes

Genotype descriptions

Phenotypes

gg _____

5. Plant with Green Leaves vs Purple Leaves

Attention!!! We gave you an offspring's genotype on this one. You'll need that info to figure out the rest of it :)

Parent 1

Genotype: _____

Genotype description: Heterozygous

Phenotype: _____

Parent 2

Genotype: _____

Genotype description: Homozygous _____

Phenotype: _____

Offspring

Genotypes

Genotype descriptions

Phenotypes

GG _____

Phenotypic ratio: ___ : ___

Genotypic ratio: ___ : ___ : ___

6. Plant with Green Leaves vs Purple Leaves

Attention!!! We gave you an offspring's **phenotype** on this one. You'll need that info to figure out the rest of it :)

Parent 1

Genotype: _____

Genotype description: _____

Phenotype: Green leaves

Parent 2

Genotype: _____

Genotype description: _____

Phenotype: Purple leaves

Offspring

Genotypes

Genotype descriptions

Phenotypes

purple leaves

Phenotypic ratio: ___ : ___

Genotypic ratio: ___ : ___ : ___