8th Grade

Genetics Families – Inheritance Patterns

Chapter 12

Most traits do not follow the simple pattern of 1 gene & 2 alleles. Instead, they follow a ______ of ______.

Below are the more complex patterns that you will be incorporating into your family. Define each pattern below and give an example to describe it.

<u>Pattern of</u> Inheritance	<u>Definition</u>	<u>Example</u>
1) Incomplete Dominance		
2) Codominance		
3) Multiple Alleles		
4) Polygenic Inheritance		

Patterns of Inheritance – Skin Color

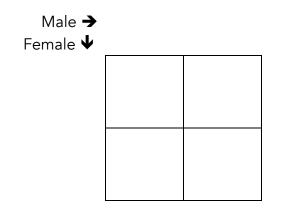
Incomplete Dominance

Directions: Choose 2 colors that can be mixed together for your P Generation Parents. For example, if you mixed black and white, you would get grey. Color in the boxes for the phenotype. Use the Alleles C & F.

Genotypes & Phenotypes for the P Generation					
	Male Parent Female Parent				
Genotype					
Phenotype					

<u>P Generation Punnett Square</u> Incomplete Dominance

Skin Color



When a trait is expressed by **incomplete dominance**, the offspring of *homozygous* parents with different phenotypes will be ______ with a blend of both phenotypes.

All of the offspring in the F_1 Generation will be _____ and

F₁ Generation – Skin Color

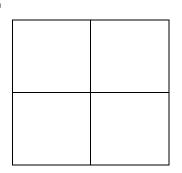
Incomplete Dominance

Genotypes & Phenotypes for the F₁ Generation					
	Male Female				
Genotype					
Phenotype					

F₁ Generation Punnett Square Incomplete Dominance

Skin Color

Male ➔ Female ↓



Trait	Genotype	Heterozygous or Homozygous	Phenotype	Probability
Skin Color				

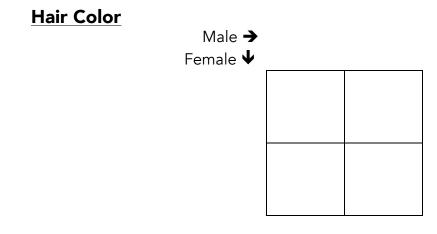
Patterns of Inheritance – Hair Color

Codominance

Directions: Choose 2 colors for the hair color of your P Generation. Color in the boxes for the phenotype. Alleles are written using a superscript – S^{G} and S^{K} .

Genotypes & Phenotypes for the P Generation					
	Male Parent Female Parent				
Genotype					
Phenotype					

<u>P Generation Punnett Square</u> Codominance



When a trait is expressed by **codominance**, the offspring of *homozygous* parents with different phenotypes will be ______ with a combination of both phenotypes being expressed

All of the offspring	g in the F1 Generation will be	and have hair
that is both	and	···

F₁ Generation – Hair Color

Incomplete Dominance

Genotypes & Phenotypes for the F₁ Generation					
	Male Female				
Genotype					
Phenotype					

F₁ Generation Punnett Square Codominance

Hair Color

Male ➔ Female ়

Trait	Genotype	Heterozygous or Homozygous	Phenotype	Probability
Hair Color				

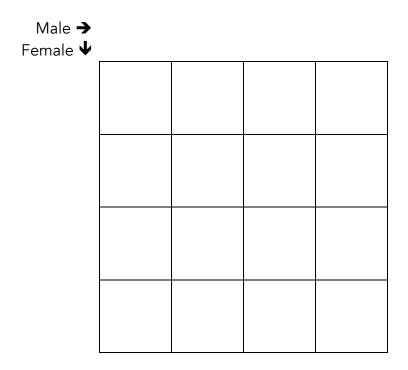
Patterns of Inheritance – Eye Color

Polygenic Inheritance

Directions: Each parent has 2 genes that control their eye color. Use the allele A for one gene and D for the other. Remember: each gene has 2 alleles

Genotypes & Phenotypes for the P Generation					
	Male Parent Female Parent				
Genotype					
Phenotype					

<u>P Generation Punnett Square</u> Polygenic Inheritance



Patterns of Inheritance – Eye Color

Polygenic Inheritance

<u>Genotypes & Phenotypes for the F₁ Generation</u>					
	Male <u>Female</u>				
Genotype					
Phenotype					

<u>F1 Generation Punnett Square</u> Polygenic Inheritance				
Male → Female ↓				

Patterns of Inheritance – Eye Color

Polygenic Inheritance

	Genotype	Number of Dominant Alleles	Phenotype	Probability
1)				
2)				
3)				
4)				
5)				
6)				
7)				
8)				
9)				
10)				

# of Dominant Alleles	Phenotype	Probability	Probability	