

Name: _____

Period: _____

Monster Babies!



Heredity is the passing on of traits, or characteristics, from parent to offspring. The units of heredity are called *genes*. Different versions of the same gene are called *alleles*. Genes are found on the *chromosomes* in a cell. *The combinations of genes for each trait occur by chance.*

When one allele in a pair is stronger than the other allele, the trait of the weaker allele is masked, or hidden. The stronger allele is the *dominant allele*, and the allele that is masked is the *recessive allele*. *Dominant alleles are written as capital letters and recessive alleles are written as lowercase letters.* If both alleles are different, the trait is said to be *heterozygous*, or *hybrid*. If both alleles are the same, the trait is said to be *homozygous*, or *purebred*. Sometimes alleles are neither dominant nor recessive. The result of such a situation is a *blending* of traits.

The genetic makeup of an individual is known as its *genotype*. The observable physical characteristics of an individual that are the result of the genotype are known as its *phenotype*.

In this investigation, you will observe how the results of different gene combinations produce certain traits.

Procedure:

1. Flip a coin twice to determine the **genotype** for each trait and record it in the data table.
Heads = allele 1, Tails = allele 2 (*Example: if you flipped heads twice, your monster will have two copies of allele 1 for his genotype.*)
2. Determine the **phenotype** resulting from the allele pair for each trait.
3. Repeat steps 1-2 for each trait and complete the female monster's Table 1.

Table 1: Genotypes & Phenotypes for Female Monster

Trait	Allele 1	Allele 2	Genotype	Phenotype
Eye	Two small eyes (E)	One large eye (e)		
Eye Color	Red (R)	White (r)		
Skin Color	Green (G)	Blue (g)		
Tail Shape	Curly (C)	Straight (c)		
Tail Color	Purple (P)	Orange (p)		
Tail	Have tail (T)	No tail (t)		
Teeth	Sharp (S)	Round (s)		
Feet	Four toes (F)	Three toes (f)		
Horn Color	Purple (W)	White (w)		
Ear shape	Pointy (Y)	Round (y)		
Ears	Four ears (N)	Two ears (n)		
Claws	Long (L)	Short (l)		

4. The female monster (described in Table 1) is married to a male monster (see Table 2 below) and they plan to have baby monsters. They are interested in finding out the probabilities of which traits their offspring will have. Fill in the missing genetic information in the table for the male.

Table 2: Genotypes & Phenotypes for Male Monster

Trait	Genotype	Phenotype
Eyes	ee	
Eye Color		White
Skin Color		Green
Tail Shape		Straight
Tail Color	Pp	
Tail		No tail
Teeth		Round
Feet	Ff	
Horn Color	ww	
Ear shape	yy	
Ears		Have 2 ears
Claws		Short

5. Complete the Punnett Squares on the next few pages to predict what traits would result from a cross between two monsters for each trait, and answer the following questions:
- Eyes- what percentage of offspring will have only one eye? _____
 - Eye color- what percentage of offspring will have red eyes? _____
 - Skin color- what percentage of offspring will have green skin? _____
 - Tail- what percentage of offspring will have a tail? _____
 - Feet- what percentage of offspring will have three toes? _____
 - Horn color- what percentage of offspring will have purple horns? _____
 - Ears- what percentage of offspring will have 2 ears? _____
 - Claws- what percentage of offspring will have long claws? _____

Eyes

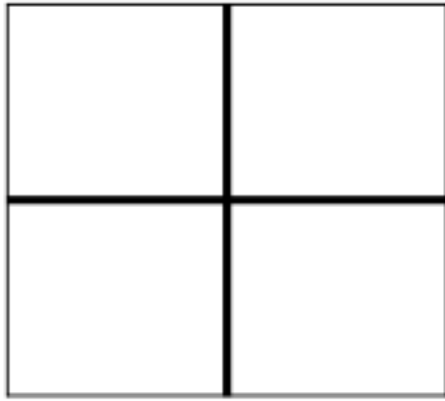
Eye Color

Skin Color

Tail Shape

Tail Color

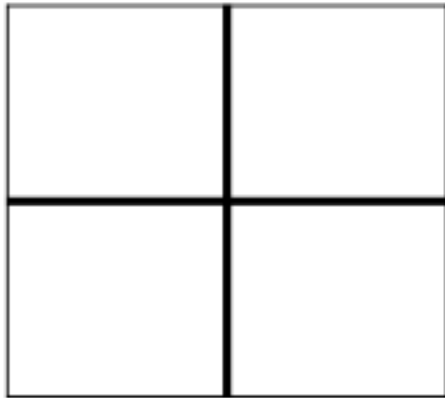
Tail



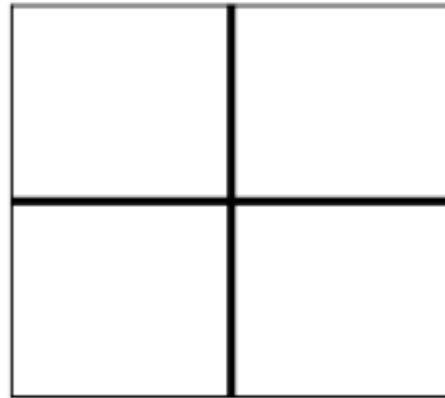
Teeth



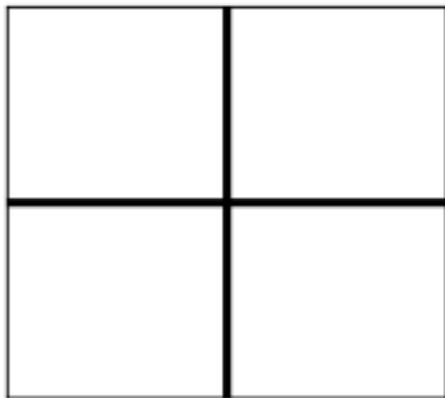
Feet



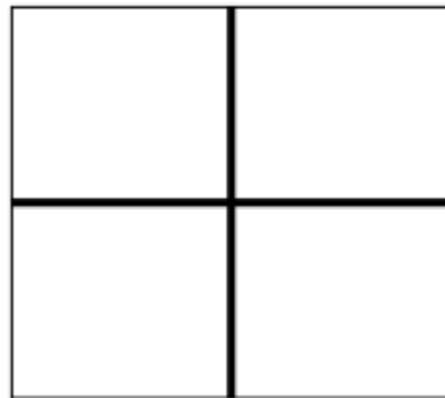
Horn Color



Ear Shape



Ears



Claws

1. Write out three possible parental crosses that could produce a child with a heterozygous genotype for tail shape (Aa).

_____ x _____ = Aa

_____ x _____ = Aa

_____ x _____ = Aa

