Goat Mendelian Genetics Worksheet

**Directions**: Complete this lab in your assigned groups of 2. Use two pennies (*or Rock, Paper, Scissors*) to determine the genotype and phenotype of your goat. Each gene mentioned in this lab is a simply inherited trait, meaning every goat has only two alleles for that trait. For each trait, you will flip two coins. Each coin represents an allele. Heads on each coin represents an allele for the dominant trait and tails represents the recessive allele. For example, if you got heads on one coin and tails on the other, your goat would be heterozygous for that trait. If you got tails on both coin-flips, the goat would have the recessive phenotype for that trait. Perform two coin flips for each trait and record the genotype of your goat for each trait. Then record the phenotype created by the genotype. Finally, draw your goat created by its genotype and phenotype and answer the questions in back.

**Traits:**

* Horns: Dominant: no horns (polled); Recessive: horns
* Wattle (lobe found on the neck): Dominant: wattle; Recessive: no wattle
* Hair: Dominant: long hair; Recessive: short hair
* Ears: Dominant: long ears; Recessive: short ears
* Behavior: Dominant: Nervous; Recessive: Docile (tame)
* Markings: Dominant: Alpine; Recessive: Solid colored
1. **Horns**: Coin 1: Heads Tails Coin 2: Heads Tails

Genotype: HH Hh hh Phenotype:
2. **Wattle**: Coin 1: Heads Tails Coin 2: Heads Tails

Genotype: WW Ww ww Phenotype:
3. **Hair**: Coin 1: Heads Tails Coin 2: Heads Tails

Genotype: LL Ll ll Phenotype:
4. **Ears**: Coin 1: Heads Tails Coin 2: Heads Tails

Genotype: EE Ee ee Phenotype:
5. **Behavior**: Coin 1: Heads Tails Coin 2: Heads Tails

Genotype: BB Bb bb Phenotype:
6. **Markings**: Coin 1: Heads Tails Coin 2: Heads Tails

Genotype: MM Mm mm Phenotype:



**No horns (polled) is
dominant to horns**



**Long ears are dominant to short ears**

**Wattle (on neck) is
dominant to no wattle**

**Long hair is
dominant to short hair**

**Alpine markings are dominant to solid color**

**Nervous behavior is dominant to docile behavior**

1. Describe your goat before based on the six traits you flipped for.

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2. Draw your goat below.
3. Next, identify three traits that you think are most valuable in your goats and list them below:

Trait\_

Trait \_

Trait \_
*NOTE: these can be any of the six traits; for example, if your goats are docile, this might help them to sell as pets. If your goats have long hair, they might sell well for making fabrics. Pick three traits that make your goats the most valuable for production traits or sale value.*
4. After each trait above, state whether it is dominant or recessive.
5. Next, choose another person’s goat to mate with. List the genotypes and phenotypes for your goat’s mate below for all six traits:

Phenotype\_ Genotype

Phenotype\_ Genotype

Phenotype\_ Genotype

Phenotype\_ Genotype

Phenotype\_ Genotype

Phenotype\_ Genotype
6. In the space below, do a Punnett Square for the three traits you chose above. Use the genotype of your goat and the genotype of the mate of your goat (a goat from another group).
7. In the space below, describe what the offspring of your goat pair will most likely look like.

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