**Genetics Practice Worksheet**

**Vocabulary**

1. Below each of the following terms are choices. Circle the choices that are appropriate for each term.

Dominant gene: D e k L N o R S

Recessive gene: M n d F G I k P

Homozygous dominant: AA Gg KK ll pp Rr TT Qq

Homozygous recessive: ee Ff HH Oo qq Uu ww Nn

Genotypes that show dominant gene: AA Dd EE ff Jj RR

Genotypes that show recessive gene: Ss gg BB Zz pp Vv

1. Fill in the Blanks using the following terms: dominant, genes, genetics, heterozygous, homozygous, recessive, chromosomes, Punnett square.
   1. Chromosomes have parts that determine traits. Those are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   2. A person having two genes which are alike is said to be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   3. A gene that “hides” another gene is said to be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   4. A gene that doesn’t always show up (even when it is present) is said to be \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   5. A person with one dominant copy of a gene and one recessive copy of that same gene is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
   6. A table which shows which genes can combine when an egg and sperm join is a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

**Punnett Square Practice Problems:** Mammalian genetics are complicated, so these examples are simplified. However, they are all based on real genetic probabilities!

1. In dogs, there is a mutation for short legs. This mutation (seen most commonly in corgis) **is dominant**. If a short-legged, **homozygous dominant** corgi female has puppies with a long-legged, **heterozygous** male, what is the **phenotype ratio and percentage of the puppies**?

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**Phenotype Ratio: \_\_\_\_\_\_\_\_:\_\_\_\_\_\_\_\_\_\_:\_\_\_\_\_\_\_\_\_**

**Phenotype Percent:**

1. In cats, being hairless is recessive to having fur. What is the **genotype ratio and percentages** of a cross of **two heterozygous, normal-furred cats?**

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**Genotype Ratio: \_\_\_\_\_\_\_\_:\_\_\_\_\_\_\_\_\_\_:\_\_\_\_\_\_\_\_\_**

**Genotype Percent:**

1. In Labrador Retrievers, dark colors of fur (black of chocolate) is dominant to yellow fur. If a female black lab has puppies with a male yellow lab, **what percentage of their puppies will be yellow labs?**

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1. In Animal Crossing New Horizons, red tulip flowers are dominant to black tulip flowers. If I cross a **red, homozygous flower** with a **red, heterozygous flower,** what is the **ratio of red to black flowers that will sprout**?

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1. Use this information to answer the following questions: In humans, red hair is **recessive** to all other colors of hair. Two **brown haired parents (genotype unknown)** have a **red haired (homozygous recessive) child**.
   1. What are the parent’s genotypes? How do you know?

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* 1. **What percent of these parent’s offspring should have red hair?** In other words, what percentage of the offspring will be **homozygous recessive?**