

Dragon Genetics

Name: _____

Period: _____

Purpose: To use knowledge of genetics to determine offspring genotype and phenotype, and calculate the probability of offspring genotype and phenotype given parental genotypes.

Procedure:

1. Find the number on the outside of the dragon, and write it here: _____.
2. Find the classmate that has a dragon with the same number.
3. Fill in the table with the genotypes on each dragon:

Trait	Maternal Genotype	Paternal Genotype
Neck Length		
Eye Color		
Horn		
Spikes		
Tail Length		
Body Color		
Wing Color		
Toe Number		
Belly Color		
Spike Color		
Freckles		
Fire Breathing		
Ear Frills		

4. Remove all of the chromosomes from both gametes. *****DO NOT LOSE, TEAR, OR CRUMPLE THEM*****
5. Pair the homologous chromosomes next to each other (line chromosomes up by number C # 1-4).
6. Fill in the "Offspring Traits" table based on the alleles on the chromosomes:

Trait	Offspring GENOTYPE	Offspring PHENOTYPE
Neck Length		
Eye Color		
Horn		
Spikes		
Tail Length		
Body Color		
Wing Color		
Toe Number		
Belly Color		
Spike Color		
Freckles		
Fire Breathing		
Ear Frills (only present in MALES)		

Analysis:

**** BE SURE TO PUT ALL CHROMOSOMES INTO THE CORRECT GAMETE (pink in egg, blue in sperm) ****

****AND TO PUT THE GAMETES BACK INTO THE CORRECT DRAGON (sperm in male, egg in female)****

1. What was the probability that the baby dragon would have the eye color that it does?
2. What was the probability that the baby dragon would have **BOTH** the traits it has for a horn and ear frills?
3. What was the probability that the baby dragon would have **BOTH** the tail length and spike color that it does?
4. What was the probability that the baby dragon would have **BOTH** the number of toes and neck length that it does?
5. What was the probability that the baby dragon would have the body color it does, as well as the traits that it has for freckles and ear frills **ALL TOGETHER?**

Poster:

1. Genotypes

- a. Title the poster "Dragon Genetics".
- b. Under the title, write the dragon family number (the number on the dragons and gametes).
- c. On the very left hand side of the poster, make a table that shows the maternal genotype.
- d. On the very right hand side of the poster, make a table that shows the paternal genotype.

2. Baby Dragon Diagram

- a. Collect the appropriate dragon parts from the front desk. **MAKE SURE THE PARTS MATCH THE PHENOTYPE OF YOUR BABY DRAGON.**
- b. Color the parts according to the phenotype of the baby dragon.
- c. Glue or tape the dragon parts onto the poster in the correct arrangement in the middle of the poster.

3. Probabilities

- a. Next to each trait, write the genotype of the baby dragon.
- b. Under the genotype, write the probability of that genotype having occurred in the offspring based on the parent genotypes.