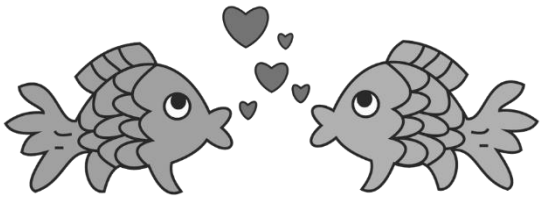
FRANKENFISH LAB

Probability & Independent Assortment

Name: _____ Date: _____ Block: _____

Finding Love Unda-da Sea:

You and your partner will pretend to be two fish who fell madly in love. In this lab, you will be simulating ***probability*** and ***Indepependent Assortment*** by contributing your genes to create a **FRANKENFISH BABY**! You will flip a pair of coins that will determine which traits your fish baby receives from each parent.



For each of the 8 trait options you will have to flip two coins to determine the **genotype** and **phenotype** of your fish.

Defining the Terms:

1. Genotype: _____
2. Phenotype: _____
3. Homozygous dominant: _____
4. Homozygous recessive: _____
5. Heterozygous: _____

Materials Needed:

- Two coins
- White paper
- Colored pencils or markers
- Copy of the 8 trait genotype/phenotype options

Procedures:

1. To determine what your fish will look like, you and your partner will both flip a coin for <u>each</u> of the 8 possible fish traits.

   (Heads=H, Tails=T)

   H=the dominant trait

   T= recessive trait

2. Go down the list of fish traits beginning with **body shape** and flip. You will need to write which genotype/phenotype your fish receives for each trait, for example: **(BB, Bb, or bb)** in the charts provided.
   - HH= trait is homozygous dominant
   - HT= trait is heterozygous
   - TT= trait is homozygous recessive
3. Once you know all of your baby fish's traits, put them together into a portrait of your **Frankenfish**! Be sure to include the full genotype for your fish.
4. Next, pair up with another group. Your fish will represent the next generation Frankenfish!

5. Using the genotypes of both groups' Frankenfish, create **Punnett Squares** and cross each one of the 8 traits to determine what your offspring (grand baby Frankenfish) might look like. Determine the ratios for each outcome.

Your Frankenfish's Genotype

Body Shape:_____ Tail Fin Shape:_____
Dorsal Fin Shape: _____ Pectoral Fin Shape:_____
Eye Shape: _____ Mouth Shape: _____
Scales Shape: _____ Scales Color: _____

Frankenfish Baby Portrait Here:

The Next Generation:

1. Body Shape
Your genotype: _____
Their genotype: _____

Phenotypic Ratio: _____
Genotypic Ratio: _____

2. Tail Fin Shape
Your genotype: _____
Their genotype: _____

Phenotypic Ratio: _____
Genotypic Ratio: _____

3. Doral Fin Shape
Your genotype: _____
Their genotype: _____

Phenotypic Ratio: _____
Genotypic Ratio: _____

4. Pectoral Fin Shape

Your genotype: _____

Their genotype: _____

Phenotypic Ratio: _____

Genotypic Ratio: _____

5. Eye Shape

Your genotype: _____

Their genotype: _____

Phenotypic Ratio: _____

Genotypic Ratio: _____

6. Mouth Shape

Your genotype: _____

Their genotype: _____

Phenotypic Ratio: _____

Genotypic Ratio: _____

7. Scales Shape

Your genotype: _____

Their genotype: _____

Phenotypic Ratio: _____

Genotypic Ratio: _____

8. Scales Color

Your genotype: _____

Their genotype: _____

Phenotypic Ratio: _____

Genotypic Ratio: _____

Grandbaby Frankenfish Here:

Post-Lab Questions: ANSWER IN COMPLETE SENTENCES, you may need the textbook!

1. In your original Frankenfish: for each trait, you were able to contribute either a **dominant allele (H)** or a **recessive allele (T)**. What does this indicate about your genotype? *Think about probability and random assortment.*

2. Each toss of your coin was an independent event-past tosses did not affect future outcomes (pg. 179), what is **segregation?**

3. What happens to alleles during segregation?

4. **Second generation Frankenfish:** You made Punnett Squares to determine what potential offspring of two fish might look like. How are the principles of probability used to predict the outcome of genetic crosses (pg. 187)?