Poker Chip Answer Sheet

Objective: Describe how the letters on Punnett Squares are determined, as well as the possible gametes that a parent organism will produce.

Background: The laws of probability:

1. The result of one event DOES NOT affect the probability of a later occurrence of the same event.
2. The chance of two independent events happening at the SAME TIME is equal to the product of the probability of those two events.

Pre-Lab:

1. What are male gametes called?

2. What are female gametes called?

3. Are gametes diploid or haploid?

Part I Become familiar with the "organism":   ANSWERS

1. What does each chip in the female beaker represent?

2. What does each chip in the male beaker represent?

3. What is the chance of drawing a **C** from either container?

4. What is the chance of drawing a **c** from either container?

5. What is the chance of drawing a **C** from both containers **AT THE SAME TIME**?

6. What is the chance of drawing a **c** from both containers **AT THE SAME TIME**?

7. What is the chance of drawing a **C** from the female container and a **c** from the male **AT THE SAME TIME**?

8. What is the chance of drawing a **C** from the male container and a **c** from the female **AT THE SAME TIME**?

Part II Crosses:

1. What process was represented when the two poker chips (egg and sperm) were placed together?

2. Together, what does the pair of chips represent (when placed together)?

3. Data table:

Possible Combinations	Expected Percentages	Round 1 Tally	Round 1 %	Round 2 Tally	Round 2 %	Round 3 Tally	Round 3 %

Part III Calculations:

1. Data Table:

Possible Combinations	Expected Percentages	Your Average	Class Average

2. Which set of percentages are the closest to the EXPECTED PERCENTAGES, the class data or your group data?

3. Why *should* the class data be closest to the expected results?

Part IV using Punnett Squares:

1. What are the possible alleles that the male gametes can have?

2. What are the possible alleles that the female gametes can have?

3. If the male has both recessive white and dominant colored chips, what is his GENOTYPE?

4. If the female has both recessive white and dominant colored chips, what is her GENOTYPE?

5. Complete the Punnett Square for the cross of the male and female beaker.

6. What fraction of these offspring would be white?

7. What fraction of these offspring would be homozygous colored?

8. What fraction of these offspring would be heterozygous colored?

9. If these are the EXPECTED offspring ratios; why did you not get these exact numbers with your poker chips?

Part V Application:

1. Find the expected **GENOTYPIC** and **PHENOTYPIC** ratios of offspring for each of the following crosses:
   a. CC x cc

   b. Cc x cc

   c. cc x cc

d. Cc x Cc