FLINN SCIENTIFIC

Name_____

Meiosis Worksheet

Part 2. Modeling Meiosis Demonstration

Observations

Sketch the stages demonstrated for both Meiosis I and II below.

Meiosis I
Meiosis II

Discussion Questions

1. In what respect is meiosis II similar to mitosis?
2. Compare and contrast what occurs during Prophase I of meiosis and what occurs during Prophase of mitosis. Explain how the processes affect the daughter cells obtained during mitosis vs. meiosis.
3. Which two events occurring during meiosis contribute to genetic variation?

Part 3. Sno-ball Sillies Genetics Lab Activity

Data Table. Offspring

Allele Letter	Trait	Allele from Mom	Allele from Dad	Offspring Genotype	Offspring Phenotype
A	Antenna				
H	Humps				
N	Nose Color				
T	Tail				
E	Eyes				
B	Body Segments				
L	Leg Color				
X or Y	Gender				

Offspring Sketch

Name_____

Post-Lab Questions

1. How many unique offspring phenotypes were created in the class?
2. If any two looked exactly alike, did their genotypes match also?
3. Compare the offspring to the parents.
   a. Do any of the offspring look exactly like either of the parents?
   b. What would happen if it were possible for an offspring to inherit all of its chromosomes from one parent?
4. Choose another team's offspring to be a mate for your model. Select two of the traits and complete a Punnett square for each.

   Trait:_____ Trait:_____

   Genetic Cross: _____ X _____ Genetic Cross: _____ X _____

   Offspring Genotypic Ratio: Offspring Genotypic Ratio:

   Offspring Phenotypic Ratio: Offspring Phenotypic Ratio:

5. The following table includes the phenotypes of each parent. Using the class data of offspring, determine the genotypes for each parent's traits.

Trait	MOM Phenotype	MOM Genotype	DAD Phenotype	DAD Genotype
Number of Antenna	1		2	
Number of Humps	3		3	
Nose color	silver		black	
Tail shape	curly		straight	
Number of eyes	2		3	
Number of body segments	3		2	
Leg color	clear		colored	
Gender	female		male	

6. Is it possible for a mating pair of two-eyed Sno-ball Sillies to have offspring with three eyes? Explain your reasoning.

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7. By random selection of one of two alleles for each of the eight traits, how many different varieties of offspring can be created? (*Hint:* If two forms for a trait exist, the possibilities are $2 \times 2 = 4$; if three traits exist, the possibilities are $2 \times 2 \times 2 = 8$).

8. If none of the offspring had three body segments, what might be inferred about the DAD's genotype for body segments? Can you be certain?

Post-Lab Analysis

1. Using a claims, evidence and reasoning model, explain how the process of meiosis leads to the patterns of inheritance seen in Mendelian traits.
   a. Propose a claim based in scientific understanding of meiosis and inheritance.

   b. Discuss how the evidence from the simulation and from two real world examples support the claim.

   c. Discuss the reasoning for the claim based on connections to the POGIL™ activity, the demonstration and the lab activity.

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Phenotypes of Sno-ball Sillies Offspring

Trait	Team 1	Team 2	Team 3	Team 4	Team 5	Team 6	Team 7	Team 8	Team 9	Team 10	Team 11	Team 12	Team 13	Team 14	Team 15	Team 16
Number of Antenna																
Number of Humps																
Nose color																
Tail shape																
Number of Eyes																
Number of Body Segments																
Number of Leg Segments																
Feet Color																
Gender																