Amoeba Sisters Video Recap: Dihybrid Crosses (Mendelian Inheritance)

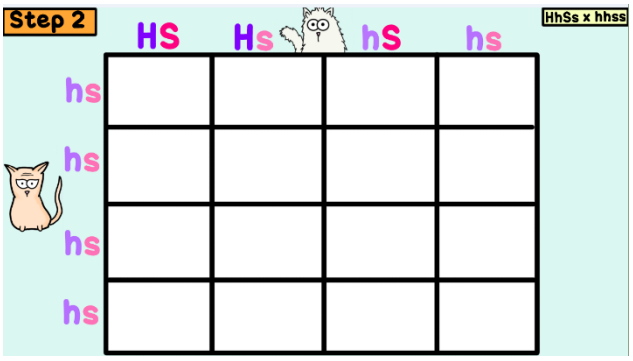
Vocabulary practice! You probably have had enough of cats with our video. On to peas! In pea plants, yellow peas (coded for by a dominant allele Y) are dominant to green peas (requiring two recessive alleles y). Round peas (coded for by a dominant allele R) are dominant to wrinkly peas (requiring two recessive r alleles). These are actual pea plant traits, by the way!

For the following, please write in the genotype or phenotype. Some are filled in for you.

Genotype	Phenotype
YYRR	Yellow, round
1._____	Green, wrinkled
YyRr	2._____
yyRR	3._____
yyRr	4._____
5._____ or _____	Yellow, wrinkled
6._____ or _____	Green, round

7. An **allele** is a form of a gene. In a dihybrid cross HhSs x hhss, how many alleles does a kitten inherit from the **mother**? _____

8. How many alleles does a kitten inherit from the **father**? _____.



9. **Gametes**, which are sex cells, carry the alleles. Why must a gamete carry **one** allele (represented by a letter) from **each** gene? Meaning, why can't a gamete carry an "hh" instead of an "hs" or an "Hh" instead of a "HS?"

The Dihybrid Problem Solve

Read the beginning part about pea plants again. Bernard really likes growing peas in his garden, but the peas he likes are green. He also likes them to have a wrinkled texture, because he thinks they look much more interesting that way. Please work out a RrYy x RrYy (**heterozygous** cross) on the back of this sheet or on another paper while showing all work.

10. After showing your work to use as support, what is the chance that Bernard will have pea plant offspring that match the phenotype he is looking for (green, wrinkled)? _____

11. What is the phenotype ratio of this heterozygous cross?

_____*(yellow, round):* _____*(yellow, wrinkled):* _____*(green, round) :* _____*(green, wrinkled)*

12. If Bernard did not receive any pea plants that were green and wrinkled in actuality, would you know for sure that the parent genotypes were incorrect? Why or why not? _____

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