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Heredity Web Quest

DNA from the Beginning – Mendelian Genetics

Go to http://www.dnaftb.org/dnaftb/1/concept/index.html

Children resemble their parents

Read the text and answer the following questions

1. How have useful traits been accumulated in plants and animals over the centuries?
   _____
2. Was there a scientific way to predict the outcome of a cross between two parents? _____
3. Who determined that individual traits are determined by discrete "factors'? In what year?
   _____
4. These "factors" are now known as _____.
5. Summarize what Mendel did?_____
   _____

Click on *Animation* at the bottom of the page. Move through the animation and answer the following questions.

1. Why did Mendel work with pea plants? _____
   _____

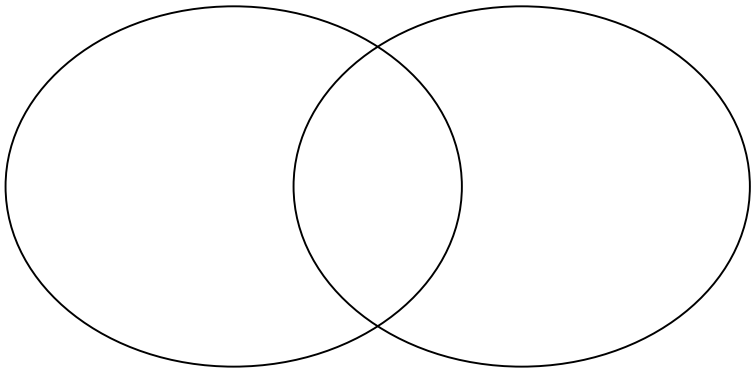
The next question deals with how pea plants self-fertilize

4. A) In the flower the male sex part is the _____.
   B) What does it drop inside the immature flower? _____
   C) Name the female sex part? _____
   D) What are the sex cells that develop there? _____
   E) What fertilizes the eggs? _____
   F) Why do you think this is called self-fertilization? _____

The next question deals with how pea plants cross-fertilize

5. Summarize how cross-fertilization is accomplished?
   _____
   _____
   Why is it different from self-fertilization?
   _____

Self-fertilization Cross-fertilization



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On the right menu bar click on number 2 *"Genes come in pairs"*. Then at the bottom click on *Animation*.

Click through the animation and answer the following questions

1. What is a phenotype? _____
2. What are the seven pairs of traits Mendel worked with in pea plants?
   a. _____ b. _____ c. _____ d. _____
   e. _____ f _____ g. _____
3. Explain what Mendel reasoned from the existence of yellow and green seed colors
   _____
   _____
4. What is an allele? _____
5. What is a genotype? _____
6. If a pea plant has the two alleles YY. What is its phenotype? _____
   What is its genotype? _____

On the right menu bar click on number 3 *"Genes don't blend"*. Then at the bottom click on *Animation*.

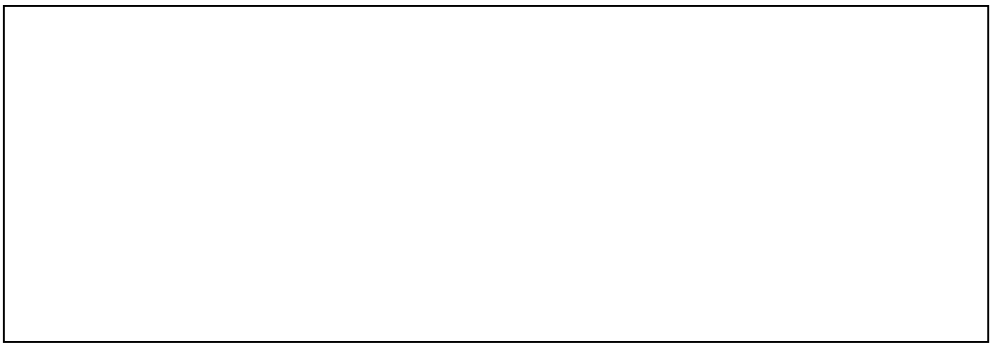
Click through the animation.

2. What observations did Mendel make and what problem did he have to solve?
   _____
   _____
   _____

On the right menu bar click on number 4 *"Genes don't blend"*. Then at the bottom click on *Animation*.

Click through the entire animation. Answer the following using the type of diagram that is found in the animation

1. Diagram the cross & offspring between pure-bred green with pure-bred yellow.



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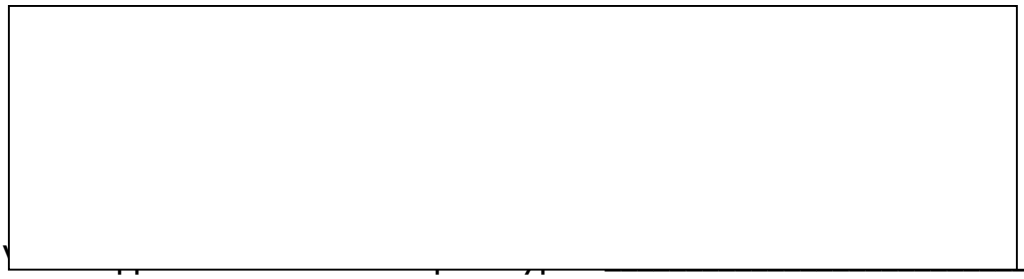
3. Diagram the cross between two *heterozygous* plants (Yy x Yy)



On the right menu bar click on number *5 "Gene inheritance follows rules"*. Then at the bottom click on *Animation*.

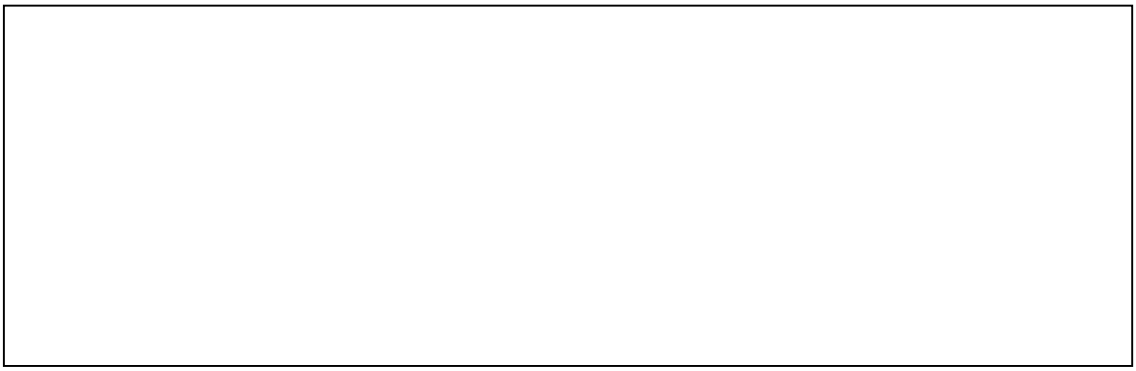
Click through the animation.

1. Explain Mendel's law of segregation

_____

_____

2. Draw a Punnett square showing the heterozygous cross of two yellow seeds Yy x Yy.



Which genotype gives the green phenotype? _____ Which genotype gives the yellow phenotype? _____

Give an example from above that explains the 3 to 1 ratio.

_____

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Part 2 – Problem Sets & Tutorials

Go to http://www.biology.arizona.edu/mendelian_genetics/mendelian_genetics.html

Take out a piece of scratch paper. Diagram the problem on a Punnett square before looking at the tutorial. Good Luck!

Click on *Monohybrid Cross*. Do problem set #1-13. Use the tutorial to help you understand the problem.

Click on *Dihybrid Cross*. Do problem set #1-9. Use the tutorial to help you understand the problem.

Click on *Sex-linked Inheritance I*. Do problem set #1-10. Use the tutorial to help you understand the problem.