

Name

Date

Period

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**Heredity WebQuest**

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**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?

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2. Was there a scientific way to predict the outcome of a cross between two parents?

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3. Who determined that individual traits are determined by discrete "factors"? In what year?

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4. These "factors" are now known as \_\_\_\_\_.

5. Summarize what Mendel did?

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

6. Why did Mendel work with pea plants?

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**The next questions deals with how pea plants self-fertilize**

7. In the flower the male sex part is the \_\_\_\_\_

8. What does it drop inside the immature flower? \_\_\_\_\_

9. What are the sex cells that develop there? \_\_\_\_\_

10. What fertilizes the eggs? \_\_\_\_\_

11. Why do you think this is called self-fertilization? \_\_\_\_\_

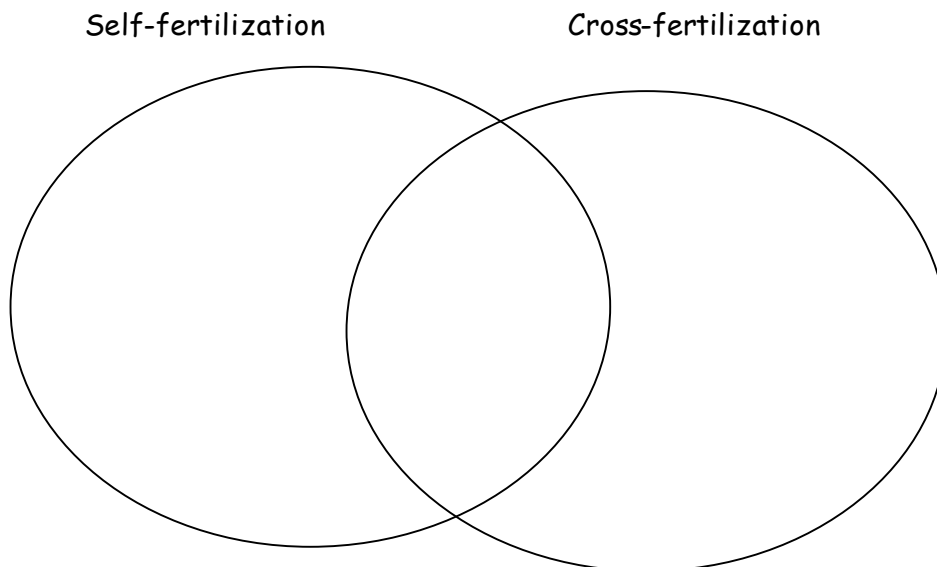
**The next question deals with how pea plants cross-fertilize**

12. Summarize how cross-fertilization is accomplished?

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13. Why is it different from self-fertilization? Complete the Venn diagram below



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

14. What is a phenotype? \_\_\_\_\_

15. What are the seven pairs of traits Mendel worked with in pea plants?

a. \_\_\_\_\_ b. \_\_\_\_\_ c. \_\_\_\_\_ d. \_\_\_\_\_  
e. \_\_\_\_\_ f. \_\_\_\_\_ g. \_\_\_\_\_

16. Explain what Mendel reasoned from the existence of yellow and green seed colors

\_\_\_\_\_

17. What is an allele?

\_\_\_\_\_

18. What is a genotype?

\_\_\_\_\_

19. If a pea plant has the two alleles YY. What is its phenotype?

\_\_\_\_\_

20. What is its genotype?

\_\_\_\_\_

On the right menu bar click on number 4 "Some genes are dominant". 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

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

22. Diagram the cross between two heterozygous plants ( $Yy \times Yy$ )

23. What happened to the recessive phenotype? \_\_\_\_\_

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

Click through the animation.

24. Explain Mendel's law of segregation

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25. Draw a Punnett square showing the heterozygous cross of two yellow seeds  $Yy \times Yy$

26. Which genotype gives the green phenotype? \_\_\_\_\_ Which genotype gives the yellow phenotype? \_\_\_\_\_

27. 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](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.**

### **Part 3 - Blood Typing**

Go to <http://nobelprize.org/medicine/educational/landsteiner/index.html>

**Click on Introduction: Blood Groups, Blood Typing & Blood Transfusions**

1. How were blood groups discovered?

2. What is blood made up of?

3. Describe the 4 different kinds of blood types? Draw a picture with each explanation!

Blood group A

Blood group B

Blood group AB

Blood group O

**Go back to the first page &  
Play the Blood Typing Game**

**Part 4 Karyotyping Activity**

**Go to** <http://learn.genetics.utah.edu/content/begin/traits/karyotype/index.html>

1. What is a Karyotype?
2. Organize the chromosomes! **Do this online.**
3. What can a karyotype tell us?
4. In the search bar on this website type in the following genetic disorders and give a brief description of the disorder and people get it.
  - A. Down Syndrome
  - B. Turner Syndrome
  - C. Klinefelter Syndrome