

Name _____

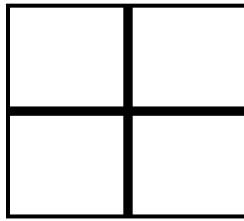
Genetics Unit Study Guide

1. What did Mendel DO to study the different characteristics in his genetic experiments? _____

2. Describe the results of Mendel's experiments in the F1 and F2 generations. What were the percentages of genotypes of the offspring? Describe the phenotypes of the offspring in each generation. _____

3. Explain why Mendel's cross of purebred tall and short pea plants resulted in only tall plants. _____

4. Create a punnett square showing the probability of producing a tall pea plant from two hybrid parents.

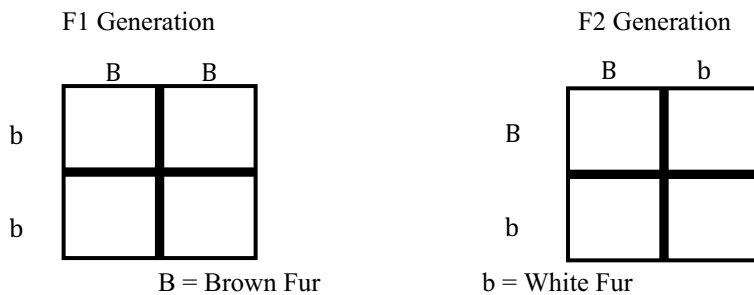


5. If a homozygous brown rabbit (BB) is crossed with a homozygous white rabbit (bb), what is the probability that an offspring will have brown fur? _____
6. Define phenotype. _____
7. The chromosome theory of inheritance says that genes are carried from _____ to offspring on _____.
8. _____ are factors that control traits.
9. Geneticists use the notation GG to mean _____.
10. Geneticists use the notation Gg to mean _____.
11. Describe the process of meiosis, and how it is beneficial to organisms. _____

12. Genes that are carried on the X and Y chromosome are called _____ - _____ genes.
13. Sex cells contribute _____ the number of chromosomes in body cells.
14. Body cells have _____ chromosomes, and sex cells have _____ chromosomes.
15. Males have _____ sex chromosomes.
16. What genetic disorder results in abnormally shaped blood cells? _____
17. Define mutation. _____
18. Mutations can be both _____ and _____.
19. A mutation is harmful to an organism if it reduces an organism's chances for _____ and _____.
20. Physical characteristics called _____ are studied in genetics.
21. Cystic Fibrosis is a genetic disorder carried on a _____ allele that causes the body to produce thick mucus in the _____ and _____.
22. Define homozygous. _____
23. Define heterozygous. _____
24. Many genes joined together make up _____.
25. Geneticists use _____ to trace the inheritance of traits in humans.
26. _____ results in two organisms that are genetically identical.
27. Describe the purpose of the Human Genome Project. _____

28. Define genetic engineering. _____
29. Give an example of selective breeding. _____
30. A person who has one recessive allele and one dominant allele for a trait is called a _____.
31. Characteristics are affected by the interactions between genes and the _____.
32. A _____ is the offspring of parents that have different alleles for a trait.
33. A punnett square shows all the possible combinations of _____ resulting from a cross.
34. An organism's _____ is its allele combination.
35. Chromosomes carry _____ from parents to offspring.
36. If a _____ allele is present, this trait will always appear in the first generation offspring.
37. In pea plants, the tall-stem allele and the short-stem allele are different forms of the same _____.
38. An organism can be heterozygous for some traits and _____ for others.
39. Mutations or changes in DNA and chromosomes cause _____.
40. A mutation in a _____ cell can be passed on to future generations. Mutations in a _____ cell only affect that one cell.
41. Explain the difference between helpful and harmful mutations in DNA. _____

Answer the questions below based upon the following punnett squares:



42. Which trait-brown fur or white fur- is controlled by a dominant allele? _____
43. Which is controlled by a recessive allele? _____
44. How do you know which allele is which? _____
45. In the F2 generation, what percentage of the offspring have white fur? _____
46. What is the genotype of the offspring that have white fur? _____
47. What percentage of the offspring in the F2 generation would have white fur if one of the parents had been homozygous recessive instead of heterozygous? _____ What percent would have brown fur? _____

Use the diagram below to answer questions #48-50.

48. In this pedigree, which individuals have the trait? _____
How do you know? _____
49. Which individuals are carriers of the trait? _____
How do you know? _____
50. A male is represented by a _____ in a pedigree. A female is represented by a _____ in a pedigree.
51. The genetic code is found in the order of nitrogen _____ along a gene.
52. What is the complimentary strand for the following sequence:
GATCGTAC - _____
53. If a woman has two sons, what is the probability that her third child will be a son also? Explain your answer. _____

