Name _____ Date_____

Genetics Study Guide

1. A disease that occurs when a child inherits a defective gene from parents who do not suffer from the disease is a(n) __**Recessive**__ disorder.
2. Skip
3. A single _**Allele**_ is a form of a gene that affects only one trait.
4. In DNA there are four different types of __**Nitrogen Bases**_.
5. Chris talks about his best friend being tall and having brown hair. He is describing the person's __**Phenotype/Traits**__.
6. _**Reginald Punnett**_ developed a square that is used to visualize all the possible combinations of alleles in offspring.
7. Humans produce diploid cells through a process called _**Mitosis**_.
8. The _**Recessive Trait**_ is the trait that seems to recede in the background in first-generation offspring.
9. _**Gregor Mendel**_ used pea plants to study the way traits are passed from parents to offspring.
10. There is _**3/4**_ probability that offspring plants will show the dominant trait when a heterozygous plant self-pollinates. (give fraction not percent)
11. The organism's appearance is known as its _**Phenotype**_.
12. The inherited combination of alleles is known as the offspring's _**Genotype**_.
13. The set of instructions for each characteristic donated by the parent to the offspring is called_**DNA**_.
14. In a DNA molecule, the nitrogen base _**Cytosine**_ pairs with _**Guanine**_ and ___**Adenine**__ pairs with ___**Thymine**_.
15. A __**Gene**__ is a set of instructions for each trait, instructions on how to make a protein, and a portion of a strand of DNA.
16. DNA is made up of _**Genes**_, have a structure like a twisted _**Ladder**_, and has 4 different nitrogen bases.
17. _**Watson**_ and __**Crick**_ made models to determine DNA structure.
18. Skip
19. Most genetic disorders, such as cystic fibrosis, are due to a _**Mutation**_.
20. The complementary strand to the DNA sequence ATCAGT would be _**TAGTCA**_.
21. _**Genetic Engineering**_ is currently used to genetically alter plants, repair damaged genes, and produce large amounts of medicines.
22. A mutation in DNA can result in a _**Genetic**_ disorder, the _**Death**_of the organism, or no change at all.
23. If a mutation occurs in the DNA of _**Sex**_ cells, it can be passed from one generation to the next.
24. Men and women have different kinds of _**Sex**_ chromosomes.
25. Men and women have the same number of _**Chromosomes**_ in their genetic make-up.
26. Genes are found on _**Chromosomes**__.
27. The process that produces sex cells is called _**Meiosis**_.
28. The passing of traits from parents to offspring is _**Heredity**_.
29. If you cross a white flower (with genotype pp) with a purple flower (with genotype PP), the possible genotypes of the offspring are _**Pp**_.
30. For the same cross in number 29, all the offspring would have the phenotype _**Purple**_.
31. The mathematical chance that an event will occur is _**Probability**_.
32. _**Alleles**_ are different forms of the same gene.
33. If you cross two rabbits that have the genotype Bb, you will have _**3**_ possible genotypes found in the offspring.
34. There are _**23**_ chromosomes found in normal sex cells in humans.
35. There are _**46**_ chromosomes found in normal body cells in humans.
36. If a purple flower with the genotype Pp (P=purple, p=white) self-pollinates, the ratio of purple offspring to white offspring would be _**3:1**_.

Use the Punnett square below to answer the below questions.
In pea plants, the trait for tallness (***T***) is dominant to the trait for being short (***t***).

	T	t
T	1	2
t	3	4

37. The offspring in square 1 would have the genotype _**TT**_.
38. The offspring in square 2 would have the genotype _**Tt**_.
39. The offspring in square 3 would have the genotype _**Tt**_.
40. The offspring in square 4 would have the genotype _**tt**_.
41. Offspring in square(s) _**4**__ would be short.
42. The offspring in square(s) _**1,2,3**_ would be tall.

For questions 43-45, use the Punnett Square below.
In this type of rabbit, the trait for long ears (F) is dominant over the trait for short ears (f).

	?	?
F	FF	Ff
f	Ff	ff

43. The unknown genotype of the parent is _ **Heterozygous Dominant**_. (use vocab.)
44. The probability that the offspring of these two parents will have long ears is _**75%**_ (percentage).
45. Both parents' genotypes are _**Heterozygous**_. (use vocab.)