Genetics Ch. 11 Test Study Guide

Use your textbook

1. Use the chapter 11 assessment p 283. The correct answers are c a a c c d d d d b.
2. Use the Standards practice p285. The correct answers are c a a c d b b d d b a d c.

Complete the following Questions

1. What are chemical factors that determine traits? alleles

2. What is a hybrid? 1 dominant and 1 recessive allele

3. Explain the purpose of Mendel's experiments with peas. Look at patterns of inheritance.

4. What is the difference between the P, F1, and F2 generation? P is the parent which produces the F1 offspring, then the F1 offspring produce the F2 offspring.

5. Complete a Punnett square if a pure breeding tall pea plant is crossed with a pure breeding short pea plant.

    a. What percentage will be tall? 100%
    b. What percentage will be heterozygous? 100%
    c. What percentage will be homozygous recessive? 0%

6. What is the principle of dominance? The dominant allele will be seen in the phenotype and cover up the recessive allele.

7. What is homozygous? Same type of alleles (TT or tt)

8. What is heterozygous? Different alleles (tT)

9. Given the P generation cross: Tt x tt. Complete a Punnett Square.

    a. What percentage will be tall? 50%
    b. What percentage will be heterozygous? 50%
    c. What percentage will be homozygous recessive? 50%

10. What does a Punnett square show? The probability of different genotype for possible offspring.

11. What is the principle of segregation? Alleles for the same trait separate during meiosis.

12. What is the principle of independent assortment? Genes for different traits separate independently during meiosis.

13. How many different allele combinations would be found in the gametes produced from a pea plant with the genotype, RrYY? 2 – RY and rY

What about RrYy? 4- RY, Ry, rY, ry

14. Given the following cross: RrYy x RRYy, how many different phenotypes are the offspring expected to show? 4 (in the ratio of 9, 3, 3, 1)

15. Define the following:
    a. incomplete dominance- a combination or mixture of both alleles are shown in the phenotype.

    b. codominance- both alleles are shown in the phenotype

    c. polygenic traits- more than 1 gene contributes to trait

16. What does "N" represent? Haploid number of chromosomes (1 set of each)

17. If an organism's diploid number is 10, what is its haploid number? __5_____

18. Diagram the phases of meiosis. Put a star next to the stage where new allele combinations form. Circle all phases that are 2N. Put a square around the stage where each cell has a single copy of each gene.

See page 277 in textbook. All stage 1 are diploid (2N). All stage 2 except the last stage are diploid. Only the last stage of meiosis produces haploid cells (N).

19. When do tetrads form? Prophase 1

20. What happens during crossing over? Homologous chromosomes exchange parts.

21. Make a Venn diagram or double bubble thinking map and compare and contrast mitosis and meiosis.

Mitosis produces 2 diploid cells and is used for repair
Meiosis produces 4 haploid cells that are gametes (sex cells).
Both involve moving duplicated chromosomes around the cell for division.

22. Do genes and/or chromosomes assort independently? Explain. Chromosomes separate independently during meiosis, but genes on the same chromosomes may not be independent of each other if they are close together on that chromosome.

23. What is a linked gene? Genes found on the same chromosome that tend to be inherited together.

24. What is the purpose of meiosis? Make gametes that are haploid.

25. Where does meiosis take place in the body? Sex glands.

26. Summarize Morgan's experiments with fruit flies. He studied flies to test that Mendel's ideas of inheritance are true for organisms other than plants. He used flies because they are small, easy to keep, and reproduce quickly with lots of offspring.