

In your textbook, read about simple Mendelian inheritance and meiosis.

Complete each statement.

1. A trait is _____ if only one allele is needed for that trait to be expressed.
If both alleles are needed for the trait to be expressed, the trait is _____.
2. When a TT tall pea plant is crossed with a tt short pea plant, there is a 100% probability that all offspring will be _____ and have the genotype _____.
3. Unlike mitosis, _____ produces cells that contain only one copy of each _____.
4. _____ and the rearrangement of alleles during _____ provide mechanisms for genetic variability.

In your textbook, read about producing physical traits and complex inheritance patterns.

Predict the outcome of the following crosses. Use Punnett squares to support your answers.

5. Homozygous short \times Homozygous short

6. Heterozygous for purple flowers \times Heterozygous for purple flowers

7. Heterozygous pink snapdragon \times Heterozygous pink snapdragon

Sequence the steps in protein synthesis from 1 to 4.

- _____ 8. Amino acids bond together to form a protein.
_____ 9. Sequence of bases in DNA is copied into mRNA.
_____ 10. tRNA molecules bring appropriate amino acids to the mRNA on the ribosome.
_____ 11. mRNA leaves the cell nucleus.

For each item in Column A, write the letter of the matching item in Column B.

Column A

- _____ 12. Results in an mRNA copy of DNA
- _____ 13. Sequence of three bases in mRNA
- _____ 14. Site of translation
- _____ 15. Governed by several genes
- _____ 16. Heterozygote has an intermediate phenotype.
- _____ 17. Double-stranded molecule that stores and transmits genetic information
- _____ 18. More likely to appear in males than in females
- _____ 19. Results in a sequence of amino acids

Column B

- a. incomplete dominance
- b. X-linked trait
- c. ribosome
- d. transcription
- e. translation
- f. codon
- g. polygenic inheritance
- h. DNA

In your textbook, read about recombinant DNA technology and gene therapy.

Sequence the steps to making recombinant DNA from 1 to 5.

- _____ 20. The plasmid becomes part of a host cell's chromosome.
- _____ 21. A DNA fragment is inserted into a plasmid.
- _____ 22. The DNA fragment replicates during cell division.
- _____ 23. The plasmid enters a host bacterial cell.
- _____ 24. A host cell produces a protein that it would not have produced naturally.

Answer the following questions.

25. What is gene therapy?

26. What are clones?

27. What is a vector? Give two examples of vectors.
