

DNA Discovery, Structure, and Replication – BIO.5e, g (25 pts)

Match each scientist with his/her contribution to the development of the double helix model. Not all scientists will be used. (4 pts; 1 pt each)

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| <ul style="list-style-type: none"> — One of two scientists credited with developing the double helix model of DNA — One of two scientists credited with developing the double helix model of DNA — Determined that in any sample of DNA, the amount of adenine (A) always equals the amount of thymine (T); and the amount of guanine (G) always equaled the amount of cytosine (C). — Performed X-ray crystallography on DNA, producing images that would reveal the helical shape of the molecule. | <ul style="list-style-type: none"> A. Erwin Chargaff B. Francis Crick C. Louis Pasteur D. James Watson E. Robert Hooke F. Rosalind Franklin |
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Provide the complimentary nitrogen base sequence to the strand provided below. (3 pts)

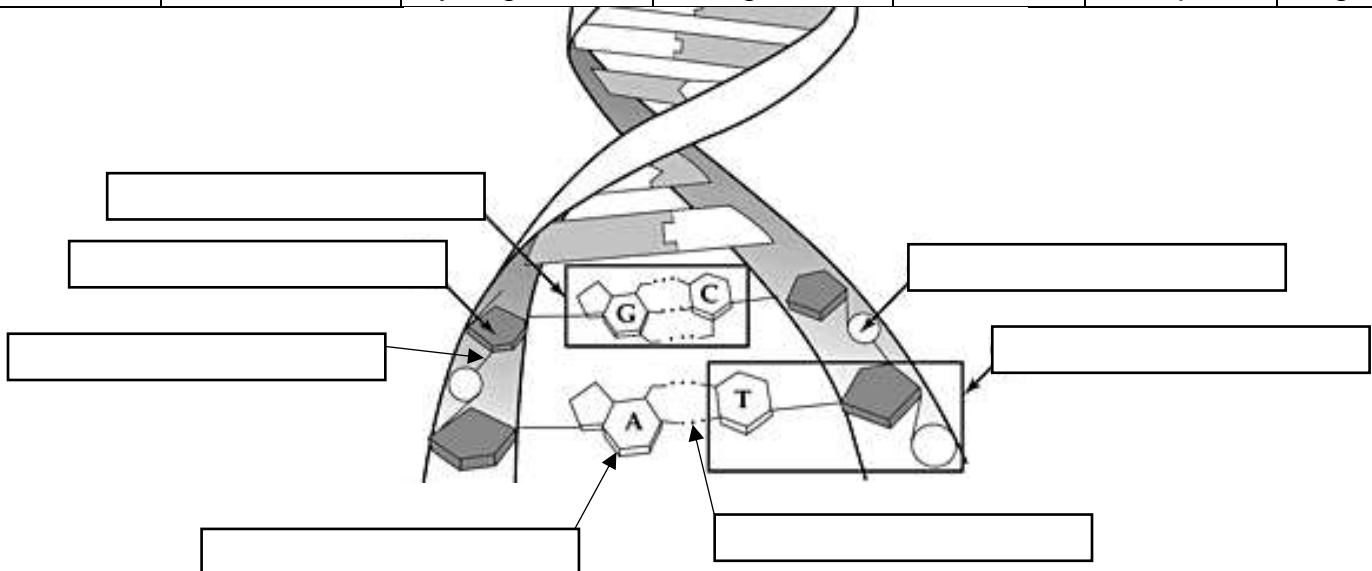
A T T G C G C G A

If a certain DNA sample contains 32% adenine, calculate the percentages of the other three bases in this sample. (3 pts, 1 pt each)

A 32% T _____ G _____ C _____

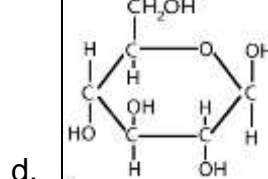
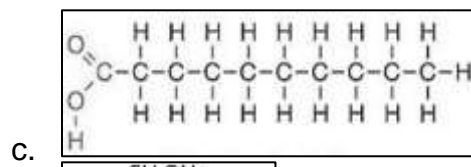
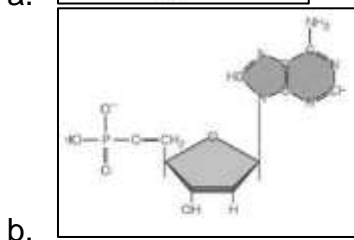
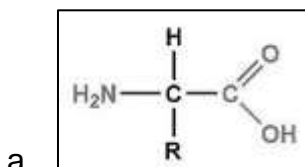
Fill in the blanks in the image below in order to correctly label the DNA molecule using the following terms. Each word will only be used once. (7 pts, 1 pt each)

Base Pair	Covalent Bond	Hydrogen Bond	Nitrogen base	Nucleotide	Phosphate	Sugar
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Choose the correct response(s) to each question below. The required number of responses will be indicated at the end of each question.

- Which of the following statements correctly describe the structure of DNA? (3pts)
 - Opposite strands are complimentary.
 - Opposite strands are identical.
 - The molecule is a double helix.
 - The molecule is triple helix.
 - The nitrogen bases are on the inside of the helix.
 - The nitrogen bases are on the outside of the helix.
- Which of the following statements correctly describe the pattern of nitrogen base pairing? (2pts)
 - A pairs with A
 - A pairs with C
 - A pairs with G
 - A pairs with T
 - G pairs with A
 - G pairs with C
 - G pairs with G
 - G pairs with T
- Which of the following is a monomer of nucleic acids, such as DNA? (1pt)



- Which of the following statements correctly explain the functions of DNA? (2pts)
 - DNA stores energy long term.
 - DNA stores genetic information.
 - DNA carries hereditary information from parents to offspring.
 - DNA controls the rate of metabolism in cells.
 - DNA provides immediate energy.