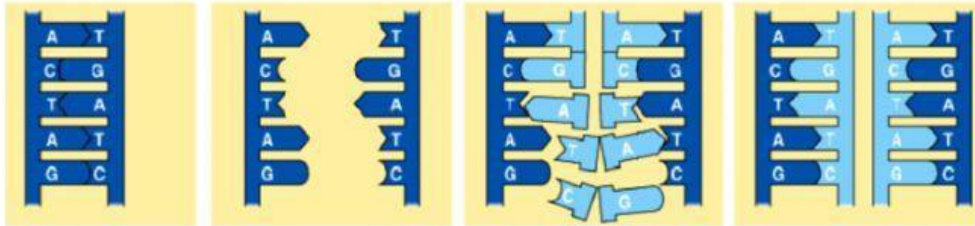


## DNA Replication Practice

*Directions: Below are the three steps of DNA replication. Follow the instructions for each step and then answer the questions that follow.*

When a cell copies a DNA molecule:

1. DNA is unzipped by helicase (**initiation**).
2. Complementary bases are added to each template strand by DNA polymerase (**elongation**).
3. Two new strands are checked for errors by DNA polymerase, then DNA winds up (**termination**).



1. What is happening to the DNA molecule in the figure?

(Explain the first step in DNA replication)

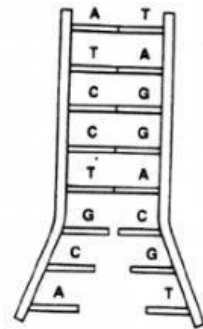
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2. What happens to the DNA molecule during the second step of DNA replication?

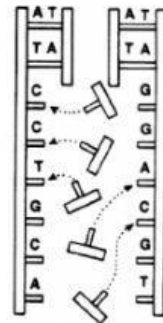
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3. What happens during the third step of DNA replication?

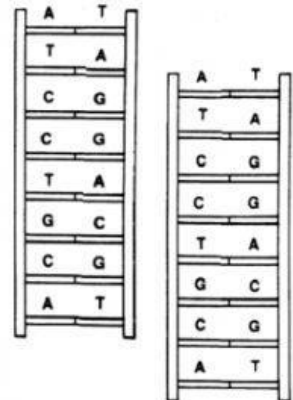
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4. What does it mean that the two strands of DNA are **complementary**? \_\_\_\_\_
- \_\_\_\_\_
5. What is **DNA replication**? \_\_\_\_\_
6. Using your knowledge of DNA replication, place the steps below in the correct order. (Write "1" for the first step, "2" for the second, etc.)
- \_\_\_\_\_ The enzyme DNA polymerase moves along the strands and adds complementary nucleotides to each exposed nucleotide in the existing strands.
  - \_\_\_\_\_ Helicase unzips the DNA double helix down the middle between the base pairs.
  - \_\_\_\_\_ A complementary strand is created for each of the two strands of the original double helix.
  - \_\_\_\_\_ Two new identical DNA molecules have been produced.
7. True or False: The process of DNA replication results in a copy of the original DNA molecule.
8. True or False: DNA does not have to break apart to be copied.
9. True or False: After DNA replication is complete, there are two new DNA molecules; one molecule has both of the original strands and one molecule has two new strands of DNA.
10. In what cell organelle does DNA replication happen? \_\_\_\_\_
11. During what phase of the cell cycle does DNA replication happen? \_\_\_\_\_
12. Below are some DNA strands. Use the base pairing rules to fill in the complementary strands.
- Original strand: A T G C A A A T T G C T C A C C G G G A T C A C  
\_\_\_\_\_
  - Original strand: A G G G G A T C A G C A C C G G A T T T C A T G  
\_\_\_\_\_
  - Original strand: T G A C G A T C G A T G C A C A T G C A T G G C  
\_\_\_\_\_