

DNA Structure & Replication Practice

Name _____

Biology

Date _____ Hour _____

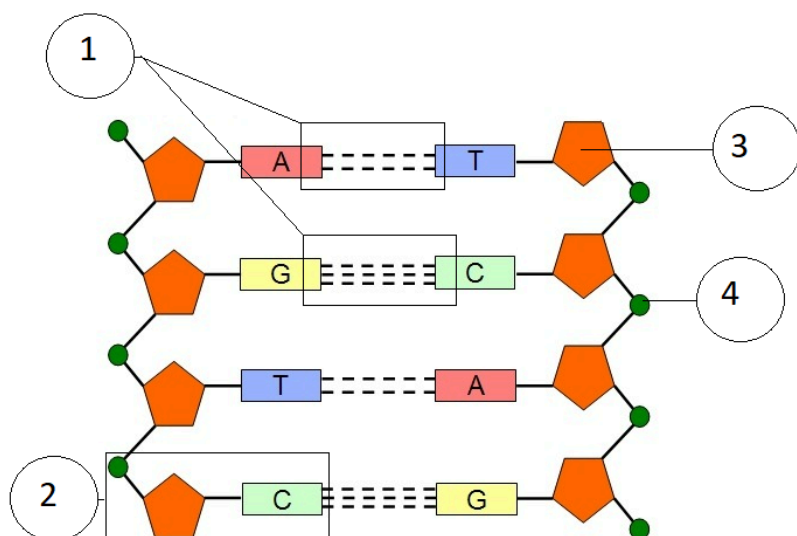
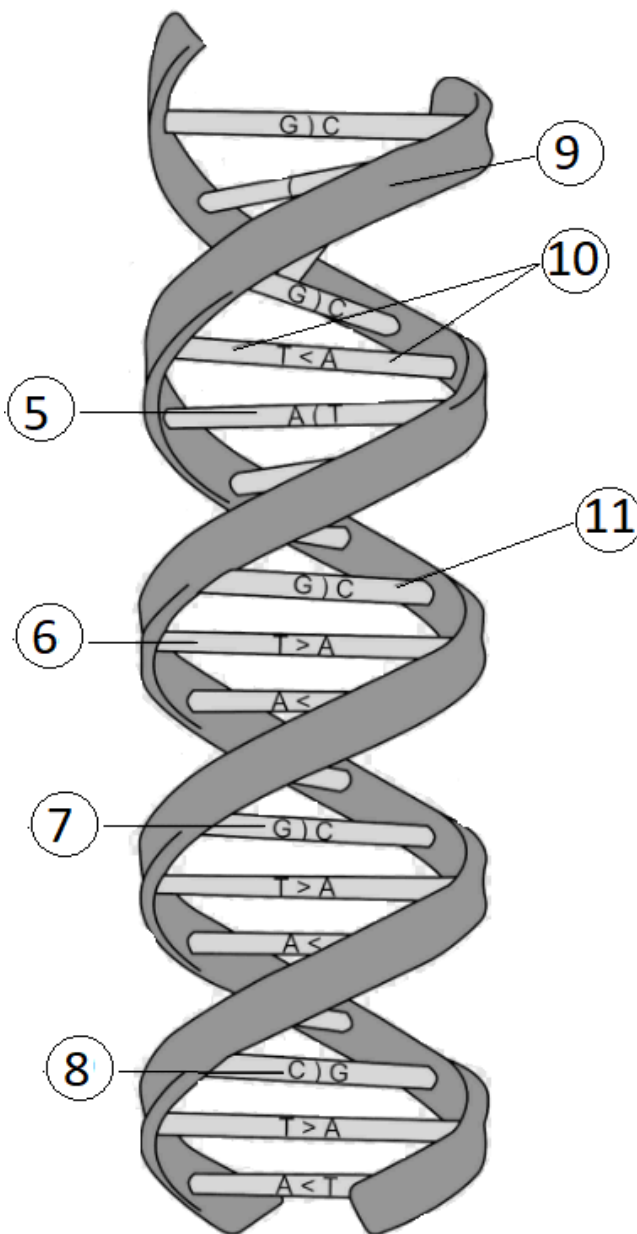
1. Write the term that best identifies each part of the DNA model to the right. Use the following word bank:

phosphate	cytosine	nitrogenous base	sugar/phosphate backbone
thymine	nucleotide	hydrogen bonds	deoxyribose sugar
guanine	adenine	base pair	

1. Hydrogen bonds
2. nucleotide
3. Deoxyribose sugar
4. phosphate
5. adenine
6. Thymine
7. Guanine
8. cytosine (or nitrogenous base)
9. sugar/phosphate backbone
10. Base pair
11. Nitrogenous base (or cytosine)

Use the image below to describe what it means to have two strands of DNA that are **antiparallel**.

Each strand runs the opposite direction of the other.



2. When does DNA replication occur? Be specific.

During interphase of the cell cycle and specifically during S stage. This is when the “synthesis” of DNA happens.

3. Where do the nucleotides in step B come from?

They come from the cytoplasm. They are just floating around waiting to be used.

4. What is the name of the enzyme in step B called? What is its role?

DNA helicase. It unzips the DNA helix.....aka it unzips genes! haha!

5. What is the name of the enzyme in step C called? What is its role?

DNA polymerase. It places the complementary nitrogenous bases on the parent strand to create a new daughter strand of DNA.

6. For each image below (A-D), write one sentence describing what is happening.

A - DNA is a long molecule that has a double helix shape. The building blocks of DNA are called nucleotides.

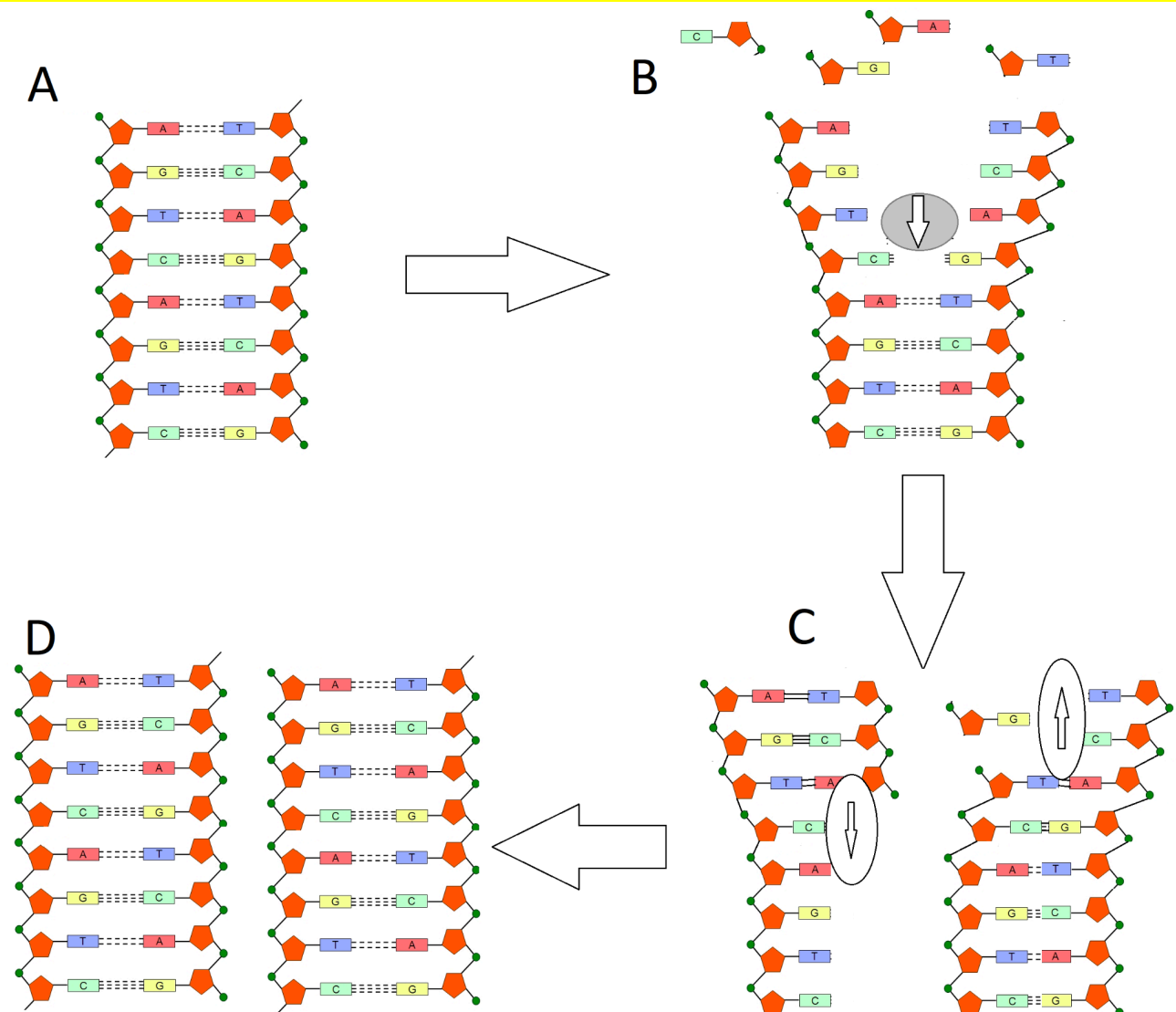
Nucleotides are made of deoxyribose sugar, phosphate, and a nitrogenous base.

B - DNA helicase unzips the double helix of DNA to give DNA polymerase access to the parent strand (template).

C - 2 DNA polymerases attach to each half of the DNA molecule and place complementary nucleotides on the template to create a new strand.

D - two identical copies of the parents strand have been created. This is called semi-conservative replication

because one half of each molecule is made of the parent strand and the other half is the new, daughter strand.



DNA & Genes Reinforcement

Name _____

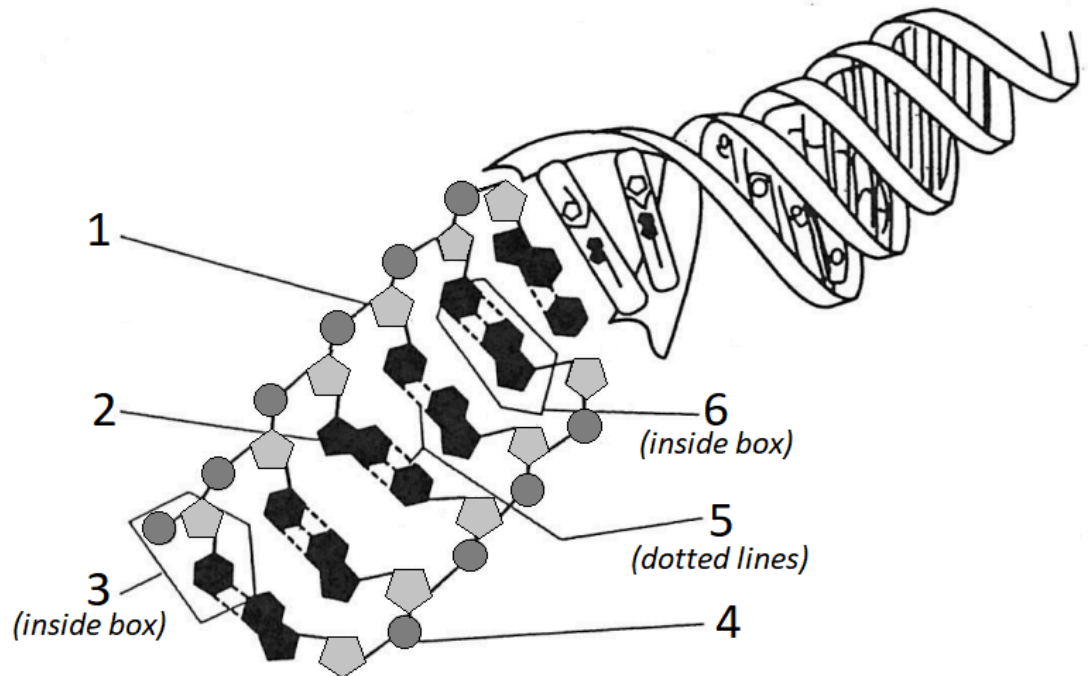
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Label the diagram below. Use the following choices:

nucleotide deoxyribose phosphate group nitrogenous base hydrogen bonds base pair

1. Deoxyribose sugar
2. Nitrogenous base
3. Nucleotide
4. Phosphate
5. Hydrogen bonds
6. Base pair



Complete each statement below. There is no word bank provided.

7. **Adenine**, guanine (G), cytosine (C), and thymine (T) are the four **nitrogenous bases** in DNA.
8. In DNA, **cytosine** always forms hydrogen bonds with guanine (G).
9. The sequence of **DNA** carries the genetic information of an organism.
10. The process of **DNA Replication** produces a new copy of an organism's genetic information, which is passed on to a new cell.
11. The double-coiled shape of DNA is called a **double helix**.
12. Write the complementary DNA strand for the following parent DNA code: A T T G C T A C

T A A C G A T G