**Structure of DNA and DNA Replication Guided Notes**

**The Structure of DNA:**

-A DNA molecule is a very long \_\_\_\_\_\_\_\_\_\_ of repeating units. The repeating units that make up DNA are called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. DNA stands for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and contains the “recipe” for making \_\_\_\_\_\_\_\_.

**Nucleotides**

3 Parts:

1. A phosphate group
2. A ring shaped sugar called \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. A nitrogen-containing \_\_\_\_\_\_\_\_\_\_

**Base Pairing**

-In DNA, this is how the bases always \_\_\_\_\_\_\_\_\_ up together.

-Adenine🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_ or Thymine🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

-Guanine🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_ or cytosine🡪 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Shape of DNA**  
-Two geneticists, \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and Crick figured out DNA’s structure. The shape of DNA is described using the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_ model. It contains \_\_\_\_\_\_\_ strands of DNA that wind around each other like a \_\_\_\_\_\_\_\_\_\_\_\_\_\_ ladder.

**DNA Replication**

**What is DNA Replication?**

-Before a cell divides, it \_\_\_\_\_\_\_\_\_\_\_ DNA. It makes an \_\_\_\_\_\_\_\_\_\_\_ copy of DNA. One \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ strand of DNA is used to make the new copy, and the original strand of DNA can never \_\_\_\_\_\_\_\_\_\_\_\_\_ the nucleus—otherwise, there would be no \_\_\_\_\_\_\_\_\_\_ left in the cell.

**Steps of Replication**

1. The enzyme DNA \_\_\_\_\_\_\_\_\_\_\_\_\_\_ unwinds the helix by breaking \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ bonds that hold DNA together, and the bases become exposed.
2. The enzyme DNA \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ adds nucleotides to form a new strand that is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to the “template” strand.

**Replication-Semiconservative**

-Each new DNA molecule contains \_\_\_\_\_\_\_\_\_\_ old strand and one \_\_\_\_\_\_\_\_ strand. Semiconservative model means one strand is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and the new strand is complementary.

**Errors During Replication**

-Occasionally, the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ nucleotide is added to the \_\_\_\_\_\_\_\_ strand of DNA (example: adenine-guanine—this is incorrect). DNA polymerase \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ each new strand quickly and can fix \_\_\_\_\_\_\_\_\_\_ (sometimes, the error isn’t caught). Example: adenine—guanine is changed to adenine—thymine.