**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period:\_\_\_\_\_\_\_\_**

**Big Idea 1: Structure of DNA**

1. DNA stands for \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. DNA is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Label picture below of ladder
3. DNA is composed of long chains of nucleotides
4. What are the 3 parts of a nucleotide? Look at picture below.

* 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

* 1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
1. The nitrogen bases:
	1. Adenine binds to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. Cytosine binds to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Erwin Chargaff observed that the amount of adenine always equals the amount of \_\_\_\_\_\_\_\_\_\_\_\_\_.
3. X-Ray diffraction photos taken by Rosalind Franklin suggested that DNA had the shape of a tightly coiled \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
4. Two scientists that established the structure of DNA: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Big Idea 2: Replication of DNA**

1. Replicate the following segments of DNA:
2. AGT CCT CGA GGT ATG b. TCA GAC GTT ACG ATC GAT TAC

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Which enzyme breaks the hydrogen bonds between the nitrogen bases? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. Which enzyme unwinds and unzips the DNA during replication? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Which enzyme adds nucleotides to the DNA bases? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. After replication, you have \_\_\_\_\_\_\_\_\_\_\_ double helices. They are/aren’t (circle one) identical to each other. Also, they are/aren’t (circle one) identical to the original parental helix.

**Big Idea 3: From Genes to Proteins**

1. Name 3 ways in which RNA is different from DNA.
2. What does RNA stand for? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. What nitrogen bases are found in RNA (use full names and letters)?
4. Which of the bases you wrote above takes the place of Thymine in DNA? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
5. During transcription, \_\_\_\_\_\_\_\_\_\_\_\_\_\_ is made.
6. The 3 steps of transcription:
7. Transcription occurs in the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ of the cell.
8. When transcription begins, RNA polymerase binds to a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
9. Transcribe the following strand of DNA into RNA:
	1. GGC TAT GTT AAG CGC GTA

 \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. After transcription, where does the mRNA go? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the function of mRNA?
3. The three letter nucleotide unit of an mRNA molecule is called a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Translate these codons into amino acids:

CCA \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ GAU \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ UGC \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Where does translation occur in the cell? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. What is the workbench of protein synthesis? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Amino acids are the monomers of a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
4. Describe translation:
5. What is the end product of transcription and translation?

Fill in the blanks: Central Dogma