Name:_____Date:_____

WS - Unit Review: DNA Structure and Replication

1. What is the full name of DNA?
2. DNA is a _____, a combination of many monomers called nucleotides.
3. The basic structure of of the DNA molecule is described as a_____ which has three sub-units. Complete the chart.

	5- Carbon sugar	Nitrogen Base
Elements:	Elements:	Elements:
Backbone or Inside DNA	RNA difference?	Chargaff's Rule:

4. Summarize the contribution of each scientist in discovering DNA structure. (see book timeline)

Erwin Chargaff:

Pauling & Corey:

Rosalind Franklin & Maurice Wilkins:

James Watson & Francis Crick:

5. Due to complementary base pairing, "if you know one side, _____."
6. Write a random sequence of DNA that is 20 bases long as well as its complementary strand.

7. Purine (1 ring or 2 ring) (A C T G U) Pyrimidine (1 ring or 2 ring) (A C T G U)
8. **Fill in the blanks:** DNA_____ is an elegant process. In order for a cell to divide it must rapidly and accurately make a copy of millions or billions of bases of information. First, an enzyme called *helicase* causes the double helix to _____ and unzip. This area where the DNA divides is called a _____ _____. Eukaryotic cells usually do this process simultaneously in many locations, but the loop of prokaryotic DNA only has _____ of these splits. Next, the enzyme DNA polymerase performs two jobs. First, it assembles new base pairs. In a nucleotide the _____ subunit attaches to the 5' carbon of its 2-deoxyribose. Its second job is to _____ the DNA, where it corrects copying errors. Because one strand is oriented ___'-->___' and the other ____'-->____',they don't copy the same. One side, called the _____ _____ copies uninterrupted. The other side, the _____ _____, copies in pieces called _____ _____ which must be linked together by an enzyme called _____.
9. Draw a simple diagram with major/minor grooves, label length and # bases per rotation, diameter

10. Identify whether the characteristic would happen in **P**rokaryotes, **E**ukaryotes, or **B**oth.

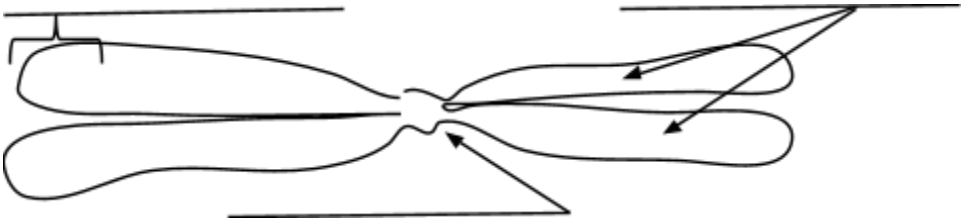
____ Millions of base pairs	____ Chromatin in long strands	____ Chromatin in a single loop
____ Many replication forks	____ Pair of replication forks	____ Billions of base pairs
____ Plasmids	____ Basic DNA double helix	____ Multiple Chromosomes

11. Put these into order(1-7) from smallest part(1) to largest(7).

____Coil ____Nucleotide____Chromosome____Histone____Double helix____Nucleosome____Supercoil

12. The suffix "-mere" means "part or segment" and can help understand the vocabulary describing chromosomal structure. Label the parts:

Centromere
Telomere
Sister Chromatids



13. Describe/diagram the cell cycle:

Interphase - **G_1/S/G_2**	*Prophase*	*Metaphase*	*Anaphase*	*Telophase*	*Cytokinesis*

14. How are each of the following different when contrasting the processes of *mitosis* with *meiosis*?

Process	# of Divisions	# of DaughterCells	Amount DNA	Compare Daughters
Mitosis				
Meiosis				

15. Genes on the same chromosome are said to be linked. Linked genes that are (close / far) are more likely to cross over. This process occurs during (Prophase 1 / Metaphase 2).

16. Identify key vocabulary term:

_____- This image of chromosomes is taken during metaphase

_____- Knowing all the genes of an individual

_____- Used to form dark bands on chromosomes for identification