

Name _____ Date _____ Per _____

12.2-12.3 READING GUIDE: DNA Structure & Replication (pages 344-353)

Section 12.2 - The Structure of DNA (page 344-349)

1) DNA is made up of subunits / monomers called _____, and each of these is made up of 3 parts (list them):

2) Sketch one nucleotide & label the 3 parts:



3) What are the 4 nitrogenous bases in DNA? (full names, not just first letter)

4) What are the base pairing rules (or Chargaff's Rule)? _____

Analyzing Data: Base Percentages

In 1949, Erwin Chargaff discovered that the relative amounts of A and T, and of C and G are almost always equal. The table shows a portion of the data that Chargaff collected.

Percentages of Bases in Five Organisms				
Source of DNA	A	T	G	C
Streptococcus	29.8	31.6	20.5	18.0
Yeast	31.3	32.9	18.7	17.1
Herring	27.8	27.5	22.2	22.6
Human	30.9	29.4	19.9	19.8
E. coli	24.7	23.6	26.0	25.7

A) Which organism has the high percentage of adenine? _____

B) If a species has 35% adenine in its DNA, what is the percentage of the other 3 bases?

C) What did the fact that A and T, and G and C, occurred in equal amounts suggest about the relationship among these bases?

5) What information was obtained from Rosalind Franklin's x-ray images of DNA? _____

6) How does the double helix explain Chargaff's Rule? _____

7) What does "antiparallel" mean? _____

8) What kind of chemical bond holds the nitrogenous bases (& therefore the 2 strands of DNA) together?

9) What is the complementary **DNA** strand?

A	T	T	C	T	C	G	A	G	T	C	A	T	A	A
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Section 12.3 - DNA Replication (p. 350-353)

1) Define **REPLICATION**: _____

2) In what stage of the cell cycle does replication occur? _____

3) Describe the major events of **DNA replication**.

4) What is the role of **DNA polymerase**? _____

5) Define **TELOMERE**: _____

6) What is the role of **telomerase**? _____

Replication in Living Cells

7) How many times more DNA do eukaryotes have compared to prokaryotes? _____

8) What are **histones**? _____

9) Complete the table below comparing DNA replication in prokaryotes and eukaryotes.

	Prokaryotes	Eukaryotes
Location of DNA		
Amount of DNA		
Starting point(s) for replication		

10) The sequence of bases on one strand of a DNA molecule is: **GGCAGTTCATGCCCATTTGAAC**.
What would be the sequence of bases on the complementary strand?
