

Complete the following questions to help you understand Concept 2.

Name: _____

Date: _____

Block: _____

1) Define the following terms:

Term	Definition
DNA ligase	
DNA polymerase I	
DNA polymerase III	
double helix	
helicase	
lagging strand	
leading strand	
mismatch repair	
nuclease	
nucleotide excision repair	
Okazaki fragment	
origin of replication	
primase	
primer	
replication fork	
semiconservative model	
single strand binding protein (SSBP)	
telomerase	
telomere	
topoisomerase	

2) Compare DNA and RNA by filling out the following chart:

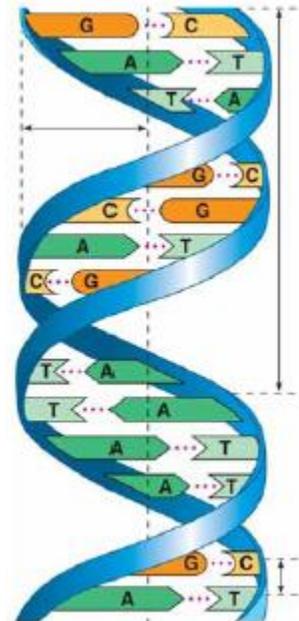
	DNA (deoxyribonucleic acid)	RNA (ribonucleic acid)
Sugar		
Types of Bases		
# of Strands		
Function		

3) List the three components of a nucleotide.

4) Explain what is meant by 5' and 3' ends of the nucleotide.

5) Who built the first model of DNA and shared the 1962 Nobel Prize for discovery of its structure?

6) Distinguish between the structure of *pyrimidines* and *purines*. Explain why cytosine binds only to guanine.



7) Given that the DNA of a certain fly species consists of 27.3% adenine and 22.5% guanine, what would be the percentages of thymine and cytosine?

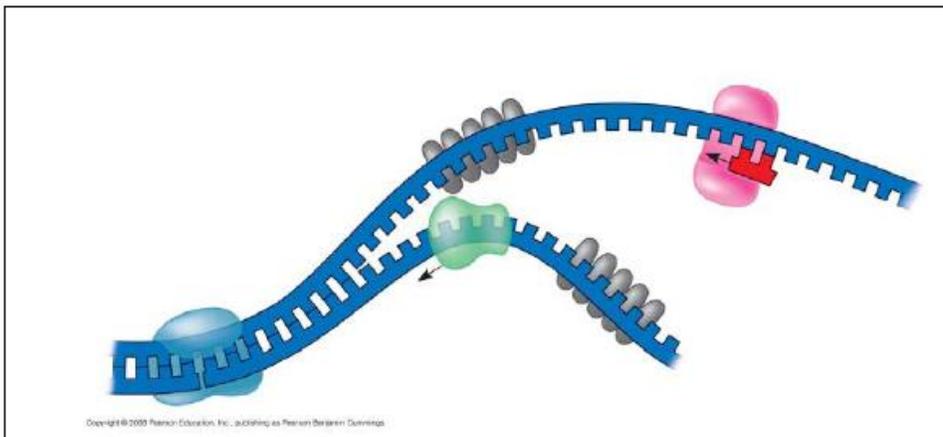
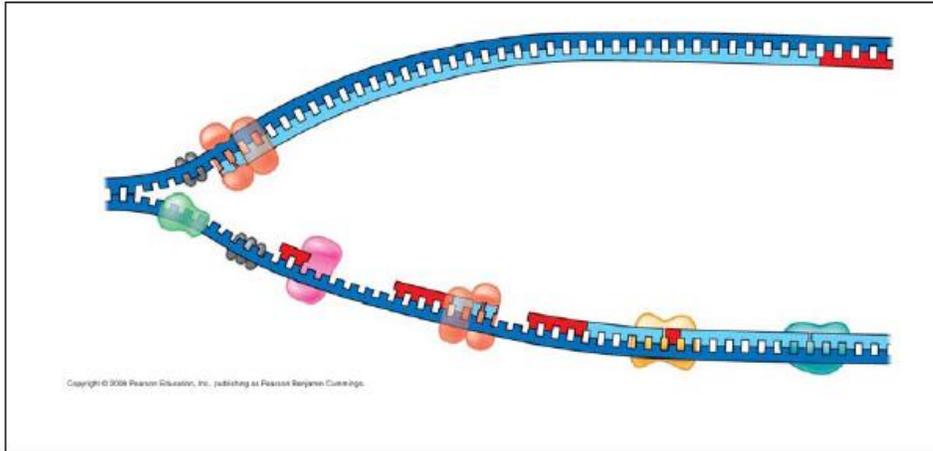
8) What do we mean when we say the two strands of DNA are *antiparallel*?

9) Name the five nitrogenous bases, and put a checkmark in the correct column for each base. Also indicate if the base is found in DNA (D), RNA (R), or both (B).

Nitrogenous Base	Purine	Pyrimidine	D, R or B

10) During DNA Replication, the leading strand is synthesized _____ the replication fork while the lagging strand is synthesized _____ the replication fork. This is because the new nucleotide can only be added in the _____ direction.

11) Label the following figures. Include 3' and 5' strands, RNA primer, primase, SSBP, topoisomerase, helicase, leading strand, lagging strand, DNA pol I, DNA pol III, DNA ligase, parental DNA, and newDNA.



12) *Put it all together!* Make a detailed list of the steps that occur in the synthesis of a new strand of DNA. Use Holtzclaw and Campbell, *but make sure to put it into your own words!*