Honors Biology
Unit 4: Genetics

Name: _____ Period: _____

4.2: DNA Replication Review

Fill in the Blanks:

_____ 1. What type of bond holds the nitrogen bases to one another across the DNA helix?

_____ 2. What type of bond connects one nucleotide to the next nucleotide (think backbone)?

_____ 3. In what part of the cell does replication occur?

_____ 4. When the DNA strands separate for replication, each strand acts as a _____ for a new strand.

_____ 5. The first step in replication is to break the _____ bonds between the nucleotides.

Match the Enzyme to Its Function:

DNA Polymerase Ligase Helicase

_____ 6. "Glues" the nucleotides together of the new DNA strand after replication.

_____ 7. Lays down the nucleotides to make the new DNA strand during replication.

_____ 8. Breaks the hydrogen bonds to "unzip" the DNA strands.

Short Answer:

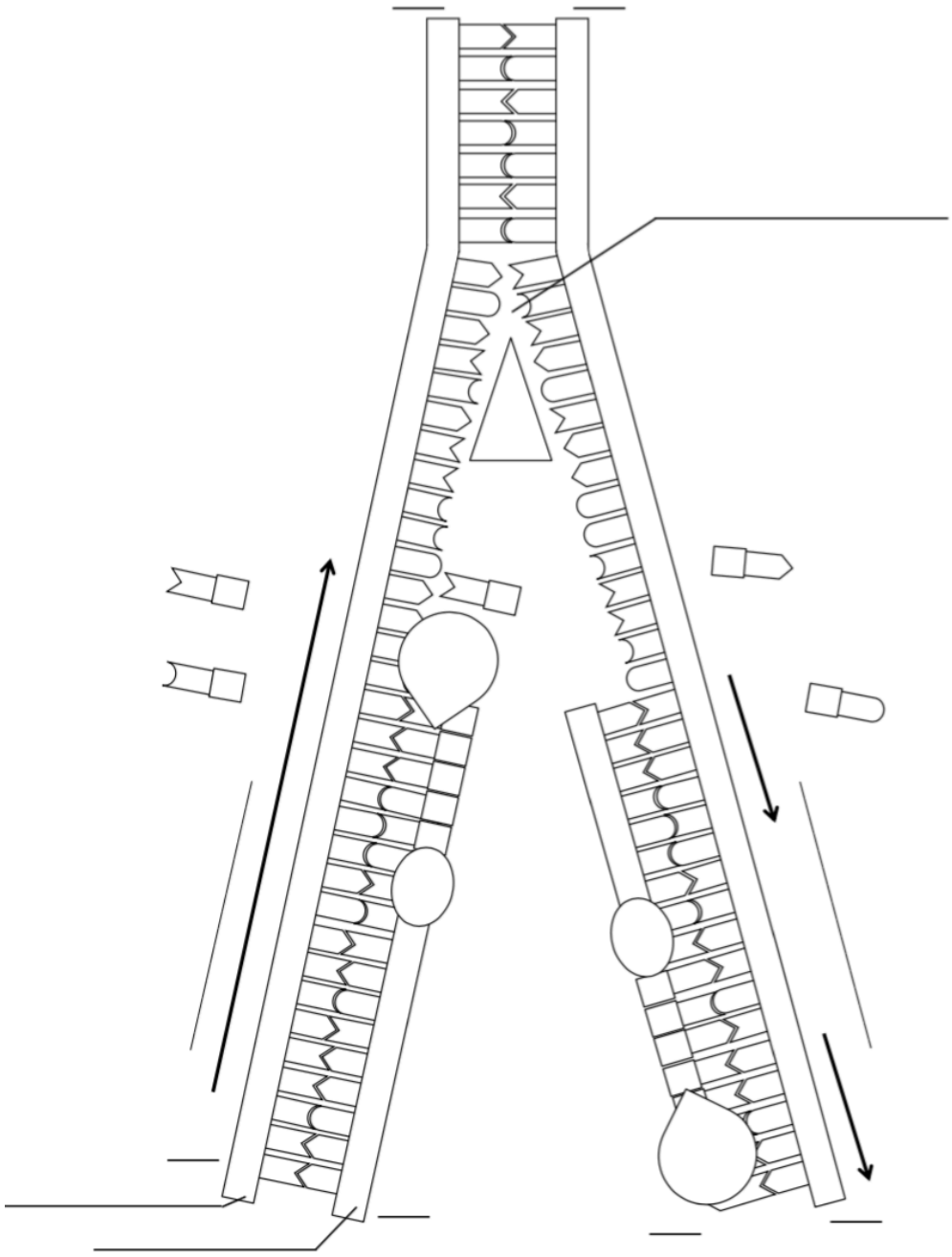
9. Why is it so important that the DNA molecule be able to make copies of itself?

10. Draw below a rough sketch of how DNA replicates.

11. How do the two new strands of DNA compare to the two "old" or original strands?

****Turn over!****

12. Label the parts of the drawing below: Helicase, DNA Polymerase, Ligase, Lagging Strand, Leading Strand, Replication Fork, Old Strand, New Strand, Adenine, Guanine, Cytosine, Thymine.



13. Based on the diagram above, describe what is happening on the leading strand. Describe what is happening on the lagging strand. How do the DNA Polymerases "know" what nucleotides to lay down?