

# Molecular Basis of Inheritance

Name: \_\_\_\_\_

## *DNA Replication and Repair Directed Reading*

1. What is semi conservative replication? Describe the *generalized* process of semi conservative replication in DNA.
2. What is the *origin of replication*?
3. How many origins of replication are there in prokaryotic cells? Eukaryotic cells?
4. What is the *replication fork*?
5. Describe the role of *DNA polymerase* in DNA replication.
6. What is the rate of elongation of a replicating DNA strand in bacteria? In humans?
7. What is the role of *nucleotide tri-phosphate* molecules in DNA replication?
8. To which carbon of the deoxyribose can DNA polymerases add nucleotides?
9. What is the "*leading strand*" in DNA replication? What is the "*lagging strand*"?

10. What are *Okazaki fragments*?

11. What is the role of the enzyme *DNA ligase* in DNA replication?

12. What is a *primer*? Why is it needed for DNA replication?

13. What is the role of the enzyme *primase*?

14. What is the role of the enzyme *helicase* in DNA replication?

15. What is the role of *single stranded binding protein* in DNA replication?

16. Describe the following ways the DNA replication “machinery” is able to prevent errors in replication.

a. DNA polymerase:

b. Mismatch repair:

17. How can nucleotide excision repair damaged DNA prior to replication?