Name _____ Block _____ Date _____

Test 5 Study Guide, Part 2 – DNA (30 pts)

1. Describe the contributions of each scientist to the discovery of DNA's molecular structure. (2pts)

Scientist	Contribution
Francis Crick and James Watson	
Erwin Chargaff	

2. Draw Franklin's "Photo 51" and identify the technique used to make it. (1pt)

   a. Technique: _____

3. Describe 2 important functions of DNA. (2pts)

   a. _____

   b. _____

4. Describe 2 important structural characteristics of DNA. (2pts)

   a. _____

   b. _____

5. Identify and draw the monomer of nucleic acids, like DNA. Label its three parts (phosphate, sugar, nitrogen base). (2pts)

6. Write the complimentary base sequence: (1pt)

   G A A C A T

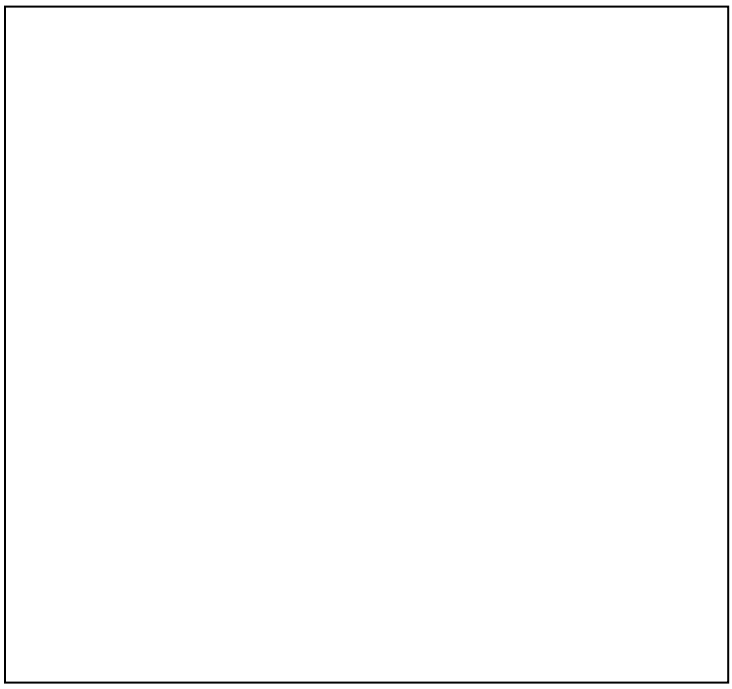
7. If a DNA sample contains 20% guanine, how much of the other three bases will it contain? (3pts)

   a. cytosine _____

   b. adenine _____

   c. thymine _____

8. Draw a DNA double strand that is at least 4 nucleotides long. (4pts) Label:
    a. a phosphate group
    b. a deoxyribose sugar
    c. a strong covalent bond
    d. the sugar-phosphate backbone
    e. a nitrogen base
    f. a base pair
    g. a weak hydrogen bond
    h. a nucleotide



9. Identify the cellular structure that holds DNA in eukaryotes (1pt). _____

10. Identify the stage of the cell cycle in which DNA is replicated (1 pt). _____

11. Explain why a cell replicates its DNA (hint: It is getting ready to do something.) and why it is important for the DNA to be copied exactly. (2pts)

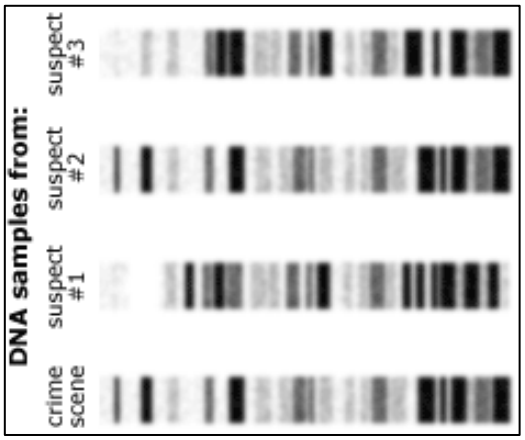
12. Draw or describe the process of DNA replication in 3 steps. Include the roles of **helicase** and **DNA polymerase**. (3pts)

13. Describe each form of genetic technology. (3pts)

Genetic Tech	Description	Example or Application
Recombinant DNA (genetic engineering)		
Cloning		
DNA Sequencing		

14. Explain why it is possible to insert foreign DNA into an organism and have that organism "use" the DNA (e.g. recombinant DNA, GMOs, gene therapy) (1pt)

15. Identify which suspect's DNA was found at the crime scene, and explain why you know this. (1pt)



Use the karyotype at right to answer: (2pts)

- Identify the gender: _____
- Draw a circle around where you found this information.
- Describe any chromosomal abnormalities:

  _____
- Draw a square around where you found this information.