Name: ______________________________

Biology I: Unit 2 (A DNA Mastery Unit) – Worksheet 1: DNA Structure

1. What do the letters DNA stand for?
   ______________________________________________________

2. Two scientists are given credit for discovering the structure of DNA. What is the name of those two scientists.
   a. ________________________________
   b. ________________________________

3. DNA is a polymer, which means that it is made up of many repeating single units (monomers). What are the monomers called?
   ______________________________________________________

4. The “backbone” of the DNA molecule is made up of two components, what are these?
   c. ________________________________
   d. ________________________________

5. There are four different variations of these monomers (four different bases), what are the names of those bases?
   a. ________________________________
   b. ________________________________
   c. ________________________________
   d. ________________________________

6. These bases are of two different types of molecules: purines and pyrimidines. Purines have ________________ ring(s) in their structure, and pyrimidines have ________________ ring(s) in their structure.

7. The two bases that are purines are:
   a. ________________________________
   b. ________________________________

8. The two bases that are pyrimidines are:
   a. ________________________________
   b. ________________________________
9. Chargoff's rule states that the DNA of any species contains equal amounts of ________________ and ________________ and also equal amounts of ________________ and ________________.

10. Based on this information, scientist could predict that the base ________________ pairs with ________________ and the base ________________ pairs with ________________ in the formation of the DNA molecule.

   This is called complementary base pairs. Thus one strand of DNA is complementary to the other strand (opposite/matching).

11. The bases are paired by ________________ bonds along the axis of the molecule.

12. Wilkins and Franklin studied the structure of DNA using ________________, a technique to examine molecules, and helped Watson and Crick determined that the shape of the molecule was a ________________ ________________.

13. Draw the basic structure of a nucleotide with its three parts.

14. Write the complementary sequence to following DNA strand:

   A   A   T   T   C   G   C   C   G   G   T   A   T   T   A   G   A   C   G   T   T
   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |

15. Use the image at the right to complete the follow:

   Circle a nucleotide.
   Label the sugar and phosphate.
   Label the bases that are not already labeled