DNA MODEL LAB

<u>Prelab Questions</u>

1. If the nitrogen base sequence on one side of DNA is G G C A C T T C C , what is the complementary sequence?

   _____

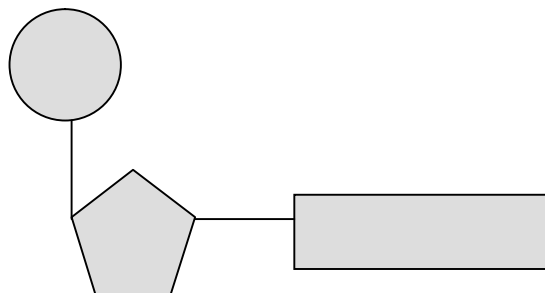2. What is a nucleotide? _____

   _____

3. What is the general structure (shape) of a DNA molecule? _____

4. What are the 3 molecules that are the components of the nucleotide shown to the right?

   Circle: _____

   Pentagon: _____

   Rectangle: _____

5. In the diagram above, which two molecules alternate to make the upright or side portion of a DNA molecule?

   _____   _____

6. In the diagram above, what is the name of the molecule to which each base is attached?

   _____

7. Name the molecules (parts of a nucleotide) which join by hydrogen bonds to attach the double strand of DNA. The specific names of these molecules are:

   _____   _____

   _____   _____

8. If there are four thymine bases on your DNA model, how many adenines will there be? _____

Lab Questions

Refer to the "DNA Model Lab" section in your lab manual for instructions on how to build your model.
CAUTION: Be gentle with the DNA model kit. The parts are fragile and can break.

9. What are the bases on the left side of the molecule? The right side? Diagram your model and
    LABEL the left and right sides. Position your model so it is oriented the same way as in your
    diagram, so it makes sense for the teacher to check. After diagramming **get teacher OK:** _____

10. If you were to open the entire molecule along the hydrogen bonds,
    what bases would the left side attach to? ____ ____ ____ ____ ____ ____

    what bases would the right side attach to? ____ ____ ____ ____ ____ ____

11. Would the two new DNA molecules contain the same nitrogen bases? _____

12. Would the two DNA molecules be exact copies of each other? _____ Explain:

    _____

    _____

Post Lab Questions:

13. What 2 amino acids does your DNA molecule code for? Use the Genetic Code table in your lab
    manual.

    DNA codon   ____ ____ ____   DNA codon   ____ ____ ____

    mRNA codon ____ ____ ____   mRNA codon ____ ____ ____

    Amino acid   _____   Amino acid   _____

14. What is the name of the process in which DNA is "rewritten" into mRNA? _____

15. Name the process in which the mRNA code is turned into amino acids? _____

16. Fill in the following codon information for the amino acids given:

    Amino acid   Valine   Amino acid   Tryptophan

    mRNA codon ____ ____ ____   mRNA codon ____ ____ ____

    DNA codon   ____ ____ ____   DNA codon   ____ ____ ____