Discovering DNA Structure

D = deoxyribo N = nucleic A = acid
DNA contains the information for carrying out the activities of the cell. How this information is coded or passed from cell to cell was at one time unknown. To break the code, today you will do a paper lab to determine the structure of DNA and show how the genetic code is carried. You have a page that has molecules called NUCLEOTIDES. DNA is made up of repeating units of nucleotides.

CHOOSE YOUR COLORS: Color the deoxyribose sugar _______. Color the phosphate group _______. Color the Adenine _______. Color the Thymine _______. Color the Guanine _______. Color the Cytosine _______.

Look at your nucleotides.
1) What are the THREE common parts of a nucleotide?

2) What is the ONE part of a nucleotide that differs among the four DIFFERENT nucleotides on your paper?

3) List the four different kinds of nitrogen bases.

Cut out your 16 nucleotides. Manipulate the nucleotide pieces until you find the best fit. Using a page in your notebook, Join the nucleotide molecules together like a puzzle. GLUE THEM IN PLACE ON THE RIGHT HAND SIDE OF YOUR NOTEBOOK!! You now have a molecule of DNA.

4) How do the nucleotides connect together to make a double stranded molecule of DNA? What patterns do you see?

5) What did you have to do to link the two sides together (are they both oriented the same way)?

6) A real DNA molecule consists of THOUSANDS of these pairs of nucleotides. What is the pairing arrangement of nitrogen bases?________ pairs with ________ and ________ pairs with __________

7) Are there always going to be an EQUAL number of adenine and thymine nucleotides in a molecule? Why?

8) Are there always going to be an EQUAL number of guanine and cytosine molecules in a molecule of DNA? Why?

9) Scientists abbreviate the nitrogen bases by using the first letter of each base. So, A always binds to ____G always binds to ____

The structure of DNA is actually in a DOUBLE HELIX arrangement. DOUBLE HELIX means that the two long chains of nucleotides are arranged in a spiral like a twisted ladder. The sides (or "uprights") of the ladder are made up of alternating ____________ and _____________ molecules. The steps (or "rungs") of the ladder are made of ______________ ______________ held together by HYDROGEN BONDS.
Biology

Deoxyribose (Sugar)
Nitrogen Base
Phosphate

A
Nitrogen Base
Phosphate

T
Nitrogen Base
Phosphate

C
Nitrogen Base
Phosphate

G
Nitrogen Base
Phosphate

Name_______________________________________  Per____