Due: Wednesday, 11-May-2005 at or before 12:00 noon. This is an **absolute** deadline, as I need to finalize grades. No work will be accepted after this deadline.

1) Identify the base sequences **complementary** to each of the following:
   a) CGTCCATA
   b) GATTACA
   c) GGGTTGAG
   d) GATCAATCGAAC

2) Using the pictures below, explain why stable base pairing does **not** occur between A and C, T and G, A and G and T and C. (*Hint: Looking at Figure 12.7 in your text may help you.*)

3) Given that the average distance between base pairs is 0.34 nm, how many base pairs are present in a chromosome that is 3.0 cm long? Remember that 1 m = $10^2$ cm and 1 m = $10^9$ nm.
4) What is the minimum number of PCR cycles necessary to convert two DNA molecules to:
   a) 5000 DNA molecules
   b) 50,000 DNA molecules
   c) 500,000 DNA molecules
   d) 5,000,000 DNA molecules

5) Consider the structure of deoxyribose below. The prefix “deoxy-” means without oxygen; the -OH group is replaced by a hydrogen atom. In the specific case of deoxyribose, the -OH group replaced by a hydrogen was bonded to the only carbon in the ring that bonds to two hydrogens in deoxyribose. Use this information to draw the correct structural formula of ribose.