The Structure and Function of DNA

1. **A.** sugar
   B. phosphate group
   C. DNA double helix
   D. nitrogenous base
   E. chromatin
   F. chromosome

2. **a)** DNA and RNA are both nucleic acids. RNA is a copy of DNA.
   b) Adenine and thymine are complementary nitrogenous bases held together by hydrogen bonds in a DNA molecule.
   c) Complementary base pairings between nitrogenous bases are held together by hydrogen bonds.
   d) Nucleotides are sub-units that make up a nucleic acid.
   e) Alleles are different forms of a gene.
   f) A sequence of nucleotide on a DNA molecule codes for a protein.

DNA Replication

1. nucleotide, gene, DNA, chromosome, nucleus, cell
2. DNA replication takes place in the nucleus of the cell.
3. DNA replication occurs during interphase of the cell cycle.
4. C-T-G-A-A-T-G-C-A-T-G-G
5. The result of DNA replication is two strands of DNA that are identical to the original DNA molecule. The new molecule contains one original strand and one new strand.
6. **a)** chromosomes **b)** genes **c)** nitrogenous bases
7. **a)** DNA **b)** RNA **c)** protein
   d) DNA carries the genetic instructions to make all the parts of an organism.
   e) RNA makes a copy of the instructions from DNA to make the proteins required to form the organism.
   f) Different proteins are required as structural components and to perform metabolic activities in an organism.
8. Genes are sections of DNA. To produce proteins, DNA is copied to create a single strand of RNA. Then the RNA is used to produce the correct sequence of amino acids to build the protein.