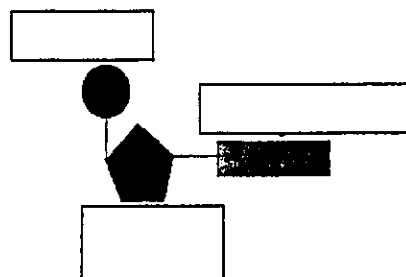


## DNA and RNA Worksheet

Name: \_\_\_\_\_

Write answers on another sheet of paper.

1. What is a nucleotide?
2. What makes up a nucleotide?
3. Label the following diagram of a nucleotide:



4. In what ways do the chemical structures of DNA and RNA differ? In what ways are they similar?
5. What differentiates one nucleotide from another?
6. What is the relationship between DNA, nucleotides, genes and chromosomes?
7. What is the relationship between DNA and RNA?
8. What are the three types of RNA? Explain the purpose of each.
9. Explain the following:
  - a) Replication
  - b) Transcription
  - c) Translation
10. What is a codon and what does it represent?
11. Describe how point mutations and frame shift mutations affect the synthesis of proteins. Give an example of each.
12. The following is the sequence of bases on one strand of a DNA molecule.

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

- a) Write the sequence of bases that makes up the complementary DNA strand.
  - b) What base sequence in mRNA would the first DNA strand code for?
  - c) What sequence of amino acids would this mRNA code for?
  - d) Would there be a change in the amino acid sequence if the last "T" was changed to a "G"? If so, what is the change? Would this affect the organism?
13. How is your DNA the same as the DNA of a jellyfish? How is it different from the DNA of a jellyfish? How do these differences in DNA cause you to be different from a jellyfish?
  14. Explain how point mutations affect the synthesis of proteins.

## Similarities and Differences Between DNA and RNA

Place a check to indicate whether each statement is part of DNA, RNA, or both.

	DNA	RNA
<b>Deoxyribonucleic Acid</b>		
<b>Ribonucleic Acid</b>		
<b>Ribose Present</b>		
<b>Deoxyribose Present</b>		
<b>Phosphoric Acid Present</b>		
<b>Adenine Present</b>		
<b>Thymine Present</b>		
<b>Uracil Present</b>		
<b>Guanine Present</b>		
<b>Cytosine Present</b>		
<b>Polymer of Nucleotides</b>		
<b>Double Stranded</b>		
<b>Single Stranded</b>		
<b>Remains in the Nucleus</b>		
<b>Moves Out of the Nucleus</b>		
<b>Contains a Genetic Code</b>		