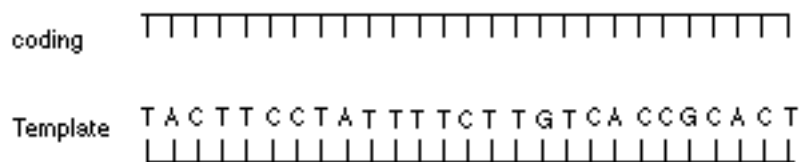
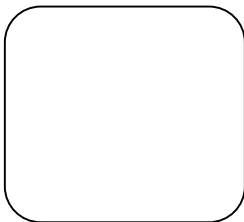


## DNA TRANSCRIPTION & TRANSLATION WORKSHEET.

- 1) Each DNA molecule has two sides, one is called the template from which the mRNA is constructed by RNA polymerase, and the other is the coding side which codes for a protein. If the template side of a DNA molecule is the sequence shown below, what will the coding side base sequence be? (Show the proper number of hydrogen bonds connecting the bases)



- 2) If the template strand from above is used, what will the resulting mRNA molecule base sequence be? Write the base sequence for mRNA above the bases of the DNA molecule. Diagram a RNA nucleotide (197) in the box provided.



- 3) Using the mRNA codon list (Page 207) for amino acids, determine the amino acid sequence for the mRNA sequence above.

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- 4) If a mutation occurred to the fourth base in the template side, thymine, and a substitution occurred such that a guanine replaced the thymine, would the protein be changed? If so, how?

- 5) If the substitution occurred to the 6<sup>th</sup> base on the template side, such that the cytosine was changed to a thymine, would the protein change? Why?
- 6) Summarize the roles of the following enzymes that play a role in DNA functions?
- a. Helicase \_\_\_\_\_
  - b. DNA polymerase \_\_\_\_\_
  - c. RNA polymerase \_\_\_\_\_
- 7) Describe the location of each process listed below and what then name the product of each process.
- a. Transcription \_\_\_\_\_
  - b. Translation \_\_\_\_\_
- 8) Describe the role of the following base(s) on the DNA molecule.
- a. Codon \_\_\_\_\_
  - a. Promoter \_\_\_\_\_
  - b. Termination codon \_\_\_\_\_
- 9) List the start and stop codons found on RNA.
- a. Start codon \_\_\_\_\_
  - b. Stop codons \_\_\_\_\_
- 10) If the DNA coding strand is ATGTGTAGTGCGAGITGA, what would the amino acid sequence be?
- 11) If the above sequence was struck by radiation and the last "T" in "AGT" was changed to an "A", how would the amino acid sequence be changed?
- 12) If the last base in the underlined sequence was changed by mutation to a "C", how would the protein be changed?
- 13) If the 4<sup>th</sup> base in the sequence was deleted by radiation (mutation), how would the sequence be changed?