NAME _____   PERIOD _____

PAP PROTEIN SYNTHESIS WORKSHEET

PART A. Read the following passage and answer the questions below.

Protein synthesis is the process used by the body to make proteins. The first step of protein synthesis is called Transcription. It occurs in the nucleus. During transcription, mRNA transcribes (copies) DNA. DNA is "unzipped" and the mRNA strand copies a strand of DNA. Once it does this, mRNA leaves the nucleus. Translation, the second step, occurs in the cytoplasm on the ribosome. mRNA will then attach itself to a ribosome. The strand of mRNA is then read in order to make protein. They are read 3 bases at a time. Three bases is called a codon. tRNA brings the amino acids to the ribosome to help make the protein. The 3 bases on tRNA are called anti-codons. Remember, amino acids are the building blocks for protein. On the mRNA strand, there are start and stop codons. They tell your body where to start and stop making certain proteins.
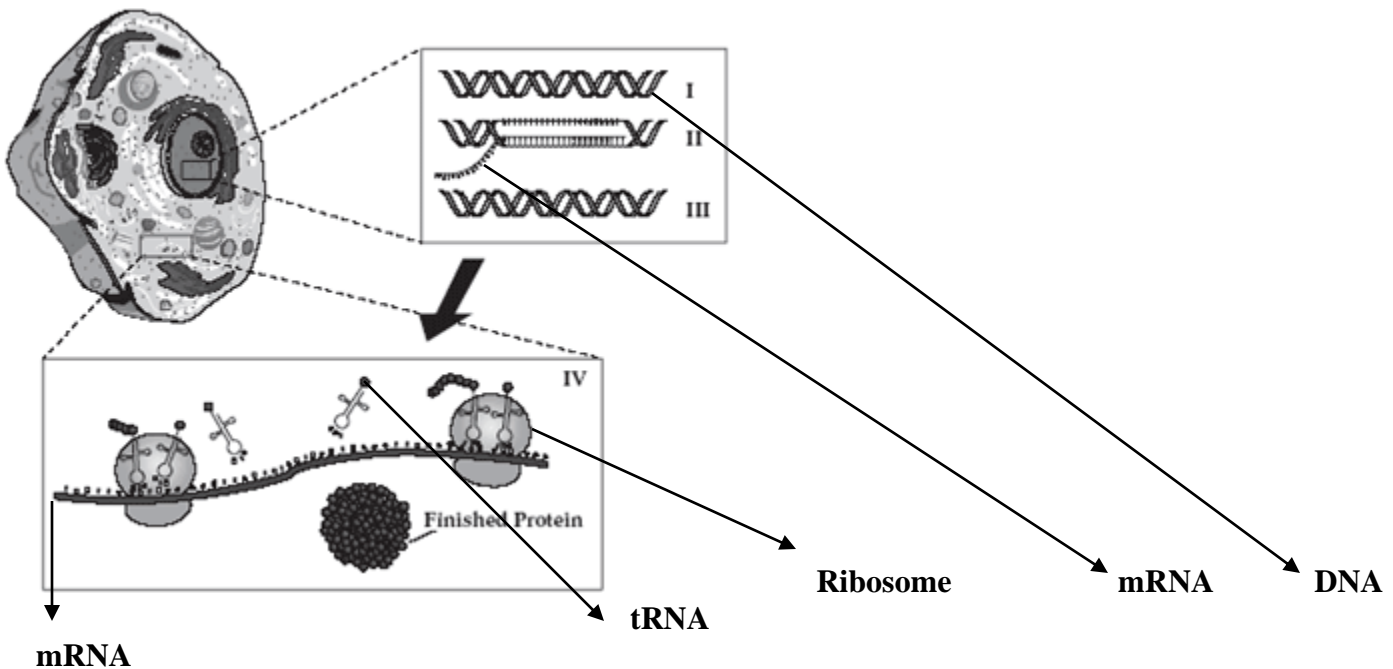
PART B. Use the passage to answer the following questions:

1. What is the first step of protein synthesis? _____

2. What is the second step of protein synthesis? _____

3. Where does the first step of protein synthesis occur? _____

4. Where does the second step of protein synthesis occur? _____

5.   Nitrogen bases are read _____ bases at a time.

6. A set of 3 bases on the mRNA strand is called _____.

7. The bases on tRNA are called _____.

8. From the passage, what is the purpose of the start and stop codons? _____

    _____

9. A bunch of amino acids put together makes _____.

PART C. Use your codon chart to determine the amino acid sequence. Remember to read through the strand and **ONLY** **start on AUG** and **STOP** **when it tells you to stop.** Follow example below:

Example:
DNA → AGA CGG TAC CTC CGG TGG GTG CTT GTC TGT ATC CTT CTC AGT ATC
mRNA → UCU GCC AUG GAG GCC ACC CAC GAA CAG ACA UAG GAA GAG UCA UAG
protein →   met - glu - ala - thr - his - asp - glu - thr - stop

1. DNA → CCT CTT TAC ACA CGG CGC TAT TCT ATG ATT ACA CGG TTG ATC

mRNA → _____

protein → _____

2. DNA → AGA ACA TAA TAC CTC TTA TAA AGA CCA GCA CTC TGA ACT GGA

mRNA → _____

protein → _____

3. DNA → TAC CTT GGG GAA TAT ACA CTT CGA TGA ATC CGT ACG GTA CTC

mRNA → _____

protein → _____

4. DNA → TAAACTCGGTACCTAGCTTAGATCTAATTACCCATC

mRNA → _____

protein → _____

5. DNA → CATTATTACGATACTAGAGCGAATAGAAACTTATCATCGTT

mRNA → _____

protein → _____

6. DNA → ACTACCTTAGTTATCCATTGACTCGAATTGTGCGCTTGCTGATC

mRNA → _____

protein → _____

7. DNA → ACCCGATACCTCTCTTATAGCATTACAAACCTCCGAGCG

mRNA → _____

protein → _____

8. DNA → CGCCATACAGACGGCAACTCTGGGTGCTTTGTTCTCTTCTCAGTATC

mRNA → _____

protein → _____