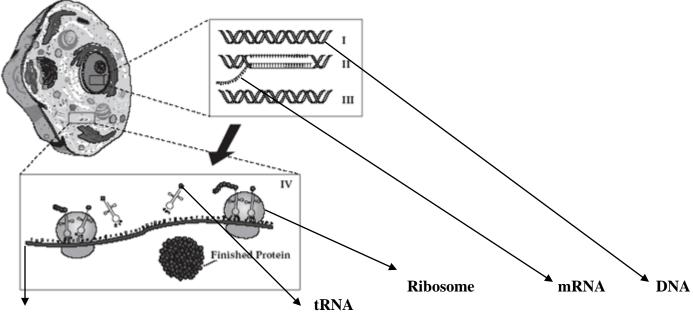
PROTEIN SYNTHESIS WORKSHEET

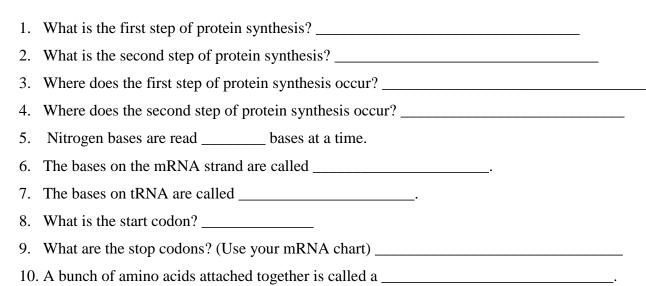
PART A. Read the following:

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 and goes into the cytoplasm. 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. These bases are called codons. tRNA is the fetching puppy. It 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. Your body knows where to start and stop making certain proteins. Just like when we read a sentence, we know when to start reading by the capitalized word and when to stop by the period.





PART B. Answer the following questions on your paper:



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

Example:

 $\begin{array}{cccc} \mathrm{DNA} \xrightarrow{\rightarrow} & \mathrm{AGA} \ \mathrm{CGG} \ \mathrm{TAC} \ \mathrm{CTC} \ \mathrm{CGG} \ \mathrm{TGG} \ \mathrm{GTG} \ \mathrm{CTT} \ \mathrm{GTC} \ \mathrm{TGT} \ \mathrm{ATC} \ \mathrm{CTT} \ \mathrm{CTC} \ \mathrm{AGT} \ \mathrm{ATC} \\ \mathrm{mRNA} \xrightarrow{\rightarrow} & \mathrm{UCU} \ \mathrm{GCC} \ \mathrm{AUG} \ \mathrm{GAG} \ \mathrm{GCC} \ \mathrm{ACC} \ \mathrm{CAC} \ \mathrm{GAA} \ \mathrm{CAG} \ \mathrm{ACA} \ \mathrm{UAG} \ \mathrm{GAA} \ \mathrm{GAG} \ \mathrm{UCA} \ \mathrm{UAG} \\ \mathrm{protein} \xrightarrow{\rightarrow} & \mathrm{start} \ \mathrm{glu} \ - \ \mathrm{ala} \ - \mathrm{thre} \ - \ \mathrm{hist} \ - \ \mathrm{asp} \ - \mathrm{glu} \ - \ \mathrm{threo} \ - \ \mathrm{stop} \\ & \mathrm{acid} & \mathrm{acid} \end{array}$

- DNA → CCT CTT TAC ACA CGG AGG GTA CGC TAT TCT ATG ATT ACA CGG TTG CGA TCC ATA ATC mRNA → protein →
- 2. DNA → AGA ACA TAA TAC CTC TTA ACA CTC TAA AGA CCA GCA CTC CGA TGA ACT GGA GCA mRNA → protein →
- 3. DNA → TAC CTT GGG GAA TAT ACA CGC TGG CTT CGA TGA ATC CGT ACG GTA CTC GCC ATC mRNA → protein →
- 4. DNA → TAA ACT CGG TAC CTA GCT TAG ATC TAA TTA CCC ATC mRNA → protein →
- 5. DNA → CTA TTA CGA TAC TAG AGC GAA TAG AAA CTT ATC ATC mRNA → protein →
- 6. DNA → TAC CTT AGT TAT CCA TTG ACT CGA ATT GTG CGC TTG CTG ATC mRNA → protein →
- 7. DNA \rightarrow ACC CGA TAC CTC TCT TAT AGC ATT ACA AAC CTC CGA GCG
- $\mathrm{mRNA} \rightarrow$
- protein \rightarrow
- 8. DNA → TAC AGA CGG CAA CTC TGG GTG CTT TGT TCT CTT CTC AGT ATC mRNA → protein →

Circle the correct choice within the parenthesis for 1 -18.

- 1. (DNA/RNA) can leave the nucleus.
- 2. mRNA is made during (transcription/translation).
- 3. mRNA is made in the (cytoplasm/nucleus).
- 4. DNA is located in the (nucleus/cytoplasm)
- 5. (Translation/Transcription) converts DNA into mRNA.
- 6. (mRNA/rRNA) is used to carry the genetic code from DNA to the ribosomes.
- 7. (tRNA/rRNA) makes up the ribosome. Look in the book for this.
- 8. (DNA/RNA) uses uracil instead of thymine.
- 9. (RNA/amino) acids make up a protein.
- 11. Transcription takes place in the (nucleus/cytoplasm).
- 12. tRNA is used in (translation/transcription).
- 13. tRNA uses (anticodons/codons) to match to the mRNA.
- 14. Proteins are made at the (nucleus/ribosome).
- 15. (tRNA/mRNA) attaches the amino acids into a chain.
- 16. tRNA is found in the (nucleus/cytoplasm).
- 17. (Translation/Transcription) converts mRNA into a protein.
- 18. Translation takes place in the (cytoplasm/nucleus).

Fill the Diagram In

