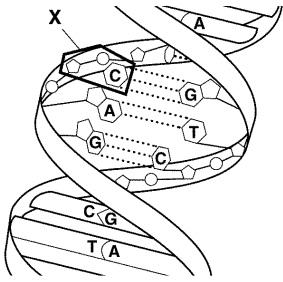


UNIT #5 REVIEW SHEET
(DNA, RNA, PROTEIN SYNTHESIS, MUTATIONS, & DNA TECHNOLOGIES)

TEST DATE: _____



- (a) Name this molecule that this structure represents.
- (b) What information does this structure "store"?
- (c) What is the name of the sugar found in this molecule?
- (d) What is the name given to the structure labeled "X"?

- (A)
- (b)
- (c)
- (d)

Name the sugar found in DNA.

What are the four bases of DNA?

What are the base pairings that occur in DNA?

What type of bond is found between the bases of the two strands of a DNA molecule?

What is the complementary strand of the following:

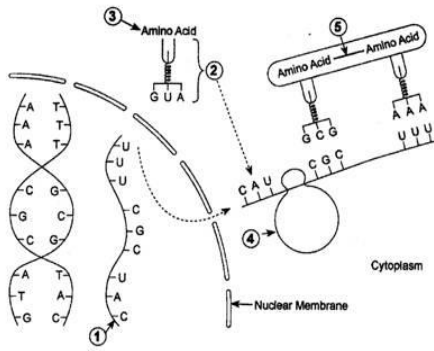
TAC GGA AGT TAG CAT

Where in a eukaryotic cell is DNA located?

Where in a eukaryotic cell is RNA located?

- (a) What is replication?
- (b) Where in the cell does replication occur?

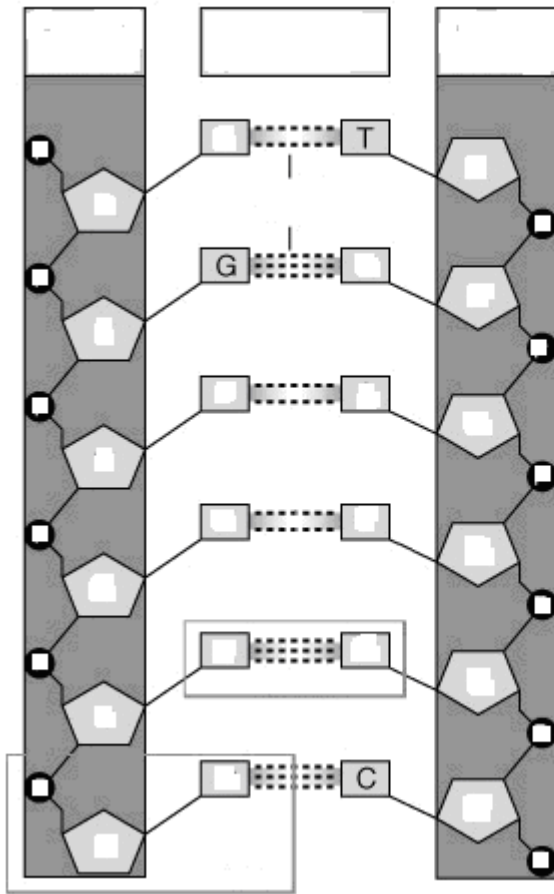
During DNA replication, a DNA strand that has the bases ATCGTCG would produce a strand with what bases?



- (f) What does number 5 represent?
- (g) What is number 4 made up of?
- (h) What process produces number 5?

- (a) What does molecule 1 represent?
- (b) By what process is it made?
- (c) What does number 2 represent?
- (d) What does number 3 represent?
- (e) What does number 4 represent?

- (a)
- (b)
- (c)
- (d)
- (e)
- (f)
- (g)
- (h)



- (a) Label all of the phosphate groups with a "P".
- (b) Label all of the sugars with an "S".
- (c) Put the letter "A" where you KNOW an adenine would be.
- (d) Put the letter "G" where you KNOW a guanine would be.
- (e) What is the name of the sugar found in this molecule?
- (f) Draw a box around a nucleotide.




- (a) What is a mutation?

Use the following DNA strand to illustrate a point mutation and then a frameshift mutation:

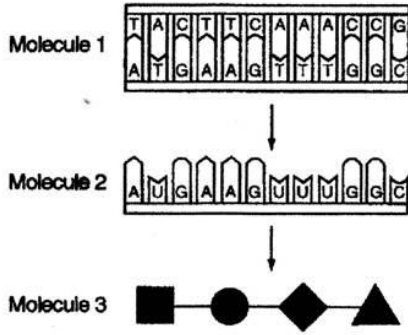
A G T C A T A T C

- (a) Point mutation
- (b) Frameshift mutation

<p>(a) What process <u>must</u> be carried out by DNA in order for a cell to undergo mitosis?</p> <p>(b) Why?</p> <p>(c) When?</p>	
<p>Name the sugar found in RNA</p>	
<p>Name the four bases of RNA</p>	
<p>Name three similarities between DNA and RNA</p>	
<p>Name the <u>3</u> types of RNA and the function of each</p>	<p>(A)</p> <p>(B)</p> <p>(C)</p>
<p>(a) Name the process that produces RNA molecules.</p> <p>(b) Where does this process occur in the cell?</p>	
<p>(a) Codons are in groups of _____ (how many?)</p> <p>(b) On which structure does one find a codon?</p> <p>(c) If you had 4 codons on a strand of mRNA, how many amino acids would you have in that particular protein?</p>	<p>(a)</p> <p>(b)</p> <p>(c)</p>
<p>(a) Are all of the three types of RNA copied from DNA?</p> <p>(b) If so, by what process?</p>	<p>(a)</p> <p>(b)</p>
<p>Which part of the DNA molecule has the “code” needed to make proteins?</p>	

<p>What are the repeating units in the polymers RNA and DNA called?</p>	
<div style="display: flex; justify-content: space-around; align-items: center;">    </div> <p style="text-align: center;"> A B C </p> <p>(a) What are the following diagrams all types of? (b) What does "a" represent? (c) What does "b" represent? (d) What does "c" represent? (e) What is the function of "b"? (f) What is the function of "c"? (g) Which of these structures would have an anticodon?</p>	<p>(a)</p> <p>(b)</p> <p>(c)</p> <p>(d)</p> <p>(e)</p> <p>(f)</p> <p>(g)</p>
<p>Use the following DNA strand to determine the messenger RNA code:</p> <p style="text-align: center;">ATT AGC GCC ACT</p>	
<p>A cell uses information from messenger RNA to produce protein during the process of _____</p>	
<p>If a mutation occurred in a somatic cell such as a liver cell, would the liver cells that develop from the mutated cell have the same mutation?</p>	
<p>In what type of cell must a mutation occur in order for the mutation to be inherited from a parent?</p>	
<p>Why do all of the cells in your body not perform the same exact function? Relate your answer to DNA.</p>	

List all of the structures (organelles and molecules) that are involved in protein synthesis. Start with DNA and end with Translation.



- (a) What does molecule 1 represent?
- (b) What does molecule 2 represent?
- (c) What does molecule 3 represent?
- (d) By what process is molecule 2 made from molecule 1? Where in the cell
- (e) By what process is molecule 3 made from molecule 2? Where in the cell would this happen?

- (a)
- (b)
- (c)
- (d)
- (e)

_____ is the process that makes a copy of RNA from DNA

_____ is the process that makes an exact copy of DNA

_____ is the process of making protein from mRNA

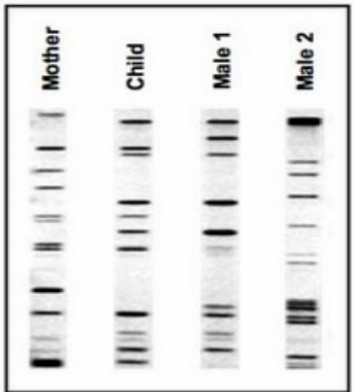
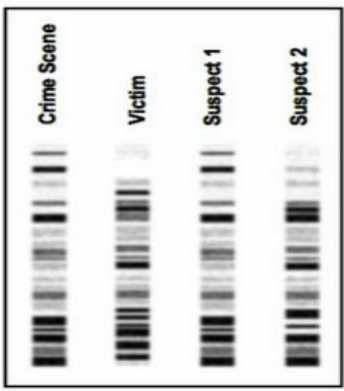
Use the following DNA strand to determine the mRNA and then the amino acids:
TGC GGA CTC CTC

mRNA:

amino acids:

A segment of DNA is called a _____. It codes for making a _____.

What is the base sequence for the start codon?	
Amino acids are linked together by _____ bonds to form a _____.	
Fill in the missing information: (a) 45% A, ____%G, ____% T, ____% C (b) 5% T, ____%C, ____% A, ____% G (c) 16% G, ____%T, ____% C, ____% A	
What does DNA stand for?	
What shape did Watson and Crick suggest for the DNA molecule?	
(a) What determines your physical appearance? (b) What could cause a rapid change in the physical appearance of a particular species?	
What is the possible outcome of excessive exposure to things such as radiation or smoke?	
(a) If the order of amino acids is changed in a protein, is that protein now considered to be a different protein? (b) Would this protein have the same function as the original protein?	
What happens to all of the amino acid that occurs AFTER a frameshift mutation?	
When a mutation occurs, what part of the DNA has been changed?	
(a)What is helicase? (b)What is the function of helicase? (c) During which processes would helicase be utilized?	

<p>What is produced in the process of Gel Electrophoresis?</p>	
<p>What does a Restriction Enzyme do in the process of Gel Electrophoresis?</p>	
<p>Use the diagram to the right to determine who fathered the child. Highlight each mark in the child's row and color code it to the parent.</p>	
<p>Use the diagram to the right to determine who the crime scene evidence belongs to.</p>	
<p>Put the following steps of Bacterial Transformation in the correct order:</p> <ol style="list-style-type: none"> Allow the bacterial cell to grow & divide to make additional protein. Use a Restriction Enzyme to cut bacterial plasmid Use a Restriction Enzyme to isolate a gene from DNA The bacteria is now "programmed" to make a protein Paste the gene into the bacterial plasmid 	<ol style="list-style-type: none"> _____ _____ _____ _____ _____
<p>What is a transgenic organism? List 2 examples. List 2 ways in which this can be useful/helpful . List 2 ways in which thos could potentiall be harmful.</p>	