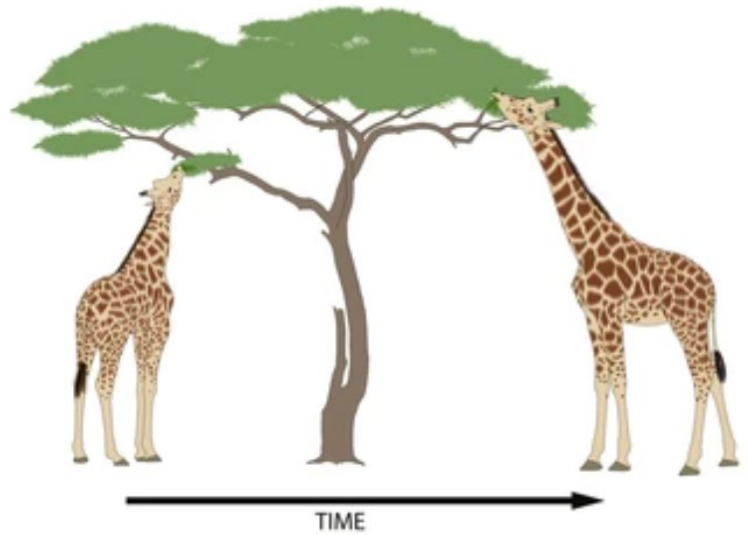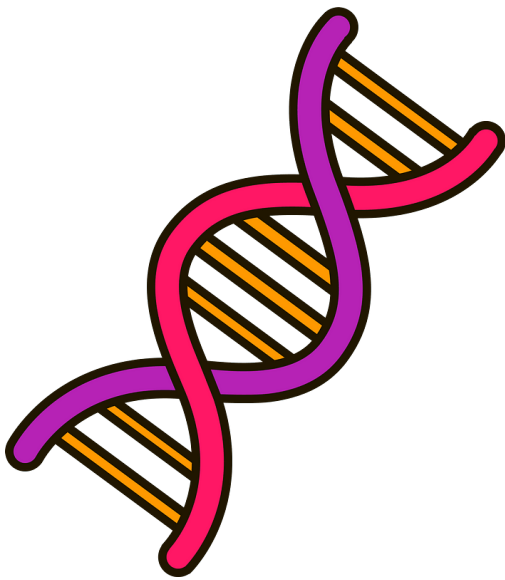# Unit 3: Biology REVIEW
"Practice Test"
Science 10

Name:_____   **Block:_____**

Part I: Vocabulary

Referring to your notes and textbook, define each of the following vocabulary terms in a complete sentence:

1. Adaptation

2. Adaptive Radiation

3. Allele

4. Artificial Selection

5. Carcinogen

6. Chromosome

7. Co-dominance

8. Complementary Base Pairing

9. Complete Dominance

10. DNA

11. Dominant

12. Extinction

13. Gene	
14. Genetic Engineering	
15. Incomplete Dominance	
16. Mendelian Genetics	
17. Mutagen	
18. Mutation	
19. Natural Selection	
20. Selection Pressure	
21. Protein	
22. Punnett Square	
23. Recessive	
24. Sex-Linked Inheritance	
25. Transcription	
26. Translation	

1. What does DNA stand for?

2. Use the diagram and follow the instructions carefully. Be clear with your labeling
    i.   Complete the complementary base pairing
    ii.   Circle ONE nucleotide.
    iii.   In the nucleotide you circled, label the THREE parts of a nucleotide.
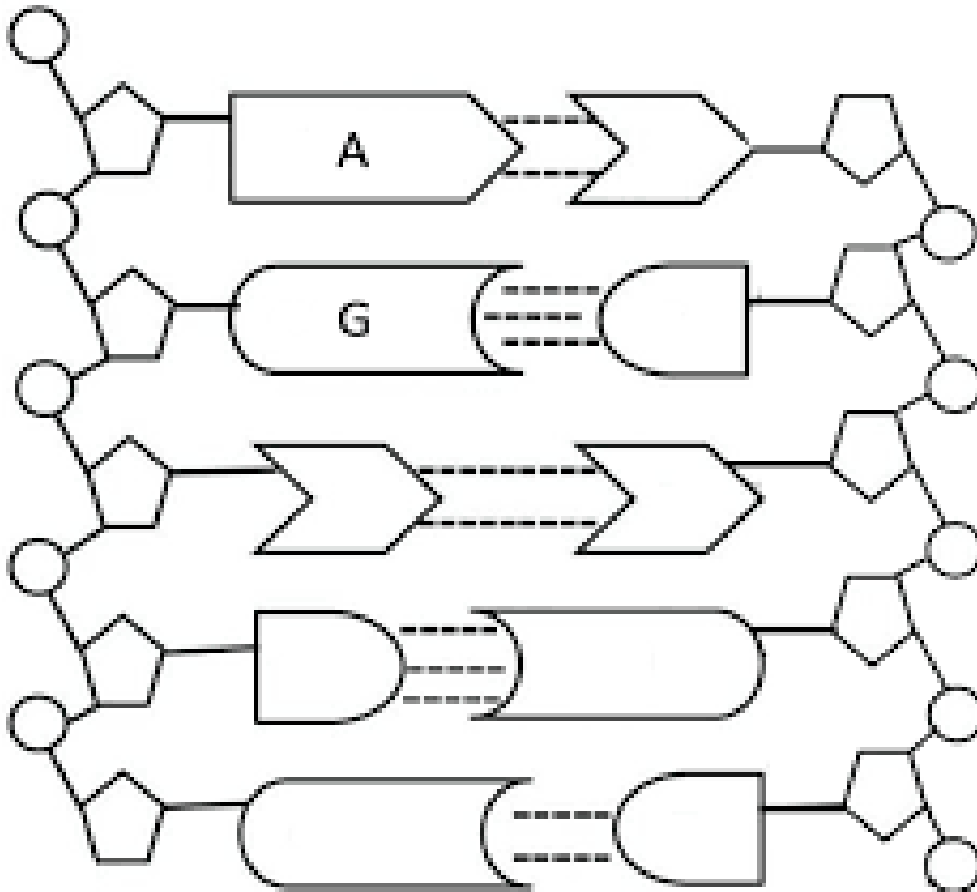
3. What type of bonds connect the two DNA strands?

4. What shape does a double-stranded DNA molecule take?

5. Distinguish between **genes and alleles.**
   (you may wish to use the diagram to help support your answer)
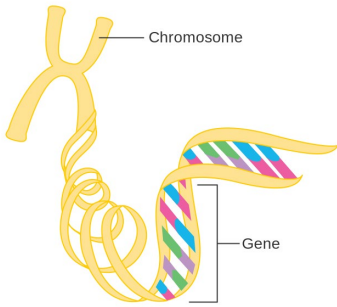
6. You have been given the template strand of DNA from a gene. ***Transcribe and translate*** it:

DNA Template Strand	T A C C C G A A T T A G G C T A T C
DNA Coding Strand	
mRNA	
tRNA	
Amino Acid Sequence	

   i.   What type of molecule contains the codons?

   ii.   How many codons are there?

   iii. What type of molecule contains the anticodons?

   iv.   How many anticodons are there?

   v.   How many amino acids are in the polypeptide made from this DNA sequence?

7. The following is an mRNA strand.
   i.   Translate it.

   ACU UAG UCC GUU CGA UUU GAU

   ii.   How many amino acids would be in the polypeptide?

8. Describe one of Mendel's experiments on peas.

9. Explain the two 'laws' resulting from Mendel's experiments.

10. Explain the difference between **complete dominance, co-dominance, and incomplete dominance** using examples from videos shown in class or notes.

11. A single gene controls the hair texture of guinea pigs. The allele for straight hair (H) is completely dominant over the allele for curly hair (h). If a breeder was to cross two hybrid guinea pigs that had both alleles, what is the probability of their offspring having curly hair? Show all your work.

12. In snapdragons, flower color is controlled by incomplete dominance. The two alleles are red (R) and white (W). The hybrid trait (RW) is expressed as pink flowers. If a plant breeder was to cross a white plant with a pink plant, what is the probability that their offspring would have pink flowers? Show all your work.

13. Human blood types are determined by co-dominant alleles (A and B). If a man with BB blood had children with a woman with AB blood, what is the chance that their children would have AA blood? Show all your work.

14. Distinguish between **positive, negative, and neutral mutations**.
    (provide examples to support your answer)

15. What are the **3 Requirements for Natural Selection?**
    i.

    ii.

    iii.

16. Explain how **natural selection** results in the increasing abundance of selected alleles.

17. Compare and contrast *(similarities and differences)* ***natural and artificial selection.***

18. What are some of the **risks** of modern agricultural practices?