

Worksheet: Unit 3 Test Review

BIOLOGY: Chapter 6-9

Directions: Use your notes and book to answer the following questions completely. A good effort on the study guide will help improve your performance on the test.

1. **Define the following terms:**

- a. **Homozygous-**
- b. **heterozygous -**
- c. **true breeding-**
- d. **genotype-**
- e. **phenotype-,**
- f. **non-disjunction-**
- g. **co-dominance-**
- h. **incomplete dominance-**
- i. **linked genes-**
- j. **genetic engineering-**
- k. **cloning-**

2. What do you call the process where two gametes fuse?

3. What is the name of the cell that is formed as a result of this fusion?

4. **What is crossing-over** (what process does it occur in, and what is the result of this process)?

5. Describe the process of **DNA replication**. (where does it occur and what is the result)

6. Complete the chart below comparing DNA and RNA:

	DNA	RNA
Types of sugar		
Nitrogen bases		
Complimentary base pairs		
Double or Single stranded?		

7. **Blood type is determined by multiple alleles.** Complete the chart below showing possible genotypes and phenotypes of blood type (page 205)

Phenotype	Genotype

8. A **human karyotype** shows 22 pairs of _____, and one pair of _____. Chromosomes.

9. A **male** has the genotype ____ and a **female** has the genotype ____.

10. **In the process of transcription** a DNA sequence reads **CATTGA**, what would the complementary mRNA strand that would read?

11. The **genes** on DNA contain instructions to assemble _____

12. The **monomers** of **proteins** are _____

13. _____ **nitrogen bases** make up a **codon** for an amino acid.

14. **State Mendel's principles of genetics.**

a. What is the **Principle of Dominance**?

b. What is the Law of **Independence Assortment**?

15. Be able to use the genetic code chart.
What are the amino acids coded for with the following codons?

- a. **UUU**-
- b. **UUC**-
- c. **ACG**-
- d. **CCU**-
- e. **AUU**-
- f. **AAA**-
- g. **GUC**-
- h. **GCC**-

Codons Found in Messenger RNA

		<i>Second Base</i>				
		U	C	A	G	
First Base	U	Phe	Ser	Tyr	Cys	Third Base
		Phe	Ser	Tyr	Cys	
		Leu	Ser	Stop	Stop	
		Leu	Ser	Stop	Trp	
C	Leu	Pro	His	Arg	U	
	Leu	Pro	His	Arg	C	
	Leu	Pro	Gln	Arg	A	
	Leu	Pro	Gln	Arg	G	
A	Ile	Thr	Asn	Ser	U	
	Ile	Thr	Asn	Ser	C	
	Ile	Thr	Lys	Arg	A	
	Met	Thr	Lys	Arg	G	
G	Val	Ala	Asp	Gly	U	
	Val	Ala	Asp	Gly	C	
	Val	Ala	Glu	Gly	A	
	Val	Ala	Glu	Gly	G	

16. **Summarize the process of translation**; (where does it occur and what is the result. Include the three types of RNA involved)

17. What did Mendel call the “**factors**” that determine traits?

18. What organisms do Mendel’s principles apply to?

19. **What causes mutations in DNA?**

a. Are all genetic mutations expressed? Explain

b. What created oil-eating bacteria?

20. What is the purpose of **Punnett squares**?

21. State the **phenotypic ratio** of a heterozygous **dihybrid** cross? _____:_____:

22. Why would a scientist or breeder use **selective breeding**?

23. What is **inbreeding** and how does it occur?

24. **Skin color** in humans is a result of _____ inheritance.

25. What are the possible gametes produced by the parent genotypes below?

a. **RrYy**-

b. **rrYY**-

c. **SSDD**-

26. **Colorblindness is a sex-linked trait.** Why do males exhibit colorblindness more than females?

27. Complete the following table comparing **Mitosis** to **Meiosis**:

	MITOSIS	MEIOSIS
Number of cells produced		
Haploid or diploid cells produced		
Involved in asexual or sexual reproduction		
Results in body cells or sex cells		
Number of divisions involved (one or two)		

28. Complete the chart below comparing the process of **Replication**, **Transcription** and **Translation**.

	Replication	Transcription	Translation
Where does it occur?			
_____ making _____			
What molecules are involved in the process? (DNA, mRNA, tRNA, rRNA)			