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## Biology 12 - The Molecular Basis of Inheritance

- Define the following terms, **IN YOUR OWN WORDS, IN AS FEW WORDS AS CLARITY ALLOWS.** (4)

i. complementary base pairing	
ii. purines	
iii. pyrimidines	
iv. replication	
v. mRNA	
vi. transcription	
vii. codon	
viii. rRNA	
ix. tRNA	
x. anticodon	
xi. polysome	
xii. recombinant DNA	
xiii. mutagens	
xiv. translation	
xv. ribosome	
xvi. Genetic Code	

2. All nucleotides are made of the following three parts:

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3. In RNA, the base \_\_\_\_\_ is replaced with the base \_\_\_\_\_.

4. Mix and match the following bases with their correct partner for base pairings: (2)

1.	purine	A	adenine
2.	pyrimidine	B	cytosine
3.	adenine	C	guanine
4.	guanine	D	purine
5.	cytosine	E	uracil
6.	thymine	F	thymine
7.	uracil	G	pyrimidine

5. DNA replication is called \_\_\_\_\_ because each new double helix is made of an old strand and a new strand.
6. A mutation is a change in the sequence of \_\_\_\_\_ within a DNA molecule.
7. During transcription, DNA serves as a \_\_\_\_\_ for mRNA formation.

Name:		Block:		Date:	
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8. DNA carries a \_\_\_\_\_; every three bases stand for one amino acid.
9. Each tRNA has an \_\_\_\_\_ at one end and a specific \_\_\_\_\_ at the other.
10. A person with PKU has a defective \_\_\_\_\_ so that phenylalanine cannot be converted to tyrosine.
11. The nucleolus is a concentration of a nucleic acid called \_\_\_\_\_.
12. The "backbone" of a strand of DNA (i.e. the poles of the DNA "ladder") is composed of \_\_\_\_\_ and \_\_\_\_\_ held together with \_\_\_\_\_ bonds.
13. The "rungs" of the DNA ladder are composed of \_\_\_\_\_ held together with \_\_\_\_\_.

14. List 3 differences in structure in RNA, compared to the structure of DNA.

1.	
2.	
3.	

15. Fill in the following table: (3)

DNA									
mRNA	G	G	U	G	U	A	A	U	U
anticodon									
amino acid									

16. Ribosomes are the site of \_\_\_\_\_. Ribosomes are composed of \_\_\_\_\_ subunits. Ribosomes are made up of \_\_\_\_\_ and \_\_\_\_\_.
17. Protein is produced during the process called \_\_\_\_\_. This process has three main parts:

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18. \_\_\_\_\_ RNA is produced having bases that are \_\_\_\_\_ to the bases in DNA. Thus, it is said that DNA serves as a \_\_\_\_\_ for mRNA production. Three bases on a length of mRNA are called a \_\_\_\_\_, and code for one \_\_\_\_\_. (2)
19. \_\_\_\_\_ RNA molecules bring \_\_\_\_\_ to the ribosome during translation. The \_\_\_\_\_ of the tRNA is complementary to the codon of the mRNA.
20. Environmental factors that cause mutations are called \_\_\_\_\_. Mutations might also cause \_\_\_\_\_ in offspring if the \_\_\_\_\_ cells of the parents are affected, or might cause \_\_\_\_\_ in the individual if the \_\_\_\_\_ cells are affected. (2)

21. Three chemical mutagens are:

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22. Three radiation mutagens are:

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23. Put phrases 1 - 6 in the correct order to describe protein synthesis: (1)

- mRNA is produced in the nucleus
- ribosomes move along mRNA
- DNA has a code

Name:		Block:		Date:	
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4. polypeptide results
  5. tRNA brings amino acids to ribosomes
  6. mRNA moves to ribosomes

ANSWER: \_\_\_\_\_