Protein Synthesis Worksheet

1. In DNA, adenine binds with _____ and guanine binds with _____.
2. In RNA, adenine binds with _____ and guanine binds with _____.
3. Transcription takes place in the _____; translation takes place in the _____.
4. The building blocks of nucleic acids are _____.
5. When the DNA "cookbook" unzips, a complete protein "recipe" called a _____ is exposed.
6. At that time, a complementary copy of that "recipe" is made. Scientifically stated, _____-RNA is formed from RNA _____, in a process called _____.
7. When this "string" of RNA leaves the nucleus through a nuclear pore, it goes into the cytoplasm and binds to another player, _____-RNA (the"site of protein synthesis").
8. The ___-RNA "recipe" is "read" and a protein is assembled in a process called _____.
9. The building blocks of proteins are _____, so another form of RNA is necessary to deliver those building blocks to the site of protein synthesis. This is _____RNA.
10. The 3 nitrogen bases of DNA are called _____; the 3 nitrogen bases of _____are called anticodons; the 3 nitrogen bases of _____are called codons.
11. All of the above steps take place during what PHASE of the cell cycle? _____
12. Know these steps in order, and be sure to learn the associated vocabulary.
13. Chromatin is _____.
14. A chromosome is _____.
15. A gene is _____.
16. The genome is _____.
17. Using the **tRNA** Dictionary below, do transcription and translation to build the protein sentence on the next page.

Anti-codon	AA sym	AA abr
CGA	A	ala
CGC	A	ala
CGG	A	ala
CGU	A	ala
ACA	C	cys
ACG	C	cys
CUA	D	asp
CUG	D	asp
CUC	E	glu
CUU	E	glu
AAA	F	phe
AAG	F	phe
CCA	G	gly
CCC	G	gly
CCG	G	gly
CCU	G	gly

Anti-codon	AA sym	AA abr
GUA	H	his
GUG	H	his
UAA	I	iso
UAG	I	iso
UAU	I	iso
UUC	K	lys
UUU	K	lys
AAC	L	leu
AAU	L	leu
GAA	L	leu
GAC	L	leu
GAG	L	leu
GAU	L	leu
UAC	M	meU
UUA	N	asn
UUG	N	asn

Anti-codon	AA sym	AA abr
GGA	P	pro
GGC	P	pro
GGG	P	pro
GGU	P	pro
GUC	Q	glu
GUU	Q	glu
GCA	R	arg
GCC	R	arg
GCG	R	arg
GCU	R	arg
UCC	R	arg
UCU	R	arg
AGA	S	ser
AGC	S	ser
AGG	S	ser
AGU	S	ser

Anti-codon	AA sym	AA abr
UCA	S	ser
UCG	S	ser
UGA	T	thr
UGC	T	thr
UGG	T	thr
UGU	T	thr
CAA	V	val
CAC	V	val
CAG	V	val
CAU	V	val
ACC	W	trp
AUA	Y	tyr
AUG	Y	tyr
ACU	-	space
AUC	-	space
AUU	-	space