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	Anti-codon	AA sym	AA abr	Anti-codon	AA sym	AA abr	Anti-codon	AA sym	AA abr
CGA	A	ala	GUA	H	his	GGA	P	pro	UCA	S	ser
CGC	A	ala	GUG	H	his	GGC	P	pro	UCG	S	ser
CGG	A	ala	UAA	I	iso	GGG	P	pro	UGA	T	thr
CGU	A	ala	UAG	I	iso	GGU	P	pro	UGC	T	thr
ACA	C	cys	UAU	I	iso	GUC	Q	glu	UGG	T	thr
ACG	C	cys	UUC	K	lys	GUU	Q	glu	UGU	T	thr
CUA	D	asp	UUU	K	lys	GCA	R	arg	CAA	V	val
CUG	D	asp	AAC	L	leu	GCC	R	arg	CAC	V	val
CUC	E	glu	AAU	L	leu	GCG	R	arg	CAG	V	val
CUU	E	glu	GAA	L	leu	GCU	R	arg	CAU	V	val
AAA	F	phe	GAC	L	leu	UCC	R	arg	ACC	W	trp
AAG	F	phe	GAG	L	leu	UCU	R	arg	AUA	Y	tyr
CCA	G	gly	GAU	L	leu	AGA	S	ser	AUG	Y	tyr
CCC	G	gly	UAC	M	meU	AGC	S	ser	ACU	-	space
CCG	G	gly	UUA	N	asn	AGG	S	ser	AUC	-	space
CCU	G	gly	UUG	N	asn	AGU	S	ser	AUU	-	space