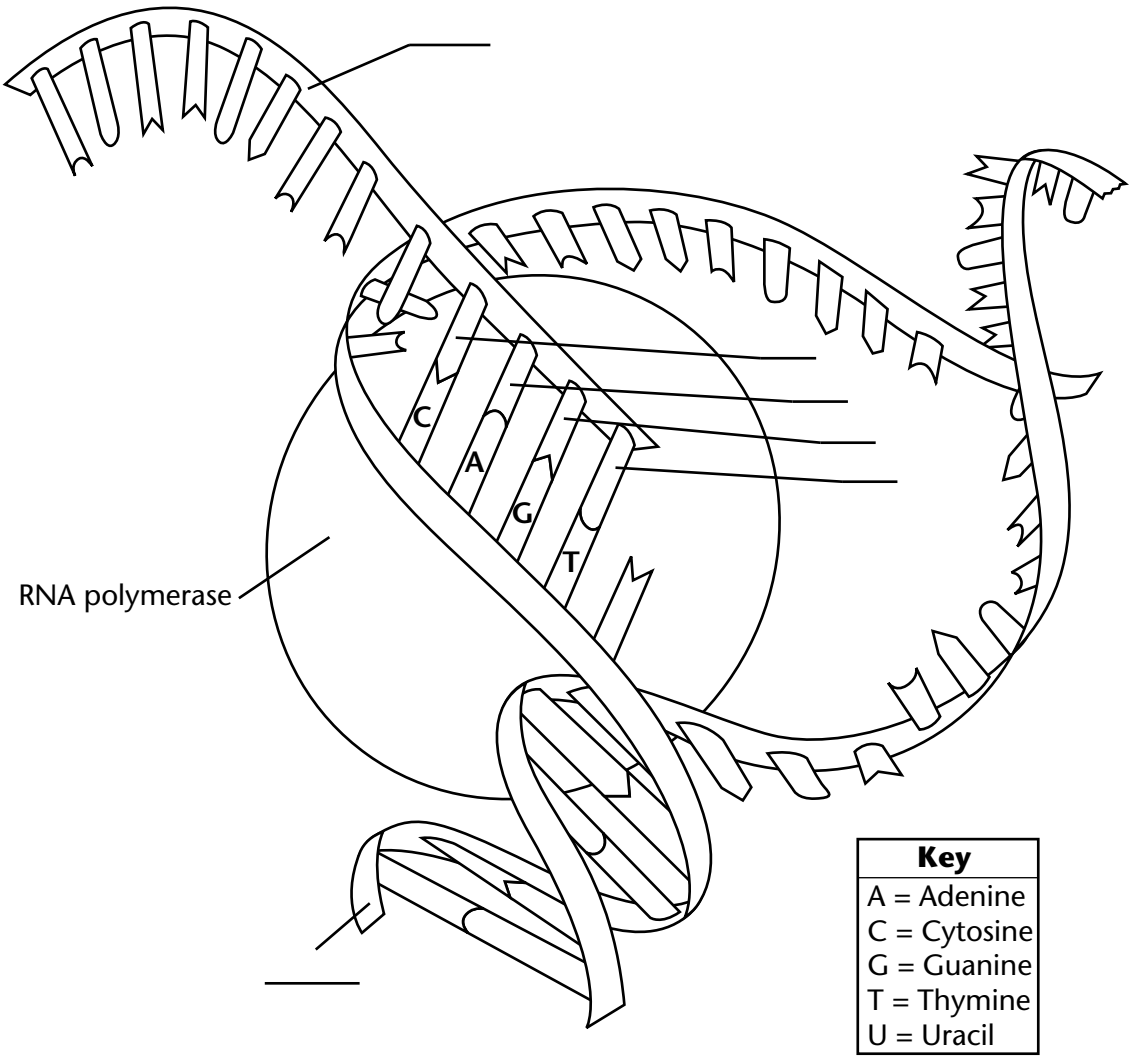
Name_____ Class _____ Date _____

Transcription

In transcription, RNA polymerase splits the two halves of a strand of DNA. RNA then uses one half as a template to make a copy of the other half. RNA contains the nucleotide uracil instead of the nucleotide thymine.

Label the DNA *and* RNA. *Then, label the missing nucleotides marked on the diagram.*



Use the diagram to answer the question. Circle the correct answer.

1. In RNA, which nucleotide is always paired with uracil?

adenine guanine

Name_____ Class_____ Date _____

Comparing DNA Replication and Transcription

DNA replication is the process by which a cell copies its DNA. During replication, both strands of the double helix are used as templates to make complementary, or matching, strands of DNA. DNA transcription is the process by which a single strand of DNA is used as a template to generate a strand of mRNA.

Fill in the missing information. One row has been completed for you.

Template DNA	Complementary DNA	Messenger RNA (mRNA)
TTACG	AATGC	AAUGC
	GGCGG	
		ACGUAGC
AGACTC		
	GATAAGA	
		CUGGCUAC

Use the table to answer the question.

1. Give another example of a template DNA code that is at least four base pairs long. Then give its matching complementary DNA and mRNA codes.

_____

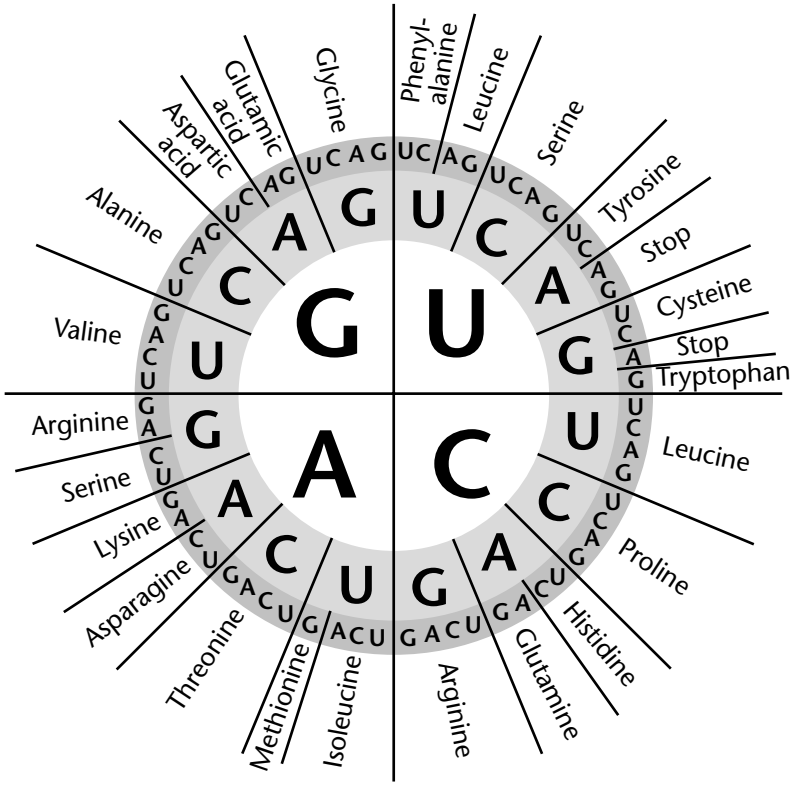
_____

Name_____ Class_____ Date _____

Decoding mRNA

The diagram shows the mRNA codes that correspond to amino acids and stop codons. Read the diagram from the center outwards. For example, the mRNA code UAC corresponds to the amino acid tyrosine.

Write the name of the amino acid that corresponds to each mRNA code. The first one has been done for you.



mRNA Code	Amino Acid
AAA	lysine
GCG	
GAU	
CAA	

Use the diagram to answer the questions.

1. Which two mRNA codes correspond to histidine?

_____

2. How many different mRNA codes correspond to arginine?

_____

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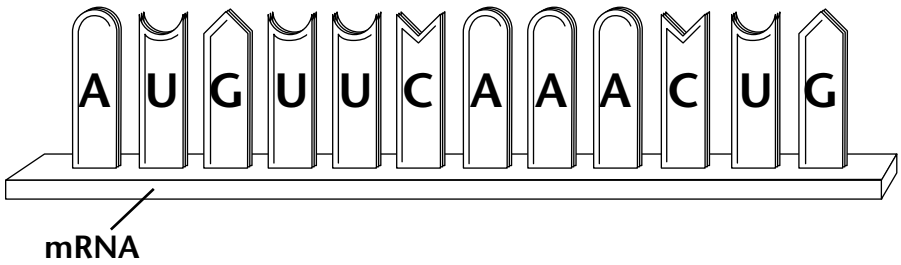
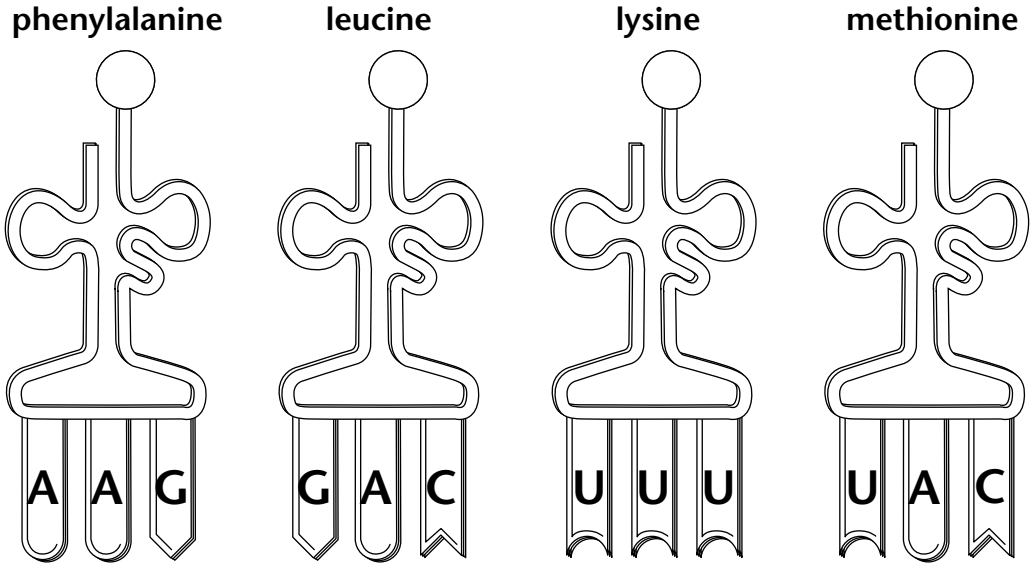
Translation

During translation, transfer RNA (tRNA) anticodons match to messenger RNA (mRNA) codons. Each tRNA molecule can carry one particular amino acid. The amino acids are joined to form a polypeptide.

Number the four tRNA anticodons in the order in which they should appear to match the codons in the mRNA strand.





_____ _____ _____ _____

Use the diagrams to answer the question.

1. List the amino acids in the order they would appear in the polypeptide coded for by the mRNA.

_____

_____