ANSWER KEY.

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Types of RNA

Biology | ANSWER KEY

Directions: Answer each question in the space provided. Show your work for every calculation. For Claim, Evidence, Reasoning (CER) questions, write all three parts.

1. Complete the table to compare DNA and RNA.

	DNA	**RNA**
Sugar		
Bases		
Number of strands		

Sugar: deoxyribose / ribose. Bases: A, T, G, C / A, U, G, C. Strands: two / usually one.

2. Write mRNA, tRNA, or rRNA for each description.

a. Has an anticodon: _____ b. Part of a ribosome: _____

c. Made up of codons: _____ d. Carries an amino acid: _____

a. tRNA b. rRNA c. mRNA d. tRNA

3. Write the RNA bases that pair with the DNA strand TACGGA.

AUGCCU

4. An RNA molecule has 120 nucleotides: 30 A, 36 U, and 28 G. How many are C? Show your work.

30 + 36 + 28 = 94. C = 120 - 94 = 26.

Answer: 26 cytosine nucleotides.

5. Three samples are analyzed. Write a Claim, Evidence, Reasoning response that identifies which sample is RNA.

Sample	**% A**	**% T**	**% U**	**% G**	**% C**
Sample 1	25	25	0	25	25
Sample 2	23	0	29	27	21
Sample 3	31	29	0	19	21

Claim: Sample 2 is RNA.

Evidence: Sample 2 has uracil (29%) and no thymine. Samples 1 and 3 have thymine and no uracil.

Reasoning: RNA contains uracil and DNA contains thymine, so the presence of U with no T identifies RNA.

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6. Explain why it helps the cell that mRNA is a temporary copy and the DNA stays in the nucleus.

The DNA is the master copy, so keeping it in the nucleus protects it from damage. Many mRNA copies can be made from one gene, and since mRNA does not last forever, the cell can change which proteins it makes.

7. Number these steps in order from 1 to 3: ____ translation at a ribosome ____ DNA in the nucleus ____ transcription to make mRNA

1 DNA in the nucleus, 2 transcription to make mRNA, 3 translation at a ribosome.

8. A liver cell and a muscle cell from the same person have the same DNA but make different proteins. Use RNA to explain how this is possible.

Each cell type copies different genes into mRNA. The mRNA is translated into different proteins, so the same DNA gives different proteins in different cells.

9. Name two differences between RNA and DNA that you could find from a chemical analysis.

RNA has ribose instead of deoxyribose and has uracil instead of thymine. RNA is also usually single-stranded.

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