Year 12 Science: DNA, transcription and translation

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. Write the complementary strand of 5' ATGCCA 3', with its ends labelled.

2. A DNA template triplet is TTC. What is the mRNA codon?

3. What anticodon pairs with the mRNA codon GGU?

4. Which amino acid does AUG code for, and what else does AUG do?

5. Of the 64 codons, how many code for amino acids?

6. A DNA sample is 30% adenine. What percentage is guanine?

Exam-style question: a section of a keratin gene

Keratin is the structural protein in hair and nails. A short, made-up section of the template strand of a keratin gene, written 3' to 5', reads TAC AAA CGT GGC ATT.

7. Give the mRNA codons and the amino acid sequence this section codes for.

8. Give the anticodons of the tRNAs that bring the first four amino acids.

9. Explain why changing the codon GCA to GCC would not change the keratin.

10. Discuss how the base sequence of the gene decides the shape and function of keratin, and why the ribosome reads mRNA rather than the DNA itself.

Fix the mistake

11. Correct this statement: "The template triplet TAC gives the mRNA codon ATG."

12. Correct this statement: "The codon AUG has the anticodon AUG."

13. Correct this statement: "Given the coding strand ATG, I complemented it to get the mRNA UAC."

14. Correct this statement: "Translation happens in the nucleus, where the DNA is."