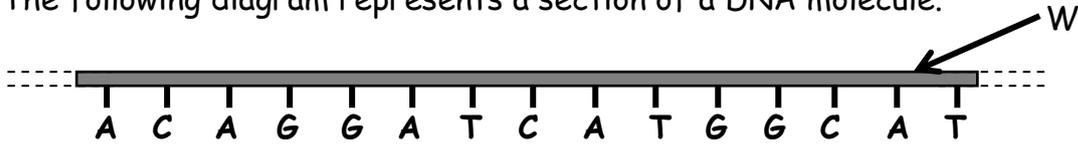


National 5 Biology

DNA & Protein Synthesis

1. The following diagram represents a section of a DNA molecule.



- (a) Region W is composed of which types of molecule? (2)
 - (b) Draw the mRNA which would complement the above DNA section. (2)
 - (c) Why would region W not adequately represent a gene? (1)
2. Calculate the percentage of guanine molecules which would be present in a DNA molecule of 6000 bases if 1200 are adenine. *(Show your calculations)* (2)
3. The following table shows the relative amounts of DNA present in some of the cells from four different animals.

	Sperm	Red Blood Cell	Liver
Trout	1.8	3.6	3.5
Sparrow	1.5	2.9	3.0
Horse	3.6	0.0	7.1
Human	3.3	0.0	6.6

- (a) Account for the DNA content of the human red blood cells being zero. (1)
- (b) Based on the information in the table, suggest a structural difference between the red blood cells of the sparrow and the horse. (1)
- (c) Make a generalisation about the DNA content of sperm compared to liver cells. (1)
- (d) When liver cells are removed from a young animal and grown in a tissue culture, their DNA content is found to be higher than the values given in the table. Explain why this would be. (2)

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4. Give three structural differences between DNA and mRNA. (3)
5. What do the letters DNA stand for? (1)
6. (a) Of what type of organic compound are enzymes composed? (1)
- (b) What do we call the sub-units of proteins? (1)
- (c) What information is responsible for the sequence of amino acids in proteins? (1)
- (d) Why is the sequence of amino acids in a protein important? (1)
- Total = 20**