A1.2 Nucleic acids

What the Cell · DP Biology · worksheet · SL statements A1.2.1–10

Name _____ **Date** _____ **Total** _____ / 36

About 35 minutes, or one section at a time. A calculator is allowed. The number of marks shows how many separate points to make.

Section A: Recall

8 marks

1 **State** the molecule that carries genetic information in every living organism. A1.2.1 **[1]**

2 **List** the components of a nucleotide. A1.2.2 **[1]**

3 **Name** the base found in RNA but not in DNA. A1.2.4 **[1]**

4 **State** the type of reaction that links RNA nucleotides. A1.2.5 **[1]**

5 **State** the type of bond between complementary bases. A1.2.6 **[1]**

6 **State** three differences between DNA and RNA. A1.2.7 **[3]**

Section B: Understanding and drawing

16 marks

7 **Draw** a section of DNA with four base pairs, showing the bases, the backbone and the bonds. A1.2.6 **[5]**

8 **Sketch** deoxyribose and ribose, to show the difference between them. A1.2.7 **[2]**

9 **Explain** what is meant by the sugar-phosphate backbone, and why it is strong. A1.2.3 **[3]**

10 **Explain** how complementary base pairing allows genetic information to be replicated. A1.2.8 **[3]**

11 **Explain** why almost identical genetic codes in all organisms is evidence of common ancestry. A1.2.10 **[3]**

Section C: Working with data

6 marks

All data in this section are invented for practice. The patterns are realistic.

12 A1.2.6, A1.2.9

A section of double-stranded DNA had 1000 base pairs. It was found to contain 280 adenine bases on strand 1 and 220 adenine bases on strand 2.

a **Calculate** the percentage of all bases in this section that are adenine. **[2]**

b **Deduce** the percentage of guanine. **[2]**

c **Calculate** the number of possible sequences of a strand 6 bases long. **[2]**

Section D: Longer answer

6 marks

13 **Outline** how the structure of DNA allows it to store a very large quantity of information accurately. A1.2.3–9 **[6]**

What the Cell. Original questions written for this course.