

(DNA and the genome)

Q1.(2019)

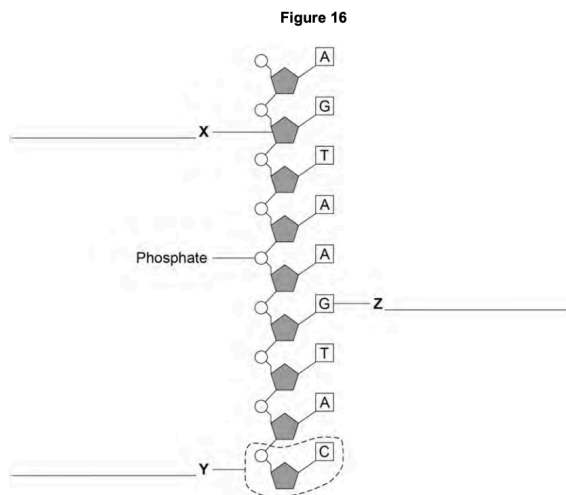
Genetic material is made of DNA.

Which structures in the nucleus of a human cell contain DNA?

[1 mark]

Q2.a)(2019)

Figure 16 shows part of one strand of a DNA molecule.

Label parts **X**, **Y** and **Z** on **Figure 16**.

[3 marks]

Choose answers from the box.

Base	Fatty acid	Nucleotide	Sugar	Glycerol
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Q2.b)(2019)

A complete DNA molecule is made of two strands twisted around each other.

What scientific term describes this structure?

[1 mark]

Q2.c)(2019)

DNA codes for the production of proteins.

A protein molecule is a long chain of amino acids.

How many amino acids could be coded for by the piece of DNA shown in **Figure 16**?
[1 mark]

Tick (✓) **one** box.

2	☐	3	☐	9	☐	18	☐
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Q2.d)(2019)

Scientists have now studied the whole human genome.

Give **two** benefits of understanding the human genome.

[2 marks]

1 _____

2 _____

Q3.(2020)

This question is about DNA.

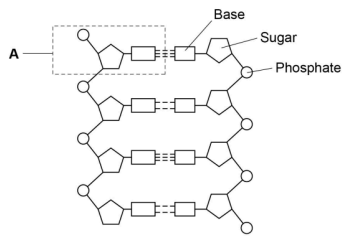
Describe the shape of a DNA molecule.

[2 marks]

Q4.a)(2020)

Figure 10 shows part of a DNA molecule.

Figure 10



DNA codes for a sequence of amino acids.

Which part of DNA forms the code for a particular amino acid?

[1 mark]

Tick (✓) **one** box.

- Bases ☐
- Phosphates ☐
- Sugars ☐

Q4.b)(2020)

Which substance is produced when amino acids are joined together?

[1 mark]

Tick (✓) **one** box.

- Carbohydrate ☐
- Fat ☐
- Protein ☐

Q4.c)(2020)

DNA is made of repeating units. One of the units is labelled **A** in Figure 10.

What is the name of the repeating unit labelled **A**?

[1 mark]

Tick (✓) **one** box.

- Chromosome ☐
- Enzyme ☐
- Nucleotide ☐

Q4.d)(2020)

Inheritance, Variation and Evolution

<http://www.pcfgstudy.com>

The DNA in one human body cell is the length of 6 000 million repeating units (part **A**).

Each repeating unit is 0.34 nanometres (nm) long.

Calculate the length of the DNA in the cell in millions of nanometres.

[2 marks]

Length = _____ million nm

Q4.e)(2020)

Give your answer to Question **07.5** in metres.

1 metre = 1×10^9 nanometres

[1 mark]

Length = _____ m

Q4.f)(2020)

DNA analysis can show people which alleles they have.

Patients who have certain types of cancer can be offered DNA analysis.

The family of the patient can also be offered DNA analysis.

Suggest **one** advantage of having DNA analysis.

[1 mark]

Q5.(2021)

The nucleus of a cell contains DNA.

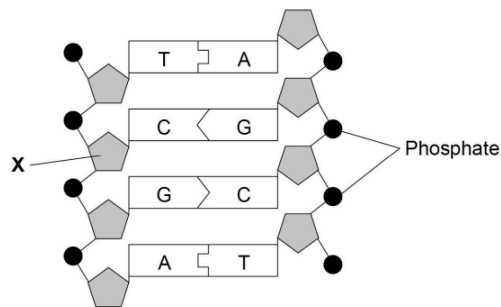
Name the structures inside the cell nucleus that contain DNA.

[1 mark]

Q6.a)(2021)

Figure 13 shows part of a DNA molecule.

Figure 13



Name the part of the DNA molecule labelled **X**.

[1 mark]

Q6.b)(2021)

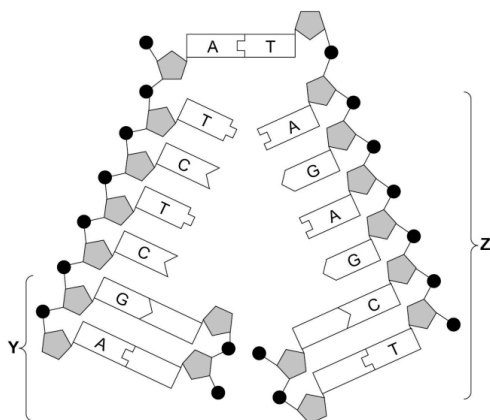
What type of substances are labelled **A, C, G** and **T** in Figure 13?

[1 mark]

Q6.c)(2021)

Figure 14 shows another section of a DNA molecule.

Figure 14



Four of the substances you named in Question 08.3 are **not** labelled in part **Y** of Figure 14.

Label each of these substances with the correct letter, **A, C, G** or **T**.

Use information from other parts of Figure 14 to help you.

[1 mark]

Q6.d)(2021)

What is happening to the DNA in part **Z** of **Figure 14**?

[1 mark]

Tick (✓) **one** box.

Differentiation

☐

Evolution

☐

Fertilisation

☐

Replication

☐

Q7.(2021)

A gene is a length of DNA.

What type of substance does a gene code for?

[1 mark]
