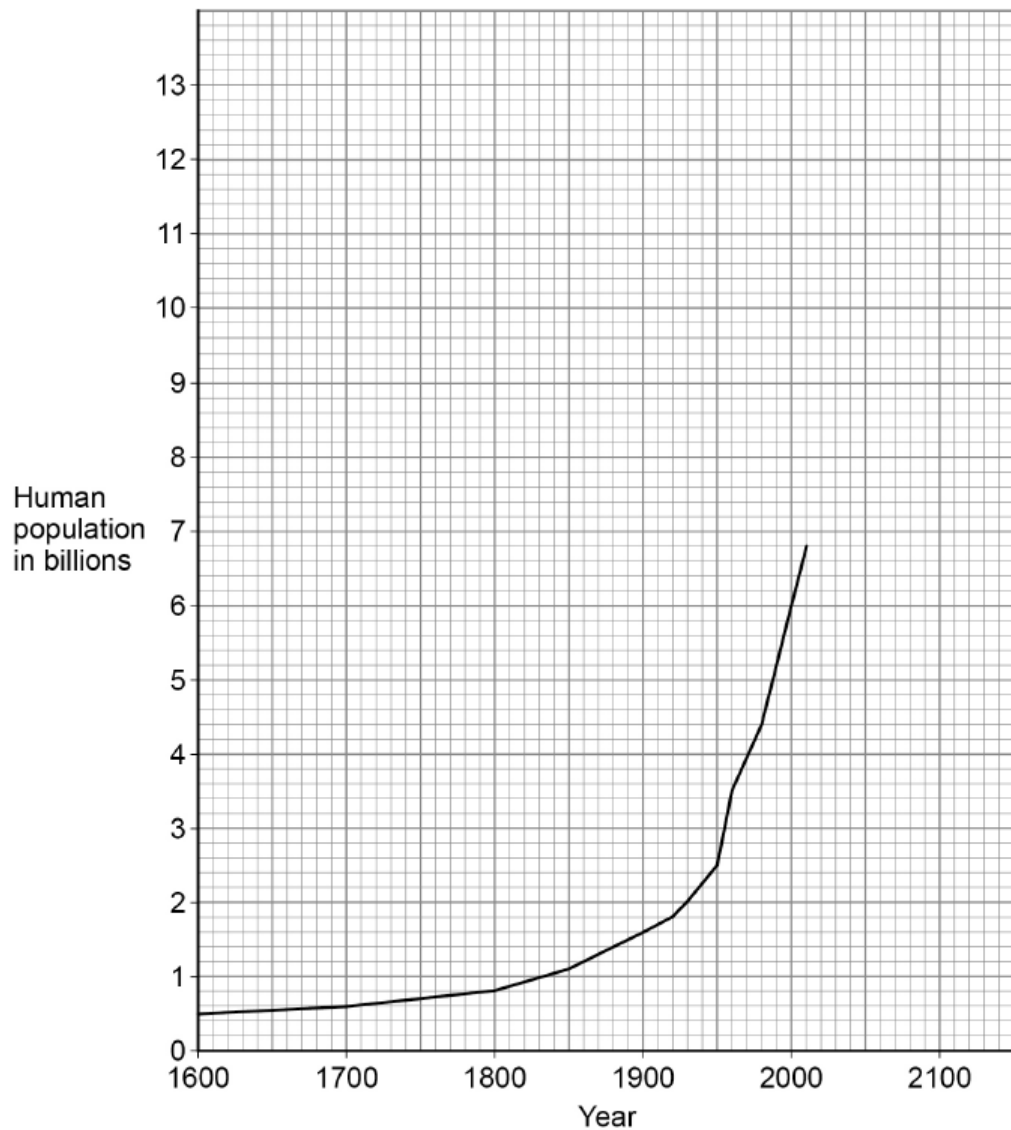


Biodiversity and the effect of human interaction on ecosystem – GCSE Biology

1. No.9

Figure 12 shows the human population from 1600 to 2010.

Figure 12



In 1900 the human population was 1.6 billion.

0 9 . 1

Calculate how many times greater the human population was in the year 2000 compared with the year 1900.

[2 marks]

Number of times greater = _____

0 9 . 2 In 1950 the human population was 2.5 billion.

Calculate the mean annual increase in the human population between 1900 and 1950.

[2 marks]

Mean annual increase = _____ billion per year

0 9 . 3 Predict the human population in 2050 if the current rate of population increase continues.

You should draw an extrapolation line on **Figure 12**.

[2 marks]

Predicted human population = _____

0 9 . 4 The increasing human population has caused a decline in fish stocks.

Describe how fishing quotas can help to return fish stocks to a sustainable level.

[2 marks]

0	9	.	5
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Farming techniques have changed in recent years.

Describe:

- why more land is being used for farming
- how increased farming has decreased biodiversity.

[6 marks]

This image shows a blank sheet of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page. There are no margins, text, or other markings on the paper.

09.6

Genetic modification of crop plants can help meet the demands of the increasing human population.

Golden rice is a genetically modified (GM) crop.

What is the advantage of golden rice compared with non-GM rice?

[1 mark]

Tick (✓) **one** box.

Golden rice contains protein-rich mycoprotein

☐

Golden rice has improved nutritional value

☐

Golden rice produces human insulin

☐

09.7

Suggest **one** reason why some people are concerned about the use of golden rice.

[1 mark]

2. No.9

Phototropism is a growth response by part of a plant to light.

0 9 . 1 Name **one** other tropism.

Give the stimulus the plant responds to in the tropism you have named.

[2 marks]

Tropism _____

Stimulus _____

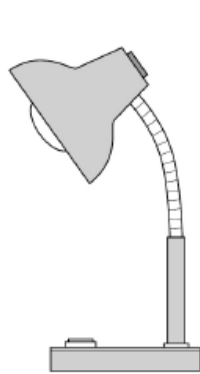
0 9 . 2 Plan an investigation to show the effect of light from one direction on the growth of plant seedlings.

Include details of any controls needed.

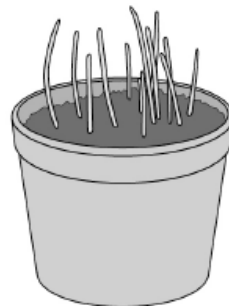
You may use some of the equipment shown in **Figure 17** and any other laboratory apparatus.

[6 marks]

Figure 17



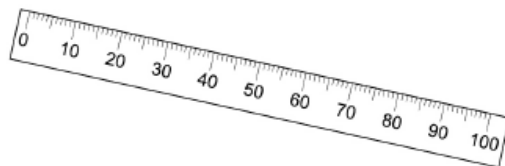
Lamp



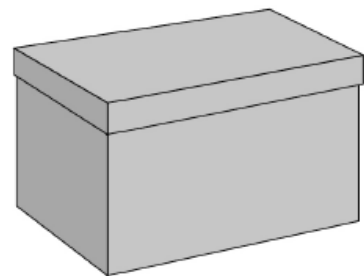
Several pots of seedlings



Scissors



Ruler



Cardboard boxes with lids

[illegible]

Explain how phototropism in a plant shoot helps the plant to survive.

[3 marks]

3. No.2

Genetic material is made of DNA.

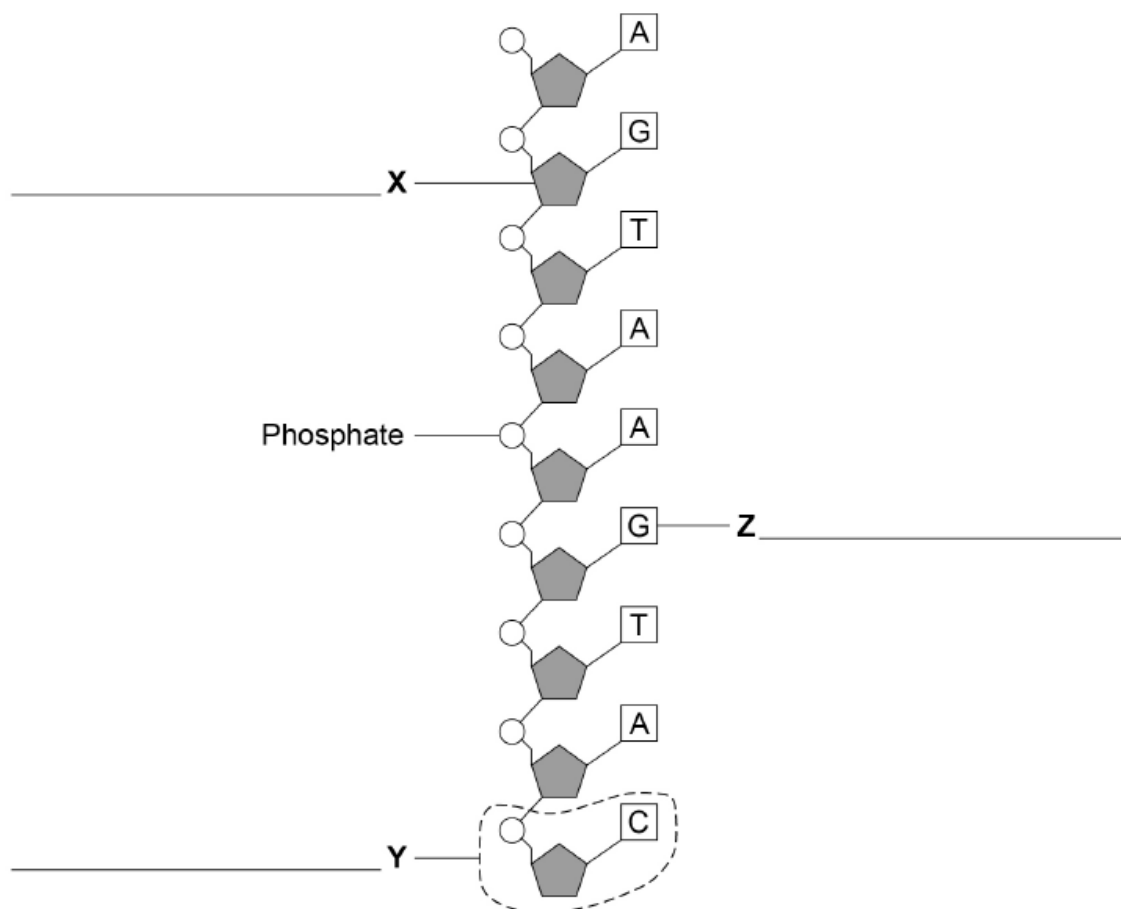
0 2 . 1

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

[1 mark]

Figure 3 shows part of one strand of a DNA molecule.

Figure 3



0 2 . 2

Label parts X, Y and Z on Figure 3.

[3 marks]

Choose answers from the box.

Base	Fatty acid	Nucleotide	Sugar	Glycerol
------	------------	------------	-------	----------

0 2 . 3 A complete DNA molecule is made of two strands twisted around each other.

What scientific term describes this structure?

[1 mark]

0 2 . 4 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 3**?

[1 mark]

Tick (✓) **one** box.

2

☐

3

☐

9

☐

18

☐

0 2 . 5 Scientists have now studied the whole human genome.

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

[2 marks]

1 _____

2 _____
