AQA - Food production – GCSE Biology

1. June/2020/Paper_2F/No.8

This question is about the decay of milk.

| 0 | 8 |.| 1 | Name **two** types of microorganism that cause decay.

[2 marks]

1 _____

2 _____

| 0 | 8 |.| 2 | Cows' milk is pH 6.6.

As milk decays, lipids in the milk are broken down.

One of the products of the breakdown of lipids causes the pH of milk to decrease.

Name the product that causes the pH to decrease.

[1 mark]

_____

1. June/2020/Paper_2F/No.8

A student investigated the effect of temperature on the time taken for different types of milk to decay.

This is the method used.

1. Put cows' milk in six test tubes.

2. Keep each test tube at a different temperature.

3. Measure the pH of the milk in each tube every day for 12 days.

4. Record the number of days taken to reach pH 5.

5. Repeat steps 1 to 4 with goats' milk and with almond milk.

| 0 | 8 | . | 3 | Give **one** way the pH can be measured.

[1 mark]

_____

| 0 | 8 | . | 4 | Give **two** control variables the student should have used in this investigation.

[2 marks]

1 _____

2 _____

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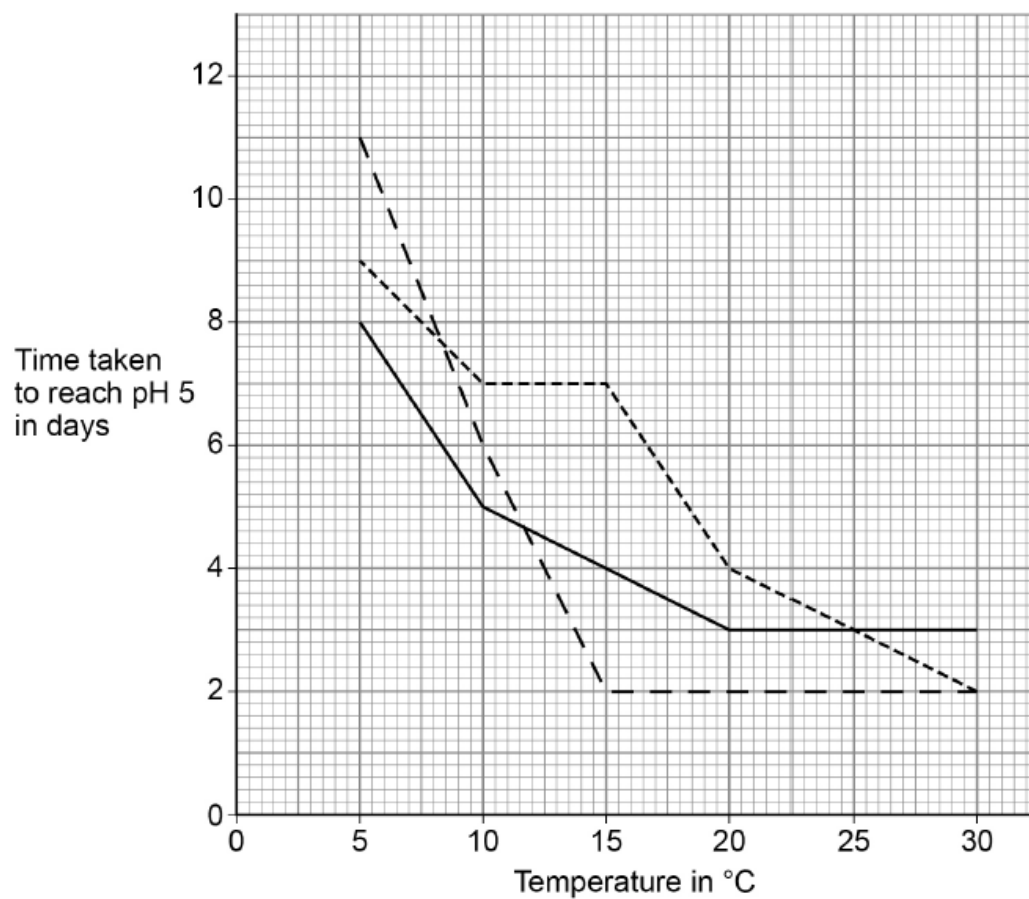
[2 marks]

1 _____

2 _____

The student improved the investigation to produce valid results.

Figure 11 shows the results.

Figure 11

Key
——— Cows' milk
– – – Goats' milk
----- Almond milk

0 8 . 5   Which type of milk stays fresh the longest at 10 °C?

[1 mark]

_____

0 8 . 6   Describe the effect of temperature on the time taken for **goats'** milk to reach pH 5.

Use data from **Figure 11** in your answer.

[2 marks]

_____

_____

_____

_____

0 8 . 7   The time taken for cows' milk to reach pH 5 at 10 °C is less than the time taken for cows' milk to reach pH 5 at 5 °C.

Suggest **one** reason why.

[1 mark]

_____

_____

0 8 . 8   Suggest **two** reasons why the different types of milk took different lengths of time to reach pH 5.

[2 marks]

1 _____

_____

2 _____

_____

0 8 . 9   The student said:

'The temperature milk is stored at affects how likely
the milk is to cause food poisoning.'

How can the investigation be developed to find out if the student is correct?

[1 mark]

Tick (✓) **one** box.

Determine the types of bacteria present in the milk ☐

Record the pH every 12 hours ☐

Use more than three different types of milk ☐

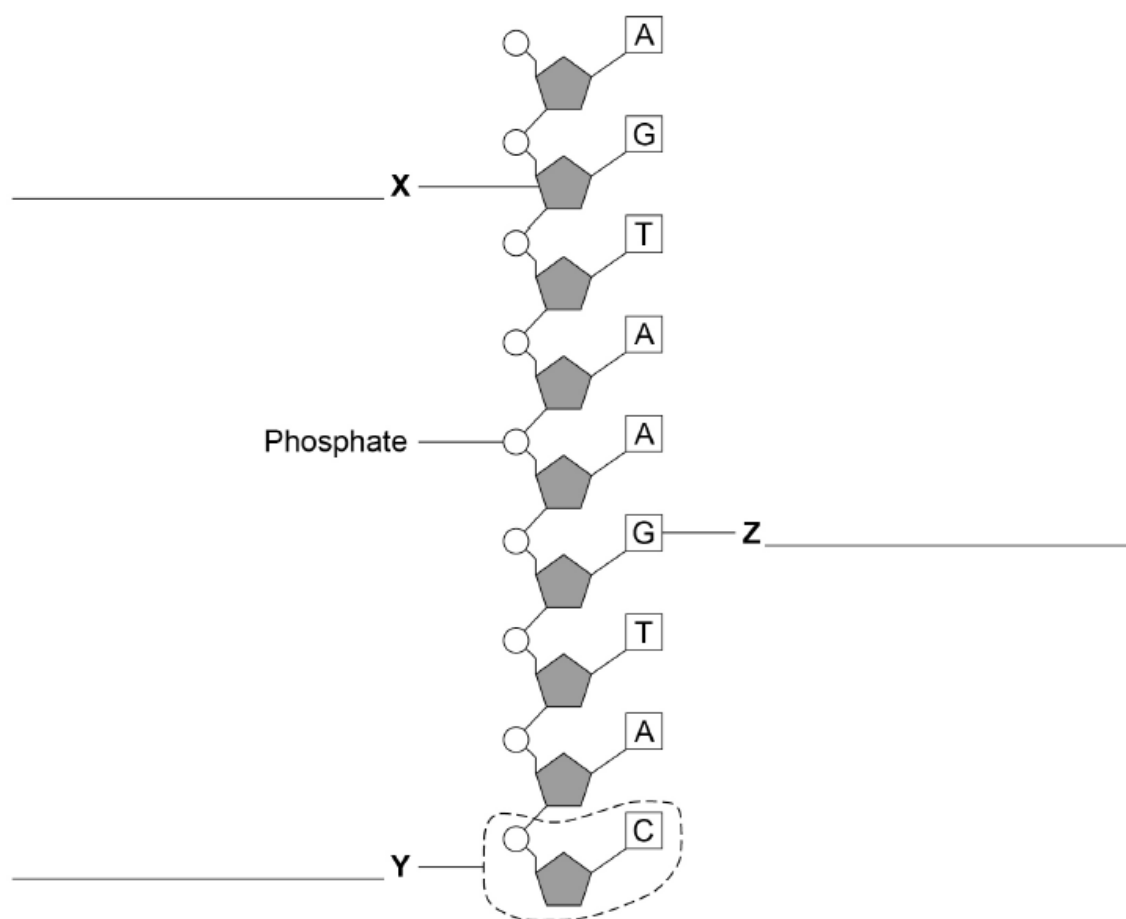**2.** June/2019/Paper_2F/No.8
Genetic material is made of DNA.

0 8 . 1 Which structures in the nucleus of a human cell contain DNA?

[1 mark]

_____

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

Figure 16

| 0 | 8 | . | 2 | Label parts **X**, **Y** and **Z** on **Figure 16**.

[3 marks]

Choose answers from the box.

| Base | Fatty acid | Nucleotide | Sugar | Glycerol |

| 0 | 8 | . | 3 | A complete DNA molecule is made of two strands twisted around each other.

What scientific term describes this structure?

[1 mark]

_____

| 0 | 8 | . | 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 16**?

[1 mark]

Tick (✓) **one** box.

2 ☐   3 ☐   9 ☐   18 ☐

| 0 | 8 | . | 5 | Scientists have now studied the whole human genome.

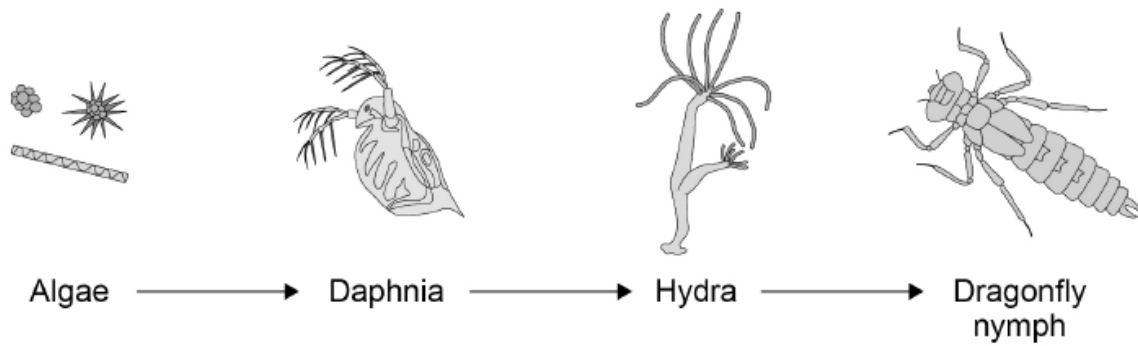Give **two** benefits of understanding the human genome.

[2 marks]

1 _____

_____

2 _____

_____

3. June/2019/Paper_2H/No.1

Figure 1 shows a food chain in a pond.

Figure 1

Algae ⟶ Daphnia ⟶ Hydra ⟶ Dragonfly nymph

| 0 | 1 |. | 1 | Which term describes the Daphnia in this food chain?

[1 mark]

Tick (✓) **one** box.

Apex predator ☐

Primary consumer ☐

Producer ☐

Secondary consumer ☐

0 1 . 2   Draw a pyramid of biomass for the food chain.

Label each trophic level.

[2 marks]

0 1 . 3   Give **one** reason why the total biomass of the Daphnia in the pond is different from the total biomass of the algae.

[1 mark]

_____

_____

Students investigated the size of the population of Daphnia in the pond.

This is the method used.

1. Collect 1 dm^3 of pond water from near the edge of the pond.

2. Pour the water through a fine net.

3. Count the number of Daphnia caught in the net.

4. Repeat steps 1–3 four more times.

Table 1 shows the results.

Table 1

Sample number	Number of Daphnia in 1 dm^3 water
1	5
2	21
3	0
4	16
5	28

| 0 | 1 |. | 4 | Calculate the mean number of Daphnia in 1 m^3 of pond water.

1 m^3 = 1000 dm^3

[2 marks]

_____

_____

_____

_____

_____

Mean number of Daphnia in 1 m^3 of pond water = _____

0 1 . 5 The pond was a rectangular shape, measuring:

- length = 2.5 metres

- width = 1.5 metres

- depth = 0.5 metres.

Calculate the estimated number of Daphnia in the pond.

Use your answer from Question **01.4**.

Give your answer in standard form.

[4 marks]

_____

_____

_____

_____

_____

_____

_____

_____

Number of Daphnia in the pond = _____

Rainfall can cause fertiliser to be washed from farmland into a pond.

The students investigated the effect of fertiliser on the population of Daphnia in water from the pond.

- The students put 20 Daphnia in each of five different concentrations of fertiliser.

- The students counted the total number of Daphnia in each concentration of fertiliser after 2 weeks.
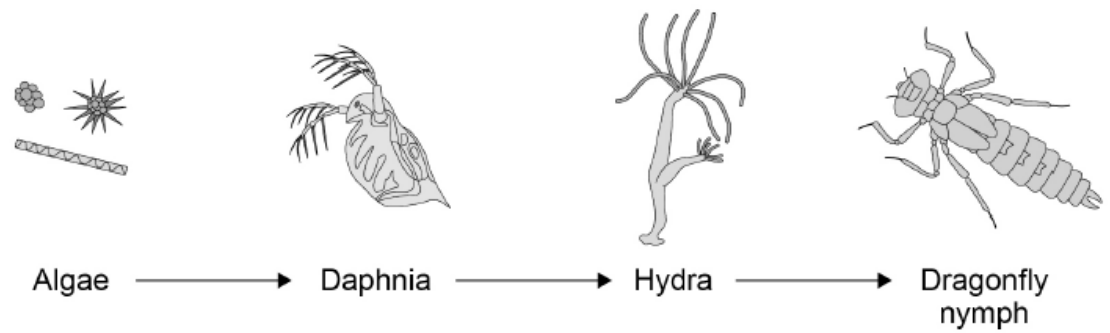
Figure 2 shows the results.
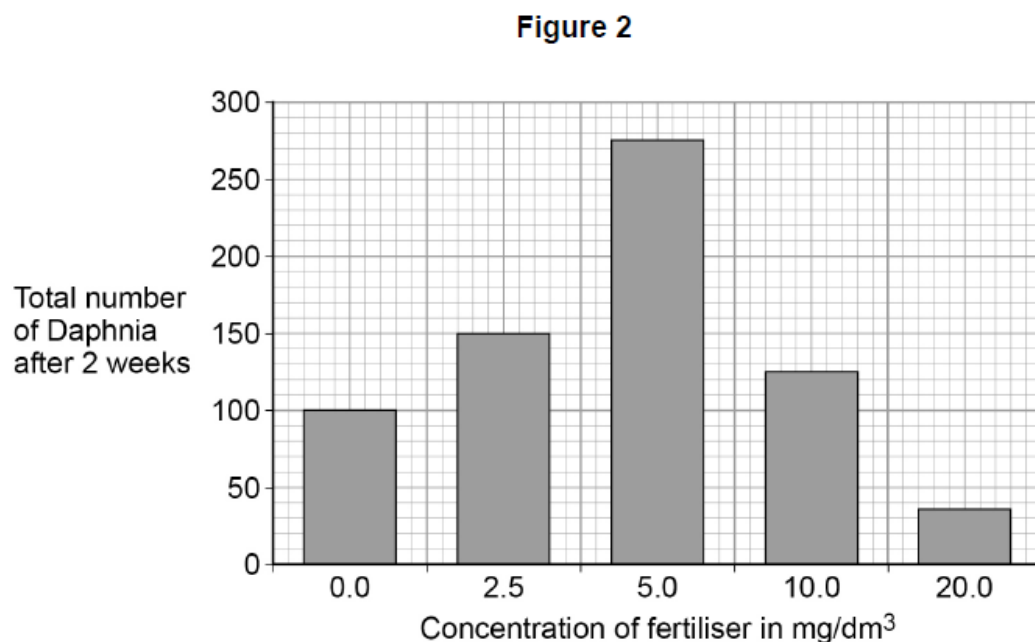
Figure 2

| 0 | 1 |. 6 | A concentration of 5.0 mg/dm³ of fertiliser caused a large increase in the population of Daphnia.

Explain why.

[2 marks]

_____

_____

_____

_____

0 1 . 7   **Figure 1** is repeated below.

Figure 1

Algae ⟶ Daphnia ⟶ Hydra ⟶ Dragonfly nymph

The population of **Hydra** will decrease when 20 mg/dm^3 of fertiliser is added to the pond.

Explain why.

[2 marks]

_____

_____

_____

_____