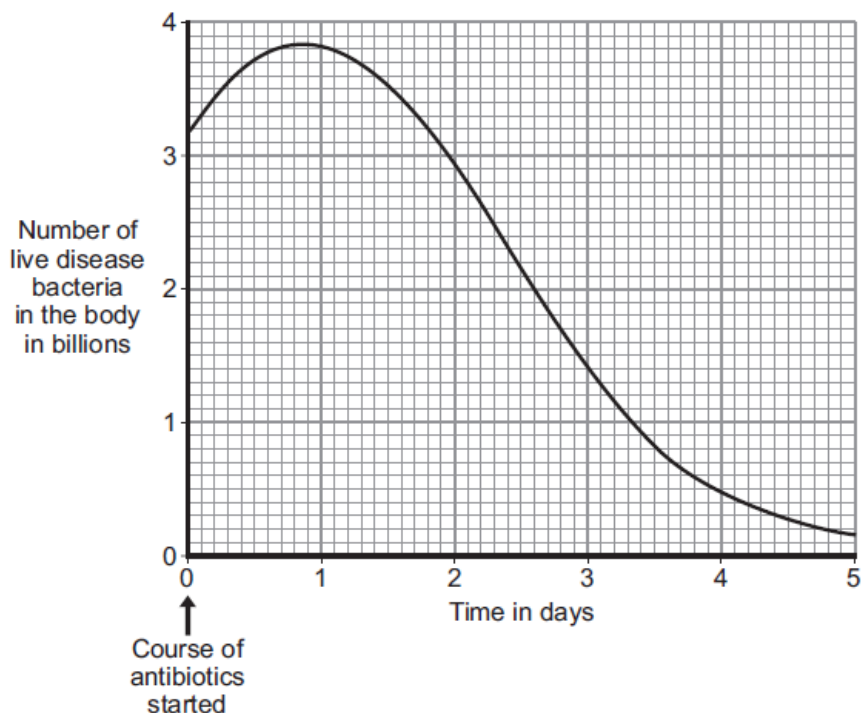


# GCSE Biology Exam Preparation

**Aim: To improve knowledge and understanding of Graphs, Calculations, Command Terms & Investigation Terms**

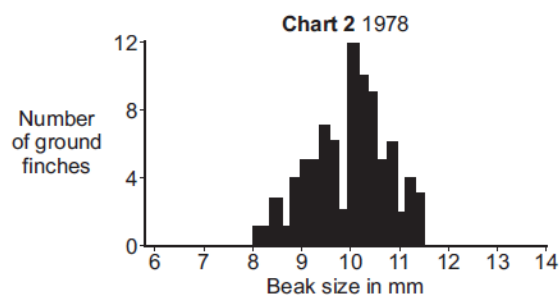
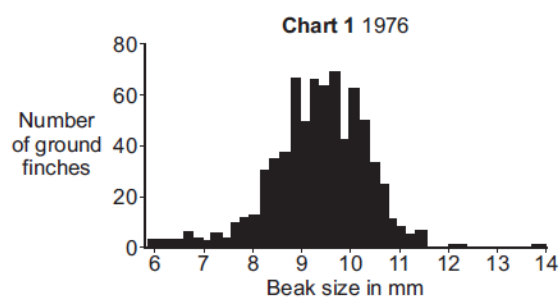
The graph shows how the number of live disease bacteria in the body changes when the man is taking the antibiotics.



**Describe** the data:

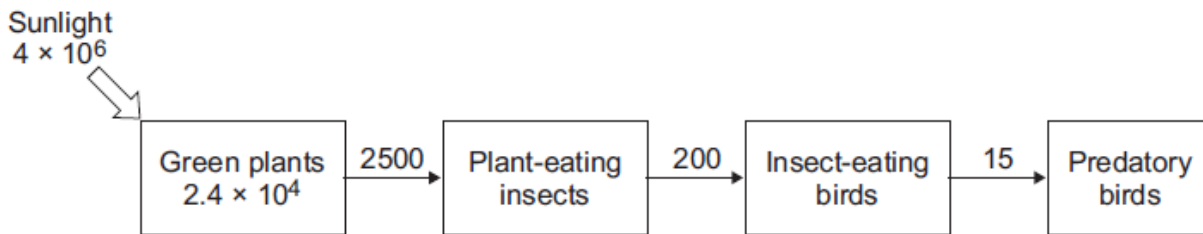
**Explain** the data:

How to calculate percentage change:



The population of the ground finches and their beak sizes changed between 1976 and 1978. Describe these changes. (3 marks)

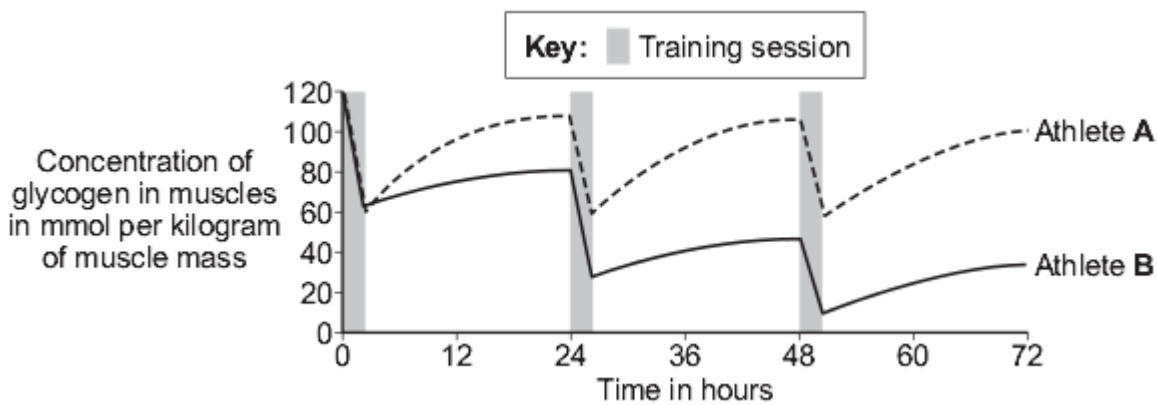
The diagram shows the annual flow of energy through a habitat. The figures are in  $\text{kJ m}^{-2}$ .



Calculate the percentage of the energy in sunlight that was transferred into energy in the green plants. Show clearly how you work out your answer.

Answer = ..... % (2 marks)

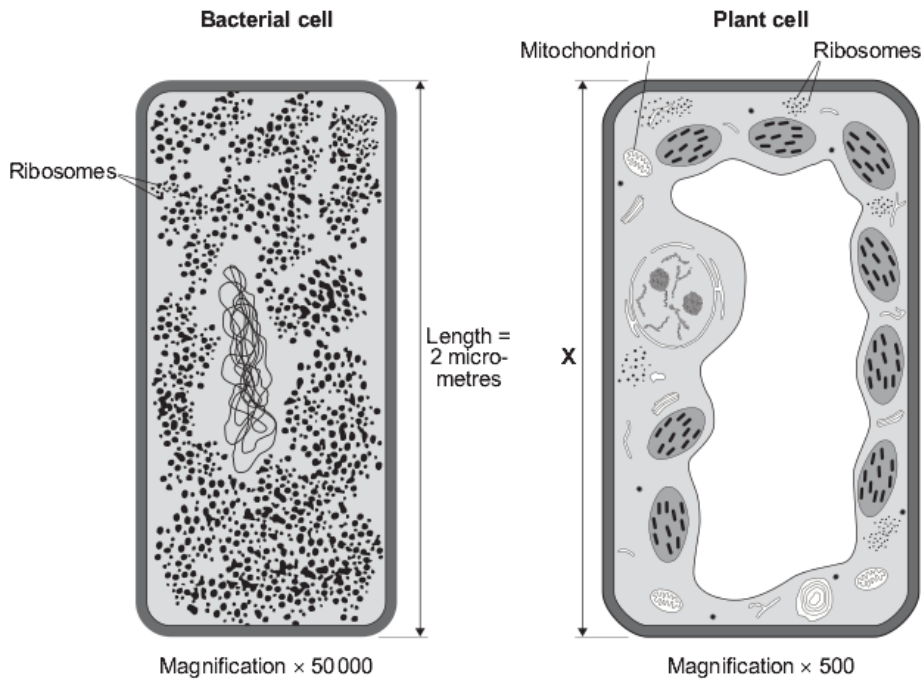
Glycogen is stored in the muscles. Scientists investigated changes in the amount of glycogen stored in the muscles of two 20 year-old male athletes, A and B. Athlete A ate a high-carbohydrate diet. Athlete B ate a low-carbohydrate diet. Each athlete did one 2-hour training session each day. The graph shows the results for the first 3 days



Give three variables that the scientists controlled in this investigation. (3 marks)

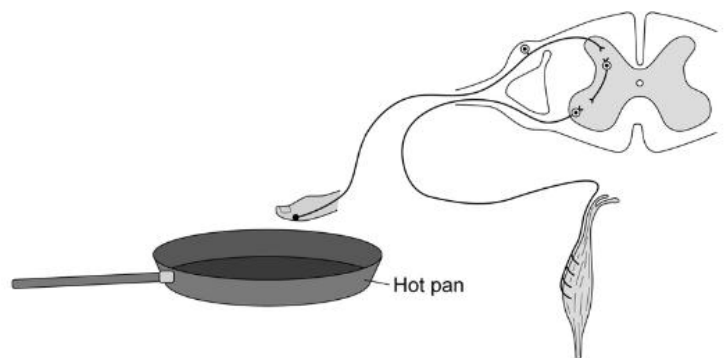
Suggest two variables that would be difficult to control in this investigation. (2 marks)

Describe one way in which the results of Athlete B were different from the results of Athlete A (1 mark)



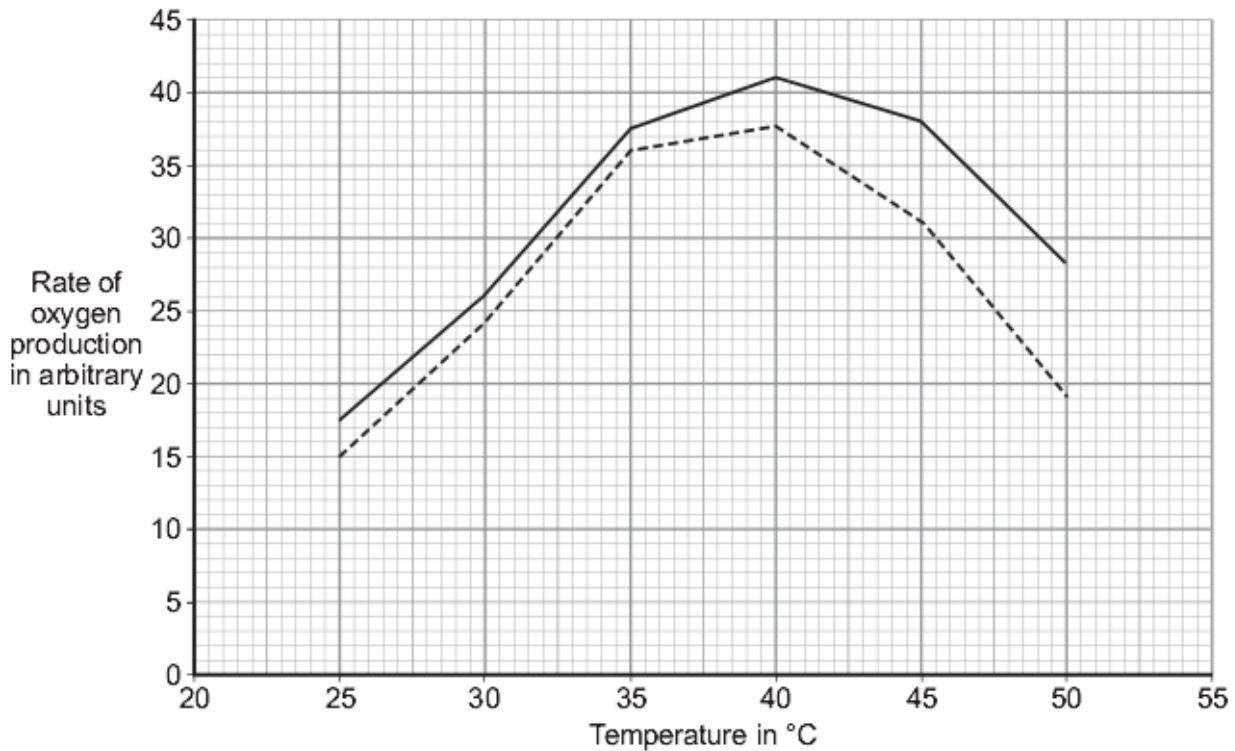
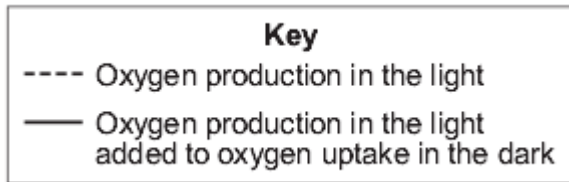
Both cells are drawn the same length, but the magnification of each cell is different. The real length of the bacterial cell is 2 micrometres. Calculate the real length, X, of the plant cell. Give your answer in micrometres. Show clearly how you work out your answer.

X = ..... Micrometres (2 marks)



The nerve pathway in this reflex action is about 1.5 metres in length. A nerve impulse travels at  $75 \text{ m s}^{-1}$ . Use this information to calculate the time taken for this reflex action to occur. Show clearly how you work out your answer

Time interval \_\_\_\_\_ s (2 marks)



Scientists investigated how temperature affects the rate of photosynthesis. The scientists grew some orange trees in a greenhouse. They used discs cut from the leaves of the young orange trees. In their investigation, the scientists measured the rate of oxygen release by the leaf discs in the light. The scientists then measured the rate of oxygen uptake by the leaf discs in the dark. The graph shows the effect of temperature on oxygen production in the light oxygen production in the light added to oxygen uptake in the dark

5 (c) (i) Describe the effect of temperature on oxygen production in the light. (2 marks)

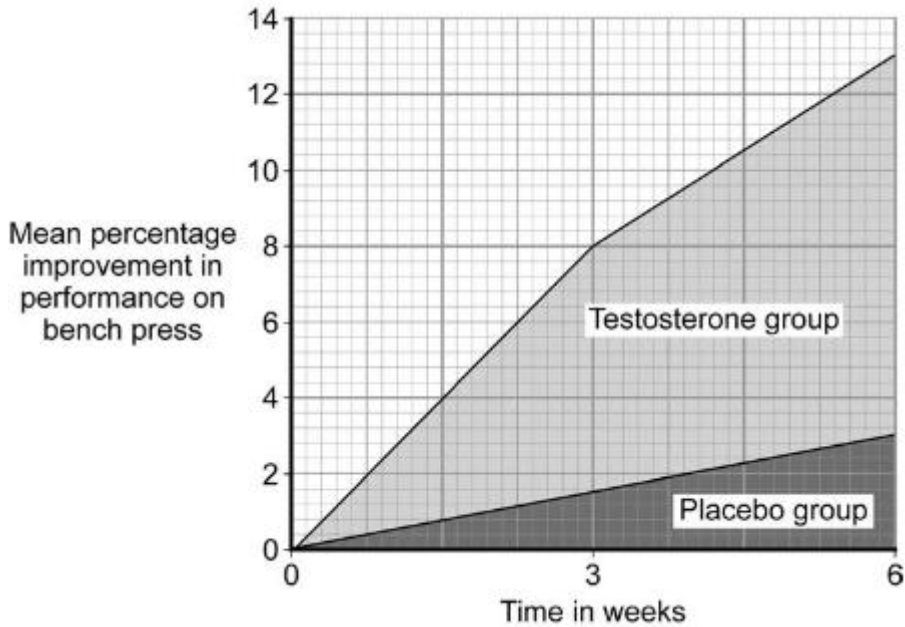
5 (c) (ii) Explain the effect of temperature on oxygen production in the light when the temperature is increased

From 25 °C to 35 °C

from 40 °C to 50 °C.

(2 marks)

Some athletes use drugs containing the steroid testosterone to improve their performance. In an investigation scientists monitored the performance of 18 male athletes over a 6 week training Programme. 9 athletes were given weekly injections of testosterone with the dose of 3.5 milligrams per kilogram of body mass, for 6 weeks the other 9 athletes were given a placebo. The athletes' performance on a bench press exercise was measured at 3 weeks and 6 weeks. The graph shows the results of the investigation



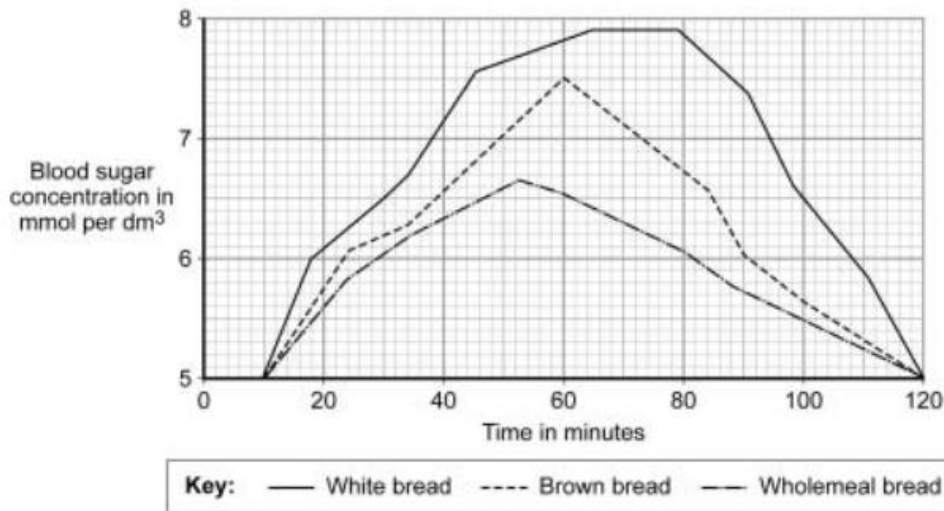
The data would have been better presented as a bar chart. Give a reason why. (1 mark)

Suggest what was given as a placebo in this investigation. (1 mark)

Describe the results of the investigation. (2 marks)

Most internet advertisements for testosterone state that athletes need to use testosterone for at least 10 weeks to significantly improve performance. Do the results of this investigation support the statement in the advertisements? Give one reason for your answer. (1 mark)

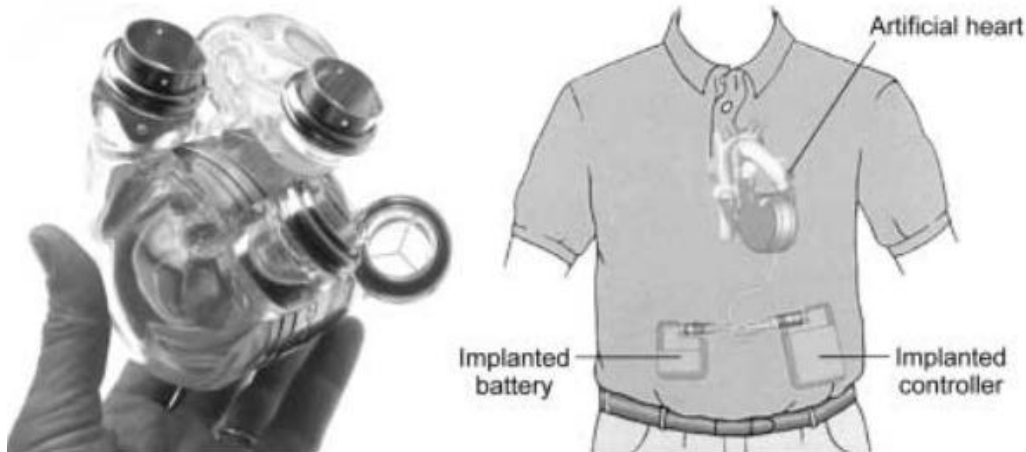
The food we eat affects how quickly our blood glucose concentration changes. In an experiment a person ate two slices of white bread. Her blood glucose concentration was recorded over the next 120 minutes. The experiment was repeated first with two slices of brown bread then with two slices of wholemeal bread. The graph shows the results of the three experiments.



Describe the effect of eating two slices of white bread on the person’s blood sugar concentration (2 marks)

The photograph shows one type of artificial heart.

The diagram shows how this artificial heart is fitted inside the body.



Read the information about this artificial heart.

The first patient to receive the heart lived for 151 days before dying from a stroke.

The second patient was given less than a 20% chance of surviving 30 days at the time of his surgery. He lived for 512 days after receiving the heart. He died because an internal membrane in the device wore out.

**Evaluate** the use of the artificial heart in treating patients (5 marks)