

B2 Chapter 3 Summary

Key Points

- Animals compete for food, water, mates, and space. Plants compete for light, water, space, and minerals.
- Adaptations are characteristics that help an organism to survive and reproduce.
- Predator and prey species are interdependent – a change in the population of one animal directly affects the population of the other.
- Differences in characteristics within a species are known as variation. Inherited variation comes from characteristics inherited from your parents. Variation caused by your surroundings is called environmental variation. Many characteristics are affected by both.
- Characteristics that can only have certain values show discontinuous variation.
- Characteristics that can be any value within a range show continuous variation.
- You inherit characteristics from your parents in your DNA.
- DNA is arranged into long strands called chromosomes. Each chromosome is divided into sections of DNA. The sections of DNA that contain the information to produce a characteristic are called genes.
- Watson, Crick, Franklin, and Wilkins worked together to produce a model of the structure of DNA.
- All living organisms have evolved from a common ancestor, through the process of natural selection.
- Fossils provide evidence for evolution.
- If a species is not adapted to its environment, it will not survive. Eventually a species can become extinct.
- Gene banks store genetic samples from organisms. This may help to prevent extinction.



BIG Write

Explaining natural selection

Imagine that you have to teach the process of natural selection to other members of your year group.

Task

Produce a presentation that explains how peppered moths evolved as a response to the Industrial Revolution. You need to explain what genes are, and how they are passed on.

Tips

- Make sure your slides are clear and cover topics in a logical order.
- Remember to explain all scientific terms clearly.

Key Words

competition, adaptation, interdependence, variation, species, continuous variation, discontinuous variation, DNA, chromosome, gene, evolution, fossils, natural selection, extinct, biodiversity, endangered, gene bank

End-of-chapter questions



- This is a polar bear. It has lots of adaptations to survive in its habitat.

 - Name the habitat in which the polar bear lives. (1 mark)
 - Match the adaptation to how it helps the polar bear to survive. (4 marks)

white fur	insulation
thick fur	camouflage
large feet	to stop the bear sinking into snow
sharp claws and teeth	to catch and eat prey

(5 marks)
- A student studied the small insects living in a log pile.

 - State the resource that the insects use the logs for. (1 mark)
 - Apart from your answer to part a, state **one** other resource that all animals need for survival. (1 mark)
 - Explain why plants don't compete for food. (2 marks)
 - State **one** resource that plants compete for that animals don't compete for. (1 mark)

(5 marks)
- Characteristics are passed on from parents to their children through genetic material.

 - Name the cell component that stores genetic material. (1 mark)
 - Name the chemical that contains all the information needed to make an organism. (1 mark)
 - Describe the difference between a gene and a chromosome. (2 marks)
 - Describe how genetic material is passed from parents to their children. (4 marks)

(8 marks)
- Dinosaurs were animals that lived on Earth millions of years ago.

 - State **one** piece of evidence that proves dinosaurs existed. (1 mark)
 - State what is meant by the word extinction. (1 mark)
 - State and explain **two** reasons that could cause an organism to become extinct. (4 marks)
 - Describe the role of gene banks in helping to prevent extinction. (3 marks)

(9 marks)
- Charlie was investigating variation within his class. He decided to investigate the differences in body mass between students.

 - State what is meant by variation. (1 mark)
 - Name the piece of equipment Charlie should use to measure body mass. (1 mark)

Charlie found that everybody in the class had a different body mass.

 - Name the type of graph Charlie should use to display his results. (1 mark)
 - Sketch and label the axes he should use to plot his results. (2 marks)
 - Explain why body mass is an example of continuous variation. (1 mark)
 - Explain how the variation in students' body mass is caused. (4 marks)

(10 marks)
- Explain the process of natural selection and the role it plays in the evolution of species. (6 marks)