

Life Sciences 11

LG 20

Vertebrates

Vertebrates introduce us to a diverse and highly advanced group of animals that share one defining feature: a backbone. As members of Phylum Chordata, vertebrates include fish, amphibians, reptiles, birds, and mammals, organisms that have successfully adapted to life in water, on land, and in the air. From the powerful muscles of a swimming salmon to the complex brain of a human, vertebrates showcase some of the most sophisticated body systems in the animal kingdom.

All vertebrates share key characteristics, including a vertebral column, a well-developed internal skeleton made of bone or cartilage, and a complex nervous system with a centralized brain. These features allow for greater support, protection of vital organs, and more advanced movement and coordination. Many vertebrates also possess highly specialized organ systems, including closed circulatory systems, efficient respiratory structures such as lungs or gills, and sensory organs that allow them to respond quickly to their environment.

The five major groups of vertebrates each display unique adaptations. Fish are primarily aquatic and use gills for respiration, while amphibians bridge the gap between water and land with life cycles that often include both environments. Reptiles are well adapted to life on land with dry, scaly skin and amniotic eggs. Birds have evolved feathers and lightweight skeletons that enable flight, and mammals are characterized by hair, mammary glands, and high levels of parental care. Together, these groups demonstrate how a shared body plan can evolve into an incredible range of forms and lifestyles.

Studying vertebrates helps us understand major evolutionary advancements such as the development of internal skeletons, increased brain complexity, and more efficient systems for movement and survival. These adaptations have allowed vertebrates to become some of the most dominant organisms on Earth. They also help us better understand our own biology, as humans are part of this group. Vertebrates remind us that evolution is not just about survival, but about innovation, diversity, and connection across species. Why did the vertebrate bring a ladder to school? Because it wanted to reach the next level of “spine”-ting knowledge!

LG 20 Hints: Read the assigned sections carefully and **take detailed notes as you go**. A portion of (LG) mark will be based on the notes you submit.

Reading and taking organized notes helps you to process information, so focus on identifying the most important ideas rather than copying everything word-for-word. Aim to summarize key concepts in your own words. A helpful strategy is to use clear headings and subheadings to organize your notes. This can make the material easier to review later. Ultimately, choose a note-taking style that works best for you, but make sure your notes are clear, organized, and show thoughtful engagement with the reading.

Instructions: Use your Biology 11 Life Sciences textbook to complete the sections below.

1. Read Chapter 31 pages 678-701

- a) Answer question 1 on page 692
- b) Answer questions #1 & 2 on page 701
- c) Complete questions 1-8 (multiple choice) on page 704

2. Read Chapter 32 pages 706-731

- a) Answer questions #1 & 2 on page 719
- b) Answer questions #1 & 2 on page 723
- c) Answer question #3 on page 731
- d) Complete questions 1-8 (multiple choice) on page 734

3. Read Chapter 33 pages 736-751

- a) Answer question #1 on page 745
- b) Answer question #1 on page 751
- c) Complete questions 1-8 (multiple choice) on page 754

4. Read Chapter 34 pages 756-765

- a) Answer question #1 on page 759
- b) Answer question #1 on page 764
- c) Complete questions 1-8 (multiple choice) on page 768

5. Read Chapter 35 pages 770-779

- a) Complete questions 1-8 (multiple choice) on page 782

7. Watch the video by Southwest Science on vertebrates before completing this guide.

Title: Vertebrates: Characteristics and groups

<https://www.youtube.com/watch?v=vE5WfHfy1MM>

- a) List 2 interesting facts you learned from the above video