EXERCISE 12

Animal Diversity

LEARNING OBJECTIVES

- Compare and contrast the body plan of different animal groups.
- Assign animals to their correct phylum based on their characteristics.
- Identify those characteristic that are important for successful terrestrial life.

INTRODUCTION

Animal bodies display a number of features that can be used in the identification of the different animal groups.

Cephalization: a concentration of nerve and sensory cells in one area (anterior or head region). This is the area of the animal that first encounters the stimuli in the environment.

Symmetry: Animals display **radial** or **bilateral symmetry**. In **radial symmetry**, the body parts of the animal are arranged around a central point e.g. star fish. There are several axes that can divide the body into mirror images of each other. Animals with **bilateral symmetry** have only one axis that can produce mirror images. They are usually cephalized, with a definite head region at the anterior of the body, a posterior region and dorsal (back) and ventral (underside or belly) regions e.g. earthworms.

Segmentation: Many animal bodies are divided into **interconnecting sections** that are repeated one after the other along the body. This is very obvious in earthworms.

Type of gut: The gut or digestive system may be incomplete or sac-like with only one opening fo feeding and getting rid of waste. **A complete or tubular gut**, has two openings, a mouth at one end and an anus at the other.

Coelom: A **coelom** is a cavity or space between the body wall and the digestive system. The coelom protects and cushions the internal organs of the animal.

Exercise 1: Identify examples of different animal groups.

Fig. 1 is a chart which shows a simplified classification of the major animal groups. Use the specimen display to locate examples of each of the groups listed on the chart. Write in at least one example of each group.

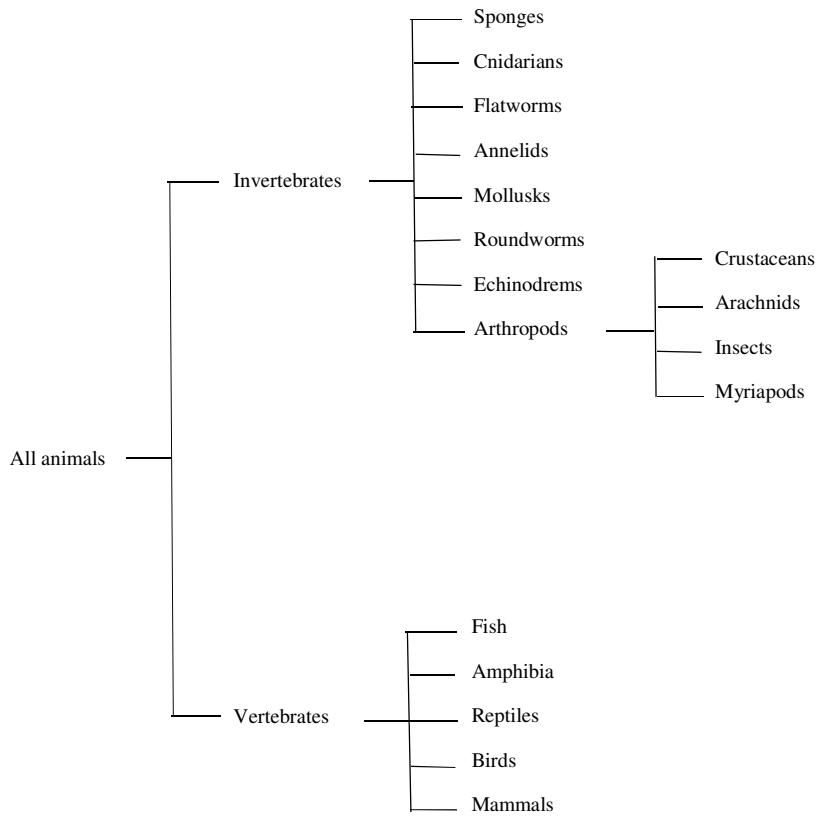

Figure 1: Classification of Animals

Draw one animal belonging to each of the invertebrate groups.

Sponge	**Cnidarian**
Flatworm	**Roundworm**
Annelid	**Mollusk**
Arthropod	**Echinoderm**

INVERTEBRATES

Exercise 2: Characteristics of Invertebrates

Some of the characteristics listed in the **Table 1** are visible when viewing an animal externally and others are not. Observe the specimen display and check off the features characteristic of each group. (Use your textbook to get information about features that can only be seen visible internally).

Characteristic	Sponges	Cnidarians	Flatworms	Annelids	Mollusks	Roundworms	Echinoderms	Arthropods
Cells organized into tissues								
Organ systems								
Coelom								
Cephalization								
Segmentation								
Appendages								
Symmetry: bilateral								
Symmetry: radial								
Type of gut: sac								
Type of gut: tubular								

Table 1: Characteristics of Invertebrates

VERTEBRATES

All vertebrates have the following features in common: a coelom, a circulatory system and an internal skeleton. The skeleton consists of a backbone or vertebral column which encloses the spinal cord and a skull or cranium which houses the brain. Apart from these unifying features, vertebrate groups display some marked differences in their other characteristics.

Exercise 3: Characteristics of Vertebrates

Observe the vertebrate specimens on display and compare Table 2 with their characteristics (for those features that are not visible externally, use your textbook to get the information).

Characteristic	Fish	Amphibia	Reptiles	Birds	Mammals
Type of body covering					
Breathing organs					
Habitat					
Type of appendages					
Amniote egg?					
Internal or external fertilization?					

Table 2: Characteristics of Vertebrates