

## CLASSIFICATION OF ANIMALS (KEY)

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### TEACHING TASK

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#### CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

##### Multiple Choice Questions

1. b) Mollusks.

Mollusks, such as snails, clams, and octopuses, often have shells made of calcium carbonate that provide protection.

2. b) Segmented worms.

This group includes earthworms, leeches, and marine polychaetes, all of which exhibit a segmented body structure.

3. d) Cnidarians.

This group includes jellyfish, corals, and sea anemones, which use specialized cells called cnidocytes to capture prey and defend themselves.

4. b) Backbone or spine made of vertebrae.

This structure is a key feature that distinguishes vertebrates from invertebrates.

5. b) Invertebrates.

Invertebrates are animals that lack a backbone, while mammals, birds, and fish are all vertebrates.

6. c) Five

#### ADVANCED LEVEL

##### More than One Answer Type

7. b) They have three body segments., c) They have six legs., d) They have wings. (though not all insects have wings, many do)

8. a) Vertebrates have a backbone or spine made of vertebrae., c) Vertebrates often possess well-developed sensory organs.

**Fill In the Blanks**

9. Echinoderms
10. Backbone

**Matching Type**

11.

1. Insects - C. Largest group of invertebrates, with three body segments and six legs.
2. Mollusks - A. Have soft bodies, often protected by a hard shell, including snails, clams, octopuses, and squids.
3. Echinoderms - B. Have spiny skin, typically found in marine environments, examples include starfish, sea urchins, and sea cucumbers.

**Answer the Following Questions**

12. Vertebrates are animals that possess a backbone or spine made of vertebrae, which are individual bony segments. This backbone is part of an internal skeleton that provides structural support and protection for the spinal cord. Vertebrates are characterized by a more complex body structure compared to invertebrates, including well-developed nervous and circulatory systems.

**Classification of Vertebrates**

Vertebrates are classified into five main groups:

**1. Mammals:**

- Characteristics: Warm-blooded, have fur or hair, and most produce milk to feed their young.

- Examples: Humans, dogs, whales.

**2. Birds:**

- Characteristics: Warm-blooded, have feathers, and lay eggs. They often have adaptations for flight.

- Examples: Eagles, sparrows, penguins.

**3. Reptiles:**

- Characteristics: Cold-blooded, have scales, and lay eggs (some give live birth). They typically have lungs and can be found in a variety of habitats.

- Examples: Snakes, lizards, turtles.

#### 4. Amphibians:

- Characteristics: Cold-blooded, usually have a life cycle that includes both aquatic (larval) and terrestrial (adult) stages. They have moist skin and typically lay eggs in water.

- Examples: Frogs, toads, salamanders.

#### 5. Fish:

- Characteristics: Cold-blooded, live in water, have gills for breathing, and most have scales. They can be further classified into bony fish and cartilaginous fish.

- Examples: Salmon, sharks, goldfish.

These groups reflect the diversity of vertebrate life and their adaptations to various environments.

13. Invertebrates are animals that lack a backbone or spine. They make up a vast majority of animal species and exhibit a wide range of forms and adaptations. Invertebrates are classified into several main groups based on their body structure, habitat, and other characteristics. Here's an overview of the major classifications:

### Classification of Invertebrates

#### 1. Phylum Porifera (Sponges)

- Characteristics: Simple, porous bodies; lack true tissues and organs; filter feeders.

- Examples: Sea sponges.

#### 2. Phylum Cnidaria

- Characteristics: Have stinging cells (cnidocytes), radial symmetry, and a simple body structure with a central digestive cavity.

- Classes:

- Hydrozoa: Hydra and Portuguese man o' war.
- Scyphozoa: Jellyfish.
- Anthozoa: Corals and sea anemones.

#### 3. Phylum Platyhelminthes (Flatworms)

- Characteristics: Bilateral symmetry, soft-bodied, and many are parasitic.

- Examples: Planarians, tapeworms, flukes.

#### 4. Phylum Nematoda (Roundworms)

- Characteristics: Cylindrical bodies, complete digestive systems, and many are parasitic.

- Examples: Ascaris, hookworms.

#### 5. Phylum Annelida (Segmented Worms)

- Characteristics: Segmented bodies, well-developed organ systems, and often possess setae (bristles).

- Classes:

- Oligochaeta: Earthworms.

- Polychaeta: Marine worms.

- Hirudinea: Leeches.

#### 6. Phylum Mollusca

- Characteristics: Soft-bodied, usually with a hard shell; have a muscular foot and a mantle.

- Classes:

- Gastropoda: Snails and slugs.

- Bivalvia: Clams and oysters.

- Cephalopoda: Squids and octopuses.

#### 7. Phylum Arthropoda

- Characteristics: Exoskeleton made of chitin, segmented bodies, and jointed appendages. This is the largest group of invertebrates.

- Classes:

- Insecta: Insects (e.g., beetles, butterflies).

- Arachnida: Spiders and scorpions.

- Crustacea: Crabs, lobsters, and shrimp.

- Myriapoda: Millipedes and centipedes.

#### 8. Phylum Echinodermata

- Characteristics: Spiny skin, radial symmetry, and a water vascular system.

- Examples: Starfish, sea urchins, and sea cucumbers.

### Summary

Invertebrates exhibit a remarkable diversity in form, function, and habitat. Their classification reflects their evolutionary relationships and adaptations to various environments, from marine to terrestrial ecosystems. Each group plays a vital role in the ecosystem, contributing to biodiversity and ecological balance.

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## LEARNERS TASK

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### CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

#### Multiple Choice Questions

1. c) Ant.

Spiders are arachnids, earthworms are annelids, and starfish are echinoderms.

2. b) Two

body segments: the cephalothorax (which combines the head and thorax) and the abdomen.

3. d) Marine

Echinoderms, such as starfish, sea urchins, and sea cucumbers, are exclusively marine animals. They inhabit various oceanic habitats, including coral reefs, sandy sea floors, and rocky shorelines. Their unique water vascular system, which aids in locomotion and feeding, is adapted to life in saltwater. Additionally, the majority of echinoderms play crucial roles in marine ecosystems, contributing to biodiversity and the health of oceanic environments.

4. b) Vertebrates.

Vertebrates are characterized by their backbone, which is composed of individual vertebrae. This group includes mammals, birds, reptiles, amphibians, and fish. While amphibians and mammals also have backbones, they are specific subcategories within the broader classification of

vertebrates. Invertebrates, on the other hand, lack a backbone entirely.

5. c) They possess a backbone or spine made of vertebrae.

This backbone is a defining characteristic of vertebrates, setting them apart from invertebrates, which do not have a backbone. While some vertebrates lay eggs, have fur or feathers, or possess gills (like fish), these traits are not universal to all vertebrates. The presence of a backbone is the key feature that unifies all members of this group.

### ADVANCED LEVEL

#### More than One Answer Type

6. The examples of insects are b) Ant and c) Butterfly.

Explanation:Ants and butterflies are both classified as insects, belonging to the class Insecta.Spiders are arachnids, which are a separate class of arthropods.Earthworms are annelids and are not insects.

7. The animals classified as vertebrates are b) Dolphins and c) Snakes.

Explanation:Dolphins are mammals and have a backbone.Snakes are reptiles and also possess a backbone.Insects and crabs are invertebrates and do not have a backbone.

#### Fill In the Blanks

8. Mollusks

9. five

#### Matching Type

10.

- |              |              |
|--------------|--------------|
| 1. Arachnids | A. Spider    |
| 2. Annelids  | C. Earthworm |
| 3. Insects   | B. Ant       |

#### Answer the Following Questions

11.What are Insects?

Insects are small animals that belong to a group called "arthropods."

They are the largest group of animals on Earth, with over a million different types!

### Characteristics of Insects

1. **Body Structure:** Insects have three main parts:
  - **Head:** This is where their eyes, mouth, and antennae are located.
  - **Thorax:** This part has three pairs of legs and often wings.
  - **Abdomen:** This is the back part of the insect, where their organs are.
2. **Exoskeleton:** Instead of bones, insects have a hard outer shell called an exoskeleton that protects them.
3. **Six Legs:** All insects have six legs, which help them move around.
4. **Antennae:** Insects have two antennae on their heads that they use to feel and smell their environment.

### Types of Insects

Insects come in many shapes and sizes. Some common types include:

- **Bees:** They help pollinate flowers and make honey.
- **Butterflies:** They have colorful wings and go through a life cycle called metamorphosis.
- **Ants:** They live in colonies and work together to find food.
- **Beetles:** They have hard shells and come in many colors.

### Life Cycle

Insects usually go through four stages in their life cycle:

1. **Egg:** Insects start as eggs.
2. **Larva:** After hatching, they enter the larval stage (like caterpillars for butterflies).
3. **Pupa:** They then change into a pupa, where they transform into adults.
4. **Adult:** Finally, they emerge as fully grown insects.

### Importance of Insects

Insects play important roles in nature:

- **Pollination:** They help plants reproduce by spreading pollen.

- Food Source: Many animals, like birds and frogs, eat insects.
- Decomposers: Some insects break down dead plants and animals, returning nutrients to the soil.

## 12. What are Vertebrates?

Vertebrates are animals that have a backbone or spine. This backbone is part of a structure called the skeleton, which helps support the body and protect vital organs. Vertebrates are a big group of animals that includes many familiar species!

### Types of Vertebrates

Vertebrates are divided into five main groups:

#### 1. Mammals:

- These animals have fur or hair and usually give live birth.
- They also produce milk to feed their young.
- Examples include dogs, cats, elephants, and humans.

#### 2. Birds:

- Birds have feathers, wings, and beaks.
- Most can fly, and they lay eggs.
- Examples include eagles, parrots, and sparrows.

#### 3. Reptiles:

- Reptiles have dry, scaly skin and lay eggs.
- They are cold-blooded, which means their body temperature changes with the environment.
- Examples include snakes, lizards, and turtles.

#### 4. Amphibians:

- Amphibians live both in water and on land.
- They usually start their life in water as tadpoles and later develop lungs to breathe air.
- Examples include frogs, toads, and salamanders.

#### 5. Fish:



- Fish live in water and have gills to breathe.
- They usually have scales and fins.
- Examples include goldfish, sharks, and salmon.

## CHARACTERISTICS OF FISH, REPTILES AND AMPHIBIANS (KEY)

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### TEACHING TASK

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#### CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

##### Multiple Choice Questions

1. B) Fish breathe through lungs.

Fish breathe using gills, not lungs. The other statements are true: fish primarily live in water, have streamlined bodies, and are ectothermic (cold-blooded).

2. D) Both laying eggs (oviparous) and giving birth to live young (viviparous).

Fish can reproduce by laying eggs (oviparous) and some species give birth to live young (viviparous).

3. B) Through lungs.

Unlike amphibians, which can breathe through their skin, reptiles have well-developed lungs for breathing air.

4. B) Dry, scaly skin.

The scales create a barrier that reduces moisture loss, allowing reptiles to thrive in dry environments.

5. B) Through gills.

Most amphibian larvae, like tadpoles, use gills to extract oxygen from water before they develop lungs as adults.

6. B) It is moist and permeable, aiding in respiration.

Amphibians have skin that allows for gas exchange and requires moisture to function effectively.

**ADVANCED LEVEL****More than One Answer Type**

7. B) Reptiles can be found in freshwater environments, C) Reptiles can be found in marine environments.

Reptiles are primarily terrestrial but can also inhabit freshwater and marine environments. They do not live exclusively in the air.

8. B) They are ectothermic, C) They have legs adapted for jumping, swimming, or crawling.

Amphibians typically lay their eggs in water (not on land in nests) and have moist, permeable skin rather than dry, impermeable skin.

**Fill In the Blanks**

9. oviparity, viviparity.

10. Reptiles

**Matching Type**

11.

1. Aquatic Life saltwater.

B. Primarily live in water, either freshwater or

2. Respiration from water.

A. Breathe through gills, which extract oxygen

3. Body Structure resistance and aid in swimming.

D. Have streamlined bodies, which reduce water

4. Skin mucus.

C. Usually covered with scales and a layer of

**Answer the Following Questions**

12. The skin of most fish is covered by \*scales\*, which provide protection and help reduce friction as they swim through the water.

13. Amphibians typically have a unique reproductive strategy that involves laying eggs in water. Most amphibians lay their eggs in moist environments, often in freshwater bodies like ponds, lakes, or streams.

Fertilization Methods

### 1. External Fertilization:

- This is the most common method among amphibians. The female lays her eggs in the water, and the male releases sperm over the eggs to fertilize them. This method is seen in many species, such as frogs and toads.

### 2. Internal Fertilization:

- Some amphibians, like certain species of salamanders, use internal fertilization. In this case, the male transfers sperm directly to the female, which then lays fertilized eggs.

### Life Cycle

After fertilization, amphibian eggs hatch into larvae (like tadpoles) that live in water and breathe through gills. As they grow, they undergo metamorphosis, developing lungs and legs, allowing them to transition to life on land as adults.

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## LEARNERS TASK

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### CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

#### Multiple Choice Questions

1. B) Through gills.

Gills extract oxygen from the water, allowing fish to breathe.

2. B) Scales and a layer of mucus.

The scales and mucus create a smooth surface, allowing fish to move more easily through the water.

3. D) All of the above.

They inhabit terrestrial environments, as well as freshwater and marine environments.

4. B) All reptiles give birth to live young.

Most reptiles lay eggs, and while some give birth to live young, not all do.

5. C) In water.

This is because their eggs require a moist environment to develop properly.

**ADVANCED LEVEL****More than One Answer Type**

6. A) Covered with scales, C) Has a layer of mucus, D) Reduces friction in water.

Fish skin is not covered with feathers; that characteristic applies to birds.

7. A) Fish breathe through gills, C) Gills extract oxygen from water. Fish do not primarily breathe through lungs or their skin.

**Fill In the Blanks**

8. Gills

9. Ectothermic

**Matching Type**

10.

- |                 |                                                                                      |
|-----------------|--------------------------------------------------------------------------------------|
| 1. Oviparous    | B. Lay shelled eggs on land.                                                         |
| 2. Viviparous   | C. Give birth to live young.                                                         |
| 3. Cold-blooded | A. Ectothermic and rely on external heat sources to regulate their body temperature. |

**Answer the Following Questions**

11. The body structure of fish that helps them move efficiently through water is their \*streamlined body\*. This shape reduces water resistance and allows for smoother, faster swimming. Additionally, their \*fins\* play a crucial role in steering and propulsion.

12. The two main respiratory organs used by amphibians throughout their life cycle are gills and lungs.

1. Gills:

- In the larval stage (like tadpoles), amphibians primarily use gills to extract oxygen from water. Gills allow them to breathe underwater as they grow and develop.

2. Lungs:

- As amphibians undergo metamorphosis and transition to adulthood, they develop lungs. This change allows them to breathe air when they

are on land. Many adult amphibians can also respire through their skin, which requires a moist environment to facilitate gas exchange.

This progression from gills to lungs illustrates their adaptation to both aquatic and terrestrial environments.

## CHARACTERISTICS OF BIRDS AND MAMMALS (KEY)

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### TEACHING TASK

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#### CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

##### Multiple Choice Questions

1. B) Feathers.

Feathers cover the bodies of birds, helping them to fly and stay warm.

2. B) Beaks

Birds have B) Beaks for eating instead of teeth.

3. D) Nests.

Nests provide a safe place for eggs and help keep them warm during incubation.

4. A) Cold-blooded.

Mammals are warm-blooded (endothermic).

5. D) Internally, as they are warm-blooded.

This allows them to maintain a stable body temperature regardless of the external environment.

6. C) To regulate body temperature.

Fur or hair helps insulate the body, keeping mammals warm in cooler environments.

#### ADVANCED LEVEL

##### More than One Answer Type

7. A) Helping them fly, B) Keeping them warm, D) Providing camouflage

Feathers are not primarily used for helping birds walk.

8. A) Cutting, C) Tearing, D) Grinding food.

These functions help mammals process food for digestion.

### Fill In the Blanks

9. Hollow bones.

10. Mammary glands.

### Matching Type

11.

1. Beaks

C. Adapted for different feeding habits.

2. Egg-laying

A. Hard-shelled.

3. Warm-blooded

B. Regulate their body temperature internally.

### Answer the Following Questions

12. Birds reproduce through **internal fertilization**. During mating, the male transfers sperm to the female, who then fertilizes her eggs internally.

After the Eggs are Laid:

1. Nest Building: Most birds build nests to lay their eggs in. Nests provide a safe and protected environment for the eggs.

2. Egg Laying: The female lays the eggs, which are usually hard-shelled. This shell protects the developing embryo inside.

3. Incubation: After laying, one or both parents incubate the eggs by sitting on them to keep them warm. This helps the embryos develop properly.

4. Hatching: After a certain period, the eggs hatch, and the chicks emerge. Depending on the species, chicks may be altricial (born helpless and require care) or precocial (born more developed and able to move around).

5. Parental Care: After hatching, the parents usually care for the chicks, providing food and protection until they are old enough to fledge (leave the nest).

This process ensures that the young birds have the best chance of survival as they grow.

13. Mammals differ from reptiles and amphibians in their body temperature regulation in the following ways:

Mammals:

- Warm-blooded (Endothermic): Mammals regulate their body temperature internally, allowing them to maintain a stable temperature regardless of the external environment. This enables them to remain active in a variety of climates and conditions.

Reptiles and Amphibians:

- Cold-blooded (Ectothermic): Both reptiles and amphibians rely on external heat sources to regulate their body temperature. Their body temperature changes with the environment, which means they often need to bask in the sun or seek shade to maintain their preferred temperature range.

Key Differences:

- Internal vs. External Regulation: Mammals can generate and retain heat internally, while reptiles and amphibians depend on the environment for warmth.

- Activity Levels: Mammals can be active in a wider range of temperatures, while reptiles and amphibians may become sluggish in cooler conditions.

This difference allows mammals to occupy various habitats and be active year-round, unlike many reptiles and amphibians, which may be more limited by temperature.

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## LEARNERS TASK

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### CONCEPTUAL UNDERSTANDING QUESTIONS (CUQ's)

#### Multiple Choice Questions

1. C) Hollow bones.

Making them lightweight for flying.

2. Birds reproduce A) By laying eggs.

3. C) Feathers.

Feathers provide insulation, which helps maintain a stable body tem-

perature.

4. C) To produce milk for feeding young.

5. D) For various functions in chewing and processing food.

Different types of teeth (like incisors, canines, and molars) are adapted for cutting, tearing, and grinding food.

### ADVANCED LEVEL

#### More than One Answer Type

6. B) Different types of beaks are adapted for various feeding habits, D) Beaks can be used for cracking nuts.

Beaks are not used for chewing food (A) and are made of a hard, keratinous material, not solid bone (C).

7. a) Fur or hair covering, c) Warm-blooded, d) Have mammary glands.

Most mammals do not lay eggs (b); instead, they give birth to live young (though some, like monotremes, do lay eggs).

#### Fill In the Blanks

8. Feathers

9. warm-blooded

#### Matching Type

10.

1. Fur or hair

B. Helps them stay warm.

2. Warm-blooded

C. Regulate their body temperature internally.

3. Different Teeth

A. Cutting, tearing, or grinding food.

#### Answer the Following Questions

11. The characteristic of birds that allows them to regulate their body temperature internally is \*feathers\*.

Benefits:

1. Insulation: Feathers trap air close to the body, providing insulation against cold temperatures.



2. **Temperature Control:** This internal regulation enables birds to remain active in a variety of environmental conditions, from cold climates to hot ones.

3. **Energy Efficiency:** By maintaining a stable body temperature, birds can conserve energy, allowing them to be more efficient in finding food and escaping predators.

Overall, feathers play a crucial role in helping birds adapt to their environments and maintain their metabolic processes.

12. A unique characteristic of mammals in terms of their reproductive method is that they possess \*mammary glands\*, which produce milk to nourish their young after birth.

This feature distinguishes mammals from other animal groups, as most other animals do not provide milk to their offspring. Additionally, most mammals give birth to live young (with some exceptions like monotremes, which lay eggs), while many other groups, such as reptiles and birds, primarily lay eggs.

