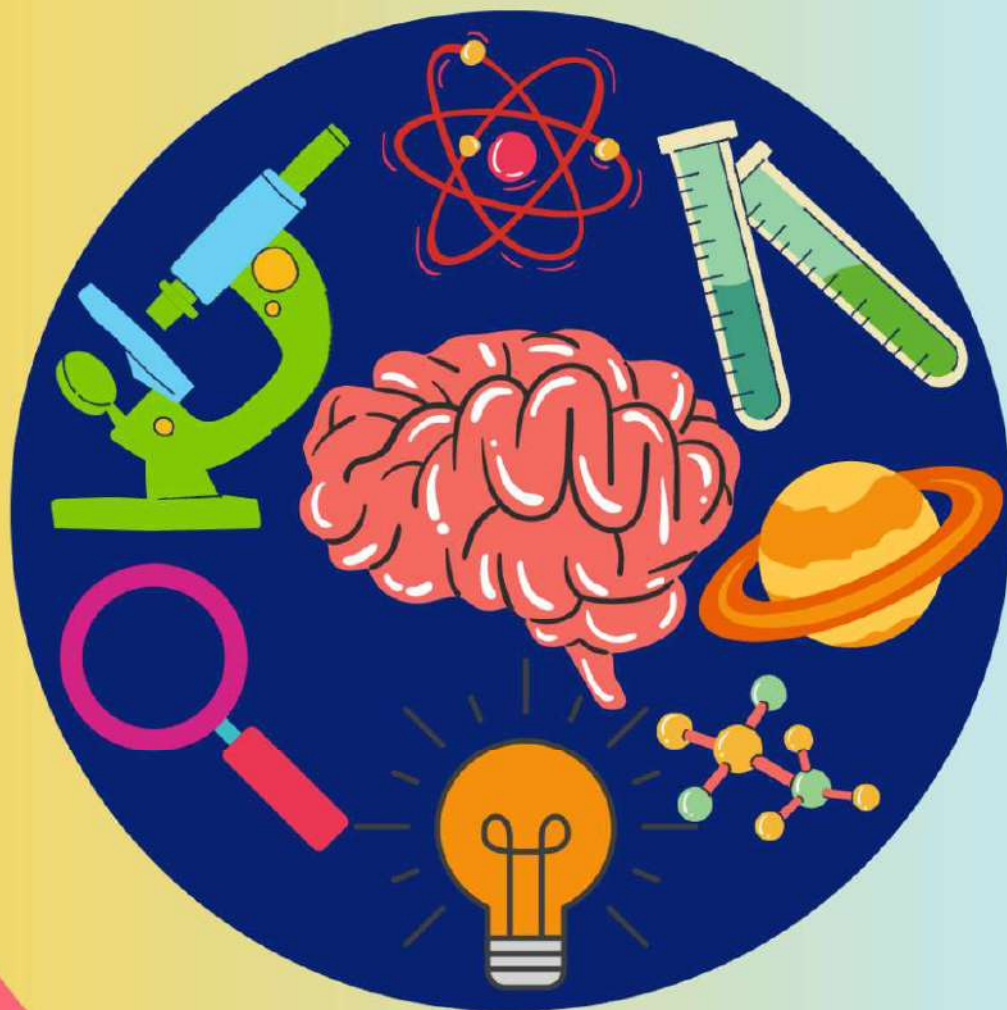


# SCIENCE WORKBOOK

5

For the preparation of National  
& International Olympiads



- Chapter-wise practice exercises
- Previous year paper

# Science Olympiad

## Exams Preparation Book

CSO | NSO | USO | iOS | NSTSE | HSO

**Grade 5**



#CRESTInnovator

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## CREST Science Olympiad Workbook for Grade 5

Second Edition

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**Disclaimer:** The information in the Workbook is to give you the path to success but it does not guarantee 100% success as the strategy is completely dependent on its execution. And it is based on previous year papers of CSO exam.

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# Preface

We are pleased to launch a thoroughly revised edition of this workbook. We welcome feedback from students, teachers, educators and parents. For improvements in the next edition, please send your suggestions at [info@crestolympiads.com](mailto:info@crestolympiads.com).

CREST Olympiads is one of the largest Olympiad Exams with students from more than 25 countries. The objective of these exams is to build competitive spirit while evaluating students on conceptual understanding of the concepts.

We strive to provide a superior learning experience, and this workbook is designed to complement the school studies and prepare the students for various competitive exams including the CREST Olympiads. This workbook provides a crisp summary of the topics followed by the practice questions. These questions encourage the students to think analytically, to be creative and to come up with solutions of their own. There's a previous year paper given at the end of this workbook for the students to attempt after completing the syllabus. This paper should be attempted in 1 hour to get an assessment of the student's preparation for the final exam.

*Publishers*

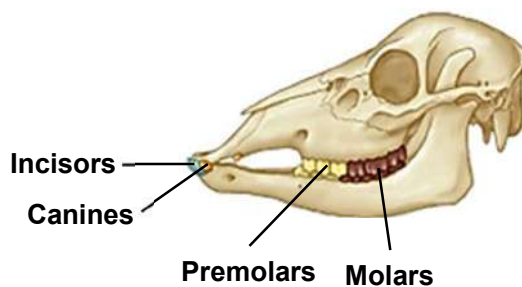
Different animals live in different places. Habitat refers to an area where a particular animal naturally lives. The habitat provides the animal with air, food, water and shelter. The home of an animal is found within its habitat. For example, the lion's home is the den and the forest is its habitat. There are different types of habitats on earth like oceans, deserts, forests, polar regions, mountains and fresh water bodies.

If a habitat changes, the animal is unable to adapt quickly and finds it difficult to survive. The ability of living things to adjust themselves to their environment is called adaptation. We have a wide variety of flora and fauna all over the Earth.

## Classification of Animals on the Basis of their Feeding Habits

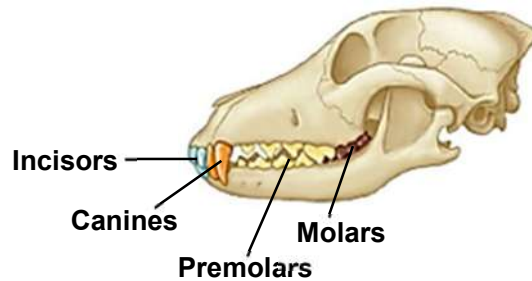
Like all living beings, animals too need food to get energy to grow and to survive.

1. **Herbivores** – Animals that eat plants and other plant parts are called plant eating animals or herbivores. They have sharp cutting teeth in the front called incisors and strong grinding teeth called molars at the back to chewing and grind the plant food. Some examples of herbivores are deer, elephants, rabbits, cows, sheep goats etc.



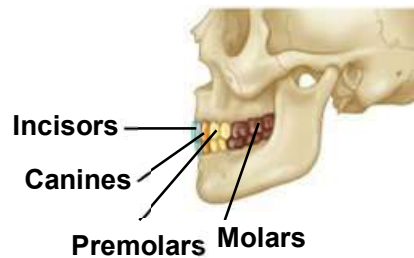
### Herbivore

2. **Carnivores** – Animals that eat only the flesh of other animals are called flesh eating animals or carnivores. Some examples of carnivorous animals are tigers, leopards, lions, wolves and dogs. They have a pair of sharp teeth which are long and pointed called canines. These teeth help in tearing the flesh of their prey. They have strong sharp grinding teeth at the back to chew the flesh and the bones. Eagles, hawks, vultures and kingfishers are some carnivorous birds that have sharp and bent beaks and claws to catch their prey and tear the flesh.



## Carnivore

3. **Omnivores** – Some examples of omnivorous animals are cats, bears, cockroaches, crows, monkeys, hens, fox, cocks and human beings which eat both plants and animals. Omnivores have well developed incisors and molars to eat both type of food.

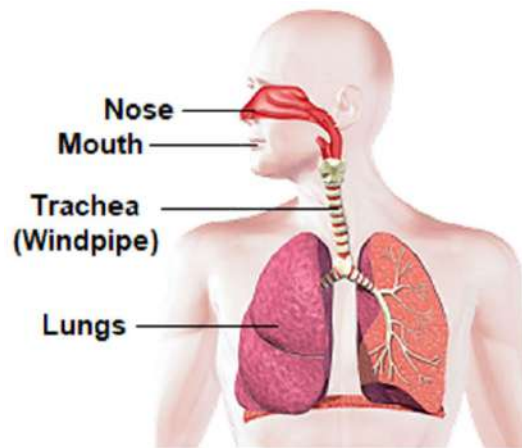


## Omnivore

4. **Scavengers** are flesh eating animals that feed on the dead remains of other animals like vultures and hyenas.
5. **Parasites** – Some animals live on or inside the bodies of other living animals to get their food. Such animals are called Parasites. Lice, mosquitoes, leaches live on the body of host. They use suckers or sucking tubes to suck the blood of their host. Roundworm and tapeworm live inside the body of the host. They suck host's blood and eat the digested food.
6. **Rodents** – Many rodents like rats have sharp incisors for nibbling and molars for gnawing.
7. Animals like snakes do not have chewing teeth, they do not chew their food instead they swallow their food whole.
8. Animals like frogs have a long sticky tongue to catch its prey. When a frog spots an insect, it sticks out its tongue and catches its prey, then it rolls back its tongue back into its mouth.

## Animal Groups Based on Organs of Breathing

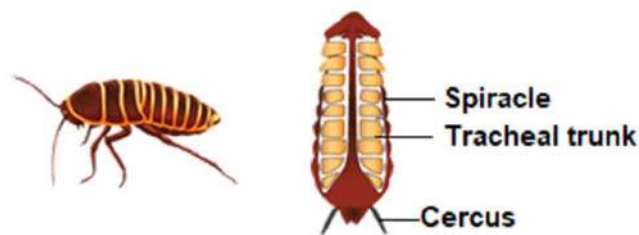
Living organisms inhale or breathe in oxygen and exhale or breathe out carbon dioxide.



Reptiles, birds and mammals breathe through their lungs. Mammals including human beings breathe through their lungs. Air is taken in through the nose and mouth and down the trachea or windpipe after which it enters into the lungs. The carbon dioxide is then thrown out of the lungs and exhaled through the mouth or nose.

**Breathing in Aquatic Animals** – Fishes breathe in oxygen and depend on their gills to inhale the oxygen present in the water. The fish takes in water into its mouth and forces it out through the gills. As the water passes out through the thin walls of the gills, the dissolved oxygen in it enters its blood stream. There are exceptions like whales and dolphins as they breathe in the oxygen present in the air through their lungs. They do this by coming up to the water surface.

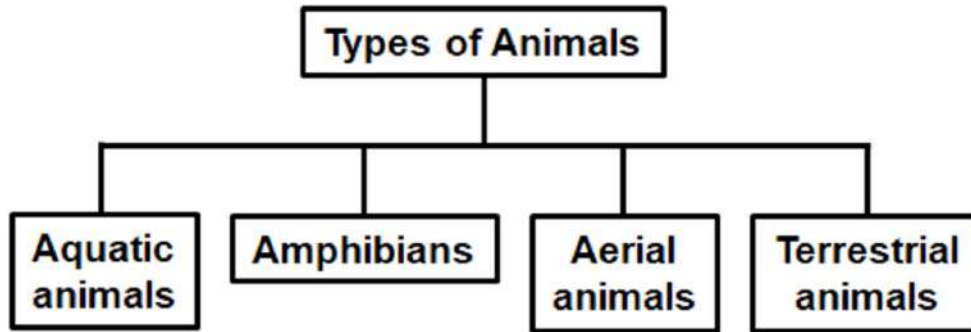
**Breathing in Insects** – Insects like cockroaches and grasshoppers have very small openings on their bodies called spiracles through which they inhale and exhale air.



**Breathing in Worms** – Earthworms have wet or moist skin which helps in breathing. They take in oxygen through this moist skin and it goes directly into their bloodstream.



**Breathing in Amphibians** – Frogs, toads, newts and salamanders live on land and in water. They breathe through skin when in water and through their lungs when on land.



## Movement in Animals

Movement in animals is also called locomotion. Animals move from place to place for various reasons:

- i. In search of food, water and shelter
- ii. To protect themselves and their little ones from the harsh climatic conditions as well as from their enemies and predators.

### Movement in Terrestrial or Land Animals

Most terrestrial animals have two pairs of limbs. The front ones are called forelimbs while the rear ones are called hind limbs. Animals such as tigers, lions, elephants, cows, camels use their forelimbs and hind limbs for locomotion such as walking, running or climbing. Long slender legs of giraffe and deer help them to run with great speed. Tigers, wolves, cats, lions and dogs move noiselessly as their feet are provided with a soft pad underneath.

Rabbits and hares have very large muscular rear legs which they mostly use to escape from their predators. They have short front legs or forelimbs and long strong hind legs that help them to leap and run or walk. Their legs help them to cover the ground with large hopping strides. Human beings only use their hind limbs for movement. Snakes do not have legs but use their muscles and scales to push their body ahead.

### Movement of Aerial or Air Borne Animals

Most birds fly with the help of their feathered wings. Their forelimbs are modified into wings. They have powerful breast muscles that helps them to fly. Their hind limbs help them to perch, hop, run and catch prey. The boat shaped body of birds help to float easily in the air. Tails also help them to direct the flight. They have light and hollow bones. Insects like butterfly and honeybees have thin membranes that enables them to fly.

### Movement of Aquatic or Water-Borne Animals

The streamlined body of fishes help them to swim in water. Their fins help to move, balance and change directions as they move through the water. The body of fish is like a boat that

helps them move smoothly and quickly in water. Many amphibians and ducks have webbed feet that help as oars or pedals when they are in water. Penguins, dolphins, whales and sea turtles have forelimbs in the form of flippers which help them swim in water.

## Migration

There are some animals that move over large distances in search of food or water, to reproduce or in search of better weather conditions. Such movement of animals in a group is called migration. Deer, elk, moose, bighorn sheep and pronghorn are examples of mammals that migrate.

## Animals Adapted to Desert Life

Deserts are hot, dry and windy and only a few animals are adapted to survive in such weather conditions.

- Camels are known as the ship of the desert. As the wind blows sand all the time, camels have long eyelashes that prevent the sand from entering their eyes. Their thick eyebrows shield their eyes from the hot sun. They have the ability to close their nostrils so that sand does not get in. Their ears are covered with hair which keep the sand out. Their big wide feet enable them to walk easily on sand without sinking into it. They can live for weeks without food and water. They store fat in their hump which is used for energy later. Their thick lips enable them to eat the prickly desert plants without feeling the pain.
- Fennec fox have large ears that helps them to lose heat as well as hear the insects from great distance.
- Ground squirrel uses its thick, extra, bushy tail to protect itself from the heat of the sun.
- Sidewinder can slide easily on the soft sand and moves sideways. Rattlesnakes are also found in desert regions.

## Animals of the Polar Regions

Animals like polar bears, musk oxen and reindeer have thick fur which helps them stay warm. They have fat under the skin which gives nourishment in winter. In winter some animals like bears, bats, snakes, lizards, turtles, frogs and squirrels become inactive and enter a sleep like state to protect themselves against the cold. This is called hibernation.

## Arboreal Animals

Tree dwelling animals are also called arboreal animals. Monkeys, chimpanzee, flying squirrels etc. are examples of arboreal animals. They have claws and well-developed hip

girdle which supports the weight of the body while climbing. The hairs and scales of the flying squirrel prevents it from slipping from the branches. In some monkeys the tail is capable of grasping the branches of trees.

## Adaptations for Protection

Camouflage is the colouration or patterns that an animal develops in order to adapt to its environment by blending with its surroundings.

Chameleon and rattle snakes are green as these animals hide in the trees and branches among leaves.

The white coloured fur of the polar bears allows them to blend in their snow – covered environment and sneak up to their prey.



Chameleon



Rattle snake

## Classification of Animals Based on their Body Structure

Animals are classified into invertebrates or vertebrates on the basis of absence or presence of backbones in their bodies.

Animals like corals, lobsters, sponges, star fish and sea cucumber are classified as invertebrates as they do not have backbones.

Animals like fish, reptiles, amphibians, birds and mammals are vertebrates as they all possess backbones.

Reptiles are cold-blooded animals that cannot control their body temperature. Some examples of reptiles are snakes, lizards, turtles and crocodiles.



**Invertebrates  
without a backbone**

**Vertebrates  
with a backbone**

Mammals have hair on their body and are warm blooded. The young ones of mammals feed on their mother's milk.

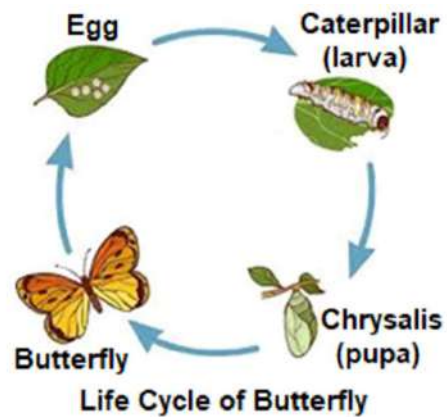
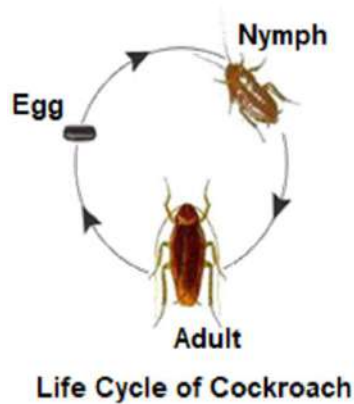
## Reproduction in Animals

One of the most important characteristics of living things is that they grow and are able to produce more of their own kind. All organisms are capable of producing young ones of their own kind and this is known as reproduction.

All animals do not reproduce in the same way. Many animals give birth to their young ones. These young ones look like their parents when they grow.

The cockroach undergoes three developmental stages in its life cycle, the egg, nymph and the adult stage.

Silkworms and butterflies go through four stages of development, as most insects do, namely egg, larva, pupa and adult.



## Practice Questions

- Consider the two statements given below and choose the correct option:  
Statement 1: Turtles have webbed feet that help them to swim in water.  
Statement 2: The tips of mountain goat's feet have sharp dewclaws that help them from slipping.
  - Statement 1 is correct and statement 2 is wrong.
  - Statement 1 is wrong and statement 2 is correct.
  - Both the statements are correct.
  - Both the statements are wrong.

- Study the given table:

	Breathes through spiracles	Breathes through skin	Herbivores	Omnivores
<b>Animal P</b>	Yes	No	No	Yes
<b>Animal Q</b>	No	Yes	No	No
<b>Animal R</b>	No	No	Yes	No

Which of these animals is cockroach and frog respectively?

- Q and R
  - R and P
  - P and Q
  - P and R
- These animals have long legs and flexible backbone which helps them to increase the length of their strides. This statement is about:
    - Adaptation in land animals
    - Adaptation in aquatic animals
    - Adaptation in aerial animals
    - Adaptation about aerial and aquatic animals
  - Starting from the first letter strike out every alternate letter to get the name of an invertebrate:
    - G D F O P L Z P J H F I B N O
    - Z S H N B A Q K W E
    - F L N O M B D S Y T W E C R S
    - C T Y U E R H T J L O E P
  - What are the adaptations for flight in birds?
    - Hollow bones to reduce body mass.
    - Feathers covering their body.
    - A streamlined body with large urinary bladder.
    - Wings with powerful muscles.
    - 1 only
    - 1, 2 and 3 only
    - 1, 2 and 4 only
    - 1, 2, 3 and 4

6. Which of the following animals' breathing organ is not found in the word grid as given below?

A	L	S	H	J
M	U	K	U	O
K	N	I	R	X
O	G	N	Q	F
P	S	Z	S	W
Y	G	H	J	K

- a. Cockroach  
b. Earthworm  
c. Dolphin  
d. Newt
7. Refer to the given conversation amongst three friends:  
Tom – Organism X's nymph can move from place to place but housefly pupa cannot.  
Danny – The lifecycle of the organism Y has same number of stages as the life cycle of a grasshopper.  
Sophia – The grasshopper nymph resembles its parents but organism Z larva does not resemble its parent.  
Now select the option that correctly identifies any two of these organisms:

- a. X – Grasshopper, Z – Housefly  
b. X – Butterfly, Y – Frog  
c. Y – Moth, Z – Cockroach  
d. Y – Butterfly, Z – Grasshopper
8. Refer to the given word grid:

Z	E	M	U	O	P
F	G	O	W	L	J
D	H	V	B	E	N
W	Q	R	S	E	M
X	C	N	J	C	A
I	T	R	F	H	L

Which of the following is not hidden in the above word grid?

- a. A flightless bird  
b. A nocturnal animal  
c. A parasite  
d. This animal that can change its colour
9. Squirrels eat mostly nuts, seeds and fruits. Sometimes they eat insects and other small creatures also. Squirrels are most likely to have what kind of teeth?
- a. Incisors and molars  
b. Canines  
c. Premolars  
d. Only incisors



15. Which of the following is correct regarding the animal shown in the picture below?



- a. It reproduces by laying eggs.
- b. It withdraws its body into a shell on sensing danger.
- c. It breathes through its skin and blowholes.
- d. It has three stages of life cycle.

16. Study the given relationship based upon the larvae of some insects and select the option that correctly satisfies the same relationship:

**Beetles : Grubs**

- a. House fly : Maggot
- b. Grasshopper : Nymph
- c. Moth : Caterpillar
- d. Both a and c

17. Consider the two statements given below and choose the correct option:

Statement 1: Penguins have forelimbs in the form of flippers which help them swim in the water.

Statement 2: Bighorn sheep is a migratory mammal.

- a. Statement 1 is correct and statement 2 is wrong
- b. Statement 1 is wrong and statement 2 is correct
- c. Both the statements are correct
- d. Both the statements are wrong

18. Select the animal pair who have similar breathing mechanisms:

- a. Crocodile and cockroach
- b. Earthworm and Newt
- c. Grasshopper and Crane
- d. Salamander and Toad

19. Consider the two statements given below and choose the correct option:

Statement 1: Chimpanzee is an arboreal animal.

Statement 2: Some monkeys have prehensile tail.

- a. Statement 1 is correct and statement 2 is wrong.
- b. Statement 1 is wrong and statement 2 is correct.
- c. Both the statements are correct.
- d. Both the statements are wrong.

20. Select the pair in which the given animals do not exhibit the same type of movement:

- a. Whale, Sea turtle
- b. Snake, Hare
- c. Frog, Duck
- d. Giraffe, Deer