

NCERT QUESTIONS WITH SOLUTIONS

1. List the similarities and differences in life cycles of plants and animals.

Ans. Similarities and differences in life cycles of plants and animals –

Character	Plant/Animal
Birth/Beginning of life	They start their life as a single cell.
Growth/ Developmental stages	They grow from their small beginnings (in plants seeds develop into adult plants). (Animals grow from babies or eggs into adult animals).
Reproduction	They reproduce when become adults. It is the process by which new individual is born. (Plant can reproduce by producing seeds). (Animals can reproduce by having babies).
Death/Life span	Plants start their life as seed which then germinates to form plantlet. Plantlet then mature to bear fruits flower & then after sometime it dies.

Differences –

Character	Plant	Animal
Beginning of birth	Seed	Baby/egg
Different life stages	Seed, seedling, adult plant	Egg (baby), young, adult (some special stages like caterpillar and pupa).
Movement	Usually stay in one place	Can move from place to place.

2. The table shows some data. Study the data and try to find out examples appropriate for the conditions given in the second and third columns. If you think that an example for any of the conditions given below is not possible, explain why?

	Does it grow?	Does it respire?	Example	Remarks
1.	No	No		
2.	No	Yes		
3.	Yes	No		
4.	Yes	Yes		

Ans.

	Does it grow?	Does it respire?	Example	Remarks
1.	No	No	Rock	Non-living, no growth and respiration
2.	No	Yes	Virus	Viruses are non-living outside host cells but respire in host
3.	Yes	No	Crystals (salt)	Non-living can perform tasks, but does not resource
4.	Yes	Yes	Humans, Plants	Living beings

3. You have learnt that different conditions are required for seed germination. How can we use this knowledge for proper storage of grains and pulses?

Ans. To ensure proper storage of grains and pulses and prevent germination.

1. **Store them in dry place:** Since seeds need water to germinate hence, seeds should be stored in a dry place where there is no moisture.
2. **Airtight:** Seeds also need air to germinate, keeping them in airtight container preventing spoilage for a longer time.
3. **Cool storage:** Seeds need the right temperature to germinate by storing grains and pulses in cool places.

4. You have learnt that a tail is present in a tadpole, it disappears as it grows into a frog. What is the advantage of having a tail in the tadpole stage?

Ans. Advantage of having a tail in the tadpole stage –

1. The tail is a primary means of locomotion (swimming) in tadpoles.
2. It helps them to navigate their aquatic environment.
3. It helps in maintaining balance during swimming.

5. Charan says that a wooden log is non-living as it cannot move. Charu counters it by saying that it is living because it is made of wood obtained from trees. Give your arguments in favour or against the two statements given by Charan and Charu.

Ans. Charan's statement –

A wooden log is non-living as it cannot move.

Argument 1: While movement is only associated with living things, it is not the only criteria to determine whether something is living. Many living organisms (like plants) do not move in the same way animals do.

Argument 2: Living organisms show several characteristics, including growth, reproduction, metabolism and response to stimuli, not just movement.

Charu's statement –

It is living because it is made of wood obtained from trees

Argument 1. While it is true that wood comes from living trees, once the wood is cut and formed into a log, it no longer exhibits the characteristics of living organisms.

Argument 2. Wood as a material does not undergo metabolic processes or grow after being cut from the tree, which are key indicators of living organisms.

6. What are the similarities and distinguishing features in the life cycles of a mosquito and a frog?

Ans. Similarities –

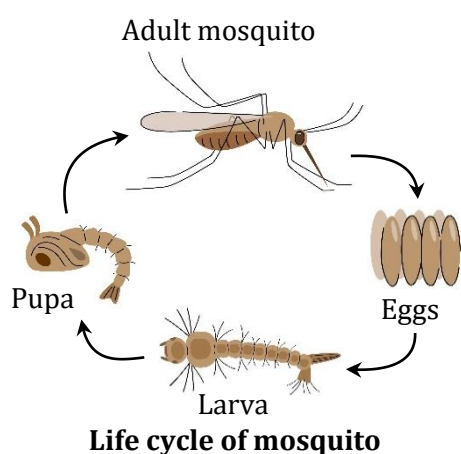
1. Aquatic egg stage/larval stage:

Both have an aquatic larval stage, mosquito hatch from eggs into larvae, and frog eggs hatch into tadpoles which are both adapted to living in water.

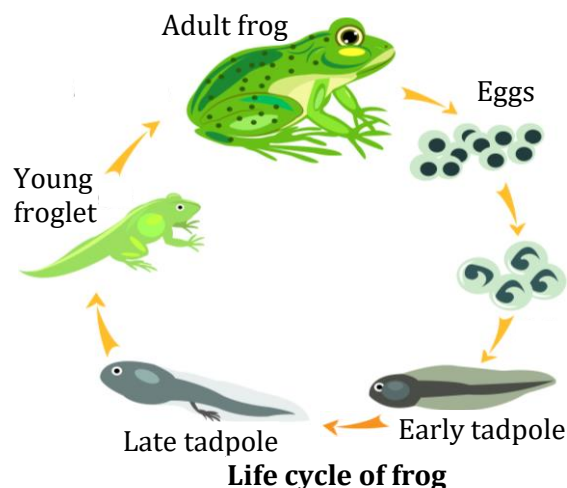
- 2. Metamorphosis:** Both undergo a process of metamorphosis where they change from one form to another. This transformation is essential for their development from larvae to adults.

Distinguishing feature –

1. The transformation from larva to pupa occurs in water followed by emergence as an adult mosquito.



Tadpole undergoes significant changes, including the development of legs, and the disappearance of tail.



2. Adult mosquitoes are small, flying insects that feed on nectar and females usually feed on, blood. Adult frogs are typically terrestrial and are known for their jumping ability. Aquatic larva and pupae, terrestrial adult.
7. A plant is provided with all the conditions suitable for its growth (Fig. 10.9). Draw what you expect to see in the shoot and the root of the plant after one week. Write down the reasons.



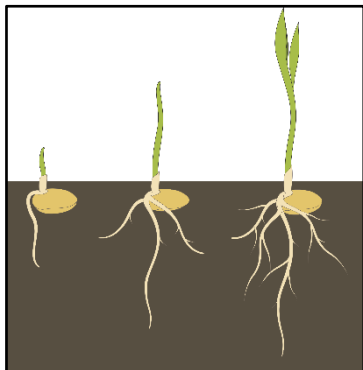
Observations

- **Shoot:** Growth upwards, towards the light source.
- **Root:** Growth downwards, into the soil for stability and nutrient absorption.

Reasons:

- Shoots grow towards light (phototropism) for photosynthesis.
- Roots grow downwards (geotropism) for nutrient absorption.

8. Tara and Vijay set up the experiment shown in the picture. What do you think they want to find out? How will they know if they are correct?



Experimental set-up

- Ans.** Tara and Vijay are likely trying to understand how the orientation of a seed affects the growth direction of the shoot (the green part above ground) and the root (the part below ground).

Observation: The shoot always grows upwards (towards the light) and the root always grows downwards (into the soil), regardless of how the seed is placed, this shows that plants have natural mechanisms (like phototropism and geotropism) that guide their growth direction.

9. Design an experiment to check if temperature has an effect on seed germination.

Ans. AIM: Experiment to Check the Effect of Temperature on Seed Germination.

Materials: Identical pots, soil, seeds, thermometers, and different temperature-controlled environments (e.g., refrigerator, room temperature, heated environment).

Procedure-(i): Fill each pot with the same type of soil.

Procedure-(ii): Plant seeds in each pot.

Procedure-(iii): Place each pot in a different environment with controlled temperatures (e.g., cold, room temperature, warm). For example, keep one pot outside in balcony to get sunlight. Put another in shade in the room. Keep the third one in basement or at coldest part of the house.

Procedure-(iv): Water each pot equally.

Procedure-(v): Record the number of seeds germinated in each environment daily for two weeks.

Observation: Measure and compare the rate of germination and growth in different temperatures.

Conclusion: The conclusion based on the observations is that optimal temperature is required for seed germination.