

Life Cycles: The Journey of Living Things

Learning objective: To describe the differences in the life cycles of a mammal, an amphibian, an insect, and a bird, and to compare the process of reproduction in plants and animals.

Nova the Owl is researching how different species reproduce. Below are descriptions of life stages for four different organisms. Match the organism to its description, then use your scientific knowledge to complete the analysis questions. Finally, compare how these species ensure their offspring survive.

Word bank: Metamorphosis · Gestation · Pollination · Amphibian · Mammal · Germination · Incubation · Larva

1. Explain why a mammal like a lion requires a period of gestation, whereas a bird like an owl requires an incubation period. Compare the role of the parent in each scenario. (3 marks)

2. Zara the Zebra has observed a butterfly undergoing metamorphosis. Why is this life cycle strategy advantageous compared to an animal that is born looking like a miniature version of its parent? (3 marks)

3. Justify your answer: If a species of plant produces thousands of seeds but does not rely on bees for pollination, how might its reproductive success be impacted in a windless environment? (3 marks)

4. What might happen if a sudden change in climate caused the water in a pond to dry up during an amphibian's larval stage? Explain the consequences for that specific population. (3 marks)

5. Compare and contrast the reproductive role of a seed in a plant's life cycle to the role of an egg in a bird's life cycle. What do they both provide for the developing embryo? (3 marks)

6. If you were to design a new species, would you choose to reproduce via live birth or by laying eggs? Justify your choice by referencing the environmental pressures the offspring might face. (4 marks)

Draw: Draw a circular diagram comparing the life cycle of a flowering plant (starting from a seed) and a frog (starting from an egg). Use arrows to show the progression and label the key stages using the provided word bank.



Extension challenge: Nova wants to know how humans have adapted to protect their offspring compared to wild animals. Write a short, persuasive paragraph explaining why parental care in mammals is often more intensive than in insects or amphibians.