

## Worksheet: 2 Deep Dive into Life Cycles

Name \_\_\_\_\_

Date \_\_\_\_\_

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### Part 1: Extended Response Questions

- 1. Explain the ecological significance of each stage in the life cycle of a flowering plant.**
    - How does each stage contribute to the survival and reproduction of the species?
  - 2. Analyze the role of metamorphosis in insect life cycles.**
    - How does complete metamorphosis (e.g., in butterflies) differ from incomplete metamorphosis (e.g., in grasshoppers), and what advantages might each provide?
  - 3. Discuss the interdependence between pollinators and the life cycle of flowering plants.**
    - Why is this relationship crucial for biodiversity?
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### Part 2: Life Cycle Comparisons

Below are the life cycles of different organisms. Fill in the missing information and compare their key features.

Organism	Stages of Life Cycle	Unique Traits
Frog	Egg → Tadpole → Froglet → Adult	
Monarch Butterfly	Egg → _____ → Pupa → Adult	Migration across continents during adult stage
Pine Tree	_____ → Sapling → _____ → Cone-Bearing Tree	Seeds dispersed by wind; no flowers
Sea Turtle	Egg → Hatchling → _____ → Adult	Females return to the same beach to lay eggs

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### Part 3: Diagram Analysis

Study the diagram of an amphibian's life cycle provided below (or create your own diagram if no image is available). Answer the following:

1. Which stage is most vulnerable to predators? Why?
  2. What adaptations help amphibians survive during their transition from water to land?
  3. Predict how climate change might impact this life cycle.
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#### Part 4: Scenario-Based Questions

1. **Scenario:** A population of bees is declining due to habitat destruction. Predict how this might affect the life cycles of nearby flowering plants.  
*Answer:*
  2. **Scenario:** A prolonged drought affects a forest ecosystem. How might this influence the germination stage in plants?  
*Answer:*
  3. **Scenario:** Invasive species are introduced into a freshwater pond, preying on frog eggs. How might this impact the local food chain?  
*Answer:*
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#### Part 5: Fill in the Blanks

1. Amphibians often begin their life in \_\_\_\_\_ and later transition to life on \_\_\_\_\_.
  2. \_\_\_\_\_ is the process where insects like butterflies undergo dramatic physical changes during their life cycle.
  3. The role of fruits in the life cycle of a plant is to protect and \_\_\_\_\_ seeds for dispersal.
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#### Part 6: Research and Report

Choose one organism from the list below and research its life cycle. Write a brief report (5–6 sentences) describing each stage and any unique characteristics.

- Dragonfly
- Salmon
- Coconut Tree
- Coral

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## Part 7: Critical Evaluation

1. Some organisms can reproduce both sexually and asexually (e.g., certain plants and fungi).
  - Compare the advantages and disadvantages of each mode of reproduction.
  - Give examples of when asexual reproduction might be beneficial for survival.
2. Certain animals, such as frogs, are bioindicators, meaning their presence reflects the health of an ecosystem.
  - Why might frogs be particularly sensitive to environmental changes?
  - How can studying their life cycle help in conservation efforts?

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## Part 8: Hypothetical Experiment

Design an experiment to investigate how temperature changes impact the life cycle of a plant. Include:

- The hypothesis.
- Variables (independent, dependent, and controlled).
- A brief procedure.

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### Bonus Question:

Life cycles vary widely across organisms, from simple bacteria to complex mammals. How do life cycles reflect evolutionary adaptations to specific environments?