Comparative Metamorphosis

A Carolina Essentials™ Investigation

Student Worksheet

Overview

Metamorphosis is the way many animals develop. *Meta* comes from the Greek word for change. *Morphe* comes from the Greek word for form. Metamorphosis means to change form. In each stage of metamorphosis, the animal's body form changes. Metamorphosis occurs in insects. It is either **complete** or **incomplete**. Complete metamorphosis has 4 stages—egg, larva, pupa, and adult. About 80% of insects go through complete metamorphosis. Incomplete metamorphosis begins with an egg, too, but the second life stage is a nymph, not a larva. Nymphs look like mini adults but do not have wings. They shed their skin, or molt, 4 to 8 times until they become adults. A butterfly life cycle is complete metamorphosis; a grasshopper life cycle is incomplete metamorphosis.

Essential Question

What are the life cycles of insects?

Investigation Objectives

- 1. Identify the stages of complete metamorphosis.
- 2. Identify the stages of incomplete metamorphosis.
- 3. Compare the stages of the 2 types of life cycles.

Safety Procedures and Precautions

Treat all animals with care and respect.

Procedure

- 1. Look at each insect with your naked eye. Make notes on your observation sheet.
- Use the magnifier and look at each insect again. Pay special attention to the mouth parts. Make notes on your observation sheet.
- 3. Draw what you see in detail on your observation sheet.
- 4. Return the insects to your teacher after each observation.
- 5. Repeat the procedure until the adult insect emerges.

Continued on the next page.

SAFETY REQUIREMENTS





MATERIALS

1 painted lady larva1 milkweed bug nymph1 lady beetle larva

Magnifier



Painted Lady Larva Observation Sheet

Date	Description and Stage	Drawing
1		
2		
_		
3		
4		
5		
6		



Milkweed Bug Nymph Observation Sheet

Date	Description and Stage	Drawing	
7			
8			
9			
10			
10			
11			
12			



Lady Beetle Larva Observation Sheet

Date	Description and Stage	Drawing
13		
14		
15		
16		
17		
18		



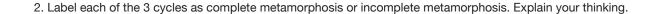
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Analysis and Discussion

1. Use the drawings in your observation sheets to make life cycle diagrams for all 3 insects. Label the life cycle stages. Include the number of days in each life cycle stage.



3. Draw a Venn diagram for the stages of metamorphosis. Label one circle **Complete** and the other circle **Incomplete**. Label the shared area, **Both**. Fill in the sections of the Venn diagram. Include the name of an insect for each type of life cycle.

