

# Mad About Metamorphosis

## GENERAL INFORMATION

### THEME

Insects mysteriously grow and change through a process known as metamorphosis.

### SUB THEMES

1. Insects are uniquely different from all other organisms.
2. Although it seems gross, insects go through several stages of growth before reaching adulthood.

### VOCABULARY

Insects, metamorphosis, complete metamorphosis, incomplete metamorphosis, larva, pupa, nymph

### ACTIVITY MATERIALS

Examples of the different stages collected in the morning (see attached sheet), insect sampling nets (sweep and dip), viewing boxes, gloves

## METHODS

### INTRODUCTION

Introduce yourself and state the title of the activity. Preview the main points of the activity and give the students an idea of what they will be doing. Conversationally state the theme and sub themes. Ask: **What are some characteristics of insects that make them unique from other organisms** (three body sections, six legs, and one pair of antennae)? **Can someone tell me what the three body sections are called** (head with eyes and antennae, thorax where legs and wings attached, abdomen which contains organs)? Explain that insects are the largest, most diverse group of organisms on the planet and that makes them an ideal group of organisms to study. Ask: **Do you think that an adult insect looks exactly the same as it did when it was born?** Explain that insects begin life in a tiny egg and when they hatch, they go through dramatic changes in their body until they reach adulthood. **What is this process called** (metamorphosis)? Explain that there are two types of metamorphosis, complete and incomplete. Show examples as you explain the different stages. In complete metamorphosis, the insect begins life in a fertilized egg. Next, the egg hatches and the larva emerges, which looks a lot like a small worm. As development continues, the larva enters the pupal stage. This is where it forms a protective shell so that it can grow wings, antennae, and legs. The most dramatic changes occur during this stage. Finally, the insect emerges as an adult where it reproduces to start the cycle over

## Teacher's Corner

### Grade Level(s)

8th

### State Performance Indicators

SPI 0807

-5.2: Analyze structural, behavioral, and physiological adaptations to predict which populations are likely to survive in a particular environment.

-5.4: Identify several reasons for the importance of maintaining the earth's biodiversity.

# Mad About Metamorphosis

## INTRODUCTION (cont.)

again. Incomplete metamorphosis is different because there is no pupal stage. Instead after the egg hatches, the insect emerges as a smaller version of the adult form, called a nymph. As it grows, the insect molts (or sheds its exoskeleton) several times before it reaches full adult size, forming wings and reproductive organs in the final stage. Ask: **Can you tell me some examples of insects that go through complete metamorphosis** (lightning bugs, ants, butterflies, and moths)? **Incomplete metamorphosis** (grasshoppers, cockroaches, earwigs, dragonflies, damselflies, mayflies)?

## ACTIVITY

Explain that the students are going to sample insects from the grassy area and the creek to find examples of the different stages of metamorphosis. To sample the grassy area, have students use a sweep net to sweep up insects. Have them dump their samples into the viewing box making sure the students using the net are wearing gloves. To sample the creek, have the students use dip nets and search under rocks. Have them dump their samples into the viewing box. Allow students 15 minutes to sample the grassy area and 15 minutes to sample the creek. Bring the group back together and discuss their results as a group. Have students present their findings and explain which stage corresponds with each sample.

## DISCUSSION

Review the following points: What characteristics make insects unique from other organisms? What is metamorphosis? What are the two types of metamorphosis? What are the stages of complete metamorphosis? What are the stages of incomplete metamorphosis? What are some examples of insects that use each type?

## WRAP-UP

Allow students to replace anything they have collected. Let the group know that the activity is coming to an end. Conversationally review the theme and sub themes. Collect the data sheets.

## BRINGING IT TO THE CLASSROOM

Allow students to research the life cycles of other groups of organisms. Assign each group of students their own group of organisms: birds, mammals, reptiles, fish, amphibians, etc. Have them put together a poster presentation detailing the defining characteristics of their group and the mechanism by which their group grows from immature to adult.

## ACKNOWLEDGEMENTS

- Copyright © 2008 Healing Stones Foundation. All rights reserved.
- Activity developed by Allison Mains and updated by Melissa Squirlock; January 2007.