

Mosquito Metamorphosis

Project & Assembly Directions

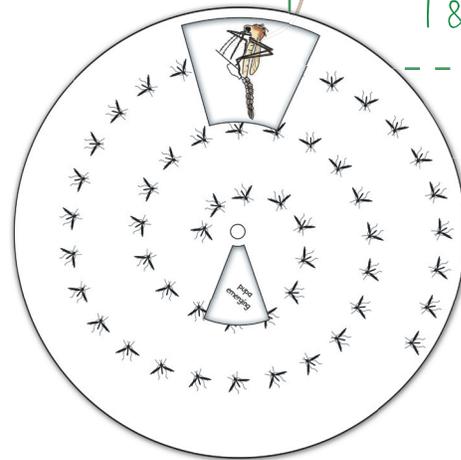
Objective

Students will recognize that mosquitoes grow through four phases of metamorphosis; egg, larva, pupa and adult.

Materials

student pages printed on vellum paper
brass fasteners
crayons or markers
scissors

(Sample Finished Product)



Time:
30-40 Minutes

Grade:
1 & up

Content

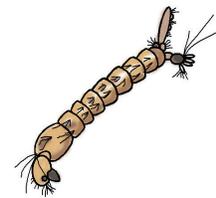
One of the most common animals around an estuary is the mosquito. The salt marsh mosquito is the most common mosquito in Lee County.

Metamorphosis: Mosquitoes grow to adulthood through four stages. This process is called metamorphosis. Many other insects, including butterflies, moths, dragonflies and beetles, undergo metamorphosis. The four stages in mosquito metamorphosis are egg, larva, pupa and adult.

Egg: Female salt marsh mosquitoes lay eggs on moist ground. Depending on the availability of water, the eggs may hatch within a few days or lay dormant for years before they finally emerge as larvae. One square foot of salt marsh may contain thousands of salt marsh mosquito eggs waiting for a high tide or heavy rain to provide conditions suitable for hatching.



Larva: When a mosquito egg hatches, the immature mosquito begins its life in the larval stage. Mosquito larvae, or wrigglers, live only in water. If their habitat dries up before they have developed into adults, they will die. The mosquito larvae are small, worm-like animals with no legs. They have many hairs, especially around their mouthparts. At the tail end there is a tube called the siphon. The



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Content Continued

larvae stick their siphons out of the water to breathe. Larvae move through the water column by jerking their bodies back and forth. Close observation will reveal their constantly working mouthparts, as they search for small organic particles of food. Mosquito larvae are generally found in shallow water, either fresh or salt, depending on the species. As the larva eats, it grows to the point where it can't grow further, due to its hard exoskeleton. The larva then sheds, or molts, its exoskeleton, leaving beneath a much softer one that will stretch as it grows. The larva will continue to eat and grow and will molt four times. Each of the four larval stages is called an instar. A mosquito larva goes through four instars, and during the final molt, the pupa emerges.



Pupa: The pupa, or tumbler, resembles a fat comma. It does not feed and has no eyes. This period of time in the mosquito's development is devoted to growth and change. The pupa normally rests at the surface of the water with its two breathing tubes, or trumpets, connected to the water's surface. Occasionally, if danger threatens, the pupa will tumble to the bottom. When the pupa is fully developed, it will come to the water's surface one last time to emerge into the adult mosquito.



Adult: When the adult mosquito is ready to emerge, the pupa will rest at the top of the water's surface and straighten out its body. The back of the exoskeleton splits and slowly the adult mosquito emerges. Like a scene from a science fiction movie, a creature with very little resemblance to its former self, emerges out of the pupal skin. The adult mosquito rests briefly on the water's surface, to allow

time for the newly developed wings to dry, then it will fly a short distance to surrounding vegetation.

The adult mosquito, like most insects, has three body regions and six legs. The three body regions are the head, thorax and abdomen. The head of the mosquito is highly specialized for obtaining food. The large compound eyes, antennae and mouth parts or proboscis, are easily distinguished. The eyes and antennae work together to search for food. Adult mosquitoes feed primarily on plant juices and nectar. The legs and wings are attached to the mosquito's thorax. There are over 3,500 species of mosquitoes throughout the world. Mosquitoes are classified in the insect order Diptera with flies and gnats. Dipterans resemble most other insects except they have two wings, instead of four, and their mouth parts are specialized for piercing and sucking. The mosquito's abdomen contains most of the vital organs and will store the blood the female mosquito needs for her eggs to develop.



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Procedure

1. Present the information on mosquito metamorphosis to the class using illustrations from the internet.
2. As a follow up to your presentation have the students make their own mosquito metamorphosis wheel.
3. Print the two pages for the wheel for each child on vellum.
4. Cut out the mosquito wheel along the dotted line from the wheel page.
5. Cut out the windows along the dotted lines from the wheel page.
6. Fasten the wheel to the full page in the center with a brass fastener.
7. Spin your wheel to see and show how a mosquito grows through its life cycle.

Sunshine State Standards

Standard: LA.A.2.2 The student constructs meaning from a wide range of texts.

Benchmark: LA.A.2.2.1 The student reads text and determines the main idea or essential message, identifies relevant supporting details and facts, and arranges events in chronological order.

Standard: SC.F.1.2 The student describes patterns of structure and function of living things.

Benchmark: SC.F.1.2.3 The student knows that living things are different but share similar structures

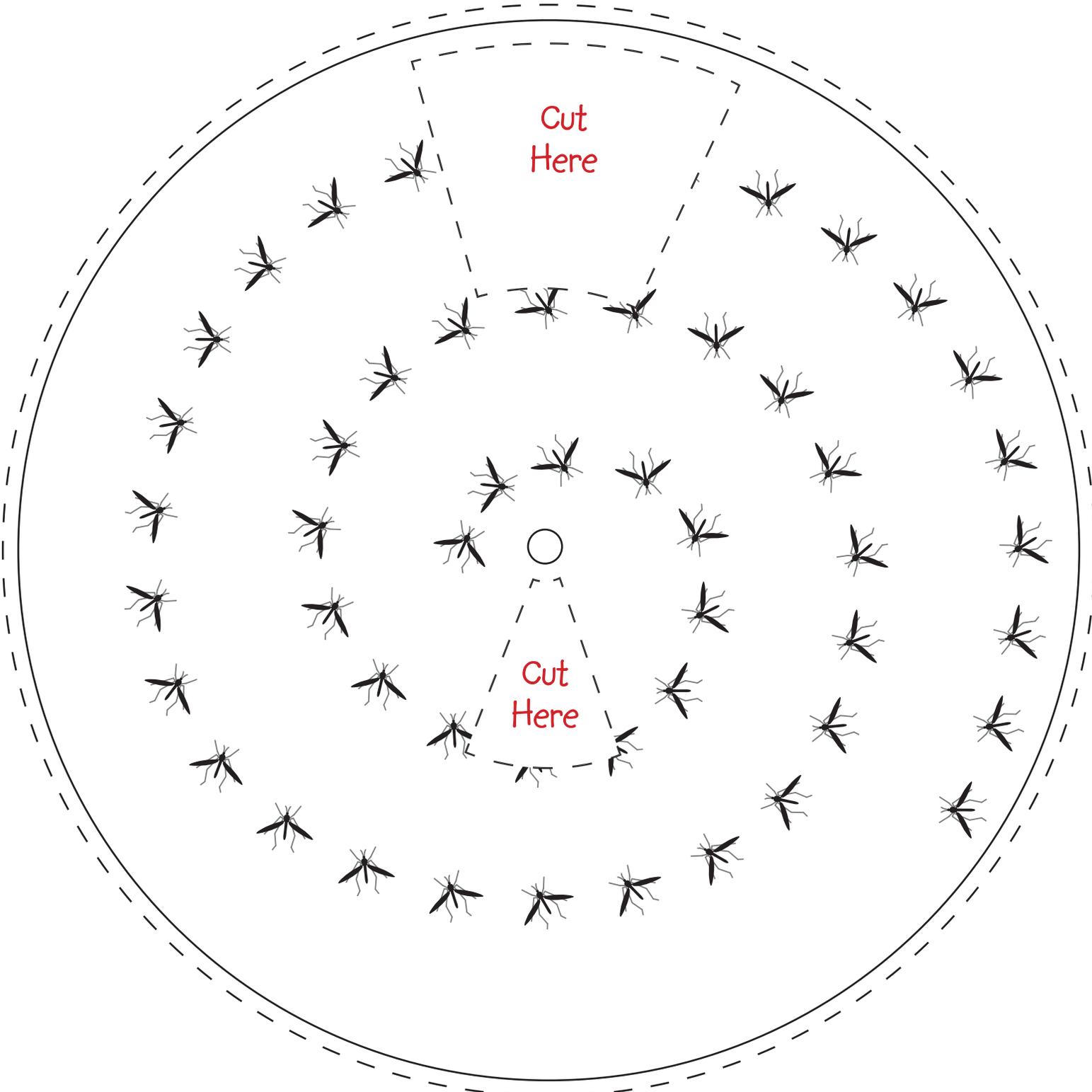
Standard: SC.G.1.2 The student understands the competitive, interdependent, cyclic nature of living things in the environment.

Benchmark: SC.G.1.2.2 The student knows that living things compete in a climatic region with other living things and that structural adaptations make them fit for an environment.



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Wheel Page



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Name _____

