

LOs: To describe the life cycle of an insect. To understand what metamorphosis is.

Insects can have different types of life cycles



Complete metamorphosis

The life cycle of these insects has four distinct stages: *egg*, *larva*, *pupa* and *adult*.

Complete metamorphosis is a change whereby the insect changes completely - the young insect does not resemble the adult. Insects in this category include beetles, butterflies and flies.



Incomplete metamorphosis

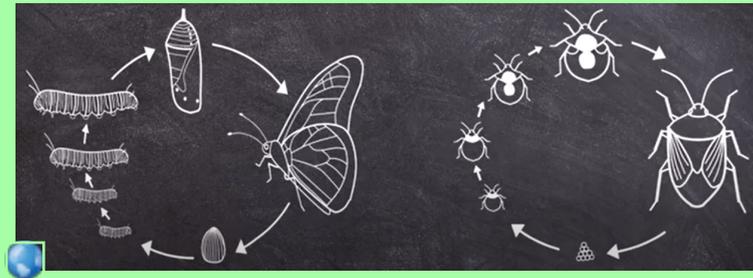
The life cycle of these insects has three distinct stages: *egg*, *nymph* and *adult*.

Incomplete metamorphosis is a change whereby the young (nymph) resembles the adults and change gradually. Insects in this category include grasshoppers, crickets and cockroaches.



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Click on the link to watch this video explaining the differences between complete and incomplete metamorphosis



Click on the link to watch this video explaining more about the life cycle of a butterfly (complete metamorphosis)



Click on the link to watch this video explaining more about complete and incomplete metamorphosis.

COMPLETE AND INCOMPLETE
METAMORPHOSIS

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The **adult** breaks out of the pupa and matures.



Eggs are laid by the female insect.



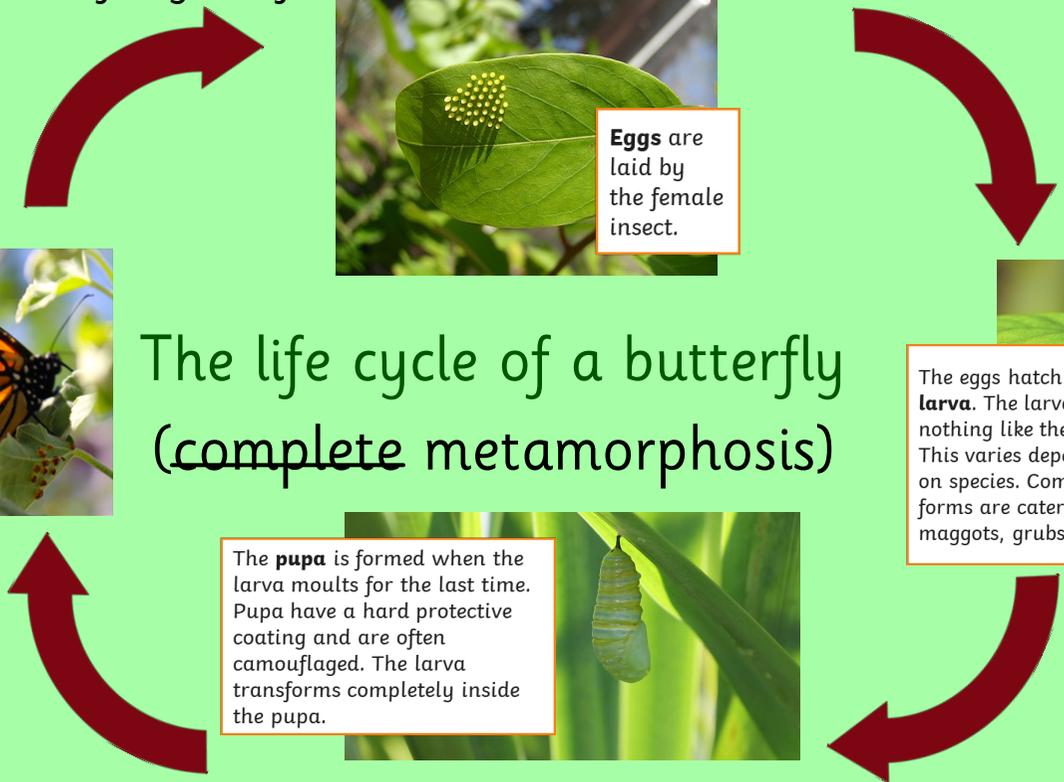
The eggs hatch into **larva**. The larva look nothing like the adult. This varies depending on species. Common forms are caterpillars, maggots, grubs.



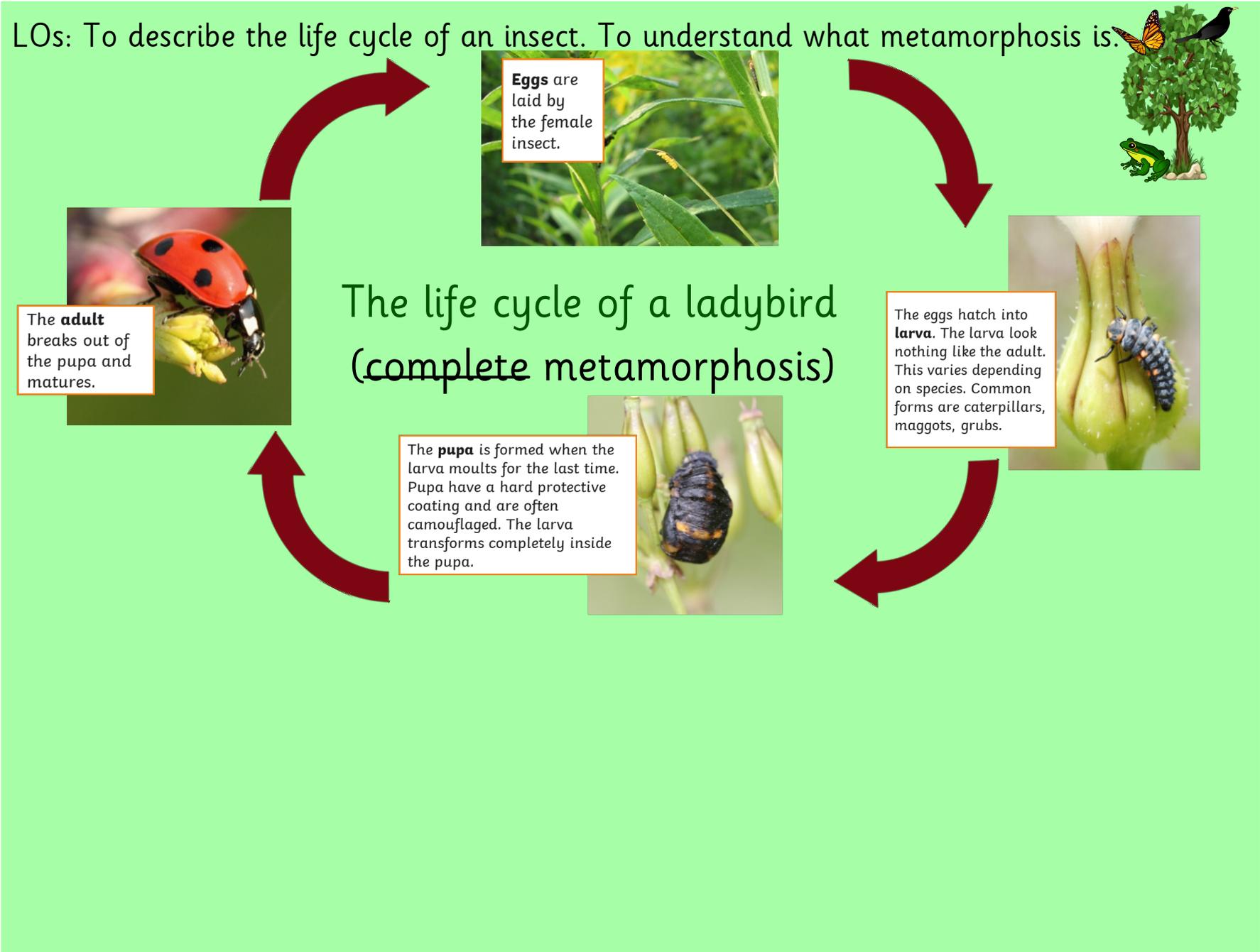
The **pupa** is formed when the larva moults for the last time. Pupa have a hard protective coating and are often camouflaged. The larva transforms completely inside the pupa.



The life cycle of a butterfly (complete metamorphosis)



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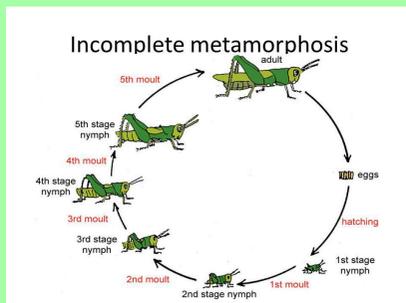
The nymph grows into the **adult** form, sometimes shedding skin. In winged insects fully functional wings mark the adult stage. Adult females lay eggs.



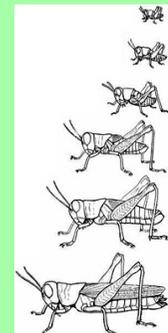
The life cycle of a grasshopper (incomplete metamorphosis)



Eggs hatch into **nymphs**. Appearance varies depending on species. Nymphs look like a smaller adult insect and usually share the same habitat and food as the adult.



Nymphs look like adult grasshoppers, called molts. They undergo five substages known as instars before fully developing into adult grasshoppers; each instar is characterized by shedding of the skin and gradual growth of wings. This stage lasts for about five to six weeks before the young nymphs mature to adult grasshoppers.



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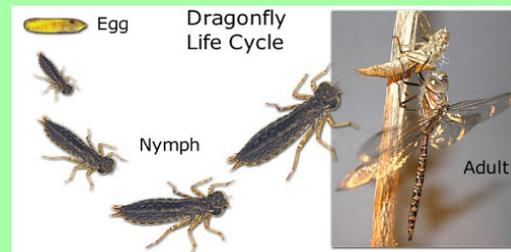


Eggs are laid by the female insect.



Eggs hatch into **nymphs**. Appearance varies depending on species. Nymphs look like a smaller adult insect and usually share the same habitat and food as the adult.

Once the dragonfly eggs hatch, the life cycle of a dragonfly larva begins as a nymph. Dragonfly nymphs live in the water while they grow and develop into dragonflies. Dragonfly nymphs live in ponds or marshy areas because the waters are calmer than in a stream or river. Sometimes they can be found in the calmer backwaters of rivers, too.



The life cycle of a dragonfly (incomplete metamorphosis)

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Independent work

Now that we know about complete and incomplete metamorphosis create your own life cycles of different insects. Can you show the differences between complete and incomplete metamorphosis?

You could draw your own lifecycles on paper, or use a computer to create them using pictures from the internet. You could even make your own PowerPoint presentation! It's up to you. On the next page, there are instructions on how to make a life-cycle wheel if you have the equipment to do so.



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Independent work

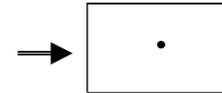
Now that we know about complete and incomplete metamorphosis we can make a life-cycle wheel.



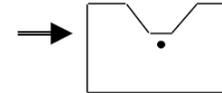
You will need:

- Two pieces of A4 card or thick paper
- Scissors
- Something round to draw around or a compass
- Paper fasteners

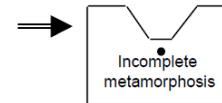
1. Fold a piece of card in half.
Make a mark in the middle and make a small hole through the two pieces of card.



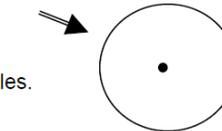
2. Next cut out a space above the hole (on the unfolded edge).



3. On one side of the card write **Incomplete metamorphosis** and on the other side write **Complete metamorphosis**.



4. On a new piece of card, cut out a circle about 14cm in diameter. Make a mark in the centre of your circle and make a small hole.



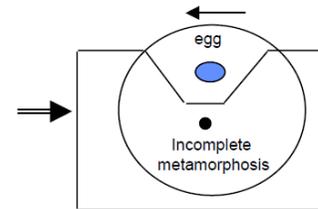
Use the pictures on the next sheet to help you draw some life-cycles.
You could stick them onto your card if you want to.

5. On one side of your circle draw the life cycle of the ~~locust~~ ^{grasshopper} around the edge.
This will have, **an egg, five nymphs** (hoppers) and **an adult**.

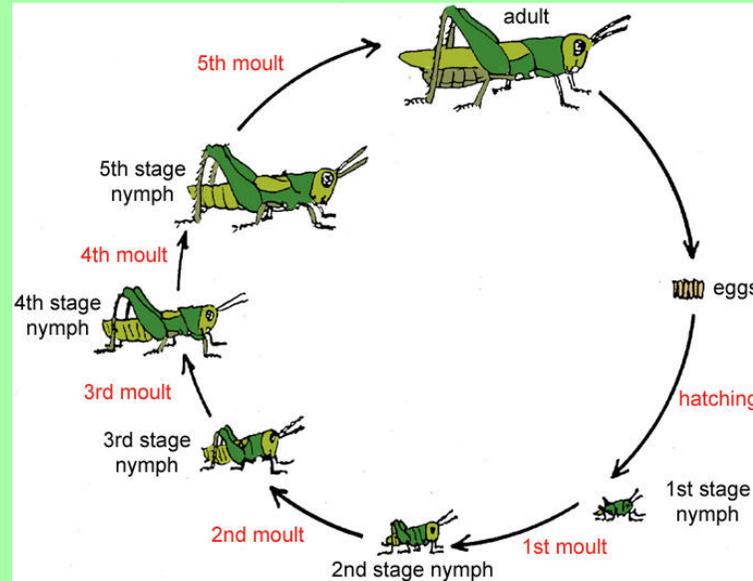
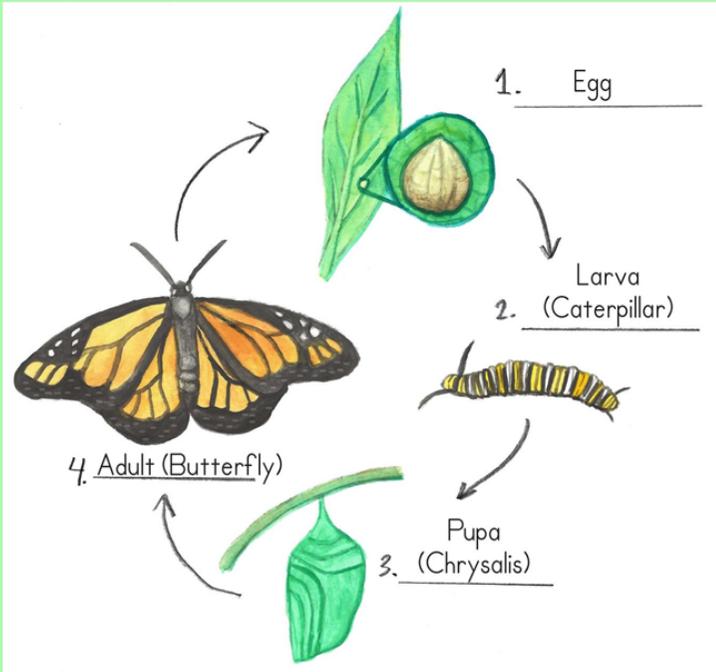
6. On the other side draw the life cycle of a butterfly.
This will have **an egg, a caterpillar, a pupa and an adult butterfly**.

7. Put your life-cycle circle into your folded card.
The life-cycle of the **locust** will be on the side which says **Incomplete metamorphosis**.
The life-cycle of the **butterfly** will be on the side which says **Complete Metamorphosis**

8. Put a paper fastener through the holes in your folded card and card circle, and your wheel is ready to turn (move it anti-clockwise).



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Making a life-cycle wheel



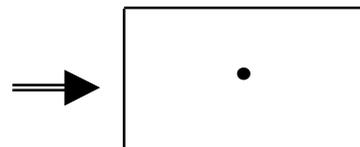
Now that we know about complete and incomplete metamorphosis we can make a life-cycle wheel.

You will need:

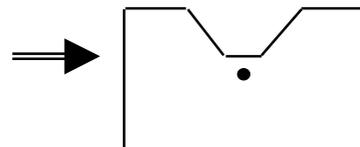
- Two pieces of A4 card or thick paper
- Scissors
- Something round to draw around or a compass
- Paper fasteners

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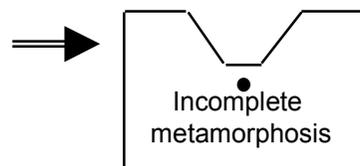
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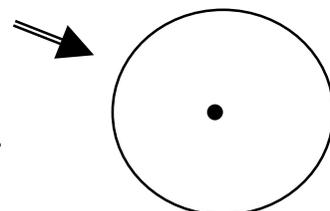
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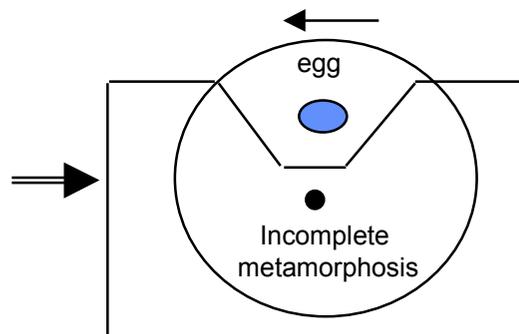
5. On one side of your circle draw the life cycle of the locust around the edge. This will have, **an egg, five nymphs (hoppers) and an adult**.

6. On the other side draw the life cycle of a butterfly. This will have **an egg, a caterpillar, a pupa and an adult butterfly**.

7. Put your life-cycle circle into your folded card.

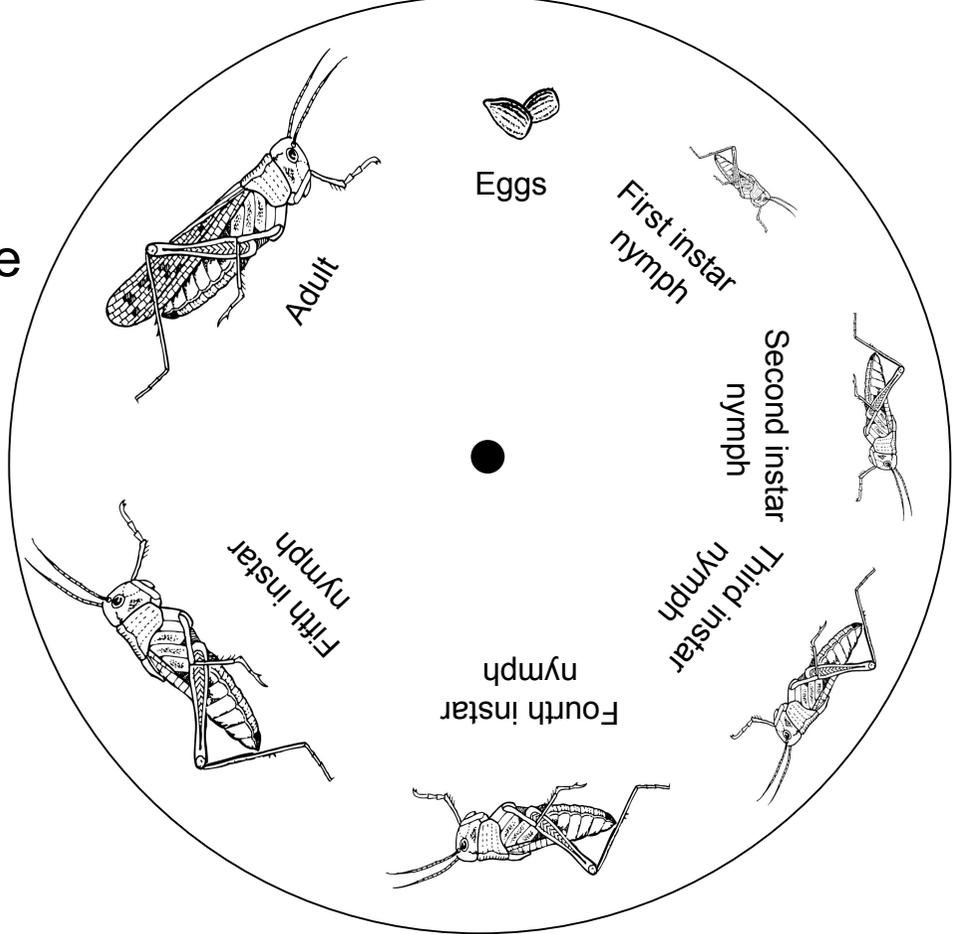
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The Life-cycle of a Locust



The Life-cycle of a Butterfly

