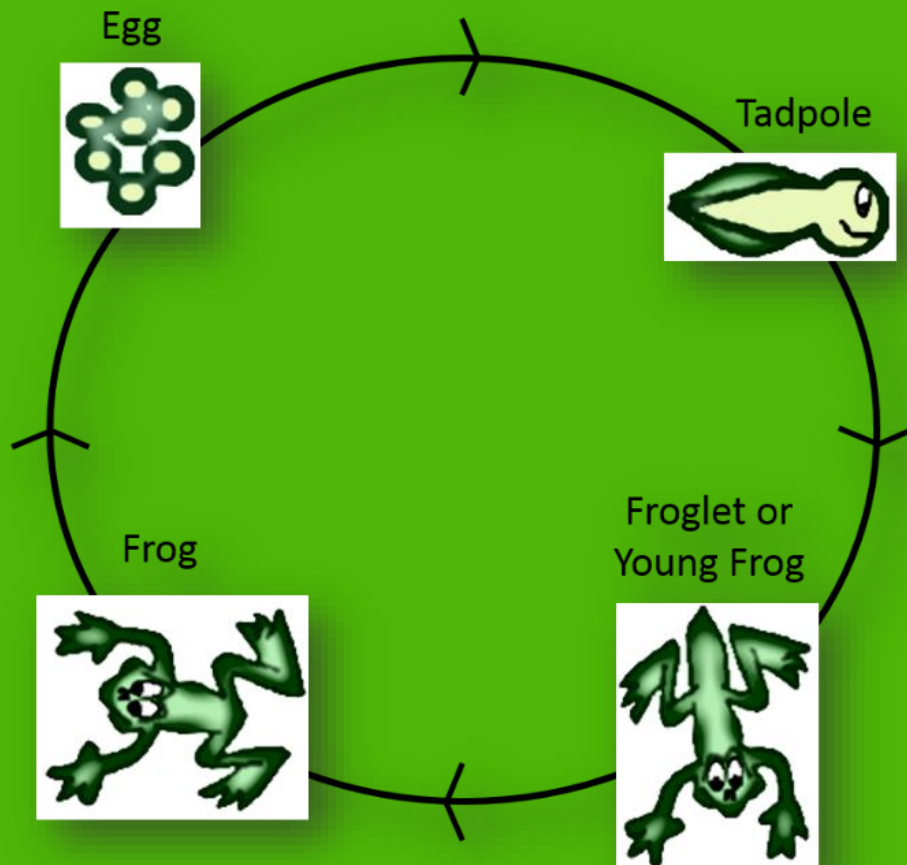


# Science and Literacy

## Lesson Sets



# Complete and Incomplete Metamorphosis

Created By Elementary Ali ©2016

# Science and Literacy

These activities are created to incorporate reading and writing into the Science curriculum. Each lesson is designed to last about a week, and encourage student participation.

Lessons are aligned with the Common Core State Standards and the Texas Essential Knowledge and Skills.

- **CCSS.ELA-Literacy.RST.6-8.1** Cite specific textual evidence to support analysis of science and technical texts.
- **CCSS.ELA-Literacy.RST.6-8.2** Determine the central ideas or conclusions of a text; provide an accurate summary of the text distinct from prior knowledge or opinions.
- **CCSS.ELA-Literacy.RST.6-8.4** Determine the meaning of symbols, key terms, and other domain-specific words and phrases as they are used in a specific scientific or technical context relevant to *grades 6–8 texts and topics*.
- **CCSS.ELA-Literacy.RST.6-8.7** Integrate quantitative or technical information expressed in words in a text with a version of that information expressed visually (e.g., in a flowchart, diagram, model, graph, or table).
- **CCSS.ELA-Literacy.RST.6-8.9** Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.

## TEKS

(10) Organisms and environments. The student knows that organisms undergo similar life processes and have structures that help them survive within their environments. The student is expected to:

(C) describe the differences between complete and incomplete metamorphosis of insects.

## NGSS

**LS1.B** Reproduction is essential to the continued existence of every kind of organism. Plants and animals have unique and diverse life cycles. (3-LS1-1)

# complete and Incomplete Metamorphosis

Sample Lesson Plan for the week

Attention Grabber: **Life Cycle Sort**

Word Wall Builder Activity

Reading with Graphic Organizer: *Complete and Incomplete Metamorphosis* with a Venn Diagram

Writing with Key Terms: Complete and Incomplete Metamorphosis

Lab/ Activity: (option one) A Metamorphosis Story – illustrated writing project with rubric

(option two) Observing Sea Monkeys grow from an egg \*\*\*Sea Monkeys grow from an egg to a Sea Monkey within a day so they make a good example to watch in the classroom. )

Writing Extension Activity

Daily Science Starters: **Complete and Incomplete Metamorphosis**

# Sample Lesson Plan

I can statement for the week	I can describe the differences between complete and incomplete metamorphosis.
------------------------------	-------------------------------------------------------------------------------

	Activities
Monday	<p>Students answer Science Starters question of the day. Go over the question and answer as a class. Ask for volunteers to share what they wrote. Discuss any new ideas and misconceptions.</p> <p>Lead a discussion about how a butterfly is different than a grasshopper. Ask students what they have noticed about the growth of a butterfly versus the growth of a grasshopper.</p> <p>Have the students work on the Attention Grabber Activity. When the students have completed the activity. Use it as a learning tool and go over the correct answers as a class.</p> <p>Introduce the word wall (or key terms) for this week. Ask students what they think the words mean and let them know they will find out the real definitions this week! Create a chart on the board to record the word wall activities for the week.</p>
Tuesday	<p>Students answer Science Starters question of the day. Go over the question and answer as a class. Ask for volunteers to share what they wrote. Discuss any new ideas and misconceptions.</p> <p>Hand out the reading with a graphic organizer. Ask students to read the passage and use context clues to define the key terms. After they have read the passage, they will complete the graphic organizer. After the students have completed the graphic organizer, lead a discussion about the facts they gathered from the reading.</p> <p>Complete the second column of the word wall builder as a class. Ask students to give their new definitions of the word wall words based on what they read today.</p>
Wednesday	<p>Students answer Science Starters question of the day. Go over the question and answer as a class. Ask for volunteers to share what they wrote. Discuss any new ideas and misconceptions.</p> <p>Hand out the summary writing with key terms. After they have written a complete summary, ask for a few volunteers to share what they wrote. You can also let the kids "pair and share" their summary with a partner.</p>

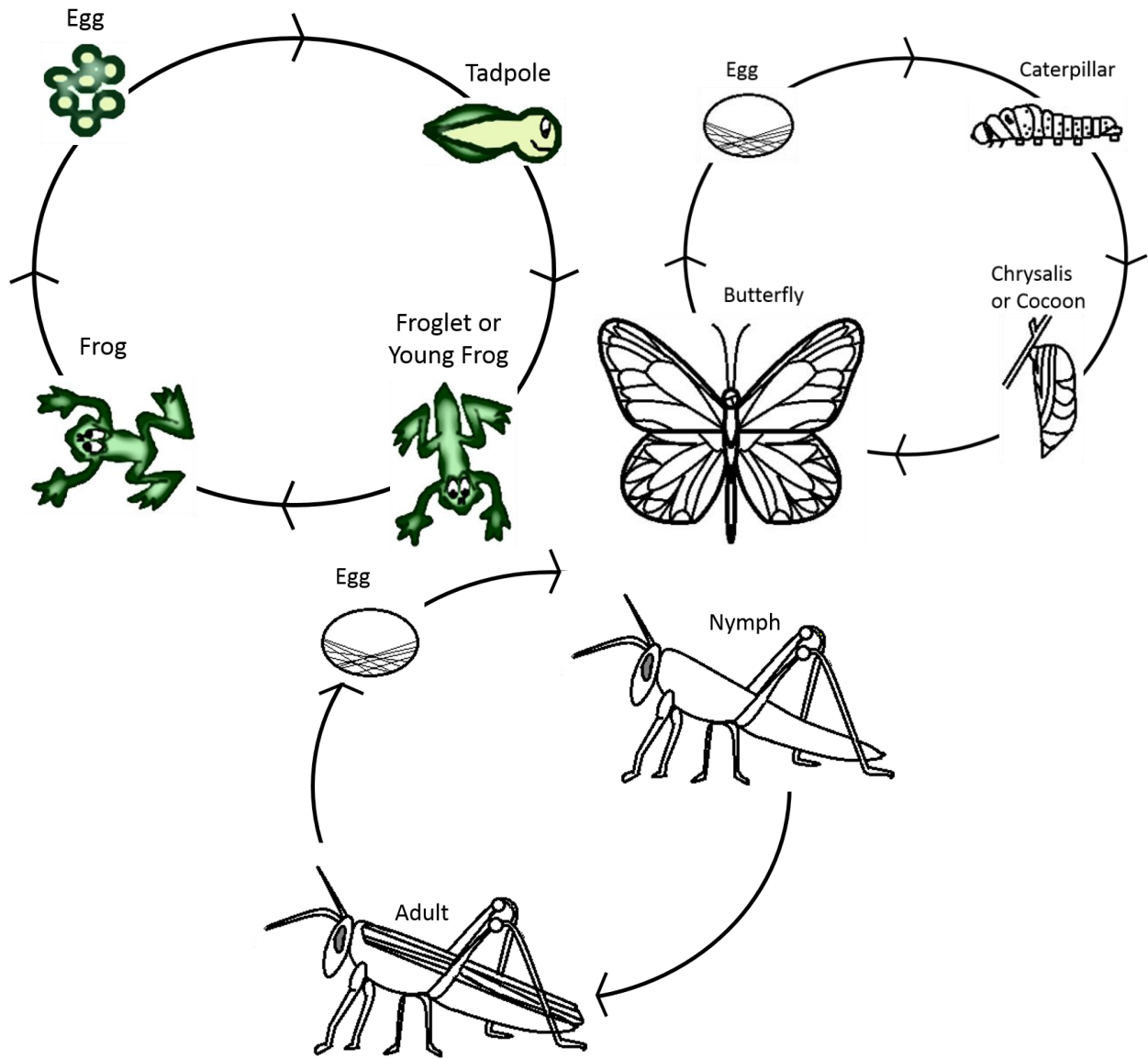
	<p>Complete the last columns of the word wall builder as a class. Write the actual definitions of the word wall words and have the students help you illustrate each word.</p>
Thursday	<p>Students answer Science Starters question of the day. Go over the question and answer as a class. Ask for volunteers to share what they wrote. Discuss any new ideas and misconceptions.</p> <p>Set up and guide the students through the lab activity for the day.</p> <p>Have students record the word wall chart for the week into their word wall journal. They can record this on notebook paper, in their science notebook, or you can print the Word Wall Chart handout for them.</p>
Friday	<p>Students answer Science Starters question of the day. Go over the question and answer as a class. Ask for volunteers to share what they wrote. Discuss any new ideas and misconceptions.</p> <p>The students will complete the Formative Assessment and Extension Writing Activity to show what they learned this week.</p> <p>Use today to guide the students through your interactive science notebook activities. (I have an Interactive Science Notebook with Science Vocabulary Activities available in my store: Elementary Ali)</p> <p>I also like to create a routine of science review stations for Fridays to help the students remember science topics they have learned in the past and will learn in the future. (I have my STAAR Science Stations available in my TeachersPayTeachers store: Elementary Ali)</p>

# Word Wall Builder

Word	What I think it means...	What I learned it means through context clues...	The actual definition of this word...	Illustration

# Life cycle sort

## Answer Key



# Life cycle Sort

Make a copy of the life cycle steps cards on the next pages for each group/ individual. Cut out the cards, mix them up, and give a copy to each group.

\*\* printing on cardstock and laminating will make these parts last for future use!



Egg



Tadpole



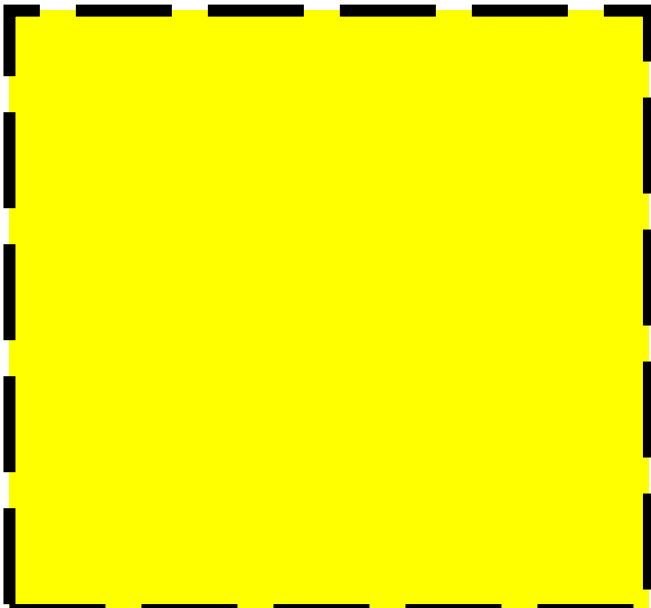
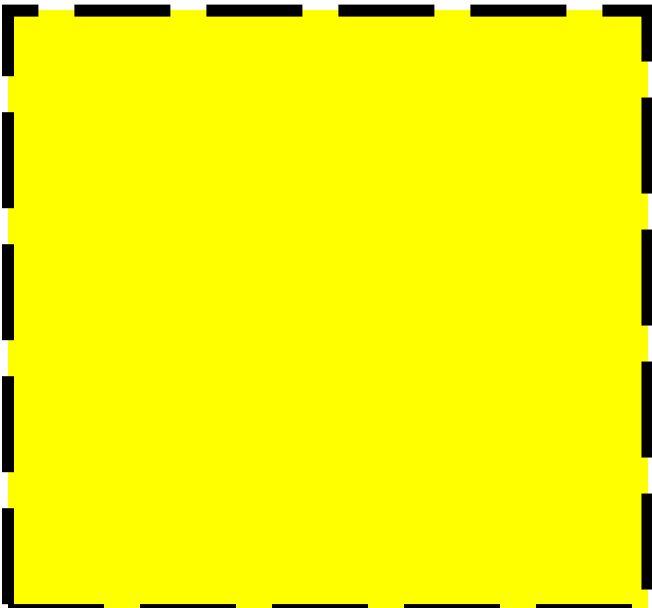
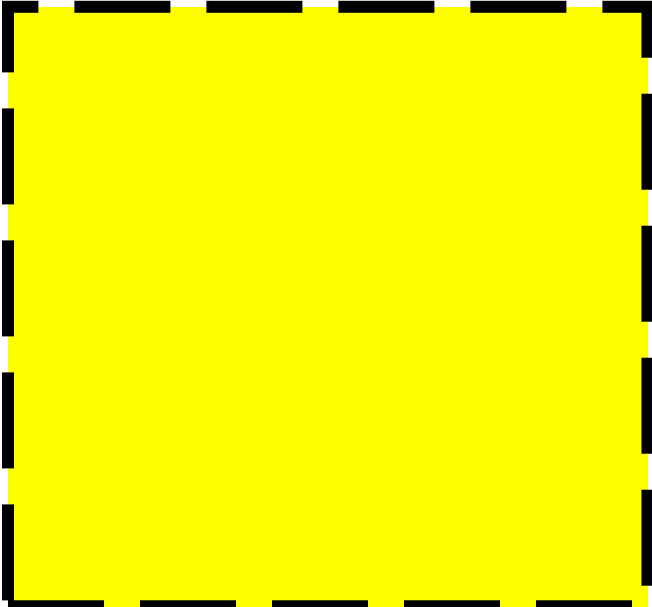
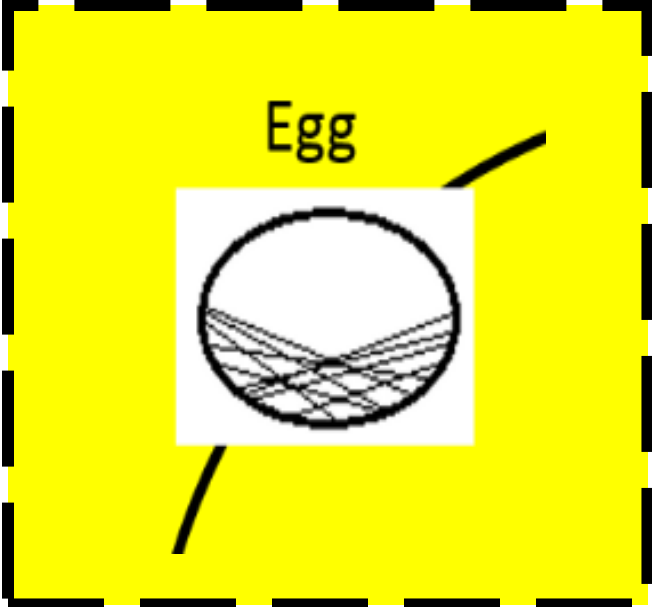
Froglet or  
Young Frog



Frog



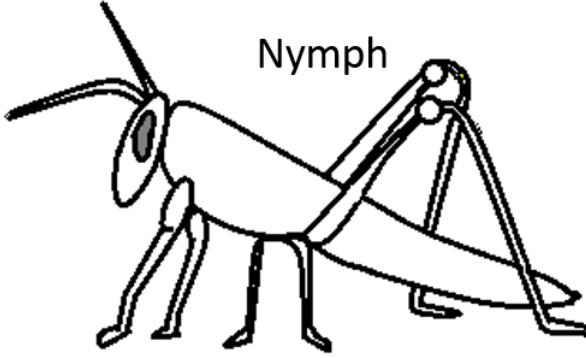
Egg



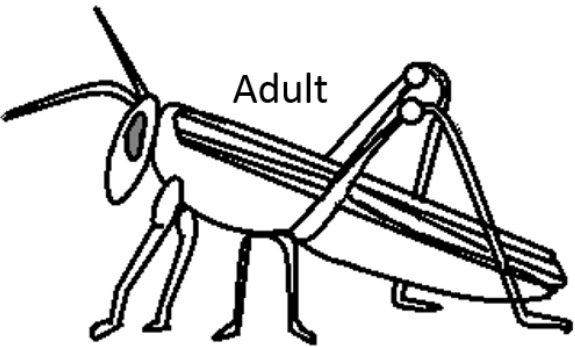
Egg



Nymph



Adult



# Complete and Incomplete Metamorphosis

**Metamorphosis** is the process by which some animals change forms throughout their life cycles. Animals like butterflies, grasshoppers, bees and beetles go through stages of metamorphosis as they get older. Unlike humans, who gradually change and grow throughout their lives, animals that change through metamorphosis have very noticeable body form changes as they progress through the stages of their life cycle.

There are two types of metamorphosis: Complete and Incomplete. Both types begin with an egg and end with an adult, but differ greatly between those two stages.

**Complete metamorphosis** has four stages which include egg, larva, pupa, and adult. A butterfly is a great example of complete metamorphosis. The larva hatches from an egg and is the eating and growing stage. A larva does not look like the adult. For example, the larva of a butterfly is a caterpillar. When the eating and growing stage is done, the larva forms a pupa to rest and rearrange its body form. This is the cocoon of a butterfly. An adult butterfly will emerge from this pupa. **Incomplete metamorphosis** has only three stages: egg, nymph, and adult. A grasshopper is an example of incomplete metamorphosis. The nymph hatches from the egg and is the eating and growing stage. As the nymph needs room to grow, it will **molt**, or shed its exoskeleton. The nymph looks similar to the adult form, and can molt many times as it grows into an adult. When the nymph emerges from its final molt, it is the adult.

Metamorphosis causes the animal's body to go through much more noticeable changes than a human does.

Use context clues to define the *key* terms!

**Metamorphosis**

---

---

---

**Complete**

**Metamorphosis**

---

---

---

**Incomplete**

**Metamorphosis**

---

---

---

**Molt** \_\_\_\_\_

---

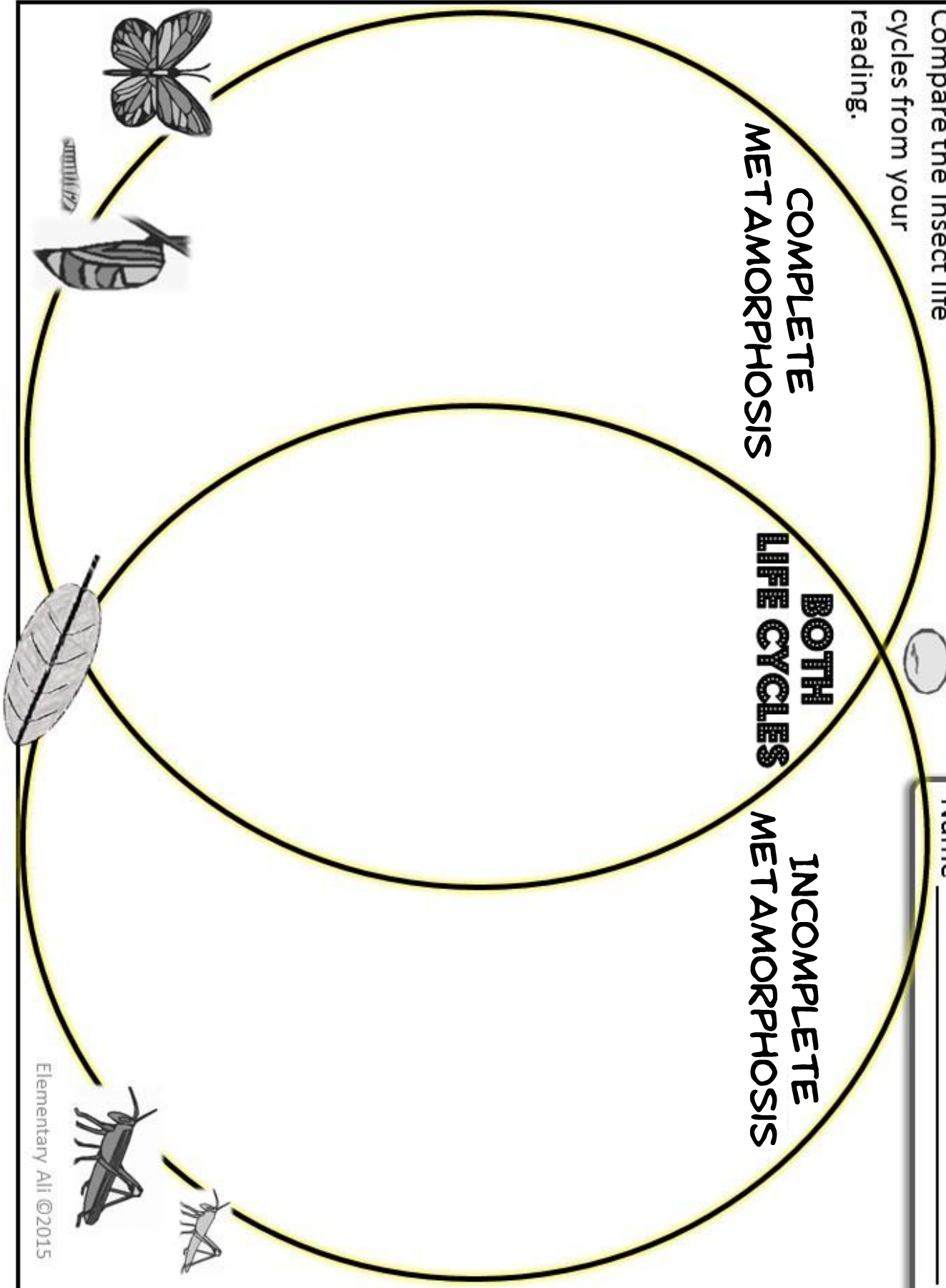
---

Compare the insect life cycles from your reading.

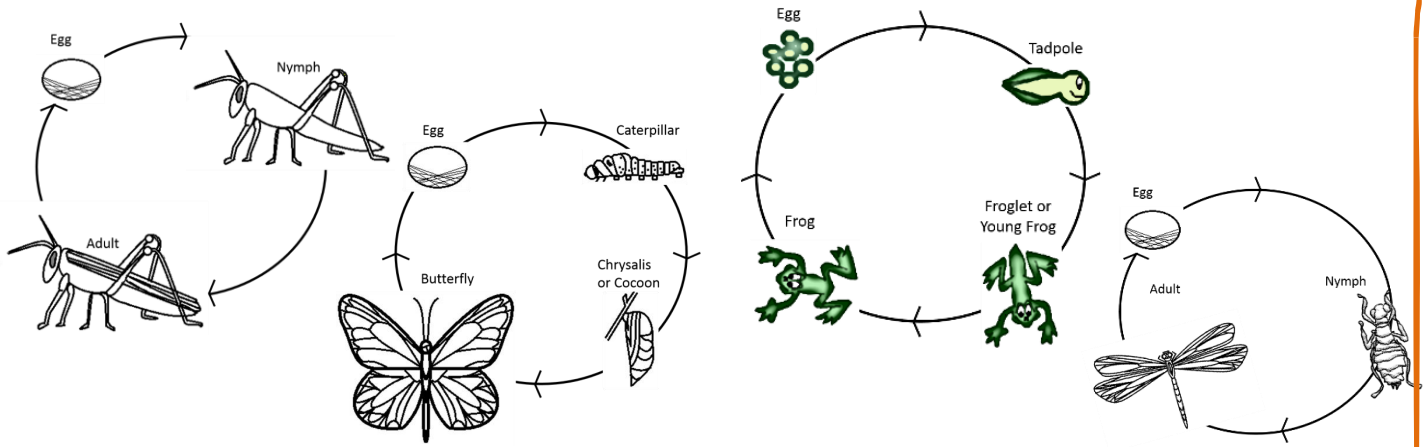


Name \_\_\_\_\_

**COMPLETE METAMORPHOSIS**      **BOTH LIFE CYCLES**      **INCOMPLETE METAMORPHOSIS**



Elementary Ali ©2015



## complete and Incomplete Metamorphosis

Write a summary about complete and incomplete metamorphosis using your key terms from the reading.

**Metamorphosis    Complete Metamorphosis    Incomplete Metamorphosis**  
**Molt**

---



---



---



---



---



---



---



---



---



---



---



---



---



---

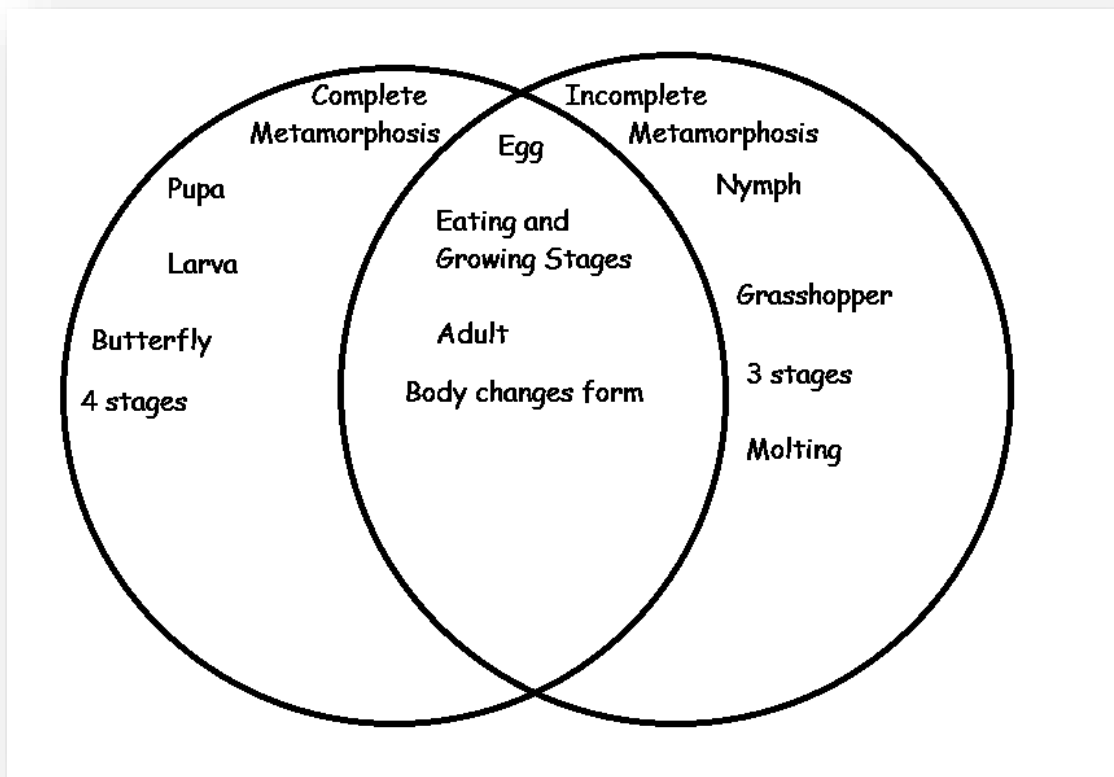


---



---

## answer key



Key term definitions:

Metamorphosis- process by which some animals change forms throughout their life cycles

Complete Metamorphosis- metamorphosis that contains 4 stages: egg, larva, pupa, adult

Incomplete Metamorphosis- metamorphosis that contains 3 stages: egg, nymph, adult

Molt- to shed the exoskeleton, or outer layer

## **Science Starters:** Complete and Incomplete Metamorphosis

**Monday** List the stages of a human life cycle. Which stage are you in right now?

**Tuesday** Draw a caterpillar and a butterfly. How are they similar and different?

**Wednesday** What is the difference when a nymph molts its exoskeleton and a bird molts its feathers?

**Thursday** What are the similarities and differences between the nymph and adult grasshopper?

**Friday** Would you rather have a life cycle like a butterfly or keep your human one? Why?



## Science Starters ✧ Complete and Incomplete Metamorphosis **ANSWERS**

**Monday** List the stages of a human life cycle. Which stage are you in right now?

Possible answers: baby, toddler, child, adolescent, adult

Child or adolescent

**Tuesday** Draw a caterpillar and a butterfly. How are they similar and different?

The both have eyes and legs, but a caterpillar travels on the ground and a butterfly travels by flying with its wings. Their color is typically different.

**Wednesday** What is the difference when a nymph molts its exoskeleton and a bird molts its feathers?

A bird molts its feathers to grow new ones when they get damaged. A nymph molts its exoskeleton to allow its body room to grow.

**Thursday** What are the similarities and differences between the nymph and adult grasshopper?

A nymph looks like the adult, but the adult is bigger and has wings.

**Friday** Would you rather have a life cycle like a butterfly or keep your human one? Why?

Any answer with a reasonable explanation is acceptable.

# Complete and Incomplete Metamorphosis Activity

## A Metamorphosis Story

Create an illustrated book telling the story of an animal going throughout either complete or incomplete metamorphosis. Include the type of animal and what they do and how they feel during each stage. Make it clear which type of metamorphosis they go through.

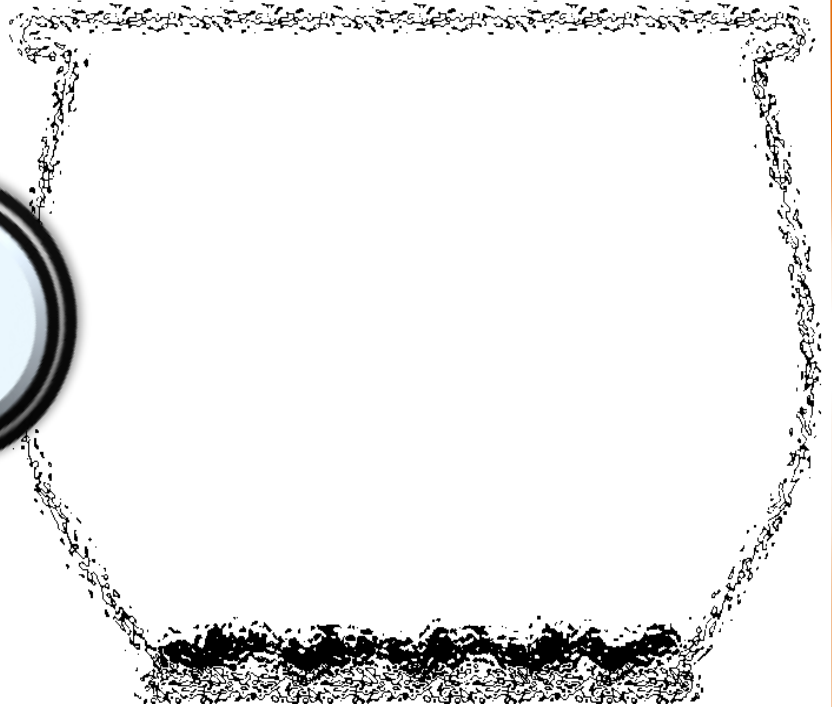
## Science Writing Rubric

	<b>Grammar and Punctuation</b>	<b>Accurate Scientific Information</b>	<b>Product Presentation</b>
<b>Excellent</b>	Free from errors, incomplete sentences, and run on sentences	Information and facts are 100% correct	Neatly written and colorful illustrations
<b>Good</b>	Minor errors with good sentence structure	One or two errors in information or facts	Minor problems with writing or illustrations
<b>Proficient</b>	Some errors and multiple sentences written incorrectly	A few errors in information or facts	A few presentation elements are missing or messy
<b>Needs Improvement</b>	Many errors and sentences written incorrectly	Many errors in information or facts	Messy writing and illustrations, lacking writing or illustrations

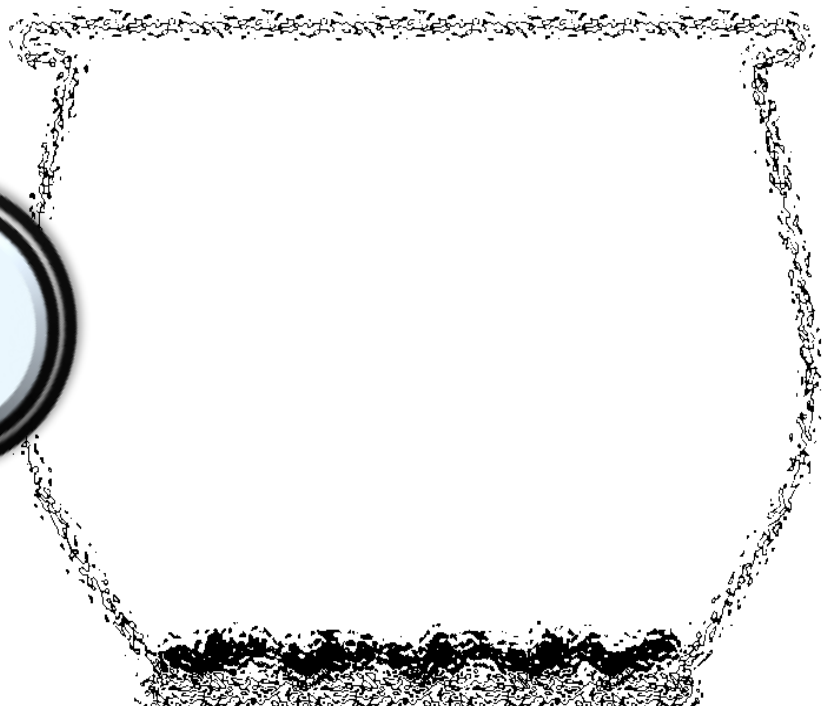
# Complete and Incomplete Metamorphosis Lab

Let's observe the growth of Sea Monkeys from an egg! Record what you observe.

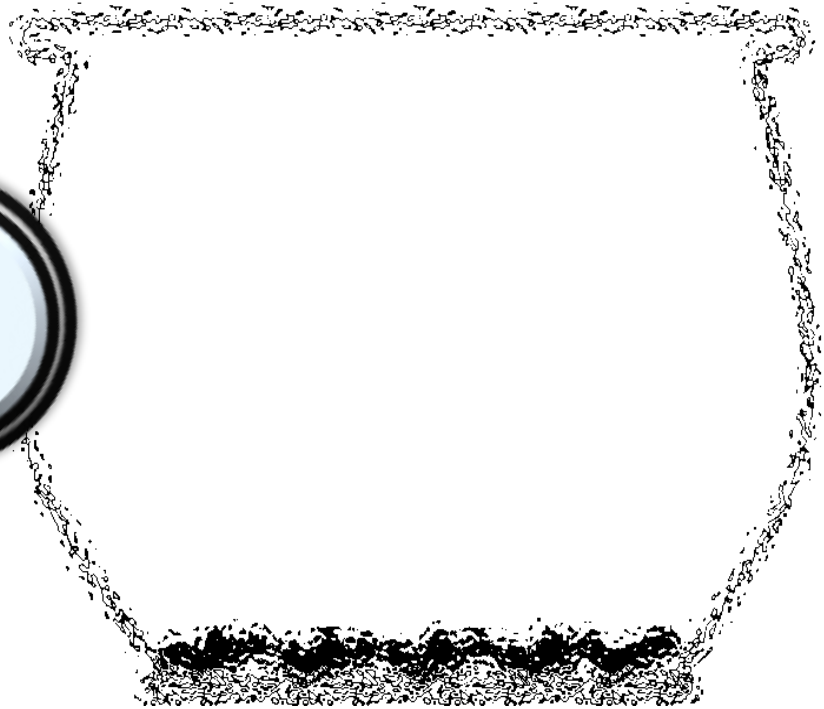
Draw and label what you see on Day One!



Draw and label what you see on Day Three!



**Draw and label what you see on Day Five!**



Describe what you observed! Does a Sea Monkey go through metamorphosis? Why or why not?

---

---

---

---

---

## Writing Extension Activity

Have the students use writing to show you what they know. They will be writing an encyclopedia page with information they learned about this week's topic. This will also help build skills in writing informational texts. Refer to the "I Can..." statement for the week to guide their topic.

### Science Writing RUBric

	<b>Grammar and Punctuation</b>	<b>Accurate Scientific Information</b>	<b>Product Presentation</b>
<b>Excellent</b>	Free from errors, incomplete sentences, and run on sentences	Information and facts are 100% correct	Neatly written and colorful illustrations
<b>Good</b>	Minor errors with good sentence structure	One or two errors in information or facts	Minor problems with writing or illustrations
<b>Proficient</b>	Some errors and multiple sentences written incorrectly	A few errors in information or facts	A few presentation elements are missing or messy
<b>Needs Improvement</b>	Many errors and sentences written incorrectly	Many errors in information or facts	Messy writing and illustrations, lacking writing or illustrations

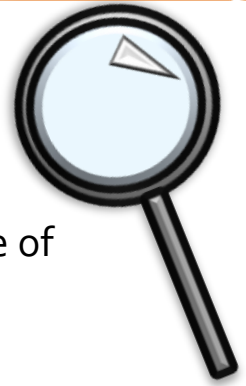
# My Encyclopedia Page

topic: \_\_\_\_\_

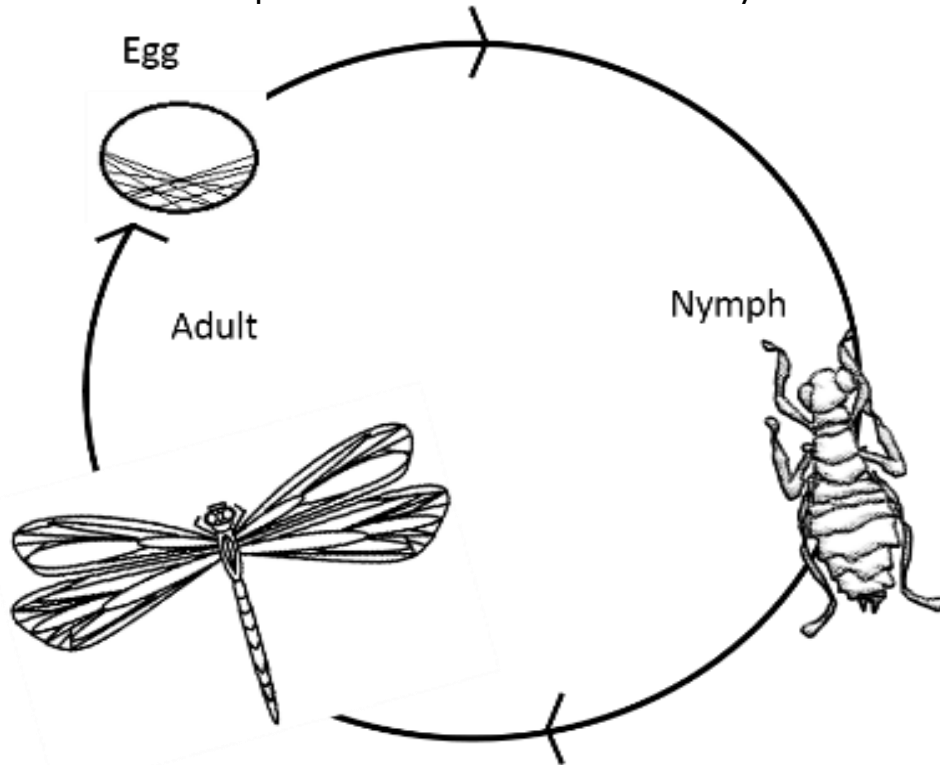
Illustrations or Diagrams



# Life cycle Detective



Look at the life cycle below and determine which type of metamorphosis it is. Which clues did you find?



I think this life cycle is ...

---

Because...

---

---

---

---