

# Lesson Plan: Life Cycle

By: Nichole Hughes and Darby Feldwinn

**Target Grade:** 3<sup>rd</sup>

**Teacher Prep Time:** 60 minutes

**Lesson Time:** 4 hours and 5 minutes (not including the Life Cycle Journal). We recommend doing this lesson over five days.

5 hours and 20 minutes (Life Cycle Journal). (This must be spread out over eight weeks, recording data twice a week.)

- Part 1:
  - 20 min – Exploring an Organism’s Life
  - 30 min – Comparing Similar Organisms
- Part 2:
  - 15 min – Class Discussion
  - 35 min – Comparing Different Organisms
- Part 3:
  - 20 min – Life Cycle Video
  - 40 min – Revising Your Model
- Part 4
  - 30 min – Class Model
- Part 5: (This section is spread out over 8 weeks, two times per week.)
  - 20 min (per day)- Life Cycle Journal
- Part 6:
  - 20 min – Data (This section can be done while completing the Life Cycle Journal each day.)
  - 20 min – Analyzing Data
  - 20 min – Lesson Reflection

## Lesson Overview:

In this lesson, students will explore the life cycles of plants and animals and be able to find similarities and differences between life cycles of different organisms. They will then make a model of what is common in the life cycle of all living things. Students will test their model by observing the life cycle of Wisconsin Fast Plants and silkworms.

## Learning Objectives:

- Students will be able to develop a model of what happens to organisms over their lifetime.
- Students will know the key stages of life for all organisms: birth, growth, reproduction, and death.
- Students will be able to collect and graphically display data about how organisms grow during their lifetime.

## NGSS:

3-LS1-1: Develop models to describe that organisms have unique and diverse life cycles but all have in common birth, growth, reproduction, and death.

- **Science and Engineering Practice**

- # 2 Developing and Using Models
  - Modeling in 3-5 builds on K-2 experiences and progresses to building and revising simple models and using models to represent events and design solutions.
    - Collaboratively develop and/or revise a model based on evidence that shows the relationship among variables for frequent and regular occurring events.
    - Develop and/or use models to describe and/or predict phenomena.

- **Disciplinary Core Idea**

- LS1.B Growth and Development of Organisms
  - Reproduction is essential to every kind of organism. Organisms have unique and diverse life cycles.

- **Cross Cutting Concept**

- #3 Scale, Proportion, and Quantity
  - Students recognize natural objects and observable phenomena exist from the very small to the immensely large. They use standard units to measure and describe physical quantities such as weight, time, temperature, and volume.

## Where This Lesson Fits in:

Students should be able to recognize the various organisms that will be assigned to them (e.g. apple tree, pumpkin, pine tree, dandelion, frog, chicken, dog, and whale; these are commonly taught in grades Kindergarten-3<sup>rd</sup>). This lesson can be paired with an English language arts unit on animal research projects, and a mathematics unit on Measurement and Graphing.

## Materials Needed:

- Life Cycles Worksheet (one per student)
- Life Cycles Journal (one per student)
- Cactus and Fish Life Cycle pictures
- Coastal Silkworm Eggs (~1000 eggs)
  - You need to purchase 1000 eggs because the survival rate from being born to week 3 is low.
  - These can be purchased online. If you get them shipped overnight on ice, you can put the eggs into your refrigerator when they come, and then remove them a week before you want to start the Life Cycles Journal. After the first year, as soon as the eggs are laid, you can put them in the refrigerator and then take them out before you want to use them the next year.
- Silkworm food
  - You can use fresh mulberry leaves or food purchased online.
- Terrarium
  - For your first year, you can purchase a silkworm kit that contains a terrarium online from Amazon or you can just use a Xerox box lid.
- Wisconsin Fast Plant Research Kit (~\$50 Amazon). This kit has set ups for 4 groups you would need to order two kits your first year. After that you can reuse supplies. If

possible you should make 4 extra set ups so if a group drops their cup they will still be able to collect data. Or for a cheaper option see below.

- Standard Wisconsin Fast Plant seeds (~5 seeds per group, recommended 8 groups in a class). (Amazon).
- Planter cups, soil, and water
  - We recommend using the following set-up: drill a 0.5 inch hole in a 9 oz clear plastic cup. Insert a multipurpose terry towel cut down to 5 cm by 15 cm so that ~4 cm of the towel is inside the cup and the rest is hanging out. Put the 9 oz cup in a 20 oz cup.
- After the Day 0 plant observation either you or the students can plant the seeds. If you are planting the seeds see Part 5 of the lesson plan below for instruction.
- Millimeter Rulers (1 per group, 8 groups recommended) (We think the Metric Ruler 30 cm/300 mm [Carolina Biological part number: 702613] work best. Note: Cover cm part with masking tape so students measure in millimeters.)
- Device that has access to the internet and can be projected
- Document camera (to model work for students)



**Teacher Prep:**

- Order the silkworms and Wisconsin Fast Plants at least a week before you want to start the lesson.
- Divide your class into 8 groups.
- Print out Life Cycles Worksheets and Journals for students.
- Have the video of the lifecycle of a sunflower, read to play (<https://www.youtube.com/watch?v=Z-iPp6yn0hw>) for part 3 of the lesson.

**Lesson Sequence:**

\* For this activity we recommend that there are 8 groups of students, ideally 3-4 students in a group. In order for students to compare their organism to similar organisms you must have 4, 8, or 12 groups. If you are doing 12 groups, you will need to think of additional organisms to the ones provided to use.

<b>Part 1:</b>	
20 minutes	<p><b>Exploring an Organism’s Life</b></p> <ul style="list-style-type: none"> <li>● Explain to students they are going to start a new science unit on life cycles, and they will each receive an organism to draw, label and answer questions about.</li> <li>● Pass out the Life Cycles worksheets, and assign each organism to a group.               <ul style="list-style-type: none"> <li>○ Plant Groups: apple tree, pumpkin, pine tree, and dandelion</li> <li>○ Animal Groups: frog, chicken, dog, and whale</li> </ul> </li> <li>● Tell students they will draw their organism at 4 to 6 different stages during its life. Afterwards, they will compare the size of the organism at these different stages.</li> <li>● Have student groups discuss and complete “Exploring an Organism’s Life” together (questions 1-5), but do not provide hints about the stages of life in question 2.</li> </ul>

30  
minutes

### Comparing Similar Organisms

- Explain that each group will now share their model from question 2 with another group.
- Assign each animal group to share with another animal group, and assign each plant group to share with another plant group.
  - Ex: Apple Tree + Pumpkin
  - Ex: Pine Tree + Dandelion
  - Ex: Frog + Chicken
  - Ex: Dog + Whale
- Explain how to fill out “Comparing Similar Organisms,” and then have student groups come together, to share their drawings for question 2, and to fill out this section, questions 6-12.

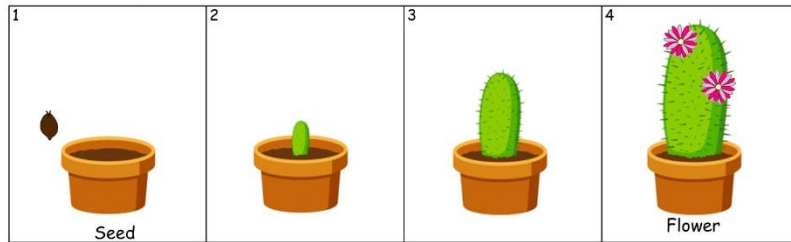
### Part 2:

15  
minutes

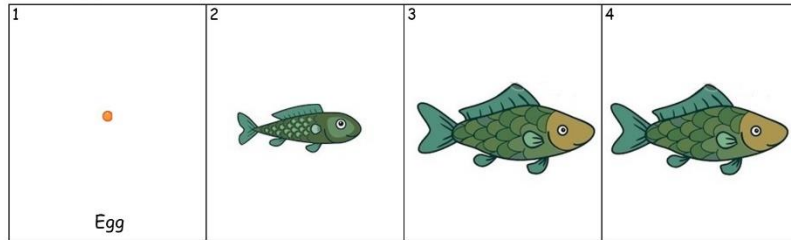
### Class Discussion

- Explain that even though plants and animals may seem very different, they have certain parts of their life cycles in common.
- Show students the Cactus and Fish Life Cycle Models (seen below).


Cactus (my organism)



Fish (my partner's organism)





- In an example notebook, go through and fill out questions 13-19 for the cactus and fish with the class. Students should NOT fill out their worksheet at this time.
- Example teacher work for this section; questions 9-12 are only filled out by students.

	<p>9) List <b>differences</b> between your two models: (you do not have to fill out all lines)</p> <p>a) _____</p> <p>b) _____</p> <p>c) _____</p> <p>10) Did the <small>Partner Group's Organism</small> change size for every stage of its life? Yes <input type="checkbox"/> No <input type="checkbox"/> Circle One</p> <p>If No: Two stages where the organism <b>stays the same size</b> are: stage _____ and stage _____.</p> <p>11) Two stages in which a/an <small>Partner Group's Organism</small> changes size are stage _____ and stage _____. (circle the stage that is bigger)</p> <p>12) List if there is anything you would like to change or add to your model (question 2): (you do not have to fill out all lines)</p> <p>a) _____</p> <p>b) _____</p> <p>c) _____</p> <p><b>Part 2:</b> <b>Class Discussion</b> *Have a class discussion on how to compare plants and animals.</p> <p><i>Comparing Different Organisms</i> (Your Teacher will assign you a second partner group to share with.)</p> <p>13) What organism did your partner group receive? <u>fish</u> <small>Partner Group's Organism</small></p> <p>Compare the sizes of your organisms:</p> <p>14) A/an <u>cactus</u> <small>Your Organism</small> is smaller than / <u>bigger than</u> / the same as <small>Partner Group's Organism</small> <u>fish</u> <small>Partner Group's Organism</small></p> 	<p>Have one group share what they drew for the stages in their model (question 2).</p> <p>Have the other group share what they drew for their stages in their model (question 2).</p> <p>15) List <b>similarities</b> between your two models: (you do not have to fill out all lines)</p> <p>a) <u>both start off small</u></p> <p>b) <u>both grow</u></p> <p>c) <u>both start out as something very different to stage 4</u></p> <p>16) List <b>differences</b> between your two models: (you do not have to fill out all lines)</p> <p>a) <u>The cactus does not have eggs</u></p> <p>b) <u>The cactus flowers and fish do not</u></p> <p>c) <u>The fish moves and the cactus stays in one spot.</u></p> <p>17) Did the <u>fish</u> <small>Partner Group's Organism</small> change size for every stage of its life? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Circle One</p> <p>If No: Two stages where the organism <b>stays the same size</b> are: stage <u>3</u> and stage <u>4</u>.</p> <p>18) Two stages in which a/an <u>fish</u> <small>Partner Group's Organism</small> changes size are stage <u>1</u> and stage <u>3</u>. (circle the stage that is bigger)</p> <p>19) List if there is anything you would like to change or add to your model (question 2): (you do not have to fill out all lines)</p> <p>a) <u>At the end of its life I think the cactus stops growing.</u></p> <p>b) _____</p> <p>c) _____</p>
35 minutes	<p><b>Comparing Different Organisms</b></p> <ul style="list-style-type: none"> <li>Assign each animal group to share with a plant group: <ul style="list-style-type: none"> <li>Ex: Apple Tree + Frog</li> <li>Ex: Pumpkin + Chicken</li> <li>Ex: Pine Tree + Dog</li> <li>Ex: Dandelion + Whale</li> </ul> </li> <li>Have assigned groups get together, share their model from question 2, and fill out "Comparing Different Organisms," questions 13-19.</li> </ul>	
<b>Part 3:</b>		
20 minutes	<p><b>Life Cycle Video</b></p> <ul style="list-style-type: none"> <li>Explain that today students will be watching a video of the life cycle of a sunflower.</li> <li>Have students watch the Sunflower Video (<a href="https://www.youtube.com/watch?v=Z-iPp6yn0hw">https://www.youtube.com/watch?v=Z-iPp6yn0hw</a>) and think about the different stages in the sunflower's life cycle while you are asking prompting questions. Ex: What is happening to the sunflower now?</li> <li>As a class, fill in question 20 and 21 together. You may have to lead students to the correct word to fill in. <ul style="list-style-type: none"> <li>At the beginning of the video the organism was a <i>seed</i>; this is known as <i>birth</i>. Then the organism <i>grew</i>. Next the organism <i>flowered</i>, and these contained <i>seeds</i> which would fall to the ground and <i>grow</i>. This is known as <i>reproduction</i>. At the end the organism <i>died</i>.</li> </ul> </li> <li>Have students rewatch the video. This time have them discuss similarities and differences between the cactus model and the video.</li> <li>In an example notebook, go through and fill out/discuss questions 22-23, first for the cactus and then in a different notebook for the fish while the class follows along (students should NOT fill out their worksheet at this time).</li> <li>Once you have completed the similarities and differences between both the cactus and the fish, tell students that it seems like there are some key</li> </ul>	

stages in life that all organisms (plants and animals) go through. Have them circle these key stages in question 21.

Example teacher work is shown below (cactus, right and fish, left). Questions 20-21 are not filled out in the second notebook.

<p><b>Part 3:</b> Life Cycle Video</p> <p>20) What organism is in the video? <u>sunflower</u></p>  <p>21) At the beginning of the video the organism was a <u>seed</u>, this is known as <u>birth</u>. Then the organism <u>grew</u>. Next the organism <u>flowered</u> and these contained <u>seeds</u> which would fall to the ground and <u>grow</u>. This is known as <u>reproduction</u>. At the end the organism <u>died</u>.</p> <p>22) List <b>similarities</b> between the video and your model: (you do not have to fill out all lines)</p> <p>a) <u>Both start off looking very different</u> b) <u>Both grow</u> c) _____</p> <p>23) List <b>differences</b> between the video and your model: (you do not have to fill out all lines)</p> <p>a) <u>The sunflower dies at end of video</u> b) <u>The sunflower flowers and fish do not</u> c) _____</p> <p>24) In question 21 circle the key stages of life that the organism went through.</p>	<p><b>Part 3:</b> Life Cycle Video</p> <p>20) What organism is in the video? _____</p>  <p>21) At the beginning of the video the organism was a _____; this is known as _____. Then the organism _____. Next the organism _____ and these contained _____ which would fall to the ground and _____. This is known as _____. At the end the organism _____.</p> <p>22) List <b>similarities</b> between the video and your model: (you do not have to fill out all lines)</p> <p>a) <u>Both start off looking very different</u> b) <u>Both grow</u> c) _____</p> <p>23) List <b>differences</b> between the video and your model: (you do not have to fill out all lines)</p> <p>a) <u>The sunflower dies at end of video</u> b) <u>The sunflower flowers</u> c) _____</p> <p>24) In question 21 circle the key stages of life that the organism went through.</p>
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- Have groups get together and discuss/fill out questions 22-23 with their group.
- Have students individually fill in the life cycle of a sunflower for question 25. Then have them share and compare their drawings with their group, before they share with the class.
- Have groups discuss what they would like to change or add to their models and fill out question 26.

40 min

### Revising Your Model

- Have groups highlight and read the answers to questions 12, 19, and 26.
- Have students work in their groups to revise their models (questions 27 and 28).
- Have them decide which group member will present which step(s).
- Have groups share their final models to the class.

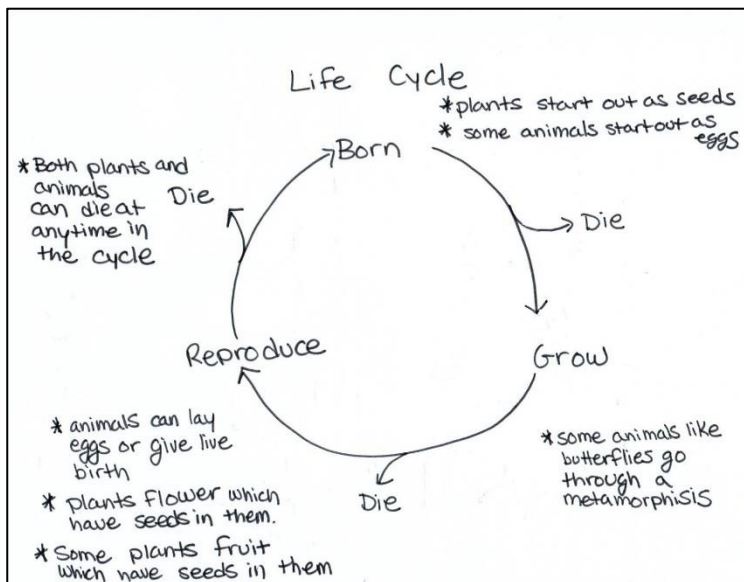
### Part 4:

30 minutes

### Class Model

- Explain to students that we are going to generate a class model that can explain any plant or animal life cycle.
- Ask students to get out their Life Cycles worksheet, and turn to Part 4, page 8.
- Hang up a large poster paper to draw the class model.
- Have a class discussion on the parts of a life cycle that all plants and animals go through, and draw/write student comments on the poster.
  - Below is an example of a class model. You do not have to have all of the details on the model at this time. As students watch the fast

plants and silkworms grow they can come back and modify the class model.



- Have students draw/write the same model in Part 4 of their Life Cycles worksheet.

**Part 5:** This section is spread out over 8 weeks, two times per week. It is recommended that you pick one day of week to collect data on the fast plants and one day a week to collect data on the silkworms. Example: Plants every Tuesday and silkworms every Thursday. Students will still be collecting data in their original groups.

20 minutes (a day)

**Life Cycles Journal**

- Explain to students that we are going to test our class model by observing fast plants and silkworms throughout their life cycle.
- Pass out the Life Cycles Journal to each student.
  - Fill out the Week 0 predictions for the plants together.
- Give each group a fast plant seed.
- Have students record observations about their seed and share with the class.
- Have students draw a picture of the organism.
- Have a class discussion on how to measure the length (horizontal) and height (vertical) of an organism. Tell them that they will make measurements to the nearest mm.
- Have students take their week 0 measurements while you also take a measurement.
- Record all measurements including yours on the board.
- If all measurements are the same you just write down the number for the class median and teacher students about the median on week 1. If not, tell students, "We need to find a way to represent all of the data with one number so we do not get overwhelmed with data." Introduce the concept of the median (middle number in an ordered set of data) and have students determine and record the class median in their journals.
- Have students discuss and fill out if their predictions were correct, and if any changes need to be made to the class model.



- If desired: You can have students plot the point for their week 0 measurements on their line graph which is located on page 9 of their worksheet.
- If desired: Groups can plant their own fast plants using the following instructions:
  - Pass out a large 20 oz cup to each group. Have the group write their names on the cup.
  - Pass out a medium 9 oz cup with a hole in the bottom that has a towel sticking out to each group.
  - Have students put the medium cup in the large cup.
  - Have students put 6 oz of potting soil in the medium cup.
    - Make sure that the potting soil is fresh. If you have old, dry potting soil the water does not absorb into the soil well and there are often dry patches that will not grow the seeds.
    - You can buy 3 oz bath cups that the students can fill up two times with soil.
  - Give each group about 5 fast plant seeds. Make sure that they evenly spread these out in the cup.
  - Put ~1 tablespoon of soil over the seeds.
  - Have students pour, slowly and evenly, ~200 mL of water over their plants.
  - It is highly recommended that the teacher make 4 extra plant set ups, in case a group drops or ruins their plants.
- Once your students have planted their plants, put the plants somewhere with light that the students will not see. If needed, you can use a desk light to shine more light on the plants. You only want students to see the fast plants/silkworms on the day you are going to take data.



- On your animal day, repeat the process for the silkworms. This time, allow students to fill out their predictions on their own.
- For Week 1, fill out the plant prediction as a class and then allow students to fill out the animal prediction by themselves. After Week 1, they will be able fill out the predictions on their own.
- After groups make their prediction, bring out the fast plants/silkworms and have the entire class look at all of the plants/animals. During this time it is important to point out any plant/animal that has died. (At this time most class models only have “die” after reproduction has occurred. If you point out dead plants/animals this will allow students to understand that plants/animals can die at any part of the life cycle.)
- Each week, groups and the teacher will measure the length and height of a fast plant and a silkworm.
  - When working with plants, groups will work with the plants that they planted.



	<ul style="list-style-type: none"> <li>▪ Groups should measure the plant in their cup that has a height that is in the middle (not the tallest or the shortest).</li> <li>○ When working with the silkworms, give each group 1 silkworm to work with for the week and then return the silkworm to its cage.</li> <li>• You will repeat this process for the next 8 weeks. <ul style="list-style-type: none"> <li>○ It is possible that the complete life cycles will take more than 8 weeks. There is a page for additional data if needed at the back of the journal.</li> </ul> </li> </ul>
<b>Part 5:</b>	
20 minutes	<p><b>Data</b></p> <ul style="list-style-type: none"> <li>• If students have not been graphing the median measurements for the fast plants/silkworms throughout the 8 weeks, have them put in the points on the line graph on pages 9 and 10. <ul style="list-style-type: none"> <li>○ If your class has not had much experience graphing, graph how a fast plant's length changes with time together. Then have them do the other graph on their own.</li> </ul> </li> <li>• As a class, find the max and min measurement for the length of a fast plant. Then find the difference in length over the fast plant's life.</li> <li>• Have students repeat this process for the other graphs.</li> </ul>
20 minutes	<p><b>Analyzing Data</b></p> <ul style="list-style-type: none"> <li>• In their groups have students answer the Analyzing Data questions (page 11, questions 30-39).</li> <li>• After groups are finished, have them share where they labeled their graph and go over their answers and make sure the class reaches a consensus for each question.</li> </ul>
20 minutes	<p><b>Lesson Reflection</b></p> <ul style="list-style-type: none"> <li>• Have students fill out questions 40 and 41 on their own.</li> <li>• Then allow a few students to share what they learned and their pictures of the life cycle of a plant or animal.</li> </ul>


# Example Student Work:

Name: \_\_\_\_\_

## Life Cycles





**Part 1:**  
Exploring an Organism's Life

1) What organism did you receive? apple tree



Talk with your group about how your organism changes over its lifetime.

2) Draw and label your organism at 4 to 6 different stages in its life.

1  seed	2  plant	3  tree
4  tree		

Comparing the size of your organism over its lifetime:

3) Does the organism stay the same size over its lifetime? Yes  No  Circle One

4) Did the organism change size for every stage of its life? Yes  No  Circle One  
If No: Two stages where the organism stays the same size are: stage 3 and stage 4.


5) Two stages in which the organism changes size are: stage 1 and stage 2. (circle the stage that is bigger)

Comparing Similar Organisms  
(Your teacher will assign you a partner group to share with.)

6) What organisms did your partner group receive? pumpkin

Compare the sizes of your organisms:

7) A/an apple tree is smaller than / (bigger than) the same as  
a/an pumpkin  
Your Organism                      Partner Group's Organism



Have one group share what they drew for the stages in their model (question 2).  
Have the other group share what they drew for their stages in their model (question 2).

8) List similarities between your two models: (you do not have to fill out all lines)

- both started as seeds
- both grew
- both had fruit

9) List differences between your two models: (you do not have to fill out all lines)

- apple trees made apples pumpkins made pumpkins
- apple trees are bigger
- pumpkins get bigger in every picture


10) Did the pumpkin change size for every stage of its life?  Yes  No Circle One  
If No: Two stages where the organism stays the same size are: stage \_\_\_\_\_ and stage \_\_\_\_\_.

11) Two stages in which a/an pumpkin changes size are stage 2 and stage 3 (circle the stage that is bigger)

12) List if there is anything you would like to change or add to your model (question 2): (you do not have to fill out all lines)

- make apple tree get bigger in each picture
- \_\_\_\_\_
- \_\_\_\_\_

**Part 2:**  
Class Discussion  
\*Have a class discussion on how to compare plants and animals.





Comparing Different Organisms  
(Your teacher will assign you a second partner group to share with.)

13) What organism did your partner group receive? frog

Compare the sizes of your organisms:

14) A/an apple tree is smaller than (bigger than) the same as  
a/an frog





Have one group share what they drew for the stages in their model (question 2).  
Have the other group share what they drew for their stages in their model (question 2).

15) List similarities between your two models: (you do not have to fill out all lines)

- both start out small
- both grow
- \_\_\_\_\_

16) List differences between your two models: (you do not have to fill out all lines)

- frog go from egg to tadpole to frog apple trees do not have eggs
- apple trees don't have eggs
- \_\_\_\_\_

17) Did the frog change size for every stage of its life?  Yes  No Circle One  
If No: Two stages where the organism stays the same size are: stage \_\_\_\_\_ and stage \_\_\_\_\_.

18) Two stages in which a/an frog changes size are stage 1 and stage 2. (circle the stage that is bigger)

19) List if there is anything you would like to change or add to your model (question 2): (you do not have to fill out all lines)

- \_\_\_\_\_
- \_\_\_\_\_
- \_\_\_\_\_

**Part 3:**

**Life Cycle Video**

20) What organism is in the video?

sunflower



21) At the beginning of the video the organism was a

seed; this is known as

birth. Then the organism

grew. Next the organism

flowered, and these contained seeds

which would fall to the ground and grow. This is known

as reproduction. At the end the organism

died.

22) List **similarities** between the video and your model:

(you do not have to fill out all lines)

- Both started out as seeds
- Both got bigger as time goes on
- Both flowered

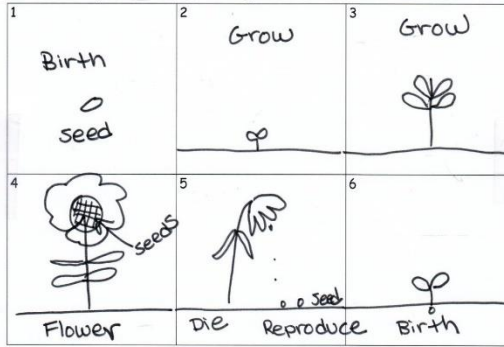
23) List **differences** between the video and your model:

(you do not have to fill out all lines)

- The sunflower dies at the end of the video
- The sunflower grew slower at the end of its life.
- 

24) In question 21 circle the key stages of life that the organism went through.

25) Draw and label the sunflower at 4 to 6 different stages in its life. Make sure to include the words: birth, growth, reproduction, death, and any other key words to designate stages of life.



26) List if there is anything you would like to change or add to your model

(question 2): (you do not have to fill out all lines)

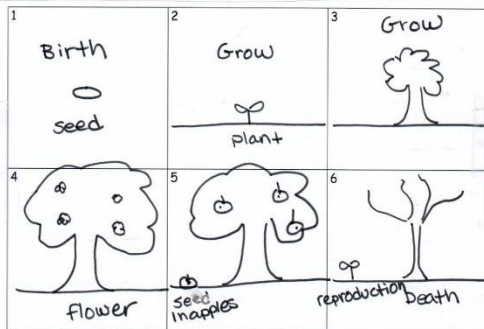
- Add reproduction to model
- Add death to model
- 

**Revising Your Model**

27) What organism did you receive? apple tree

28) **Highlight and read answers for questions 12, 19, and 26.**

Revise your model by drawing and labeling your organism at 4 to 6 different stages in its life. Make sure to include the words: birth, growth, reproduction, death, and any other key words to designate stages of life.



Assign a stage number(s) to each person in your group and write their name and the stage number(s) below.

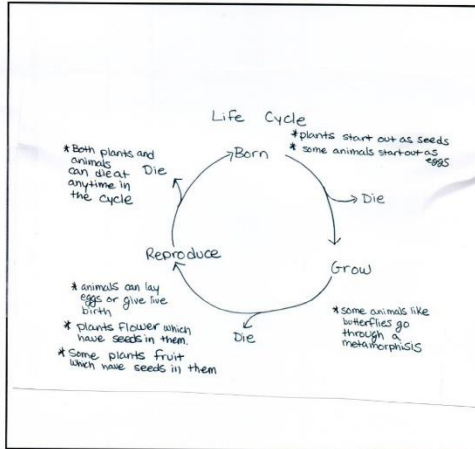
- Darby Name 's stage number(s): 1
- Nichole Name 's stage number(s): 2 and 3
- Alex Name 's stage number(s): 4
- Sammi Name 's stage number(s): 5 and 6

Then share your model with the rest of the class.

**Part 4:**

**Class Model**

29) As a class, generate a model that could be used for any organism to show what happens during their life cycle.



**Part 5:**

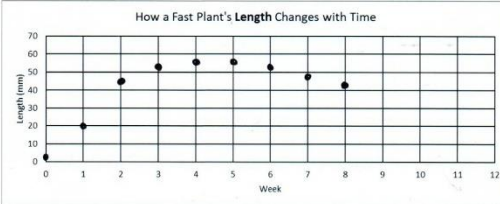
**Life Cycle Journal**

Get your lifecycle journal from your teacher and fill it out for the next 8 weeks.

**Part 6:**

**Data**

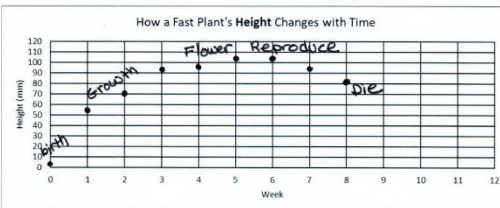
**Class Plant Graphs of Length and Height**



**Plant Length Summary:**  
\*Fill out at the end of life cycle.  
Max Length: 56 mm  
Min Length: 2 mm

Over the organism's life it had a length difference of:

$$\frac{56 \text{ mm} - 2 \text{ mm}}{54 \text{ mm}}$$

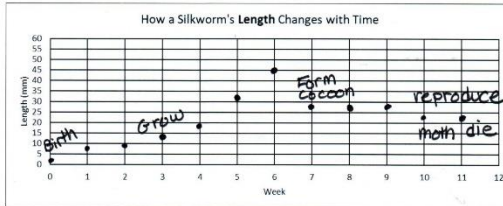


**Plant Height Summary:**  
\*Fill out at the end of life cycle.

Over the organism's life it had a height difference of:

$$\frac{101 \text{ mm} - 1 \text{ mm}}$$

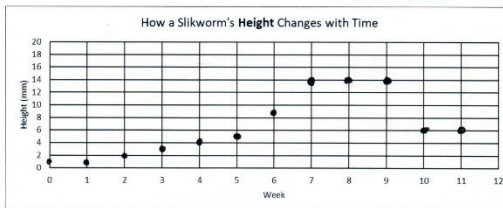
**Class Animal Graphs of Length and Height**



**Animal Length Summary:**  
\*Fill out at the end of life cycle.  
Max Length: 45 mm  
Min Length: 1 mm

Over the organism's life it had a length difference of:

$$\frac{45 \text{ mm} - 1 \text{ mm}}{44 \text{ mm}}$$



**Animal Height Summary:**  
\*Fill out at the end of life cycle.

Over the organism's life it had a height difference of:

$$\frac{14 \text{ mm} - 1 \text{ mm}}{13 \text{ mm}}$$

**Analyzing Data**

**Plant Life Cycle**

30) Label the following on the fast plant height graph: birth, growth, flower, reproduce, and die.

31) The stage in which the organism was the **longest** was:  
birth / growth / reproduction / death

32) The stage in which the organism was the **shortest** was:  
birth / growth / reproduction / death

33) The stage in which the organism was the **tallest** was:  
birth / growth / reproduction / death

34) The stage in which the organism was the **shortest** was:  
birth / growth / reproduction / death



**Animal Life Cycles**

35) Label the following on the silkworm length graph: birth, growth, form cocoon, moth, reproduce, and die.

36) The stage in which the organism was the **longest** was:  
birth / growth / reproduction / death

37) The stage in which the organism was the **shortest** was:  
birth / growth / reproduction / death

38) The stage in which the organism was the **tallest** was:  
birth / growth / reproduction / death

39) The stage in which the organism was the **shortest** was:  
birth / growth / reproduction / death

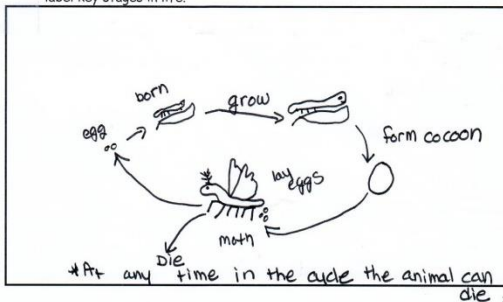


**Lesson Reflection**

40) What did you learn about the life cycles of plants and animals?

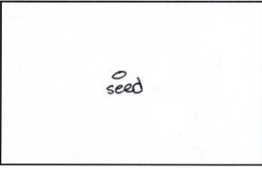
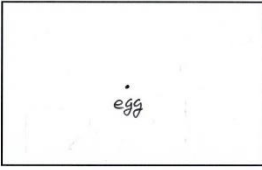
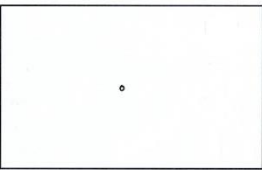
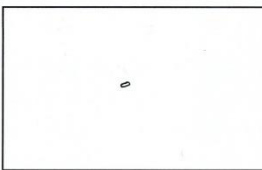
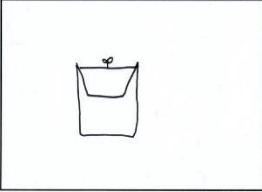

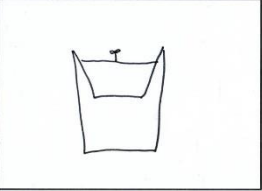

I learned that all plants and animals are born, grow, reproduce, and die. Some animals have other stages of life. For example silkworm are initially caterpillars and then they form a cocoon and come out as a moth.

41) Draw a picture of the life cycle of a plant or an animal of your choice and label key stages in life.





\*The example of the Life Cycles Journal is only given for Weeks 0 and 1. Below Weeks 0 and 1 is data that we collected for all 8 weeks, along with pictures.

<p><b>Plant</b> We will be observing: <u>fast plant</u></p> <p><b>Week 0 - Plant</b> <u>Predictions:</u> Our model predicts that the first stage of the organism's life will be <u>before birth</u> / birth / growth / reproduce / death. Draw a picture of what you think this stage of life will look like.</p> 	<p><b>Animal</b> We will be observing: <u>silkworm</u></p> <p><b>Week 0 - Animal</b> <u>Predictions:</u> Our model predicts that the first stage of the organism's life will be <u>before birth</u> / birth / growth / reproduce / death. Draw a picture of what you think this stage of life will look like.</p> 	<p><b>Week 0 - Plant</b> <u>Observations:</u> <u>seed</u> <u>black colored</u></p> <p>Draw a picture of what the organism looks like today.</p>  <p><u>Measurements:</u> Individual Length: <u>2 mm</u> Median Length: <u>3 mm</u> Individual Height: <u>1 mm</u> Median Height: <u>1 mm</u></p> <p>*Graph the median class data on page 9 of the worksheet.</p>	<p><b>Week 0 - Animal</b> <u>Observations:</u> <u>egg</u> <u>grey colored</u></p> <p>Draw a picture of what the organism looks like today.</p>  <p><u>Measurements:</u> Individual Length: <u>1 mm</u> Median Length: <u>1 mm</u> Individual Height: <u>1 mm</u> Median Height: <u>1 mm</u></p> <p>*Graph the median class data on page 10 of the worksheet.</p>
<p><b>Week 0 - Plant</b> <u>Model Revisions:</u> Were your predictions correct? Why or why not? <u>yes the plant started as a seed</u></p> <p>Do we need to revise the class model? Yes <input type="radio"/> No <input checked="" type="radio"/></p> <p><b>Week 1 - Plant</b> <u>Predictions:</u> Last week our organism was: <u>not born</u> / born / growing / reproducing / dying. Our model predicts the next stage of the organism's life will be: <u>birth</u> / growth / reproduction / death. Do you think the organism has moved onto the stage circled above? Yes <input checked="" type="radio"/> No <input type="radio"/></p>	<p><b>Week 0 - Animal</b> <u>Model Revisions:</u> Were your predictions correct? Why or why not? <u>yes the animal started as an egg</u></p> <p>Do we need to revise the class model? Yes <input type="radio"/> No <input checked="" type="radio"/></p> <p><b>Week 1 - Animal</b> <u>Predictions:</u> Last week our organism was: <u>not born</u> / born / growing / reproducing / dying. Our model predicts the next stage of the organism's life will be: <u>birth</u> / growth / reproduction / death. Do you think the organism has moved onto the stage circled above? Yes <input checked="" type="radio"/> No <input type="radio"/></p>	<p><b>Week 1 - Plant</b> <u>Predictions Continued:</u> I think the median length will: <u>increase</u> / stay the same / decrease. I think the median height will: <u>increase</u> / stay the same / decrease.</p> <p>Draw a picture of what you think this stage of life will look like.</p> 	<p><b>Week 1 - Animals</b> <u>Predictions Continued:</u> I think the median length will: <u>increase</u> / stay the same / decrease. I think the median height will: <u>increase</u> / stay the same / decrease.</p> <p>Draw a picture of what you think this stage of life will look like.</p> 
<p><b>Week 1 - Plant</b> <u>Observations:</u> <u>The plant sprouted</u> <u>there are two leaves</u></p> <p>Draw a picture of what the organism looks like today.</p> 	<p><b>Week 1 - Animals</b> <u>Observations:</u> <u>The animal hatched</u> <u>The caterpillars are small and black</u></p> <p>Draw a picture of what the organism looks like today.</p> 	<p><b>Week 1 - Plant</b> <u>Measurements:</u> Individual Length: <u>20 mm</u> Median Length: <u>21 mm</u> Since last week the median length has: <u>increased</u> My prediction was <u>correct</u> / incorrect. Individual Height: <u>55 mm</u> Median Height: <u>46 mm</u> Since last week the median height has: <u>increased</u> My prediction was <u>correct</u> / incorrect. *Graph the median class data on page 9 of the worksheet.</p> <p><u>Model Revisions:</u> Were your predictions correct? Why or why not? <u>yes the plant sprouted</u></p> <p>Do we need to revise the class model? Yes <input type="radio"/> No <input checked="" type="radio"/></p>	<p><b>Week 1 - Animal</b> <u>Measurements:</u> Individual Length: <u>7 mm</u> Median Length: <u>6 mm</u> Since last week the median length has: <u>increased</u> My prediction was <u>correct</u> / incorrect. Individual Height: <u>1 mm</u> Median Height: <u>1 mm</u> Since last week the median height has: <u>increased</u> My prediction was <u>correct</u> / incorrect. *Graph the median class data on page 10 of the worksheet.</p> <p><u>Model Revisions:</u> Were your predictions correct? Why or why not? <u>yes the silkworm hatched</u></p> <p>Do we need to revise the class model? Yes <input type="radio"/> No <input checked="" type="radio"/></p>

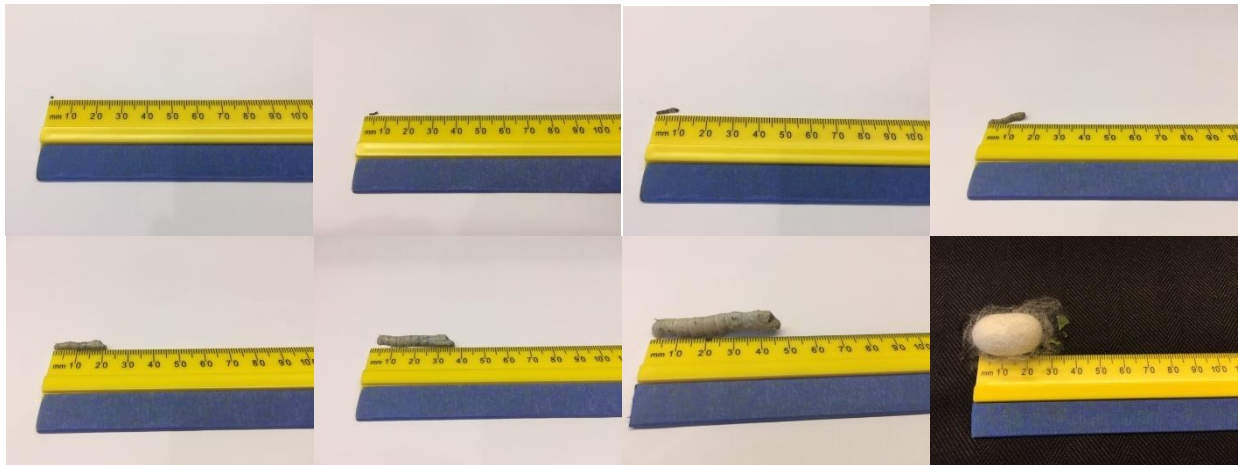
**Fast Plant Data**

	<b>Length (mm)</b>	<b>Height (mm)</b>	<b>Notes</b>
<b>Week 0</b>	2 mm	1 mm	Plants sprouted on day 3.
<b>Week 1</b>	20 mm	55 mm	Plants only have 2 seed leaves (leaves that are part of the seed embryo).
<b>Week 2</b>	45 mm	70 mm	Plants have 2 leaves.
<b>Week 3</b>	51 mm	91 mm	Plants have small flowers.
<b>Week 4</b>	56 mm	95 mm	Plants have more small flowers.
<b>Week 5</b>	56 mm	101 mm	Plants have started to fall over, some new plants are sprouting up.
<b>Week 6</b>	54 mm	101 mm	Plants are starting to die.
<b>Week 7</b>	49 mm	94 mm	Plants are continuing to die.
<b>Week 8</b>	41 mm	90 mm	Plants are continuing to die.

### Silkworm Data

	Length (mm)	Height (mm)	Notes
<b>Week -1</b>	N/A	N/A	1 week before you want students to start their journal, take the silkworm eggs out of the refrigerator.
<b>Week 0</b>	1 mm	1 mm	Before showing students, remove any silkworms that have hatched.
<b>Week 1</b>	7 mm	1 mm	My eggs hatched on day 9, which was 2 days after week 0.
<b>Week 2</b>	9 mm	2 mm	
<b>Week 3</b>	14 mm	3 mm	
<b>Week 4</b>	19 mm	4 mm	
<b>Week 5</b>	32 mm	5 mm	
<b>Week 6</b>	45 mm	9 mm	
<b>Week 7</b>	26 mm	14 mm	I pushed week 7 back by 1 day because my silkworms were just starting to cocoon and I did not want to disturb the process.
<b>Week 8</b>	26 mm	14 mm	
<b>Week 9</b>	26 mm	14 mm	
<b>Week 10</b>	23 mm	6 mm	The silkworm emerged as a moth 2 days after week 9. The moths only live about a week so make sure that if it is just after a week that you do not wait too long to show students.
<b>Week 11</b>			Eggs were in container and silkworm died.

### Picture of Silkworms







**Note:**

If for some reason your fast plants or silkworms die. These are video links to time lapse videos that you can watch to show students the organisms' complete life cycle. They can also be used at the end of the lesson to remind students of what they observed.

Fast Plant Video <https://www.youtube.com/watch?v=JumEfAbjBjk>

Silkworm video <https://www.youtube.com/watch?v=q9RyyDM6XH8>

**Other Resources:**

- **EPIC Reading**- Has digital books called *The Life Cycle of a Plant*, and *Butterflies* that teach about life cycles.
- **BrainPop**- Has videos called *Ecosystems*, *Tundra*, and *Everglades* that touches on various plant and animal life cycles in those habitats.
- **FOSS Science Program 4<sup>th</sup> grade Life Science book**- Has articles called "Ecosystems" and "Freshwater Ecosystems" that touches on life cycles of various plants and animals in different ecosystems.
- **Mystery Science**- "Why do plants grow flowers?" video.
- **Discovery Education**- "Life Cycles" video, "Animal Life Cycle: Butterflies" video, "What Animals Hatch From Eggs" video, and "Metamorphosis" video.