

## Teacher Guide



**Task/Assessment Name: "Wiggling Through Third Grade"**

**Unit or Course: Life Cycle of the Mealworm-Grade 3**

**Developers: Kathryn Brooks**

**Purpose: Summative Assessment of a Life Cycle of a Mealworm**

**Vermont Framework Standards: Life Science-Life Cycle 7.13 c,cc,ccc**

**Vermont Grade Expectations or Local Learning Goals:**

**S3-4:2**

**(DOK 2)**

**Students demonstrate their understanding of PREDICTING AND HYPOTHESIZING by...**

- Identifying simple patterns of **evidence** used to develop a **prediction** and propose an **explanation**.

**S3-4:31**

**(DOK 2)**

**Students demonstrate their understanding of Reproduction by ...**

- Investigating and describing a variety of plant and animal **life cycles**.

**S3-4:35**

**(DOK 3)**

**Students demonstrate their understanding of Food Webs in an Ecosystem by...**

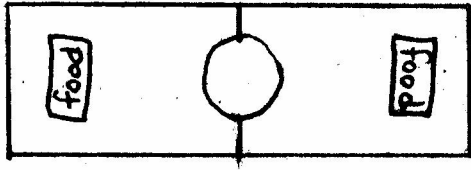
- Researching and designing a **habitat** and explaining how it meets the needs of the organisms that live there.

### **Teacher Materials and Administration Notes**

**Materials per group for task:**

- 5 active mealworms. Mealworms can be purchased at any pet supply store.
- Similar size pieces of potato and apple

- Shoe box made ahead of time with the following in the bottom.



(Keep your shoeboxes from year to year.)

Center lines and circle, place for apple and potato at opposite ends of box equidistant from circle. Students will need lots of experience working with mealworms during the unit. Perhaps boxes could be used generically for other experiments throughout the unit.

- Pencil

Scenario:

### Mealworms and Butterflies

The kindergarten students have been learning about the life cycles of insects. When they are finished, the class is going to release their butterflies but keep the mealworms. It's your job to help them answer these questions.

- How does the life cycle of the mealworm compare to that of the butterfly?
- What can they feed their mealworms to keep them alive in the classroom?

#### Question/Task #1:

Use what you've learned about mealworms to show the stages in the life cycle of the mealworm. Fill in each section of the life cycle wheel with a diagram and a label from the word box.

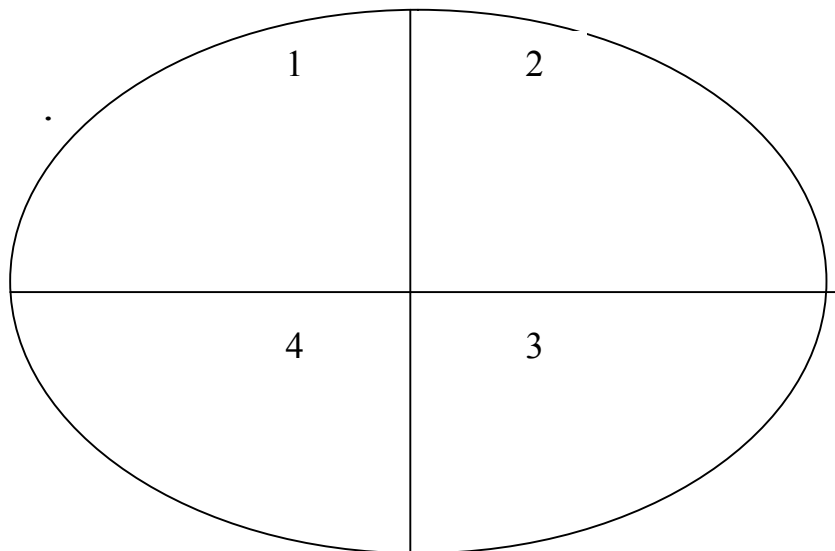
Materials needed:

Pencil

### Word Box

Pupa	Adult	Egg	Larva
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#### Mealworm Life Cycle



1. Depth of Knowledge: Webb Level 1      Webb Level 2      Webb Level 3

2. Part of the Grade Expectation(s) **most strongly elicited** by the question.  
S3-4:31

3. Pre-requisite skills and knowledge students need to be successful:

Know how to make a diagram

Know how to match a word with diagram

Know the stages of development of a mealworm by using correct vocabulary.

4. Expected (correct) student response:

Student will be able to identify accurately the phases in the life cycle of a mealworm

1. Drawing with egg label

2. Drawing with larva label

3. Drawing with pupa label

4. Drawing with adult label

5. Score Guide:

Points:

Key Elements:

1

Correctly ordering and labeling the four stages

1

Draw diagrams that match the labels

0

No answer or incorrect answer

**Question/Task #2:**

**Name two ways that the life cycle of the butterfly and the mealworm are the same.**

1. \_\_\_\_\_

2. \_\_\_\_\_

1. Depth of Knowledge:      Webb Level 1      Webb Level 2      Webb Level 3

2. Part of the Grade Expectation(s) **most strongly elicited** by the question.

S3-4:31

3. Pre-requisite skills and knowledge students need to be successful:

Need to understand the life cycle of the mealworm and the butterfly

4. Expected (correct) student response:

Any two of the following responses:

- Both have four stages
- Both are complete metamorphosis
- Both have an egg, larva, pupa, adult
- Both develop into insects
- Any response that state that both have a similar stage (e.g., both have an egg stage)

5. Score Guide:

Points:	Key Elements:
1	One Key Element
1	Second key element
0	No answer

**Question/Task: #3**

**Which food do mealworms prefer: apples or potatoes? You will work with a partner to do an experiment which will answer this question.**

**Predict what food your mealworm will prefer.**

**Prediction:** \_\_\_\_\_

**Explain why:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

1. Depth of Knowledge: Webb Level 1   Webb Level 2   Webb Level 3
2. Part of the Grade Expectation(s) most strongly elicited by the question.  
S3-4:2
3. Pre-requisite skills and knowledge students need to be successful:  
How to state a prediction with evidence.

4. Expected (correct) student response:

I predict that \_\_\_\_\_ because \_\_\_\_\_.

5. Score Guide:

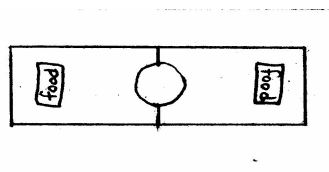
Points:	Key Elements
1	Prediction
1	Evidence
0	No response or incorrect answer

**Question\Task #4:**

Observe your mealworm in action, and record the data on the data sheet.

**Materials per group:**

- 5 active mealworms
- Similar size pieces of potato and apple
- Shoebox
- Pencil



**Procedure:** Each pair of students will:

1. Take a shoebox with the above outline.
1. Put apple and potato in designated places.
2. Place 5 mealworms in the circle.
3. After 5 minutes, record how many mealworms are on each side of the placemat.
4. Record the number on the data sheet provided.
5. Repeat steps 3, 4, and 5 for three more trials.
6. Record the totals under each column.

**MEALWORM FOOD CHOICES**

	<b>APPLE (number of mealworms)</b>	<b>POTATO (number of mealworms)</b>
<b>Trial 1</b>		
<b>Trial 2</b>		
<b>Trial 3</b>		
<b>Trial 4</b>		
<b>Total</b>		

1. Depth of Knowledge:      Webb Level 1      Webb Level 2      Webb Level 3
  
2. Part of the Grade Expectation(s) **most strongly elicited** by the question.  
S3-4:4 bullet 1,3
  
3. Pre-requisite skills and knowledge students need to be successful:
  - Knows how to follow multi-step directions
  - Knows how to collect data
  - Knows how to add to get a total
  
4. Expected (correct) student response:
  - Numbers of mealworms for each trial will add up to 5.
  - Totals will be added correctly.

5. Score Guide:

Points:	Key Elements:
1	Each row adds to 5
1	Adds total correctly
0	No answer or incorrect

Question/Task #5:

Refer back to your prediction in task #3. Tell which food you thought the mealworm would prefer.

Circle the food.            Apple       Potato

Does your data support your prediction? \_\_\_\_\_

Explain: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

1. Depth of Knowledge:      Webb Level 1      Webb Level 2      Webb Level 3

2. Part of the Grade Expectation(s) **most strongly elicited** by the question.  
S3-4:2

3. Pre-requisite skills and knowledge students need to be successful:  
Compares prediction with results

4. Expected (correct) student response:

Students will correctly identify yes or no.

A response that says more mealworms went to the \_\_\_\_\_. ( Any other appropriate response that reflects the data.)

5. Score Guide:

Points:

Key Elements:

- |   |  |
|---|--|
| 1 | Correctly states whether data supports prediction. |
| 1 | Uses data to correctly support yes or no answer.   |
| 0 | No response or incorrect                           |

Question/Task #6:

**What were two things that were kept the same during the trials that made this a fair test?**

1 \_\_\_\_\_

2 \_\_\_\_\_

1. Depth of Knowledge:      Webb Level 1      Webb Level 2      Webb Level 3

2. Part of the Grade Expectation(s) **most strongly elicited** by the question.  
S3-4:3

3. Pre-requisite skills and knowledge students need to be successful:  
Understanding of components of a fair test.  
The ability to identify controlled variables.

4. Expected (correct) student response:  
Any two of the following:  
• Same number of mealworms

- Same distance from food
- Same starting place
- Same amount of time
- Same box
- Same placement of box
- Any realistic answer

5. Score Guide:

Points:	Key Elements:
1	Identifies one controlled variable
1	Identifies 2 controlled variable
0	No response