Name _____ Teacher _____ Date _____

3.2: Grading the Observing Mealworms Eating Worksheet

Use this worksheet to complete the mealworms eating investigation and to record your observations, measurements, and class results.

*This worksheet has "grading" in the title because at this point, students can be held accountable for correct answers. Level 4 (correct) responses to the questions are in **blue bold italics** below. There are also comments about common Level 2 and Level 3 responses to help you with grading and making decisions about what to emphasize in future lessons.*

Red italics suggest ways to grade student responses by giving them points for correct or partially correct answers. There are 25 points total on this worksheet.

A. Steps in the investigation: *Check the box as you complete each step.*

1. □ Get a small container for your mealworms during the investigation. Make sure the container is deep enough for mealworms to not crawl out, and has holes in the lid for ventilation so your mealworms have air.
2. □ If your mealworms are already in their meal bedding and container, you will need to separate the mealworms from the bedding. Using the end of a pencil, separate all the worms from the meal. If your worms come already separated from bedding, skip this step.
3. □ Place an empty small container onto the digital balance and "zero" out the scale. Then gently pour about 15 g of mealworms into this container. Record on your worksheet the "Mass of the mealworms before" box in Part C.
4. □ Cut a small piece off of the potato (about 10g) and place on the scale. Record on your worksheet the "Mass of the potato before" box in Part C.
5. □ Place the piece of potato that you massed into the container with worms.
6. □ Measure the mass of the entire container with all of its contents. Record on your worksheet the "Mass of whole container before" box in Part C.
7. □ Place the small container with the worms and food into a larger sealable 9.5 cup container.
8. □ Place a Petri dish with about 25 ml of blue BTB into the large sealable 9.5 cup container near the container with the mealworms. Record the color of the BTB in the "Color of BTB before" box. Seal the large sealable 9.5 cup container.
9. Complete Part B below with your macroscopic observations.
10. □ Final Mass: After 24 hours you will measure the mass of the whole container, the potato, and the mealworms. Use the same "zeroing" procedures as above. Record mass measurements in the "Measurements After" boxes. Observe the color of the BTB and record it in the "Changes in color of BTB" box.

B. Observations during the investigation: *Record your macroscopic-scale observations below. Use drawings and/or words to show what is happening when mealworms eat.*

Observations will vary from group to group, but every student should record observations from his or her group.

1 point for observations

C. Measurements during the investigation: *Record your measurements in the table. Results will vary from group to group, but every student should record results from his or her group. 1 point for each correct line: 20 points total*

Measurements BEFORE	***Measurements AFTER***
Mass of mealworms before Time: _____ Mass: _____ g	**Mass of mealworms after** Time: _____ Mass: _____ g Change in mass: _____ g
Mass of potato before Time: _____ Mass: _____ g	**Mass of potato after** Time: _____ Mass: _____ g Change in mass: _____ g
Mass of whole container before Time: _____ Mass: _____ g	**Mass of whole container after** Time: _____ Mass: _____ g Change in mass: _____ g
Color of BTB before Time: _____ Color of BTB: _____	**Changes in color of BTB after** Time: _____ Color: _____ Change in color: _____

D. Results for the whole class: *Make notes about how the observations and measurements of other groups compared to yours. Describe patterns in your class data.*

Changes in mass of the mealworms: *Student answers should reflect patterns in class data. Generally, mass should go up.* *1 point for correct response*	**Changes in mass of the potato:** *Student answers should reflect patterns in class data. Generally, mass should go down.* *1 point for correct response*
Changes in mass of the whole container: *Student answers should reflect patterns in class data. Generally, mass should go down.* *1 point for correct response*	**Changes in color of BTB:** *Student answers should reflect patterns in class data. Generally, the BTB should turn yellow.* *1 point for correct response*