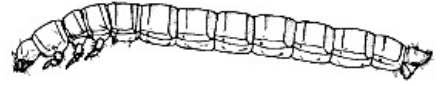


Name: _____ PERIOD: _____ Date: _____

***Tenebrio molitor* - Mealworm Inquiry Lab- OL**

Scientific Inquiry in Biology begins by making observations about things in nature. Next, the scientist asks questions about something of interest. The scientist will then research the topic to see what is already known. Finally, scientists conduct investigations (experiments) to find answers to their questions.



Today, you will **observe mealworms**. Your experiment **must not harm the mealworms**.

1. STATING A PROBLEM OR QUESTION

A scientific question is a question that can be investigated (capable of collecting quantitative (you can measure it) data!!). It should not be a yes or no question.

For example a **good question** would be: Do mealworms prefer dark or light environments? (Answer can be counted)

A **bad question**: Do mealworms have eyes? (Answer is either yes or no...no investigation required)

You will be observing how the mealworms respond in these environments:

- 1) **Light** or **Dark** environment?
- 2) **Smooth** or **rough** surface preference of mealworms
- 3) **Color** or **no color** preference of mealworms
- 4) **Wet** or **dry** surface preference of mealworms

2. IDENTIFY YOUR VARIABLES

This will be a controlled experiment, which means you are only testing one variable and all other variables will stay the same.

- The variable you are **changing**/testing is the **INDEPENDENT VARIABLE**.
- What you decide to **measure** is your **DEPENDENT**.
- The variables that **stay the same** are called your **CONSTANTS OR CONTROL VARIABLE**.

You will have different experimental lab stations. The group that is not involved in the experiment is the **control group**. Everybody will have the same control group, which will be the mealworms in the same container as yours with nothing in it.

Name: _____ PERIOD: _____ Date: _____

3. OBSERVING THE MEALWORMS

- You will be given 5 or 6 total mealworms to use for the experiment.
- **Keep the mealworms in their container while you are observing them.**
- **Watch** the mealworms' behavior for 5 minutes. (set a timer)
- Write down **5 FACTUAL observations (facts are true for EVERYBODY.)**

Sentence stems to help you get started on your **observations!** (you don't have to use them, they are to help you write good observations!"

- "I notice that _____."
- "I counted _____."
- "The worms have _____."

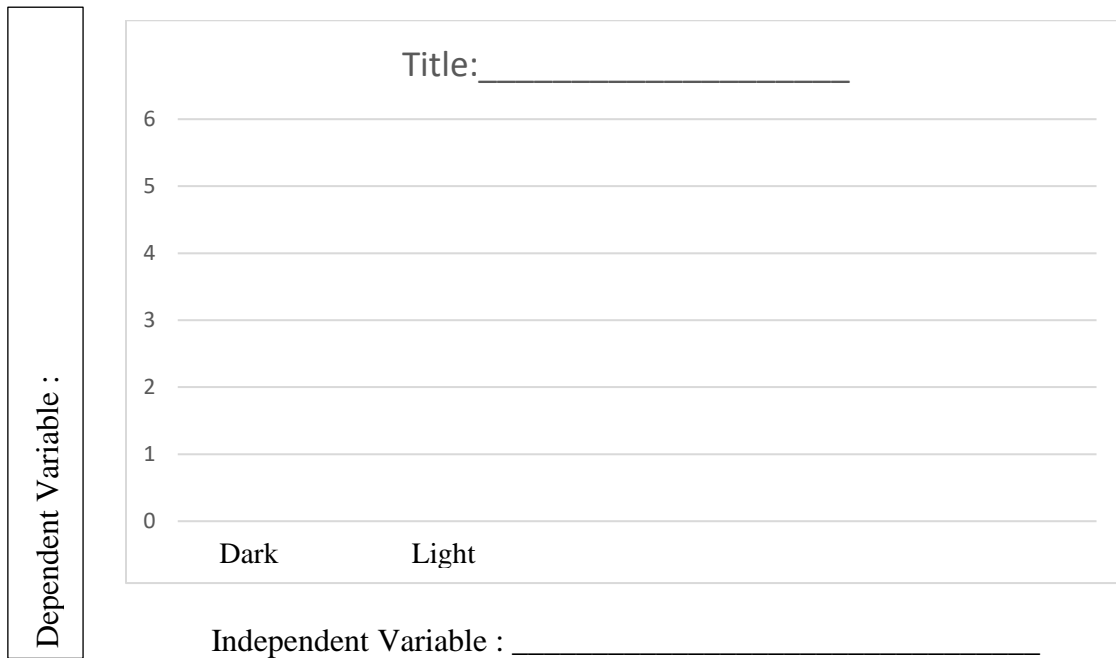
Name: _____ PERIOD: _____ Date: _____

STATION 1: DARK OR LIGHT?

1. *At this station, you will test the preference of mealworms for darkness or light.*
2. *One side will be covered and the other side uncovered.*
3. *CAREFULLY place your mealworms in the center of the choice chamber and observe them for 3 minutes.*
4. *At the end of 3 minutes, record how many mealworms are on the dark side, and then record how many mealworms are on the light side.*

Number of mealworms on DARK SIDE	Number of mealworms on LIGHT SIDE
INDEPENDENT VARIABLE: (What was changed)	DEPENDENT VARIABLE: (What was measured)

***GRAPH** your data. Make a **BAR GRAPH**. Bar graphs are used for **COMPARING** sets of data.



* **QUESTION**: Why do you think the worms chose the side they did? Write a complete sentence.

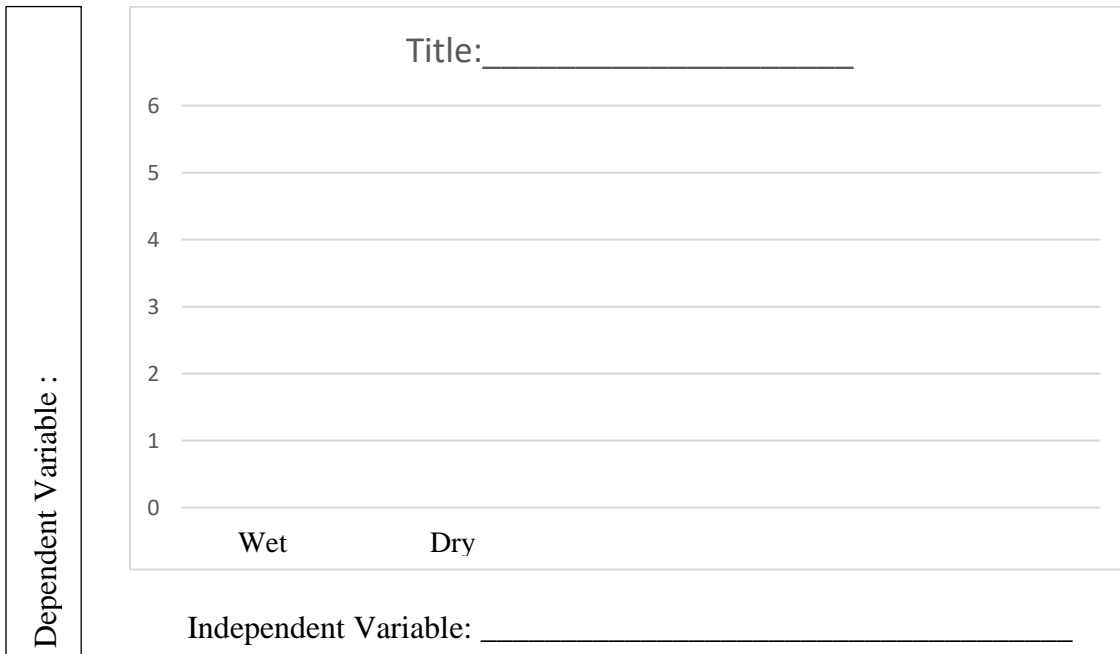
Name: _____ PERIOD: _____ Date: _____

STATION 2 : WET OR DRY?

5. *At this station, you will use the pipet to add no more than 6 drops of water to the paper towel on one side of the CHOICE CHAMBER so that it is slightly damp. (don't put too much water!)*
6. *You will leave the other side DRY.*
7. *CAREFULLY place your mealworms in the center of the choice chamber and observe them for 3 minutes.*
8. *After 3 minutes, record how many mealworms are on the WATER side, and then record how many mealworms are on the DRY side.*

Number of mealworms on WET SIDE	Number of mealworms on DRY SIDE
INDEPENDENT VARIABLE: (What was changed)	DEPENDENT VARIABLE: (What was measured)

***GRAPH** your data. Make a **BAR GRAPH**. Bar graphs are used for **COMPARING** sets of data.



* **QUESTION:** Why do you think the worms chose the side they did? Write a complete sentence.

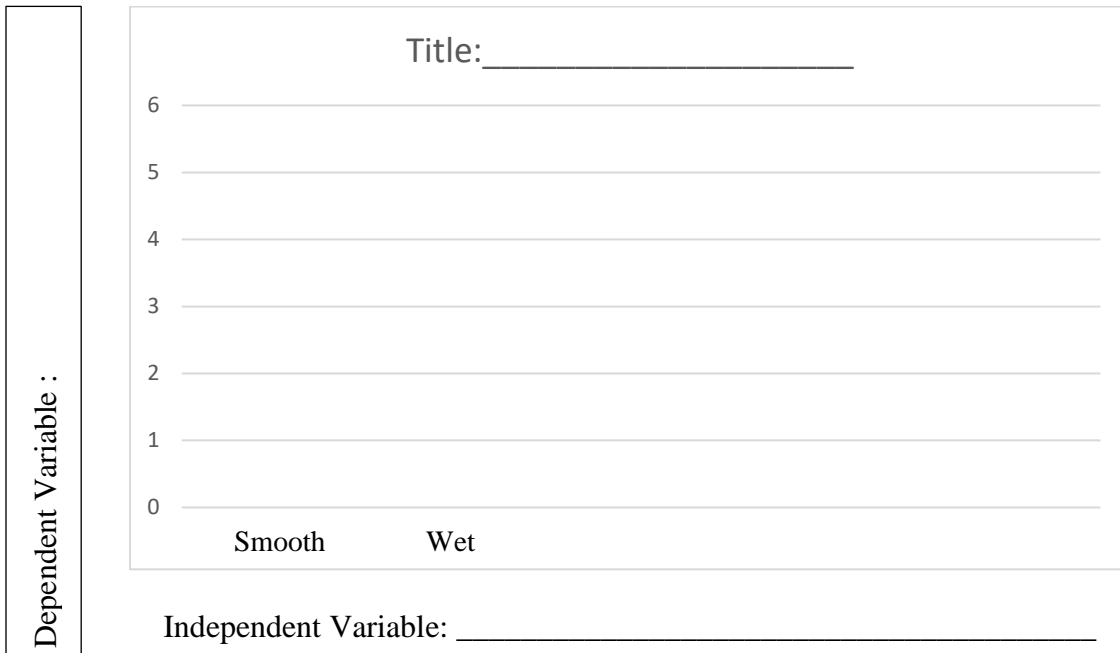
Name: _____ PERIOD: _____ Date: _____

STATION 3: SMOOTH OR ROUGH?

9. *At this station, you test the mealworm preference to rough or smooth sediment .*
10. *One side of the choice chamber will be rough (sandpaper) and one side smooth.*
11. *CAREFULLY place your mealworms in the center of the choice chamber, and observe them for 3 minutes.*
12. *After 3 minutes, record how many mealworms are on the smooth side, and then record how many mealworms are on the rough side.*

Number of mealworms on SMOOTH SIDE	Number of mealworms on ROUGH SIDE
INDEPENDENT VARIABLE: (What was changed)	DEPENDENT VARIABLE: (What was measured)

***GRAPH** your data. Make a **BAR GRAPH**. Bar graphs are used for **COMPARING** sets of data.



* **QUESTION**: **Why** do you think the worms **chose the side they did**? Write a complete sentence.

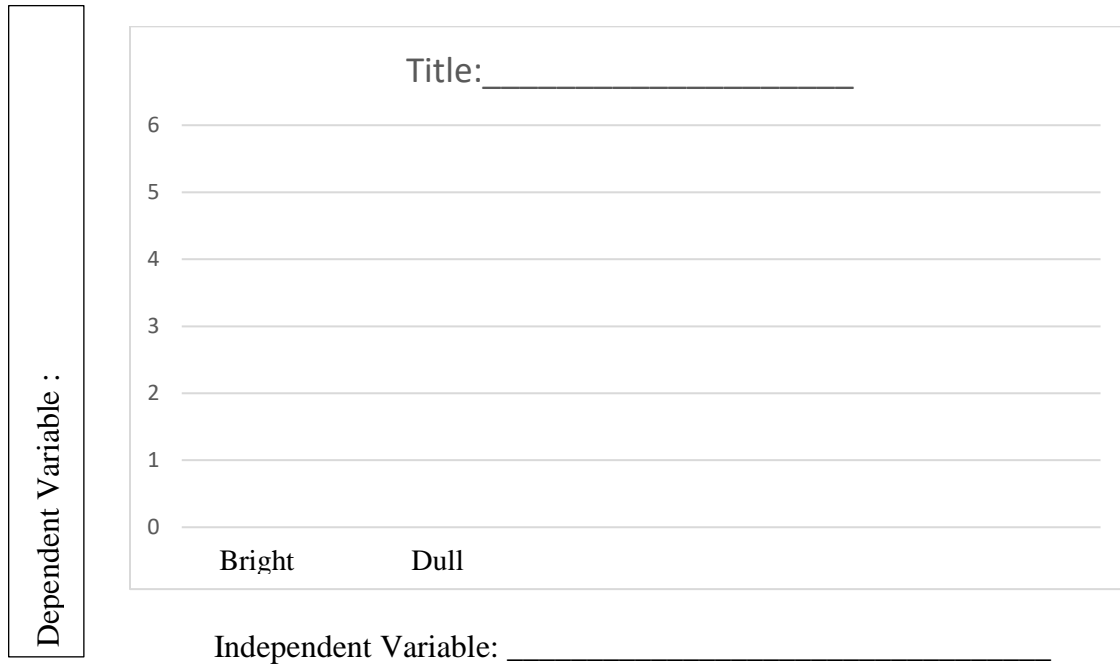
Name: _____ PERIOD: _____ Date: _____

STATION 4: BRIGHT COLOR OR DULL COLOR?

- 13. *At this station, you will test the preference of mealworm color choice.*
- 14. *One side of the choice chamber will be bright and the other side will be dull*
- 15. *CAREFULLY place your mealworms in the center of the choice chamber, and observe them for 3 minutes.*
- 16. *After 3 minutes, record how many mealworms are on the colored paper side, and then record how many mealworms are on the white paper side.*

Number of mealworms on BRIGHT SIDE	Number of mealworms on DULL SIDE
INDEPENDENT VARIABLE: (What was changed)	DEPENDENT VARIABLE: (What was measured)

***GRAPH** your data. Make a **BAR GRAPH**. Bar graphs are used for **COMPARING** sets of data.



* **QUESTION**: Why do you think the worms chose the side they did? Write a complete sentence.