Significant Surroundings Lab

Name: _____

As an animal physiologist, it is your job to determine the mealworm's preferred environment. You will observe their responses to different temperatures, lighting, and surface textures. Take time to write your hypothesis before beginning each experiment. After each experiment, remove the mealworms from the box.

My Observations of a Mealworm
Draw and write your observations.

Experiment I: Creep and Crawl

Testable Question: What type of surface do mealworms prefer to crawl on?

Hypothesis: _____

_____

_____

Materials:

- Sandpaper
- Construction paper
- Ruler
- Timer
- Ten mealworms
- Shoebox
- Scissors
- Masking tape

Procedure:

1. Carefully measure the inside of the shoebox using the ruler. Cut a piece of construction paper that fits inside half of the shoebox. Cut a piece of sandpaper that fits into the other half of the shoebox. Use masking tape to tape the seam between the two types of paper.
2. Count out 10 mealworms and place them in the center of the shoebox. Set the timer for three minutes.
3. Observe the mealworm's movement for three minutes. Record the number of mealworms in each half of the shoebox in the data chart below. Express the mealworm preferences as a fraction in its simplest form. For example, if eight out of 10 mealworms prefer sandpaper, write $\frac{8}{10}$ as $\frac{4}{5}$. Indicate which condition most mealworms prefer.

Results

	Construction Paper	Sandpaper
Number of Mealworms		
Expressed in Fraction Form		
Mealworm Surface Preference *(check preference)*		

Experiment II: Icy Hot

Testable Question: What temperature do mealworms prefer?

Hypothesis: _____

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_____

Materials:

- Ten mealworms
- Timer
- Shoebox
- Two resealable plastic bags
- Lightweight paper

Procedure:

1. Fill one resealable plastic bag one-fourth full with warm (not hot) water. Fill one resealable plastic bag one-fourth full with cold water. Carefully remove excess air from the bags before sealing.
2. Place the plastic bags on opposite sides of the shoebox. Make sure that they are evenly spaced and as flat as possible.
3. Label one side of the paper "cold" and the other "warm." Place the lightweight paper over the plastic bags making sure the labels match the water temperature. Fold the edges of the paper upward if necessary to create a smooth surface for the mealworms.
4. Count out 10 mealworms and place them in the center of the shoebox. Set the timer for three minutes.
5. Observe the mealworm's movement for three minutes. Record the number of mealworms in each half of the shoebox in the data chart below. Express the mealworm preferences as a fraction in its simplest form.

Results

	Warm Water	Cold Water
Number of Mealworms		
Expressed in Fraction Form		
Mealworm Temperature Preference *(check preference)*		

Experiment III: Insect Illumination

Testable Question: What lighting do mealworms prefer?

Hypothesis: _____

_____

_____

Materials:

- Ten mealworms
- Scissors
- Shoebox with lid
- Flashlight
- Timer
- Ruler

Procedure:

1. Measure the length of the top of the shoebox. Mark the middle. Using scissors cut the lid in half widthwise.
2. Count out 10 mealworms and place them in the center of the shoebox.
3. Place the lid on half of the shoebox and shine a flashlight on the other half of the box. Set the timer for three minutes.
4. Observe the mealworm's movement for three minutes. Record the number of mealworms in each half of the shoebox in the data chart below. Express the mealworm preferences as a fraction in its simplest form.

Results

	Dark	Light
Number of Mealworms		
Expressed in Fraction Form		
Mealworm Lighting Preference *(check preference)*		

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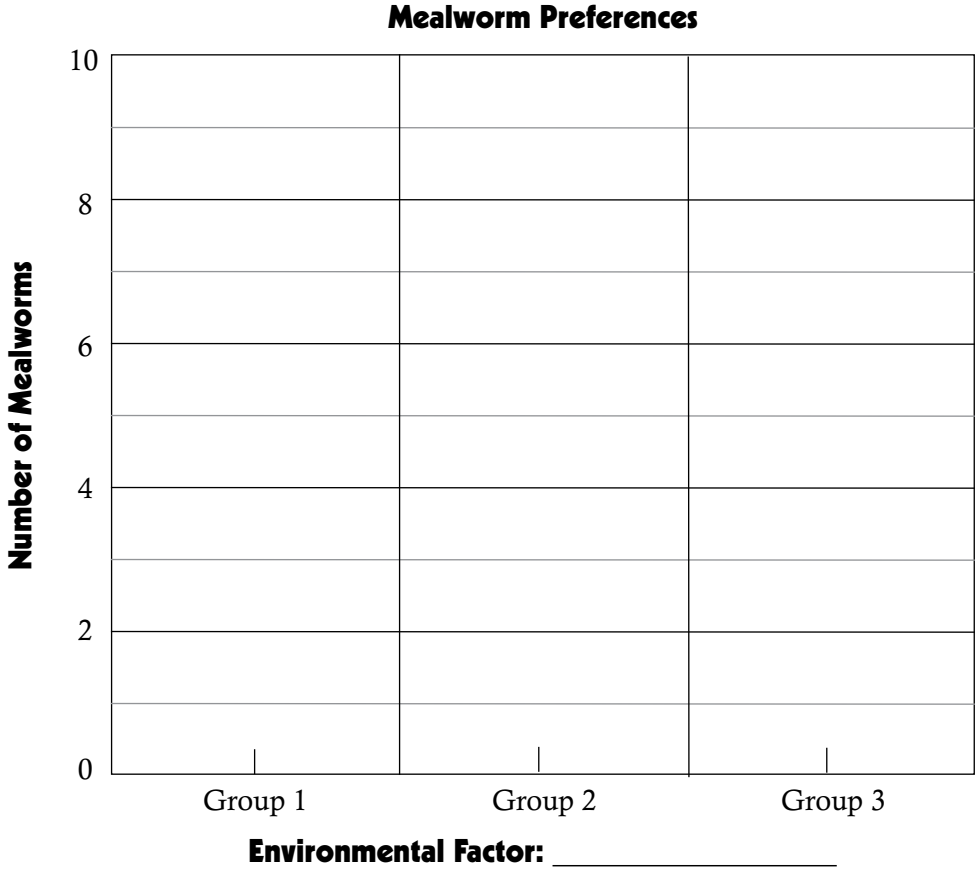
Graph It!

Choose one environmental factor (temperature, lighting, or surface texture) your group tested. Collaborate with two additional groups to create a double bar graph comparing each group's results.



Conclusion

As an animal physiologist, you have just completed three important experiments that helped you to understand the environmental preferences of mealworms. By choosing the best environment, you are able to support the mealworm's health and well-being. Learning about environmental factors that affect animals is a crucial part of your job. It is also important to learn how to share and communicate your results.

1. Please write a short paragraph describing the mealworm behaviors you observed.

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_____

_____

_____

_____

2. It is important for an experiment to be a fair test. You conduct a fair test by making sure that you change one factor at a time while keeping all other conditions the same. Upon reflection of the experiments you performed, was this a fair test? Explain why or why not.

3. If you had time to design more experiments to test mealworms preferences, what would you test? How would you test it? Please describe at least one additional experiment.