VERMICOMPOSTING: STEM ACTIVITY

GRADE: 3-5

SUBJECT: Life Science

Name: _____ **Date:** _____

Class/Grade: _____ **Group Members:** _____

Part 1: Research

- Complete this STEM activity after you have researched worms and the vermicomposting process.

Part 2: Engineering - Design Your Bin

1. Build a functioning vermicompost bin using accessible materials.

- Consider ventilation, drainage, light exposure, and ease of harvesting compost. Label the parts of your bin clearly.

Materials Needed:

- Red wiggler worms
- Plastic bins or containers
- Soil and bedding (shredded newspaper, dry leaves, coconut coir)
- Food scraps (fruit and vegetable peels and parts - small pieces)
- Thermometer, moisture sensor (optional)
- Scale (for measuring food and compost)
- Graph paper

Challenge:

- Build a **leachate catch system** or a **self-draining bin**.
- Design a bin that minimizes odor and maximizes composting efficiency.

2. What materials will you use? _____

_____

Design Planning Box:

Build your bin. Write down the exact materials you use.

_____ _____

_____ _____

_____ _____

_____ _____

What questions do you have?

_____

_____

Part 3: Science - Worm Observation

4. What do worms need to survive?

List three conditions worms need to live and thrive.

1. _____

2. _____

3. _____

5. Hypothesis: Which food do you think the worms will eat fastest?

☐ Banana peels ☐ Apple cores ☐ Bread ☐ Lettuce ☐_____ ☐ _____

Why? _____

6. Observation (Day 1): Draw your worm bin and label key parts (worms, food, bedding, etc.)
Drawing Box:

Part 4: Technology & Math - Data Collection

Daily Compost Log (Fill in over 1–2 weeks)

Date	Food Added (grams/oz)	Moisture (Dry/Normal/Wet)	Temperature (°C)	Worm Activity Notes

7. Graph it!

Plot your temperature readings and food weight over time on a graph.

Part 4: Math - Calculate & Compare

8. How much food did your worms eat in total?

Total weight of food added in week 1: _____ grams

Total food added in week 2: _____ grams
Space for math calculations:

9. Estimate the number of worms in the bin _____
Space for math calculations:

Optional: Calculate Changes in moisture/temperature over time.

10. What is another math question you could ask about your worm data?

_____

Part 5: Reflection & Extension

9. What surprised you most about the vermicomposting process? _____

_____

10. Why is vermicomposting important for the environment? _____

_____

11. Which worm bin(s) were the most successful (worms stayed alive and compost was created)? Describe:

_____

12. What would you improve if you built another bin? _____

_____

_____