Lesson A Quiz – Beyond the Trash: The Five Pathways of Food Waste
QUIZ LINKS:
>   **Module 2 Lesson A Quiz - Editor Link**
>   **Module 2 Lesson A Quiz - Responder Link**

Multiple Choice
Which of the following accurately describes organic waste?
  A. Only plastic and metal materials
  B. Non-recyclable glass and ceramics
  C. Biodegradable materials from plants or animals
  D. Synthetic chemicals and pesticides

What kind of emission is created when organic waste is left in landfills?
  A. Oxygen
  B. Nitrogen
  C. Carbon monoxide
  D. Methane

Managing organic waste sustainably can cut ___ emissions
  A. Greenhouse gas
  B. Noise pollution
  C. Light emissions
  D. Radioactive emissions

What percent of all food produced is never eaten?
  A. 40-50%
  B. 10-15%
  C. 25-30%
  D. 60-70%

What emissions does aerobic composting produce?
  A. CO_2
  B. Methane
  C. Nitrous oxide
  D. Sulfur dioxide

Which is the correct process of biochar pyrolysis?
  A. Burning wet biomass in high oxygen
  B. Heating dried biomass in low oxygen
  C. Freezing biomass to remove moisture
  D. Mixing biomass with chemicals at room temperature

Second valorization:
  A. Discards all waste after the first use
  B. Only focuses on packaging products
  C. Uses the by-product of first valorization to create valuable output
  D. Converts raw materials directly into food without waste

True or False
Methane from rotting food warms the planet >25× faster than CO_2.

Short Answer
Briefly describe the 3 benefits of biochar pyrolysis.

Answer should:
- Describe the benefits of biochar (Hint: carbon vault, soil super sponge, microbe mansion)
- Be 3 sentences minimum

Short Essay
From Lesson A, recall Path 3, the Bokashi Fermentation method. Describe 3 qualities of the bokashi method, and 1 drawback.

Requirements:
- Describe 3 qualities of the bokashi method
- Describe 1 drawback of the bokashi method
- Be 4-5 sentences long.

Lesson B Quiz – Carbon Math
QUIZ LINKS:

Multiple Choice

Despite no perfect solutions, why are these paths important?
    A. They guarantee zero waste instantly
    B. They make landfills produce electricity overnight
    C. They remove the need for any recycling programs
    D. They can close the landfill loop

When thinking about the ΔCO_2-eq, positive Δ means it:_____
    A. Removes all greenhouse gases
    B. Adds pollution
    C. Has no impact on the environment
    D. Creates only oxygen

Landfill = _____ CO_2-eq per kg of orange peel
    A. +500 g
    B. +100 g
    C. +250 g
    D. +800 g

When thinking about the ΔCO_2-eq, negative Δ means it:_____
    A. Increases greenhouse gases
    B. Has no effect on emissions
    C. Reduces pollution
    D. Only changes the temperature

Which of the following is easiest to set up with a low cost?
    A. Anaerobic digester
    B. Compost
    C. Biochar kiln
    D. Biogas refinery

True or False

Insects produce more usable protein than biochar.

Short Answer

Briefly explain the case study mentioned in Lesson B about transforming campus waste.

Answer should:
    ● Discuss what the case study utilized
    ● Explain how the methods described in the case study was able to create healthy plants
    ● Be 3 sentences minimum

Design Prompt

If you were running a school that produced a certain amount of lunch waste, let's say around 40 kg, what types of paths would you use to reduce lunch waste? (Hint: Recall the campus scenario from Lesson B)

Requirements:

- Describe which paths you would use to reduce lunch waste
- Allocate how much waste could go towards your chosen methods
- Be 3-4 sentences minimum

Lesson C Quiz – Measuring Waste & Calculating CO_2 Impact
QUIZ LINKS:
  Module 2 Lesson C Quiz - Editor Link
  Module 2 Lesson C Quiz - Responder Link

<u>Multiple Choice</u>
What is the first step for measuring waste?
 A. Estimating waste volumes
 B. Calculating CO_2 emissions
 C. Sorting waste by color
 D. Measuring bin weight after collection

Use _____ to convert volume to mass.
 A. Temperature (°C)
 B. Surface area (m²)
 C. Density (kg/L)
 D. Pressure (Pa)

If mass per bin is 15 kg, and is emptied 3 times a week, what is the weekly waste total?
 A. 30 kg/week
 B. 50 kg/week
 C. 60 kg/week
 D. 45 kg/week

Which of the following is the correct formula for CO2-eq?
 A. CO_2-eq = Mass of waste (kg) ÷ Emission factor
 B. CO2-eq = Mass of waste (kg) $\times$ Emission factor (kg CO2-eq/kg waste)
 C. CO_2-eq = Volume of waste (L) $\times$ Density (kg/L)
 D. CO_2-eq = Emission factor $\times$ Temperature (°C)

What is the correct emission factor for food waste?
 A. 0.9 kg CO_2-eq/kg
 B. 2.5 kg CO_2-eq/kg
 C. 3.2 kg CO_2-eq/kg
 D. 1.9 kg CO_2-eq/kg

If the density of food waste is .5 kg/L, and bin volume is 30 L, what is the mass per bin?
 A. 15 kg per bin
 B. 10 kg per bin
 C. 5 kg per bin
 D. 30 kg per bin

Which of the following is NOT a method mentioned when estimating waste volumes?
 A. Visual estimation
 B. Counting bins
 C. Weighing samples
 D. Methodical estimation

Graph Question – Waste Measurement & CO₂ Impact

A cafeteria tracked its food waste for one week. The graph below shows the **total mass of waste (kg)** sent to three different pathways:

Pathway	Waste Mass (kg)	Emission Factor (kg CO_2-eq/kg)
Landfill	30	2.5
Compost	20	0.9
Anaerobic Digestion	10	0.5

The following 3 questions will use the table above

Question 1 (Multiple Choice)

Which pathway produced the **highest CO_2-eq emissions**?
 a) Landfill
 b) Compost
 c) Anaerobic Digestion
 d) All are equal

Question 2 (Short Answer)

Calculate the **CO_2-eq** for each pathway and the **total weekly emissions**. Show your work.

Question 3 (Interpretation)

If the cafeteria wanted to cut its emissions in half, which pathway should it reduce first, and why? Write 2–3 sentences.

True or False

We don't need to know data when measuring waste, and can rely on guessing for solutions.

Short Answer

A cafeteria has a 30 L bin for food waste. The density of food waste is 0.5 kg/L. If the bin is emptied twice a week, what is the total weekly mass of waste?

Answer should:
 ● Show your work

Short Essay

Explain how to measure the amount of food waste a cafeteria makes in a week and how to figure out how much CO_2 it produces. Use an example with numbers in your answer.

Requirements:
 ● Show your work
 ● Be 3 sentences minimum