Handout 6.5: Compost Sort and Packaging Redesign

Name: _____ Date: _____ Period: _____

Print pages 1 to 4 for every student. Page 5 is the compost sort card set, one per group of four, printed and cut apart.

DAY 1

Part 1. Sustainability, in your words

Something is **sustainable** if _____

LSA

Three farm methods

Method	What the farmer actually does	What it protects
Crop rotation		
Drip irrigation		
Integrated pest management		

Which one surprised you? _____ Why?

Part 2. Plant it and keep it alive

My plant: _____ Planted on: _____

My care plan

Question	My answer
How much water each time?	
How often?	
How much light does it need, and where in this room gets it?	
Who waters it if I am absent?	

Watering chart, four students per week. Write your name in the week you signed up for.

Week	Names
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	

Part 3. Compost sort

Sort the ten cards. Write each one in the right column, and for the NOT column write a reason.

GOES IN THE COMPOST	DOES NOT GO IN, and why

The card my group argued about: _____

Why we argued: _____

The rule in one sentence: things that used to be a plant break down. Things that came from an animal, or have oil or grease on them, _____.

Part 4. Packaging: protection against waste

The cucumber question

A cucumber wrapped in plastic stays fresh about three times as long as a loose one.

What gets better with the wrap: _____

What gets worse with the wrap: _____

Our three packages

Package	How many layers?	What is each layer doing?
1.		
2.		
3.		

Circle the one your group will redesign tomorrow.

The two criteria for tomorrow

Day 1 exit card

Sustainable means _____.

One thing that makes food production more sustainable is _____.

DAY 2: The redesign

Step 1. Define the problem

Our package: _____

The problem in one sentence: _____

Step 2. Criteria and constraints

Criteria (what the new design has to achieve):

1. The food still gets protected: _____
2. The waste goes down: _____

Constraints (rules the design cannot break). These are given to you:

1. The food has to survive shipping in a truck and being stacked three high.
2. The food has to last at least two weeks on a store shelf.
3. The package has to say what is inside and carry a Nutrition Facts panel.

Step 3. Brainstorm four ideas, then select one

#	Idea	One problem with it
1		
2		
3		
4		

The idea we selected: _____ Why that one: _____

Step 4. Prototype

Build the model. Draw your model here and label every part.

Step 5. Test it

Your teacher will ask you to drop it and stack three. Write what happened.

Drop test: _____

Stack test: _____

Step 6. Justify

Question	Our answer
How many layers did the original have?	
How many does ours have?	
What protects the food now?	
What did we remove, and what was that layer doing?	
What got worse in our design?	

Our thirty-second pitch, in two sentences:

Class total: how many layers did the whole class remove today? _____

Page 5: Compost sort cards

Print one set per group of four and cut apart. Each card has the item name and a small picture.

1. Apple core	**2.** Coffee grounds and the paper filter
3. Eggshells	**4.** Banana peel
5. Plain paper towel (no cleaner on it)	**6.** Chicken bones
7. Leftover buttered noodles	**8.** Cheese rind
9. Lettuce that went slimy in the fridge	**10.** Plastic produce sticker

Grade 8 stretch: the cost line and the hard question

Cost line

Question	Our estimate	How we would find out for real
Does the new package cost the company more or less to make?		
Does it cost more or less to ship?		
Would the store charge the same price?		

The hard question

Name one case where **more** packaging is the sustainable choice. Explain in three or four sentences.

Teacher key

Part 1, sustainability: accept any student wording that includes "can keep going" or "does not run out" or "does not use it all up." The state's own line is CTE SUS 1. a) Define "sustainability" as it applies to resource use, and the plain version is: a way of using something that you could keep doing without running out or wrecking the place it comes from.

Part 1, three methods:

Method	What the farmer does	What it protects
Crop rotation	Plants a different crop in the same field each year instead of the same one over and over	The soil keeps its nutrients, and pests and diseases that live on one crop lose their host
Drip irrigation	Runs hoses or tape along the rows and drips water right at the plant's roots instead of spraying the whole field	Water. Far less evaporates or runs off, so the same crop takes much less water
Integrated pest management	Watches for pests and counts them, then uses the smallest thing that works: a resistant seed, a beneficial insect, a trap, a barrier, and sprays only as a last step	Money, beneficial insects, and water quality. Less spray means lower cost and less runoff

Part 3, compost sort answers:

Card	In or out	Why
1. Apple core	IN	Plant material, breaks down fast
2. Coffee grounds and paper filter	IN	Both are plant based. The filter is unbleached paper
3. Eggshells	IN	They break down slowly and add calcium. They are not animal flesh
4. Banana peel	IN	Plant material
5. Plain paper towel	IN, with a condition	Fine if it wiped up water or food. Out if it wiped up cleaner or grease
6. Chicken bones	OUT	Animal product. Draws rats and raccoons and does not break down in a home or

		school pile
7. Leftover buttered noodles	OUT	The butter is fat. Fat and oil go sour instead of breaking down and they draw animals
8. Cheese rind	OUT	Dairy. Same reason as the bones and the butter
9. Slimy lettuce	IN	Still plant material. Spoiled plant food is exactly what compost is for
10. Plastic produce sticker	OUT	Plastic. It never breaks down, and it is the number one contaminant in commercial compost

The rule in one sentence: things that used to be a plant break down. Things that came from an animal, or have oil or grease on them, draw animals and turn sour instead of breaking down.

The card groups argue about: number 5, the paper towel, and number 9, the slimy lettuce. Both arguments are good ones. Let them run for thirty seconds.

Part 4, the cucumber: better with the wrap, it stays fresh three times as long, so far fewer cucumbers get thrown away, and the store can ship it farther. Worse with the wrap, it is a piece of single use plastic per cucumber, and most curbside programs will not take that film.

Day 2, what a strong redesign looks like: it removes an outer sleeve or a box that was only there for shelf display and branding, and it keeps the layer that actually touches the food and seals out air. A weak redesign removes the seal and keeps the box.

The test question is the teaching tool. “Drop it. Stack three.” A group that removed the structural layer finds out in two seconds, and that is a better lesson than an explanation.

Grade 8 hard question, sample answer: single-serving packaging for a hospital or a school lunch can be the sustainable choice, because food that has to be thrown out for safety after being opened wastes the whole container, and a sealed single portion prevents that. Another good answer: a sturdier package that stops 5 percent of a truckload from being crushed saves more resources than the extra cardboard costs, because the food itself took far more water, fuel, and land to produce than its box did.

Scoring: the handout is daily work, complete, partial, or missing. The two things to look for: the compost rule stated as a reason and not “it is gross,” and a Day 2 justification that answers both criteria and names what got worse.