

2.7 A Jury's Dilemma— Written Assessment



Action Synopsis

Students analyze a trial involving a dispute about a composting business, then outline how a Special Investigator could gather evidence to help settle the case.

One Session

1 hour

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| 1. Present the challenge of a court case about composting. |  posing a challenge |
| 2. Discuss criteria for high quality work. |  setting standards |
| 3. Generate ideas about the case in groups, then work independently to write detailed opinions about the case. |  applying knowledge |
| 4. Share and discuss completed work. |  communicating |
| 5. Summarize and discuss ways to solve the case. |  reflecting |

Desired Outcomes

By the end of this assessment activity, students should:

- ✓ Show that they can think broadly and accurately about factors that influence the biological process of decomposition.
- ✓ Be better able to explain and justify their ideas.
- ✓ Realize how scientific knowledge can be used in everyday life.

What You'll Need



For each student:

- copy of "Challenge Sheet" (page 251)
- copy of "Scoring Sheet" (page 252)

Getting Ready

- ◆ Plan groups of 3–4 students.

Action Narrative

Today we're going to read a court case that requires knowledge about decomposition before it can be settled.

Give each student a copy of the "Challenge Sheet." Make sure that students know what a plaintiff and a defendant are, then read the dilemma aloud. Have students summarize the two sides of the argument to make sure that they've picked up on all of the details.

Since you are specialists in decomposition, the jury needs your help. What is your challenge?

After students have summarized their challenge, explain that they'll work in groups at first, because talking with others is a good way to generate ideas. Then they'll have a chance to demonstrate individually that they can solve a problem by applying knowledge about decomposition and research methods. Emphasize that when students outline tasks for the Special Investigator, they should suggest possible experiments to do, as well as observations to make.

What do you think I should look for when I score your responses?

Have students think through what knowledge and skills this assessment is asking them to demonstrate. Hand out the "Scoring Sheet," and revise or enhance it as needed to reflect what you and the class feel are important elements of the challenge.

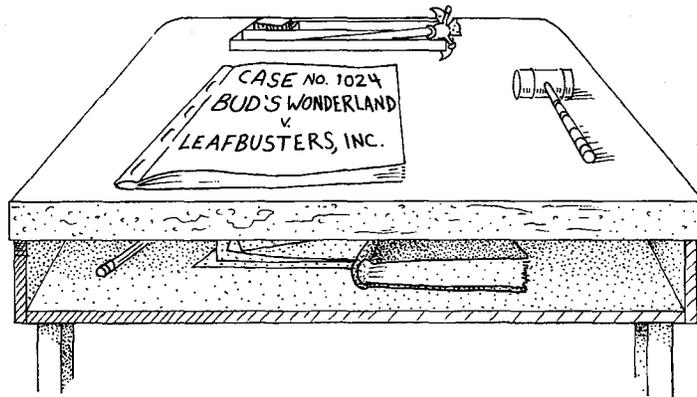
Go ahead and begin working in your groups. After you've jotted down all of the ideas everyone can think of, work alone to complete the assignment.

Listen in as students generate ideas. Once they start working on their own, make sure they're pushing themselves to write down everything they can think of that a Special Investigator could do. Many students tend to stop writing after they've described what came to mind first.

Let's hear your ideas.

After students have completed their work, have volunteers describe the one reason for the slow decomposition that made the most sense to them, and the tasks they outlined for the Special Investigator. Encourage other students to react to and build on their ideas.

An alternative way to share their work which students enjoy is to set up a mock trial, with students playing roles of plaintiff, defendant, witnesses, special investigator, judge, and jury. This takes one or two additional periods.



! Conclude the activity with questions such as:

If you were on the jury, what evidence would make you vote in favor of Bud?

Students might cite evidence such as: the Special Investigator discovered that Leaf Busters' leaves in the city don't really turn into compost faster; or Leaf Busters isn't treating its compost pile at Bud's the same way it treats its compost in the city; or the leaves in the two locations are different kinds.

What would make you vote in favor of Leaf Busters?

Some reasons students might give are: the Special Investigator found out that Leaf Busters was treating the compost at Bud's the same as it treated the compost



in the city; or the compost pile on Bud's land was being sabotaged (e.g., with chemicals that killed microbes or by drying it).

How could they settle the problem?

Students might suggest ways to speed up the decomposition process (e.g., turning the pile to aerate it; keeping it moist, but not soaked; adding more microbes; adding food that is higher in nutrients and energy) so that the compost can be sold and profits shared more quickly.

Have students hand in their group brainstorm list with everyone's names on it, as well as their individual work with a "Scoring Sheet" attached for your feedback.

Ongoing Assessment

Student Reflections

Have students fill out a "Scoring Sheet" to assess their own work.

Teacher Reflections

Groups might list some of the following reasons why leaves turned into compost more slowly at Bud's than at Leaf Busters' city location:

it's usually a few degrees warmer in the city, which would favor microbe growth;

there might be more kinds of leaves in the city pile that are tender and easier for microbes to consume;

perhaps there is more air, soil, and water pollution in the city that somehow weakens the leaves, making them easier for microbes to break down;

maybe pollution adds something to the leaves that makes them more nutritious for microbes;

maybe the leaves in the city get trampled on more before Leaf Busters collects them, so they are in smaller pieces that give microbes more surface area;

maybe there are more microbes or invertebrate decomposers in the city;

maybe Leaf Busters does things to the city compost pile to speed up decomposition, like keeping it moist, turning it, adding microbes, or adding food that is higher in nutrients and energy; or

maybe Bud is sabotaging the compost pile on his land, by adding chemicals to kill the microbes, soaking it, or drying it out.

In selecting a reason, students should make a strong case for why that factor is the most likely cause of slower decomposition. There is no one best reason to explain why decomposition is slower at Bud's than in the city, so the strength of students' responses depends on the understanding of decomposition they exhibit.

Some observations which students might suggest the Special Investigator could do include:

- determining how long the leaves have been in each pile, and how decomposed each pile is;
- measuring or looking up the average air temperature and rainfall at each site;
- using a moisture meter to see how moist each compost pile is;
- seeing what kinds of leaves are in the piles in the two sites;
- seeing what shape the leaves are in when they first go into the two piles;
- looking for invertebrate decomposers, fungal hyphae, bacterial colonies (under a microscope), and odors that indicate decomposition;
- looking for chemical residues, or evidence of other tampering in either pile; or
- interviewing employees of Bud's Wonderland and Leaf Busters, Inc. to see if they've observed anything unusual happening with either of the two piles.

Some experiments which students might suggest the Special Investigator could do include:

- taking newly fallen leaves from the city and putting them in a pile on Bud's land, and taking newly fallen leaves from Bud's region and putting them in the city, to see if the leaves themselves decompose differently;
- doing things to the leaf pile at Bud's to make the conditions exactly the same as those for the pile in the city (e.g., making it warmer), then comparing the two piles; or
- making two piles of leaves at Bud's, keeping one the same as the current leaf pile and doing things (e.g., turning the leaves, adding water) to the other pile to see if Leaf Busters could do anything to speed up the decomposition rate.

NAME(S) _____ DATE _____

A JURY'S DILEMMA

THE PLAINTIFF'S STORY: BUD'S WONDERLAND

Bud, the owner of Bud's Wonderland, entered into a deal with Leaf Busters, Inc. Bud told Leaf Busters it could use land next to his amusement park out in the country for five years to keep the leaves that people pay the company to collect from their yards. Instead of paying rent on the land, Leaf Busters agreed to give Bud half of the profits it made from selling leaf compost to gardeners.

Bud brought Leaf Busters to court because a year has gone by and no profits have come in. Bud says Leaf Busters is guilty of fraud by claiming that leaves naturally turn into compost that can be sold. He also claims the company is guilty of negligence by not doing all it can to help the leaves decompose. Bud wants to throw Leaf Busters off his land, and make the company pay to have its tons of leaves hauled away.

THE DEFENDANT'S STORY: LEAF BUSTERS, INC.

Leaf Busters argues that it isn't guilty of fraud. The company says it expected the leaves to turn into compost faster than they have, because at its other business site located in the city the leaves decompose quickly.

In fact, Leaf Busters thinks it should sue Bud! The company claims that he is sabotaging the compost pile by making the conditions unsuitable for decomposition. Leaf Busters believes the real reason Bud wants to break the agreement is so that he can put a miniature golf course on the land and make more money.

YOUR GROUP'S CHALLENGE:

Make a list of the possible reasons why Leaf Busters' leaves are turning into compost more slowly on Bud's land than at the company's other location in the city.

YOUR CHALLENGE:

Choose one reason, and explain why it makes the most sense to you.

Describe what a Special Investigator could do to figure out if the reason you chose is correct. Remember, to help the jury solve its dilemma, the Special Investigator's research needs to be detailed and fair.

GOOD LUCK!

NAME(S) _____ DATE _____

A JURY'S DILEMMA

OBJECTIVES	POINTS				SCORE
	3 High Quality	2 Meets Objectives	1 Falls Short	0 Not Done	
LIST OF POSSIBLE REASONS					
1. Includes a wide variety of reasons, both environmental and human-caused.	_____	_____	_____	_____	_____ x 2 = _____
2. Shows understanding of what causes decomposition.	_____	_____	_____	_____	_____ x 2 = _____
EXPLANATION OF ONE REASON					
3. Selects a reason that makes sense.	_____	_____	_____	_____	_____ = _____
4. Shows understanding of decomposition processes.	_____	_____	_____	_____	_____ = _____
SPECIAL INVESTIGATOR TASKS					
5. Includes things to do at both compost sites.	_____	_____	_____	_____	_____ = _____
6. Suggests relevant observations.	_____	_____	_____	_____	_____ = _____
7. Includes a fair test or experiment Special Investigator could do.	_____	_____	_____	_____	_____ = _____
COMMENTS:				FINAL SCORE: _____	
				Total Possible Score: 27 Overall Achievement: 23-27 High 18-22 Sound 9-17 Limited 0-8 Inadequate	