

Fixing Jade's Exit Ticket: Seven Statements About Food, Energy and Matter

Learning target: I can find the errors in a classmate's statements about cellular respiration, explain what went wrong in each one, and rewrite each statement so that it is scientifically accurate.

Error analysis About 35 min Individual MS-LS1-7 · practice writing independent practice

Name _____ Date _____ Period _____

Directions

Jade wrote seven statements on an exit ticket. Some are correct and some contain a mistake that many students make. In Part A, decide which statements are correct and underline the word or phrase in each incorrect one that gives the mistake away. In Part B, for each incorrect statement, explain what Jade was probably thinking, why it is wrong, and write a corrected version. Do not just add the word 'not'; rewrite the idea so it is true and specific. Part C asks you to step back and look for the pattern in the mistakes.

You will need: This worksheet, Pencil

Jade's exit ticket (copied exactly) — 1. Only animals do cellular respiration. Plants do photosynthesis instead. 2. Cellular respiration creates new energy inside the mitochondria. 3. The atoms in an acorn can end up as part of a squirrel's muscle. 4. When sugar is broken down, some of its mass turns into energy, so the squirrel loses that mass for good. 5. Breathing in and out is the same thing as cellular respiration. 6. Fat is a food molecule that stores energy for a long time and is part of cell membranes. 7. A plant gets most of the matter for its body from the soil through its roots.

Part A: Diagnose

1. Mark each statement correct or incorrect. For the incorrect ones, copy the word or phrase that contains the mistake. For the correct ones, write 'none'.

Correct or incorrect?	The word or phrase that gives it away
Statement 1	
Statement 2	
Statement 3	
Statement 4	
Statement 5	
Statement 6	
Statement 7	

Part B: Explain and rewrite

For each incorrect statement, write three things: (a) **What Jade was thinking**: the reasonable idea that led to the mistake. (b) **Why it is wrong**: the evidence or the science that shows it. (c) **The rewrite**: a corrected statement in one or two sentences.

2. Statement 1 (plants do photosynthesis instead of cellular respiration).

3. Statement 2 (cellular respiration creates new energy).

4. Statement 4 (mass turns into energy and is lost for good).

5. Statement 5 (breathing is the same as cellular respiration).

6. Statement 7 (a plant's matter comes mostly from the soil).

Part C: Step back

7. Two of Jade's mistakes come from the same confusion: mixing up matter and energy. Which two statements are they, and what is the one rule that fixes both?

8. Statements 3 and 6 are correct. For each one, write the one piece of evidence or reasoning from this chapter that supports it.

Three tests for any statement about respiration

Run each of Jade's statements through these tests. Matter test: does the statement keep track of every atom, or does matter appear, disappear or turn into something that is not matter? Energy test: does the statement say energy is released or converted (good), or created or made (bad)? Who test: does the statement claim a process belongs to only one kind of organism? If a statement fails a test, that test tells you what to rewrite.

Write the eighth statement

Write a new statement that a careful student might get wrong about the carbon in a potato's starch after you eat it, then trade with a partner and diagnose each other's statement using the three tests in the scaffold. Your statement must be tempting: it should sound right at first, and the error should be about where atoms go or where energy goes, not a simple vocabulary slip.