YEAR 8 SCIENCE - UNIT 2 - LESSON 1

Matter, Particles and the Smallest Unit of an Element

Use this worksheet after reading the lesson to practise the key ideas and prove you can meet the success criteria.

Name _____

Date _____

Class _____

1. Key Ideas

- Matter is anything that has mass and takes up space.
- The particle model explains matter as tiny particles with spaces between them.
- An element contains one type of atom.
- A compound contains two or more elements chemically joined.
- A mixture contains substances physically combined, not chemically joined.

2. Success Criteria

By the end, you should be able to:

- describe matter using particles
- distinguish elements, compounds and mixtures
- explain why an atom is the smallest unit of an element

3. Key Terms

Matter
Anything that has mass and takes up space.

Particle
A tiny piece of matter used in scientific models.

Atom
The smallest unit of an element that keeps that element's identity.

Element
A pure substance made of one type of atom.

Compound
A pure substance made when different atoms are chemically joined.

Mixture
Two or more substances physically combined.

4. Activity: Classify Each Substance

Tick whether each substance is an element, compound or mixture. Then write one reason for your choice.

Substance	Element	Compound	Mixture	Reason
Oxygen gas	☐	☐	☐	
Water	☐	☐	☐	
Salt water	☐	☐	☐	
Iron	☐	☐	☐	
Carbon dioxide	☐	☐	☐	

5. Short Answer Questions

1. Explain why a tiny piece of copper is still copper, but there is eventually a smallest unit that can still be called copper.

2. Compare an element and a compound. Use one example of each.

3. Why is air described as a mixture rather than a compound?

6. Extend: Apply the Idea

A student says, "If I crush a piece of iron into smaller and smaller pieces, it will eventually stop being iron because it is too small to see."

Do you agree or disagree? Explain your answer using the terms **atom**, **element** and **particle**.

7. Multiple Choice

1. Which statement best describes matter?

☐ A. Anything that has mass and takes up space

☐ B. Anything that can be seen with the naked eye

☐ C. Anything that is alive

☐ D. Anything that is made only of metal

2. Which substance is an element?

☐ A. Water

☐ B. Salt water

☐ C. Iron

☐ D. Air

3. Why is water a compound?

☐ A. It contains one type of atom only

☐ B. It contains hydrogen and oxygen chemically joined

☐ C. It is always visible

☐ D. It is physically mixed with oxygen

8. Success Criteria Proof

Finish with evidence that you can do each success criterion.

SUCCESS CRITERION 1: DESCRIBE MATTER USING PARTICLES

In 2-3 sentences, explain how the particle model describes matter.

SUCCESS CRITERION 2: DISTINGUISH ELEMENTS, COMPOUNDS AND MIXTURES

Classify these three examples and give one reason for each: copper, carbon dioxide, muddy water.

SUCCESS CRITERION 3: EXPLAIN WHY AN ATOM IS THE SMALLEST UNIT OF AN ELEMENT

Explain why one atom of gold is still gold, but separating that atom into smaller parts would no longer give you a smaller piece of the element gold.

One thing I still need help with: