Grade 8 Integrated Science

Term 1 - 60 complete lesson plans

Ready to teach, in the KICD lesson-plan format | 40-minute lessons | PDF and editable Word

ABOUT THIS PACK

60 complete, ready-to-teach Grade 8 Integrated Science lesson plans for Term 1, covering elements and compounds, physical and chemical changes and classes of fire.

TOPICS IN THIS PACK

Topic	Name	Lessons
1.1	Elements and Compounds	18
1.2	Physical and chemical changes	22
1.3	Classes of fire	20

INSIDE EVERY LESSON PLAN

- The specific learning outcomes, key inquiry question, core competencies, values and PCIs, and the resources needed.
- A timed lesson flow: what the teacher does and what the learners do, from introduction to summary.
- The key content (a worked example, notes or a practical with its expected results), then four practice questions with the answers for the teacher.
- The common mistake to watch for, and ideas for learners who need support and for those ready for more.
- A four-level CBC assessment rubric (EE, ME, AE, BE), homework, and a blank reflection space to fill in after teaching.

A TASTE OF LESSON 1

Atoms and elements

By the end of the lesson, the learner should be able to: a) describe an atom as the smallest particle of an element; b) define an element

> **The smallest particle**
> An atom is the smallest particle of an element that can take part in a chemical reaction. Atoms are far too small to see, even with a microscope.
> An element is a substance made of only one kind of atom. It cannot be broken down into simpler substances by chemical means.

You also receive this pack as an editable Word file, so you can change any lesson to suit your class before you print it. Lessons follow the order of the KICD curriculum design.

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Atoms and elements

Strand 1.0 Mixtures, Elements and Compounds > Sub-strand 1.1 Elements and Compounds | Lesson 1 of 18 | 40 minutes

SCHOOL	TEACHER	DATE
CLASS / STREAM	TIME	ROLL (B / G)

SPECIFIC LEARNING OUTCOME(S)

By the end of the lesson, the learner should be able to: a) describe an atom as the smallest particle of an element; b) define an element

KEY INQUIRY QUESTION(S)

- Why is it important to use symbols for representing elements in day-to-day life?

CORE COMPETENCIES, VALUES AND PCIS IN THIS LESSON

COMPETENCY	**Learning to learn**	Learners say what they found easy or hard and decide their next step.
COMPETENCY	**Communication and collaboration**	Learners explain their thinking to a partner and report their findings to the group.
VALUE	**Unity**	Learners share materials fairly and work as one team.
PCI	**Financial literacy**	Examples use shillings and cents, shopping, saving and simple budgets.

LEARNING RESOURCES

Chart of the 13 element names and symbols | Empty labelled containers (salt, toothpaste, baking powder, fertiliser bags, juice cartons) | Particle-diagram charts | Learners' exercise books

ORGANISATION OF LEARNING

Whole class for the introduction and the summary; pairs or groups of four to five for guided practice; individual work for the independent tasks.

KEY WORDS

atom | element | molecule | compound | symbol | word equation | reactant | product

THE LESSON AT A GLANCE

Introduction	Teacher models	Guided practice	On their own	Wrap-up
6 min	9 min	10 min	9 min	6 min

Inside this plan: the step-by-step lesson flow with what the teacher and learners do, the key content, practice questions with answers, a common mistake to watch for, an assessment rubric on the four CBC levels, support and extension ideas, homework and a reflection page.

LESSON FLOW

Stage	Minutes	The teacher	The learners
Introduction	6	Greet the class and ask: "If you keep breaking a piece of copper wire into smaller pieces, what is the smallest piece that is still copper?" Take two or three answers, link them to earlier work, then state today's outcome.	Answer the starter question, recall what they already know and read the outcome aloud.
Step 1: Teacher models	9	Take learners through "The smallest particle" (key ideas on the next page), explaining as you go. Use chart of the 13 element names and symbols, empty labelled containers (salt, toothpaste, baking powder, fertiliser bags, juice cartons), particle-diagram charts. Ask learners to predict what comes next before you show it.	Watch, predict the next step, ask questions and note the key steps in their exercise books.
Step 2: Guided practice	10	Give questions 1 and 2. Move round the groups, ask "How do you know?" and correct errors kindly on the spot.	Work in pairs or small groups, explain each step to a partner and check one another's answers.
Step 3: Independent practice	9	Set questions 3 and 4 for individual work. Mark as you walk round and note who needs help in the next lesson.	Work on their own, then swap books with a partner to check.
Summary and conclusion	6	Ask two or three learners to state the key idea in their own words. Give this exit question and check the answers: "Can an element be broken into simpler substances chemically?"	Say the key idea in their own words and answer the exit question in the exercise book.

KEY IDEAS

The smallest particle

An atom is the smallest particle of an element that can take part in a chemical reaction. Atoms are far too small to see, even with a microscope.

An element is a substance made of only one kind of atom. It cannot be broken down into simpler substances by chemical means.

Examples of elements: copper, iron, oxygen, carbon, gold.

PRACTICE QUESTIONS - WITH ANSWERS FOR THE TEACHER

No.	Question	Answer
1	What is an atom?	**The smallest particle of an element that can take part in a chemical reaction.**
2	What is an element?	**A substance made of only one kind of atom.**
3	Give three examples of elements.	**For example copper, iron and oxygen.**
4	Can an element be broken into simpler substances chemically?	**No.**

WATCH OUT FOR

Learners think atoms can be seen with a hand lens. They are far too small.

ASSESSMENT RUBRIC - THE FOUR CBC LEVELS

Level	What the learner can do
Exceeds expectations (EE)	Can describe an atom as the smallest particle of an element confidently and accurately, explain the method used, and apply the idea to new or unfamiliar problems.
Meets expectations (ME)	Can describe an atom as the smallest particle of an element accurately in familiar situations; notices and corrects slips without help.
Approaches expectations (AE)	Can partly describe an atom as the smallest particle of an element, or does so with prompts from the teacher or a partner; makes some errors.
Below expectations (BE)	Cannot yet describe an atom as the smallest particle of an element without direct help; needs the idea taught again with concrete objects.

SUPPORT AND EXTENSION

Learners who need support	Show pictures of pure elements: a copper wire, an iron nail, charcoal (carbon).
Learners ready for more	Is air an element? Explain. (Answer: No, it is a mixture of several gases)
Inclusion	Seat learners with low vision near the board and read aloud whatever you write; use large, clear, tactile materials; allow extra time; pair with a patient partner; use gestures or Kenyan Sign Language for the key words.

HOMEWORK AND FOLLOW-UP

Redo questions 3 and 4 neatly in the exercise book. Then tell someone at home what you learned about "atoms and elements" and bring one question of your own to ask next lesson.

TEACHER SELF-CHECK

- Did every learner get a turn to handle materials or explain their thinking?
- Did most learners meet the outcome? Write down the names of those who did not.
- Was the pace right — did any step take too long or too short a time?
- Which competency and value did I see learners showing?
- What will I change the next time I teach this lesson?

REFLECTION ON THE LESSON / SELF-REMARKS

Write this after teaching - what worked, what to change, which learners need follow-up.

Molecules and compounds

Strand 1.0 Mixtures, Elements and Compounds > Sub-strand 1.1 Elements and Compounds | Lesson 2 of 18 | 40 minutes

SCHOOL	TEACHER	DATE
CLASS / STREAM	TIME	ROLL (B / G)

SPECIFIC LEARNING OUTCOME(S)

By the end of the lesson, the learner should be able to: a) define a molecule and a compound; b) tell elements and compounds apart

KEY INQUIRY QUESTION(S)

- Why is it important to use symbols for representing elements in day-to-day life?

CORE COMPETENCIES, VALUES AND PCIS IN THIS LESSON

COMPETENCY	**Learning to learn**	Learners say what they found easy or hard and decide their next step.
COMPETENCY	**Communication and collaboration**	Learners explain their thinking to a partner and report their findings to the group.
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ORGANISATION OF LEARNING

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KEY WORDS

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LESSON FLOW

Stage	Minutes	The teacher	The learners
Introduction	6	Greet the class and ask: "Water is made from hydrogen and oxygen. Is water an element?" Take two or three answers, link them to earlier work, then state today's outcome.	Answer the starter question, recall what they already know and read the outcome aloud.
Step 1: Teacher models	9	Take learners through "Atoms joined together" (key ideas on the next page), explaining as you go. Use chart of the 13 element names and symbols, empty labelled containers (salt, toothpaste, baking powder, fertiliser bags, juice cartons), particle-diagram charts. Ask learners to predict what comes next before you show it.	Watch, predict the next step, ask questions and note the key steps in their exercise books.
Step 2: Guided practice	10	Give questions 1 and 2. Move round the groups, ask "How do you know?" and correct errors kindly on the spot.	Work in pairs or small groups, explain each step to a partner and check one another's answers.
Step 3: Independent practice	9	Set questions 3 and 4 for individual work. Mark as you walk round and note who needs help in the next lesson.	Work on their own, then swap books with a partner to check.
Summary and conclusion	6	Ask two or three learners to state the key idea in their own words. Give this exit question and check the answers: "Which elements make up table salt?"	Say the key idea in their own words and answer the exit question in the exercise book.

KEY IDEAS

Atoms joined together

A molecule is two or more atoms joined together chemically. An oxygen molecule has two oxygen atoms joined.

A compound is a substance made of two or more different elements chemically combined, for example water (hydrogen and oxygen) and common salt, sodium chloride (sodium and chlorine).

A compound has properties different from its elements: sodium is a dangerous metal and chlorine a poisonous gas, but sodium chloride is table salt.

PRACTICE QUESTIONS - WITH ANSWERS FOR THE TEACHER

No.	Question	Answer
1	What is a compound?	**Two or more different elements chemically combined.**
2	Is oxygen gas an element or a compound?	**An element (its molecules have only oxygen atoms).**
3	Which elements make up water?	**Hydrogen and oxygen.**
4	Which elements make up table salt?	**Sodium and chlorine.**