8

DepED
DEPARTMENT OF EDUCATION

Learning Activity Sheet for Science

Quarter 2

Lesson

2

Learning Activity Sheet for Science Grade 8
Quarter 2: Lesson 2 of 6 (Week 2)
SY 2025-2026

Development Team

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LEARNING ACTIVITY SHEET

Learning Area:	Science (Chemistry)	**Quarter:**	2nd Quarter
Lesson No.:	Lesson 2 Subtopic 1	**Date:**	
Lesson Title/ Topic:	Atomic Structure and Subatomic Particles		
Name:		**Grade & Section:**	

I. Activity No.: Activity #1: Completing the Table of Subatomic Particles (15 minutes)

II. Objective(s): *At the end of the activity, the learners are expected to:*

1. Identify the properties of protons, neutrons, and electrons
2. Complete the table with information about subatomic particles for given elements.
3. Draw atomic diagrams based on the provided information.

III. Materials Needed: Textbook/notes on atomic structure, periodic table, drawing paper, colored pencils, writing materials

IV. Instructions:

- Fill in the following table with the properties of subatomic particles:

Particle	Symbol	Mass (amu)	Charge	Location
Proton				
Neutron				
Electron				

- Write the atomic number, number of protons, neutrons, and electrons of the following elements.

Element	Atomic Number	Protons	Neutrons	Electrons
Carbon				
Magnesium				
Lithium				

- Answer the following questions:
  - How do the number of protons, neutrons, and electrons define the properties of an element?
  - Why is the location of protons, neutrons, and electrons within an atom important for its stability?
  - How do the charges of subatomic particles contribute to the overall charge of an atom?

LEARNING ACTIVITY SHEET

Learning Area:	Science (Chemistry)	**Quarter:**	2nd Quarter
Lesson No.:	Lesson 2 Subtopic 2	**Date:**	
Lesson Title/ Topic:	Atomic Structure and Subatomic Particles		
Name:		**Grade & Section:**	

I. Activity No.: Activity #2: Understanding Atomic Structure (15 minutes)

II. Objective(s): *At the end of the activity, the learners are expected to:*

1. Describe the composition of atoms.
2. Identify and compare the sizes of protons, neutrons, and electrons.
3. Determine the charges of subatomic particles.
4. Illustrate the structure of boron and helium atoms.

III. Materials Needed: Textbook/Notes on atomic structure, paper, colored pencils, ruler

IV. Instructions:

- Write a brief explanation (3-5 sentences) of how atoms are composed.

_____
_____
_____
_____
_____
_____

- Answer the following questions based on your reading and understanding:
  1. Which is larger, a proton or an electron?
  2. Which is larger, a neutron or an electron?
  3. What are the charges for each of the three subatomic particles?
  4. Where is most of the mass of an atom located?

- Using the drawing paper and colored pencils, sketch a diagram of a boron atom, which has five protons and six neutrons in its nucleus. Label the protons, neutrons, and electrons.

LEARNING ACTIVITY SHEET

Learning Area:	Science (Chemistry)	**Quarter:**	2nd Quarter
Lesson No.:	Lesson 2 Subtopic 2	**Date:**	
Lesson Title/ Topic:	Atomic Structure and Subatomic Particles		
Name:		**Grade & Section:**	

I. **Activity No.:** Activity #3: Role of Subatomic Particles and Atomic Stability (10 minutes)

II. **Objectives:** *At the end of the activity, the learners are expected to:*

1. explain the significance of the arrangement of subatomic particles in an atom.
2. Understand how the arrangement of subatomic particles affects atomic stability.

III. Materials Needed: worksheet, writing materials

IV. Instructions: Read the following passage about the role of subatomic particles in atomic stability and chemical behavior. Answer the questions that follow:

Passage: The arrangement of electrons in shells around the nucleus determines the chemical properties of an element. Electrons in the outermost shell, called valence electrons, are involved in chemical reactions. Protons in the nucleus determine the element's identity, while neutrons add mass and stability to the nucleus. The balance of forces between protons and electrons keeps the atom stable.

Questions:

1. Why are valence electrons important for chemical reactions?

2. How do protons determine the identity of an element?

3. What role do neutrons play in the stability of the nucleus?

V. Extension Activity (Optional)

- Research Assignment: Write a short report on a historical figure in atomic theory, such as Rutherford or Bohr. Describe their key discoveries and how these discoveries advanced our understanding of atomic structure.

LEARNING ACTIVITY SHEET

Learning Area:	Science (Chemistry)	**Quarter:**	2nd Quarter
Lesson No.:	Lesson 2 Subtopic 2	**Date:**	
Lesson Title/ Topic:	Atomic Structure and Subatomic Particles		
Name:		**Grade & Section:**	

I. Activity No.: Activity #4: Investigatory Case Study – The Mystery of the Unstable Atom (30 minutes)

II. **Objective(s):** *At the end of the activity, the learners are expected to:*

1. Investigate the cause of instability in a hypothetical atom by analyzing its subatomic particles.

III. Materials Needed: Case study worksheet (provided below), Periodic table, Scientific calculator (optional)

IV. Instructions:

- Read the case study:
  - A mysterious atom has been discovered, and it exhibits unusual instability. Your task is to investigate and determine the cause of this instability based on its subatomic particles. Here are the details of the atom:
  - The atom has 8 protons, 10 neutrons, and 8 electrons.
  - It has been observed to decay rapidly, emitting particles and energy.
  - Scientists suspect an imbalance in the nucleus.

- Analyze the information:
  - Compare the number of protons, neutrons, and electrons.
  - Identify the element based on the number of protons.
  - Consider the stability of the nucleus based on the neutron-to-proton ratio.

- Complete the table:

Particle	Symbol	Charge	Mass (amu)	Location	Number
Proton					
Neutron					
Electron					

Guide Questions:

1. *What element is this atom, and how did you identify it?*
2. *Calculate the neutron-to-proton ratio. Is this ratio within the range typically found in stable atoms?*
3. *Based on your analysis, what might be causing the instability in this atom?*

- Research and Report:

- Choose a real-world example of an unstable atom (e.g., Carbon-14, Uranium-238).
- Research the properties of this atom, including its neutron-to-proton ratio, decay process, and applications in science. Complete the research worksheet:

Real-world Unstable Atom	Protons	Neutrons	Neutron-to-Proton Ration	Type of Decay	Application

- Write a short report comparing your chosen unstable atom to the investigatory case study atom. Discuss the similarities and differences in their instability and the implications for their use in scientific applications.

Guide Questions:

1. *What similarities do you notice between the case study atom and the real-world unstable atom you researched?*
2. *How does the neutron-to-proton ratio affect the stability of both atoms?*
3. *What are some practical applications of unstable atoms in science and industry?*

- Final Reporting:
  - Prepare a brief presentation summarizing your research and analysis from Activities 1 and 2.
  - Use visual aids (e.g., diagrams, charts) to support your presentation.
  - Present your findings to the class, highlighting key points and answering any questions from your peers.