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DepED
DEPARTMENT OF EDUCATION

# Lesson Exemplar for Science

Quarter 2
Lesson
5

**Lesson Exemplar for Science Grade 8**
**Quarter 2: Lesson 5 of 6 (Week 6)**
**SY 2025-2026**



**Development Team**

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**SCIENCE / QUARTER 2 / GRADE 8**

| **I. CURRICULUM CONTENT, STANDARDS, AND LESSON COMPETENCIES** | |
|---|---|
| **A. Content Standards** | The learners learn that:<br>1. The use of timeline and charts can illustrate scientific knowledge of the structure of the atom has evolved over time.<br>2. The current structure of the atom includes subatomic particles, their symbol, mass, charge, and location.<br>3. Elements and compounds are identified as pure substances.<br>4. **The periodic table is a useful tool to determine the chemical properties of elements.** |
| **B. Performance Standards** | By the end of the Quarter, learners demonstrate an understanding of the structure of the atom and how our understandings have changed over time. They draw models of the atom and use tables to represent the properties of subatomic particles. **They demonstrate their knowledge and understanding of the periodic table by identifying the elements, their symbols, their valence electrons, and their positions within the groups and periods**. They design and/or create timelines or documentaries as interesting learning tools. |
| **C. Learning Competencies and Objectives** | ***Learning Competency***<br>1. discuss the significant contributions of early scientists in the development of the periodic table using a timeline;<br>2. identify the names and symbols of the first 20 or several common elements of the periodic table;<br>**3. explain that the arrangement of elements in the periodic table as 7 periods and 18 groups is based on their atomic structure and chemical properties, such as reactivity;**<br>4. explain that the electron structure of an atom determines its position on the periodic table;<br>5. calculate the number of protons, neutrons, and electrons in the atom of several elements, such as aluminum; and explain that the elements within a group in the periodic table have the same number of valence electrons.<br>***Learning Objectives:***<br>Students should be able to:<br>1. Explain the basic layout of the periodic table, including the total number of periods (rows) and groups (columns).<br>2. Locate an element as either a representative, transition, or inner transition element.<br>3. Recognize the portions of the periodic table that contains the metals, nonmetals and metalloids. |
| **D. Content** | Topic: Regions in the Periodic Table<br>Sub-topics:<br>1. Periods and Groups<br>2. Representative, Transition and Inner Transition Elements<br>3. Metals, Non-metals and Metalloids |
| **E. Integration** | SDG 6: Clean water and sanitation<br>SDG 12: Responsible Consumption and Production |

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|---|---|
| | SDG 14: Life below water<br>SDG 15: Life on land |

## II. LEARNING RESOURCES


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| III. TEACHING AND LEARNING PROCEDURE | | NOTES TO TEACHERS |
|---|---|---|
| **A. Activating Prior Knowledge** | **DAY 1**<br>**1. Short Review**<br>True or False. Ask students to raise their left hand if they think the statement is true. If false, ask them to raise their right hand.<br>1. The first attempt to classify the elements was made by Newlands.<br>2. Mendeleev classified elements in the order of increasing atomic number.<br>3. The atomic numbers of elements were assigned by Mosley.<br>4. The first periodic law was proposed by Dobereiner.<br>5. Newlands arranged the elements based on their atomic masses.<br><br>**2. Feedback (Optional)**<br>Provide feedback on how to check any homework given in Week 4. | The teacher may revise the instruction or the items.<br><br>**Expected Responses**<br>1. False<br>2. False<br>3. True<br>4. False<br>5. False |
| **B. Establishing Lesson Purpose** | **DAY 1**<br>**1. Lesson Purpose** | |

| | | |
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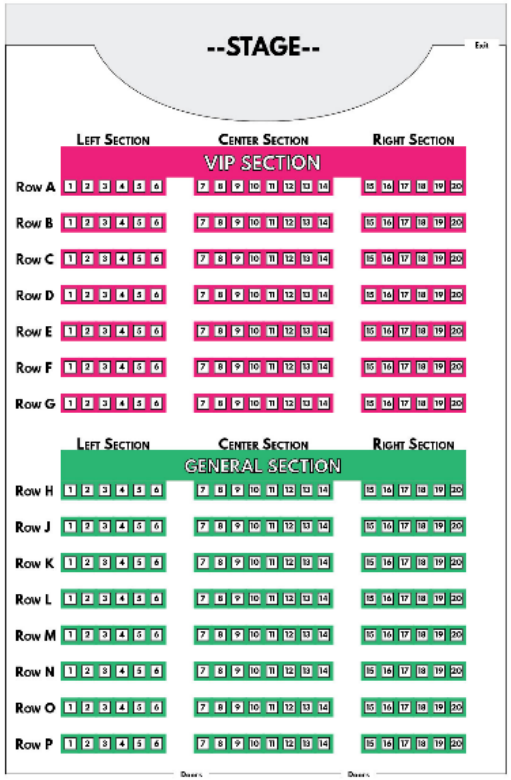
| | *Ask the following.*<br>1. How are the elements in the periodic table arranged?<br>2. Is it necessary to memorize the entire periodic table?<br>3. Is there a way that we can locate an element in a quick way?<br><br>**2. Unlocking Content Area Vocabulary**<br>• period<br>• group<br>• representative<br>• transition<br>• metalloids | Unlocking Content Vocabulary - practice key words and/or phrases (max 6, WM) which will be used in the lesson |
| **C. Developing and Deepening Understanding** | **DAY 1**<br>**SUB-TOPIC 1: Periods and Groups**<br>**1. Explicitation**<br>Use analogies to the periodic table such as cinema, concert venue or simple classroom seating arrangement. Make sure that there is a visual representation provided to them. Ask them to share some recent experiences about their cinema.<br><br>Cheney Hall Seating Chart<br>  <br> | Image Source: https://www.cheneyhall.org/s/Stage-Seating-Charge-High.jpg |

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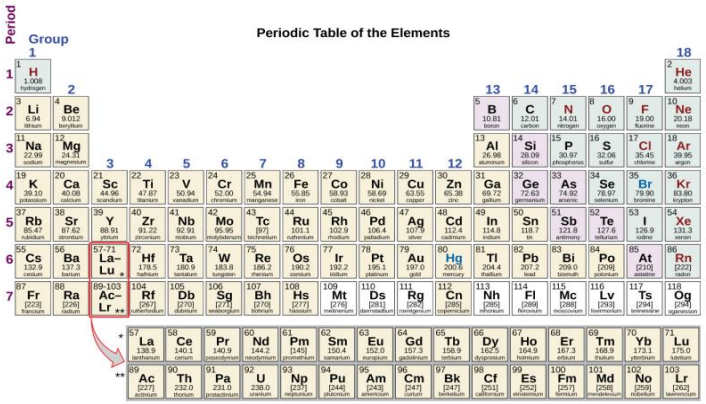
| | **2. Worked Example**<br>The teacher may ask first what the students observed in the periodic table. Then, relate each part of the cinema seating arrangement to the parts of the periodic table.<br>• Elements as Seats: Imagine each seat in the cinema represents an element.<br>• Periods (Rows): The rows of seats in the cinema can represent the periods in the periodic table.<br>• Groups (Sections): Sections within a row (typically A, B, C etc.) can be analogous to the groups (columns) in the periodic table. Seats within a section would share some common properties like armrests or legroom.<br>• Atomic Structure (Seat Number): Seat numbers within each row can represent the number of protons (unique identifier for an element) similar to the seating arrangement analogy explained earlier.<br>• Chemical Properties (Seat Type): The type of seat (regular, recliner, balcony) can represent the chemical properties of elements. For example, recliner seats could be for more reactive elements, while regular seats could be for less reactive elements.<br><br>*Points for discussion:*<br>• A modern periodic table arranges the elements in increasing order of their atomic numbers and groups atoms with similar properties in the same vertical column.<br>• Each box represents an element and contains its atomic number, symbol, average atomic mass, and (sometimes) name. The elements are arranged in seven horizontal rows, called **periods** or series, and 18 vertical columns, called **groups**.<br>• Groups are labeled at the top of each column. IUPAC recommends that the numbers 1 through 18 be used.<br>• For the table to fit on a single page, parts of two of the rows, a total of 14 columns, are usually written below the main body of the table. | Worked Example - a single practical example by teacher and class linking C1 and C3; helps to develop understanding of the topic through guided practice<br><br>Lesson Activity - multiple and varied examples/exercises allowing independent practice<br><br>Image Source: https://pressbooks.pub/molecularworld/back-matter/appendix/ |



Elements of Life. Atoms of the following elements are essential for life. The teacher will guide the students on how to provide the group number and period number for the following elements:

| **Element Name (Symbol)** | **Group Number** | **Period Number** |
|---|---|---|
| Calcium (Ca) | 2 | 4 |
| Carbon (C) | 14 | 2 |
| Oxygen (O) | 16 | 2 |
| Sodium (Na) | 1 | 3 |

**DAY 2**

**3. Lesson Activity**

**Activity 1.**

Instructions: The teacher will ask the students to find the symbol or name of the elements given in the table, provide for the corresponding group number and period number.

See Learning Activity Sheet: *Activity #1: Where is my Place?*

| **Element Name (Symbol)** | **Group Number** | **Period Number** |
|---|---|---|
| Lithium (___) | | |
| _____ (Au) | | |
| Selenium (___) | | |
| _____ (Ne) | | |
| Europium (___) | | |

*Possible questions for enrichment:*

1. Why is it important to know the group or period number of an element?
2. Are the group numbers and period numbers absolute?

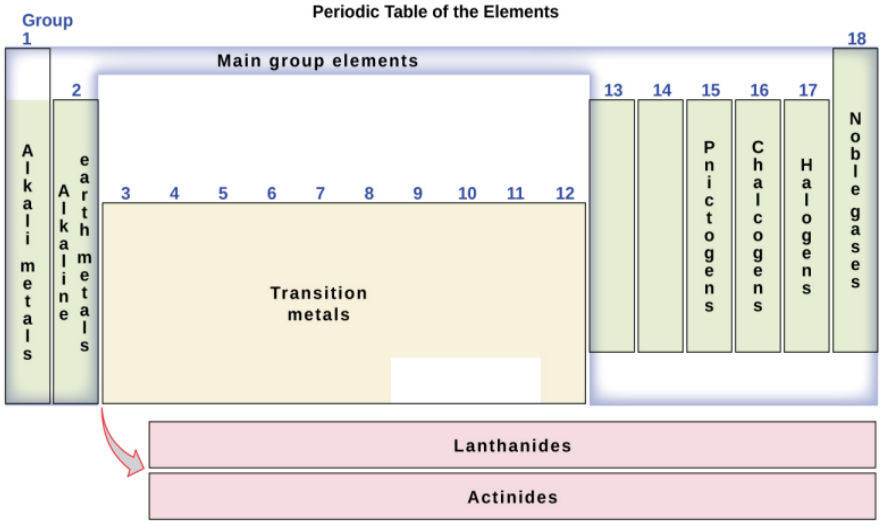
**SUB-TOPIC 2: Representative, Transition and Inner Transition Elements**

**1. Explicitation**

Using the periodic table, complete the following statements:

1. Period 1 contains 2 elements, H and He.
2. Period 2 contains ____ elements, Li to Ne.
3. Period 3 contains ____ elements, ___ to ___.
4. Group 1 contains ____ elements, H to Fr.
5. Group 2 contains ____ elements, ___ to ___.

**2. Worked Example**




*Points for discussion:*

- Representative (or Main group) elements are those in Groups 1A through 8A.
- Transition elements, are the groups designated by a numeral and the letter B.
- Inner transition elements are in the two rows at the bottom of the periodic table.

The discovery of the periodic recurrence of similar properties among the elements led to the formulation of the periodic table, in which the elements are arranged in order of increasing atomic number in rows known as periods and columns known as groups.

| Element Name (Symbol) | Group Number | Period Number | Representative, transition, or inner transition? | Common name of the group it belongs to |
|---|---|---|---|---|
| Lithium (Li) | 1 | 2 | Representative | Alkali metal |
| Gold (Au) | 11 | 6 | Transition | Transition metal |
| Selenium (Se) | 16 | 4 | Representative | Chalcogens |
| Neon (Ne) | 18 | 2 | Representative | Noble gases |
| Europium (Eu) | 10 | 6 | Inner transition | Lanthanides |

**3. Lesson Activity**

**Activity 2.**

Compare and Contrast. Ask the students to complete the tables below by referring to their periodic table of elements for properties. Allow them to access other resources to complete the activity.

See Learning Activity Sheet: *Activity #2: More Info about the Elements*

| Element Name (Symbol) | Group Number | Period Number | Representative, transition, or inner transition? | Common name of the group it belongs to |
|---|---|---|---|---|
| Californium (___) | | | | |
| _____ (Co) | | | | |
| Erbium (___) | | | | |
| _____ (Fr) | | | | |
| Gallium (___) | | | | |

| | | |
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| | 1. Which is common among the given elements in the given table?<br>2. Where did these elements get its names?<br><br>**DAY 3**<br>**SUB-TOPIC 3: Metals, Non-metals and Metalloids**<br>**1. Explicitation**<br>**Sorting Challenge:**<br>1. Prepare a set of pictures or flashcards with everyday objects made from metals, non-metals, and metalloids.<br>2. Divide the class into small groups.<br>3. Give each group the picture set and ask them to sort the objects into categories.<br>4. After sorting, have each group present their categories and reasoning behind them.<br>5. Discuss the properties used for sorting and introduce the terms metals, non-metals, and metalloids.<br><br>**2. Worked Example**<br>• Flashcards of actual elements (C, O, Ag, Au, Si, Te)<br>• Guide students on how to identify metals, non-metals, or metalloids based on the periodic table.<br>• Metallic elements are found on the left side and center part of the periodic table.<br>• Non-metallic elements are found on the right side of the periodic table.<br>• Few elements show both metallic and non-metallic properties, and they are called metalloids. They are found at the border of the stair step line that separates metals and non-metals.<br><br>**3. Lesson Activity**<br>Using the periodic table, ask students to name the metals, non-metals and metalloids in Group 13, 14, and 15. Ask them to name at least five common examples of transition metals. | |
| **D. Making Generalizations** | **1. Learners' Takeaways**<br>Complete Me. Ask the students to complete the sentences with what they learned about the topic.<br>1. The periodic table is _____. | The teacher may propose other activities for the learners to describe their understanding of a |

| | | |
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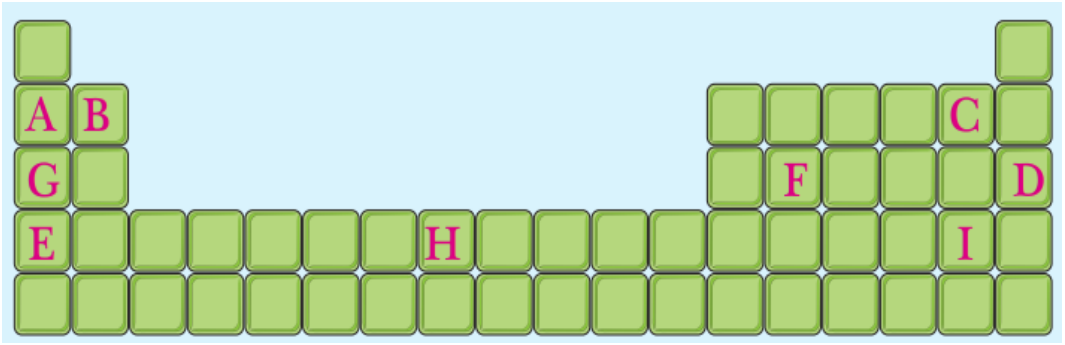
| | 2. The periodic table consists of _____.<br>3. Elements are classified into _____.<br>4. Metals are found on _____;<br>nonmetals are found on _____;<br>and metalloids are found on _____.<br><br>**2. Reflection on Learning**<br>In their notebook, the students will write a journal entry consisting of 3-4 sentences, answering ANY of the following questions.<br>1. What did I learn about this lesson that I did not know before?<br>2. Which topic was easy for me?<br>3. Which topic was challenging to learn?<br>*4.* Do I understand it now? | concept, idea, and skill covered in the previous topic.<br><br>The teacher should allow the learners to document their ways on how they think about their learning (metacognition). |

| **IV. EVALUATING LEARNING: FORMATIVE ASSESSMENT AND TEACHER'S REFLECTION** | | **NOTES TO TEACHERS** |
|---|---|---|
| **A. Evaluating Learning** | **1. Formative Assessment**<br>Some elements in the periodic table are represented by the letters A to I and are contained in the figure below:<br><br>  <br><br><br>1. Which element is an alkaline earth metal?<br>2. Which element is a noble gas?<br>3. Which metallic element is more reactive than G? Why?<br>4. Indicate the most reactive non-metallic element.<br>5. Which elements are found in period 4? | The teacher may form other assessment items or strategies for this section.<br><br>**Key to Correction:**<br>1. B<br>2. D<br>3. A<br>4. C<br>5. E, H, I<br>6. F<br>7. H |

<table>
<tr><td></td><td colspan="3">6. Name the element that is found in Group 14 and Period 3.<br>7. Which element is a transition metal?<br><br>2. Homework (Optional)</td><td></td></tr>
<tr><td rowspan="5">B. Teacher's Remarks</td><td>Note observations on any of the following areas:</td><td>Effective Practices</td><td>Problems Encountered</td><td rowspan="5">The teacher may take note of some observations related to the effective practices and problems encountered after utilizing the different strategies, materials used, learner engagement and other related stuff.<br><br>Teachers may also suggest ways to improve the different activities explored in the lesson exemplar.</td></tr>
<tr><td>strategies explored</td><td></td><td></td></tr>
<tr><td>materials used</td><td></td><td></td></tr>
<tr><td>learner engagement/ interaction</td><td></td><td></td></tr>
<tr><td>others</td><td></td><td></td></tr>
<tr><td>C. Teacher's Reflection</td><td colspan="3">Reflection guide or prompt can be on:<br>• <u>principles behind the teaching</u><br>What principles and beliefs informed my lesson?<br>Why did I teach the lesson the way I did?<br><br>• <u>students</u><br>What roles did my students play in my lesson?<br>What did my students learn? How did they learn?<br><br>• <u>ways forward</u><br>What could I have done differently?<br>What can I explore in the next lesson?</td><td>Teacher's reflection in every lesson conducted/facilitated is essential and necessary to improve practice. You may also consider this as an input for the LAC/Collab sessions.</td></tr>
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