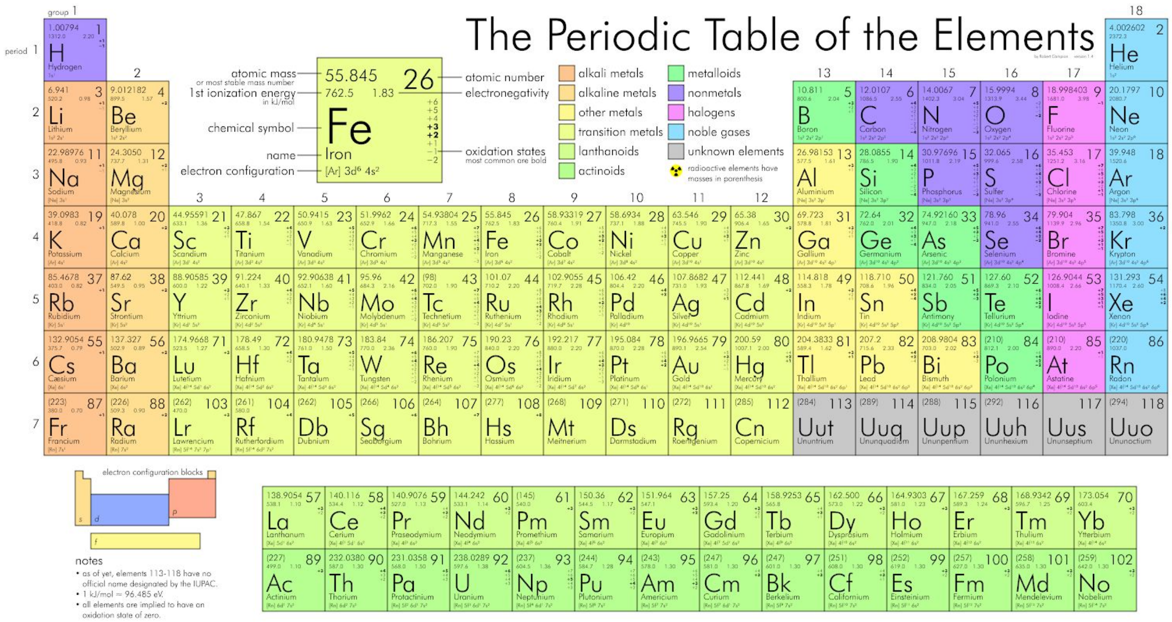
INTRODUCTION TO PERIODIC TABLE

80minutes



teri school of advanced studies

Google Earth Education

Overview: in this lesson, Students will identify different atoms by the number of protons in the nucleus and realize that the number of electrons equals the number of protons in a neutral atom. They will also be able to explain the meaning of atomic number and atomic mass.using expedition guided tour. They will identify the elements named after places and create a google project on it .

Subject/Topic: Chemistry/Environmental Chemistry	Grade Level: 8-10 Th Grade
learning objectives: • Students will begin to look closely at the periodic table. They will be introduced to the basic information given for the elements in most periodic tables: the name, symbol, atomic number, and atomic mass for each element. Students will focus on the some important groups of element using guided tour from expeditions. • They will try to correctly match cards with information about an element to each of the elements. • students will explore some elements named after places and find the reasons for the naming • Students will environmental implications of metallurgical processes and strategize a sustainable model for use of metals	lesson summary: • Engage: Students will begin to look closely at the periodic table. They will be introduced to the basic information given for the elements in most periodic tables: the name, symbol, atomic number, and atomic mass for each element.. They will try to correctly match cards with information about an element to each of the first 20 elements. • • Explore: students will explore some elements named after places and find the reasons for the naming • Students explore environmental implications of metallurgical processes. • Revise: Revise the concepts atomic number, atomic mass important elements and their uses,environmental impacts of metallurgical processes . • Apply: students will use the VR expedition project - periodic table using expeditions app , Elements to help them determine what atom your card describes. The diagram and information below will help you

	match your cards to the correct atoms.
materials needed: • access to google earth. • Expedition app • https://expeditions.gle/fdl/ZcZV • student copies of the ACTIVITY sheets https://www.middleschoolchemistry.com/pdf/chapter4/4.2_student.pdf • student internet access.	Inquiry: • strategize a sustainable model for metallurgy
sustainable development goals:  	Culminating task/assessment: • Students will identify some elements named after places .Determine history of the element , the sources,uses and environmental impacts of metallurgical processes involved .strategize a sustainable plan for metallurgy of the elements .

Lesson Plan	
Engage (20 minutes)	Students will be introduced to an interactive model of periodic table using a guided tour from expedition app https://expeditions.gle/fdl/ZcZV Explain that each box contains information about a different atom. The periodic table shows all the atoms that everything in the

	known universe is made from. It's kind of like the alphabet in which only 26 letters, in different combinations, make up many thousands of words. The 100 or so atoms of the periodic table, in different combinations, make up millions of different substances.
Explain (20 min)	Explain atomic mass. The atomic mass of an element is based on the mass of the protons, neutrons, and electrons of the atoms of that element. The mass of the proton and neutron are about the same, but the mass of the electron is much smaller (about 1/2000 the mass of the proton or neutron). The majority of the atomic mass is contributed by the protons and neutrons. For any element in the periodic table, the number of electrons in an atom of that element always equals the number of protons in the nucleus. But this is not true for neutrons. Atoms of the same element can have different numbers of neutrons than protons. Atoms of the same element with different numbers of neutrons are called isotopes of that element. The atomic mass in the periodic table is an average of the atomic mass of the isotopes of an element

Explore (30 min)	Each group will receive a set of cards with information that describes a particular atom. Each student will explore the periodic table of the elements, solve the activity sheet. They try to place the element in the common periodic table . They use internet to identify the elements named after places, find the metallurgical processes involved in extraction and its environmental implication,
revise (10 min)	in their small groups, ask students to discuss the following questions: Are number of protons equal to number of neutrons for all elements? Can two elements have same number of neutrons ? Why do you think periodic table was created? What are impacts of metallurgy on environment ? What are the best Strategies to reduce the negative impacts of metallurgical processes on environment

Evaluate: Culminating Task Rubric

	Exceeding	Meeting	Approaching	Beginning
Knowledge Content	student demonstrates mastery of key student demonstrates mastery of key concepts -to the basic information given for the elements in most periodic tables: the name, symbol, atomic number, and atomic mass for each element.	student demonstrates student good understanding of--to the basic information given for the elements in most periodic tables: the name, symbol, atomic number, and atomic mass for each element.	student demonstrates partial understanding of key concepts concepts --to the basic information given for the elements in most periodic tables: the name, symbol, atomic number, and atomic mass for each element.	student lacks understanding of key concepts -to the basic information given for the elements in most periodic tables: the name, symbol, atomic number, and atomic mass for each element.
Claim And Evidence	student provides a clearly stated claim naming many metals named after places identifying the most important environmental impacts of metallurgy giving several pieces of specific evidence. student is able to explain how each piece of evidence supports their claim and strengthens their argument	student provides a clearly stated claim naming many naming many metals named after places identifying the most important environmental impacts of metallurgy giving 1-2 pieces of specific evidence. student is able to explain how each piece of evidence supports their	student provides a clearly stated claim naming many naming many metals named after places identifying the most important environmental impacts of metallurgy.identifying the most important reasons for success giving 1-2 pieces of specific evidence. student is not	student provides a clearly stated claim naming naming many metals named after places identifying the most important environmental impacts of metallurgy. .evidence is either absent or does not support the student's claim.

		claim and strengthens their argument	able to explain how each piece of evidence supports their claim and strengthens their argument	
presentation	presentation clearly and creatively communicates the goals, strategy other ’ strategies fall short. action steps encouraging others to get involved are included.	presentation clearly and creatively communicates the goals, why this is the best strategy and the ways that other ’ strategies fall short	presentation clearly and creatively communicates the goals, strategy but does not give reasons why this is best strategy	information about the goals, strategy does not include reasons why this is the best strategy and the ways that other ’ strategies fall short. action steps do not encourage others to get involved are included.

ADDITIONAL RESOURCES

Interactive periodic table
https://www.fishersci.com/us/en/periodic-table.html#ni28

CHEMICAL DIGITAL LIBRARY
http://www.chemeddl.org/resources/ptl/index.html

METALLURGY AND ENVIRONMENT ISSUE
https://link.springer.com/article/10.1007/s11837-015-1395-7

CREDITS
written by Pooja Seth (PGT chemistry -BBPSGRHM)