

4.3 Valence Electrons and Lewis Dot Diagrams

DO NOW:

Complete 4.2 Exit Ticket!

Take out page 3 and 5 of your 4.2 packet and staple these papers together. Write your name on top and Lab #9.

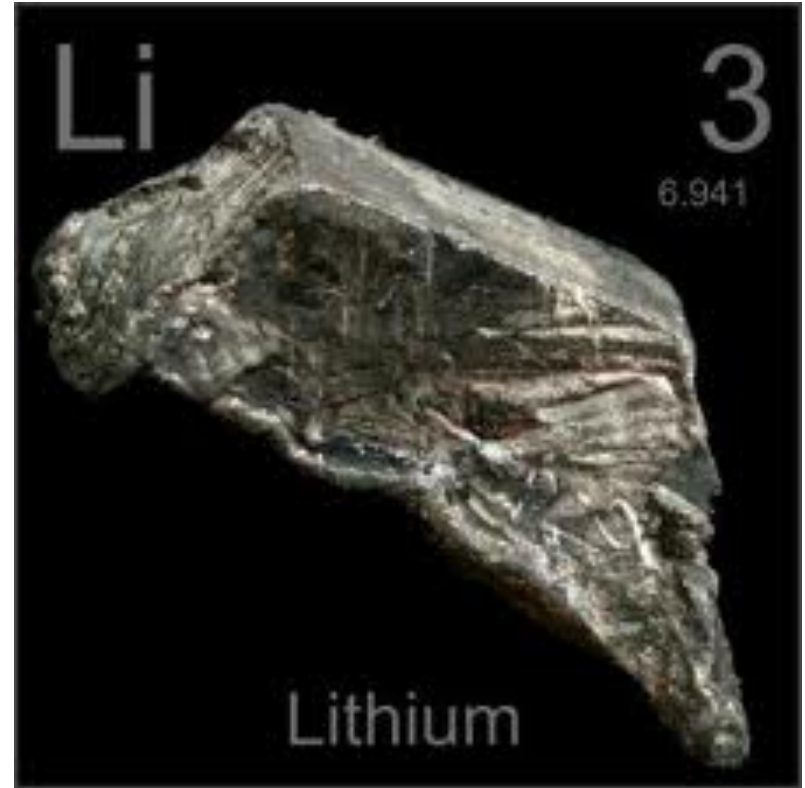
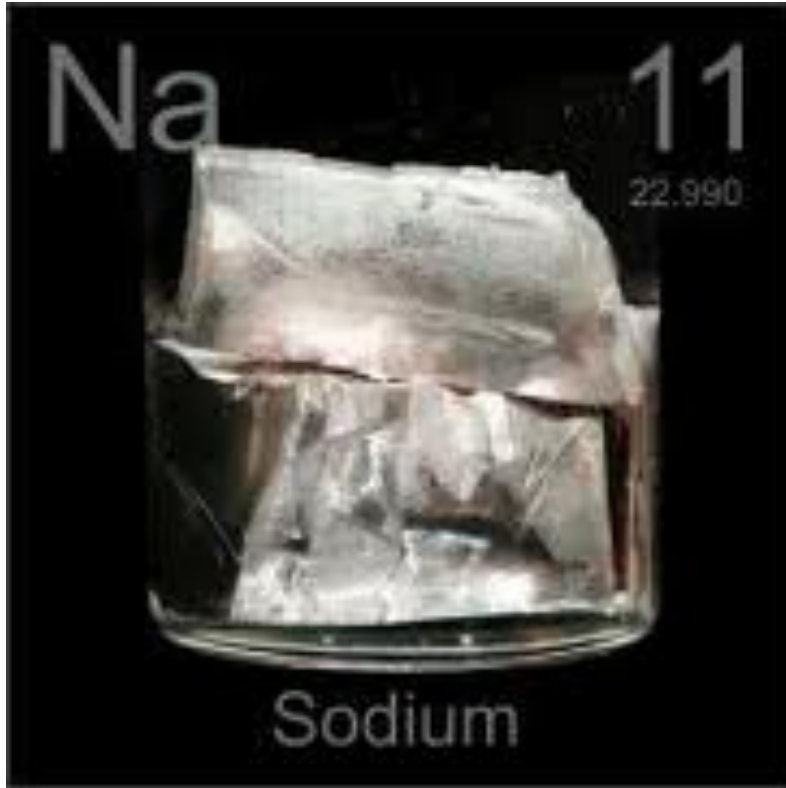
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Agenda:

- Do Now/Objective
- Video Hook
- Mini Lesson
- Classwork
- Exit Ticket
- Homework



Video Hook (5 minutes)



- What are some physical similarities between these metals?

Objective: SWBAT identify the number of valence electrons in and draw a Lewis Dot Diagram of any element.

Post-Video

- What are some similarities between these metals in chemical properties?

Objective: SWBAT identify the number of valence electrons in and draw a Lewis Dot Diagram of any element.

New Vocabulary

- Lithium, sodium and potassium are in the same group in the periodic table...
- What is a group**?
- A group** on the periodic table is a vertical column

Objective: SWBAT identify the number of valence electrons in and draw a Lewis Dot Diagram of any element.

New Vocabulary

- Boron, carbon, and oxygen are in the same period in the periodic table...
- What is a period**?
- A period** on the periodic table is a horizontal row

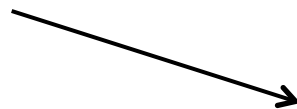
Objective: SWBAT identify the number of valence electrons in and draw a Lewis Dot Diagram of any element.

New Vocabulary

- Valence electrons** are electrons in the outermost electron shell

Objective: SWBAT identify the number of valence electrons in and draw a Lewis Dot Diagram of any element.

Example:



22.98977	+1
Na	
11	
2-8-1	

- How many electrons are in the first shell?
- How many electrons are in the second shell?
- How many electrons are in the third shell?
- How many valence electrons are in Na?

Objective: SWBAT identify the number of valence electrons in and draw a Lewis Dot Diagram of any element.

Your Turn

Find the electron configuration for the following elements and circle the valence electrons.

- Magnesium _____
- Potassium _____
- Xenon _____
- Ca-40 _____

Objective: SWBAT identify the number of valence electrons in and draw a Lewis Dot Diagram of any element.

Lewis dot diagram: used to show the number of valence electrons in an atom where each dot represents a valence electron!

What is the electron configuration for Cl?

How many valence electrons does it have?

Objective: SWBAT identify the number of valence electrons in and draw a Lewis Dot Diagram of any element.

Lewis Dot Diagrams

Cl

Objective: SWBAT identify the number of valence electrons in and draw a Lewis Dot Diagram of any element.

Name the steps

- What are the steps to drawing electron dot diagrams?

Objective: SWBAT identify the number of valence electrons in and draw a Lewis Dot Diagram of any element.

Quick Practice

- Draw a Lewis Dot Diagram for the following elements:
 - Hydrogen
 - Carbon
 - Oxygen
 - Fluorine
 - Sulfur
 - Bromine

Objective: SWBAT identify the number of valence electrons in and draw a Lewis Dot Diagram of any element.

Turn and Talk

- What do elements with similar chemical properties have in common in their Lewis dot structures?

Objective: SWBAT identify the number of valence electrons in and draw a Lewis Dot Diagram of any element.

- What is the total number of valence electrons in an atom of carbon in the ground state?
1. 8
 2. 2
 3. 14
 4. 4

Objective: SWBAT identify the number of valence electrons in and draw a Lewis Dot Diagram of any element.

Classwork

- Complete 4.3 Classwork quietly with your neighbors. If you finish early, check your answers with Ms. Hart and then you can move onto independently working on your homework!

Objective: SWBAT identify the number of valence electrons in and draw a Lewis Dot Diagram of any element.

Exit Ticket

- Complete the 4.3 Exit Ticket

Objective: SWBAT identify the number of valence electrons in and draw a Lewis Dot Diagram of any element.

HOMEWORK

Complete 4.3 HW

Objective: SWBAT identify the number of valence electrons in and draw a Lewis Dot Diagram of any element.

PART TWO!

4.4 Wave Mechanical Model – Timeline of the Atom

SPARK:

What is the mass of a proton?

What is the mass of a neutron?

How many protons are in oxygen?

What is the difference between a ground state and an excited state?

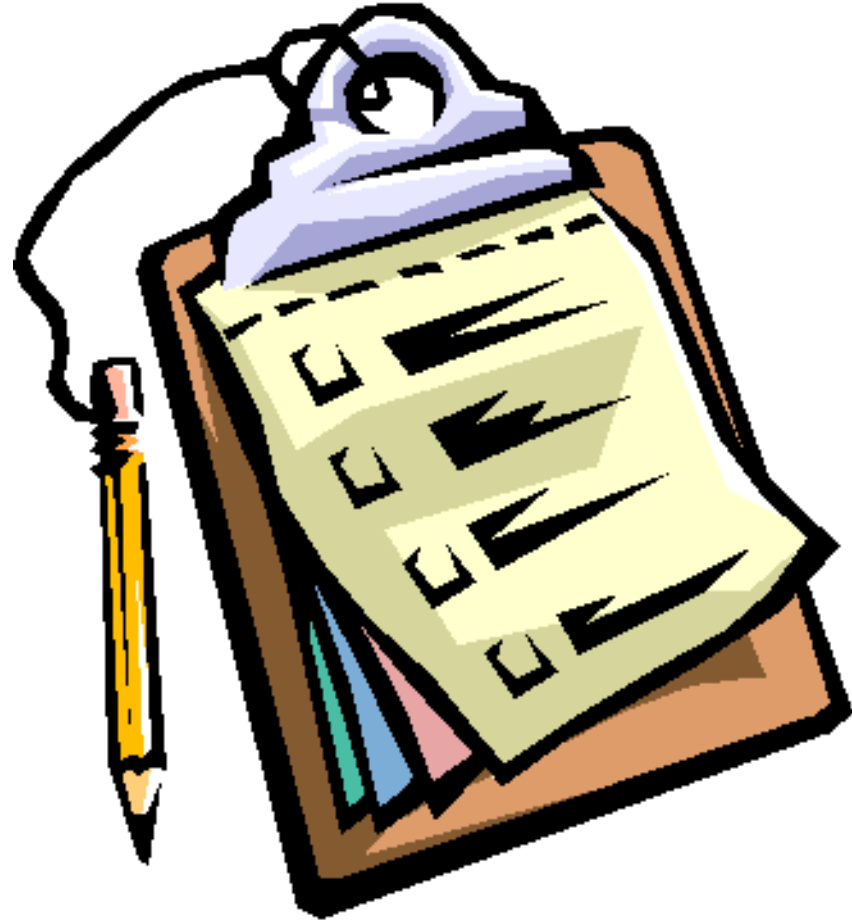
Draw the Bohr Model for lithium

Objective

SWBAT describe the evolution of the atom.

Agenda:

- Do Now/Objective
- Homework Review
- Wave-Mechanical Model
- Timeline of the Atom
- Review
- Homework!



Wave Mechanical Model

- The last one!!!!
- The scientist **Schrödinger** said that the electrons were not in energy levels, but instead in something called orbitals**.
- Orbital** - probable location of an electron



Wave Mechanical Model

- **IMPORTANT:** The Schrödinger atomic model (or wave mechanical model) describes the location of the electrons orbiting the nucleus more accurately than other models. However, the Bohr model is more useful when predicting chemical bonding and describing chemical properties of elements.

Timeline of the Atom

- Using your notes, create a timeline of the atom on your loose leaf sheet of paper. Be sure to include:
 - the scientists name
 - the type of experiment they did
 - the major discoveries they found!
- Get your work checked by Ms. Hart and then move onto 4.4 Classwork!

4.4 Review Sheets

- You have the remainder of the period to complete your Review sheets. **ASK FOR HELP!**

HOMEWORK

Complete all 4.4 worksheets AND 4.3 WS
Quiz on Tuesday!

Watch this at home:

[http://www.ted.com/talks/
just how small is an atom.html](http://www.ted.com/talks/just_how_small_is_an_atom.html)?.

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Lewis Dot Diagram of any element.