Properties of Elements

15.2

PPT: 40 minutes

Video: 24 minutes

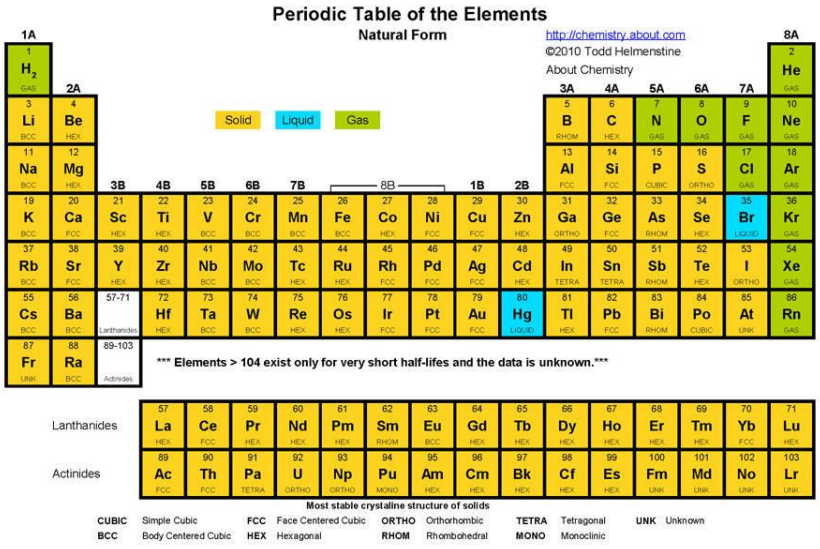
Your paper should look like this…

	Properties of Elements
State of Matter At room Temp	
Periodic Properties	
Metals & Metal Alloys	

	Properties of Elements
Carbon = the element Of life	
N,O,P	
Video Notes	

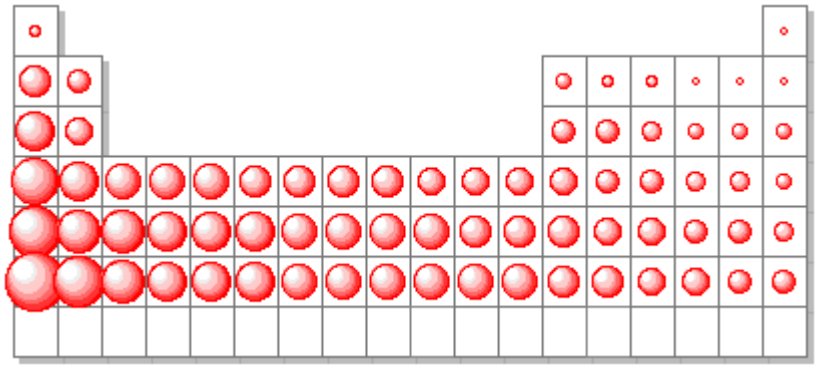
State of Matter at Room Temp

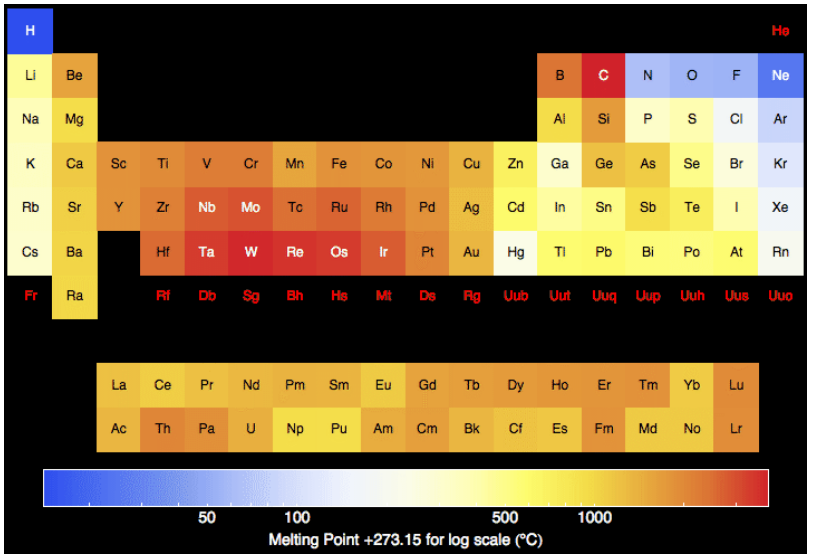
- Most elements are solid at room temp
- Only two are liquid: mercury (Hg) & bromine (Br)
- Gases are the Nobel gases + a few others
- The fuller the outer shell, the weaker the intermolecular forces = gas!



Periodic Properties of Elements

- Boiling point ↑ to middle of PT and then decreases again.
- Atom size ↑ as you go down the PT and left ↙
- Elements in the same group have similar characteristics



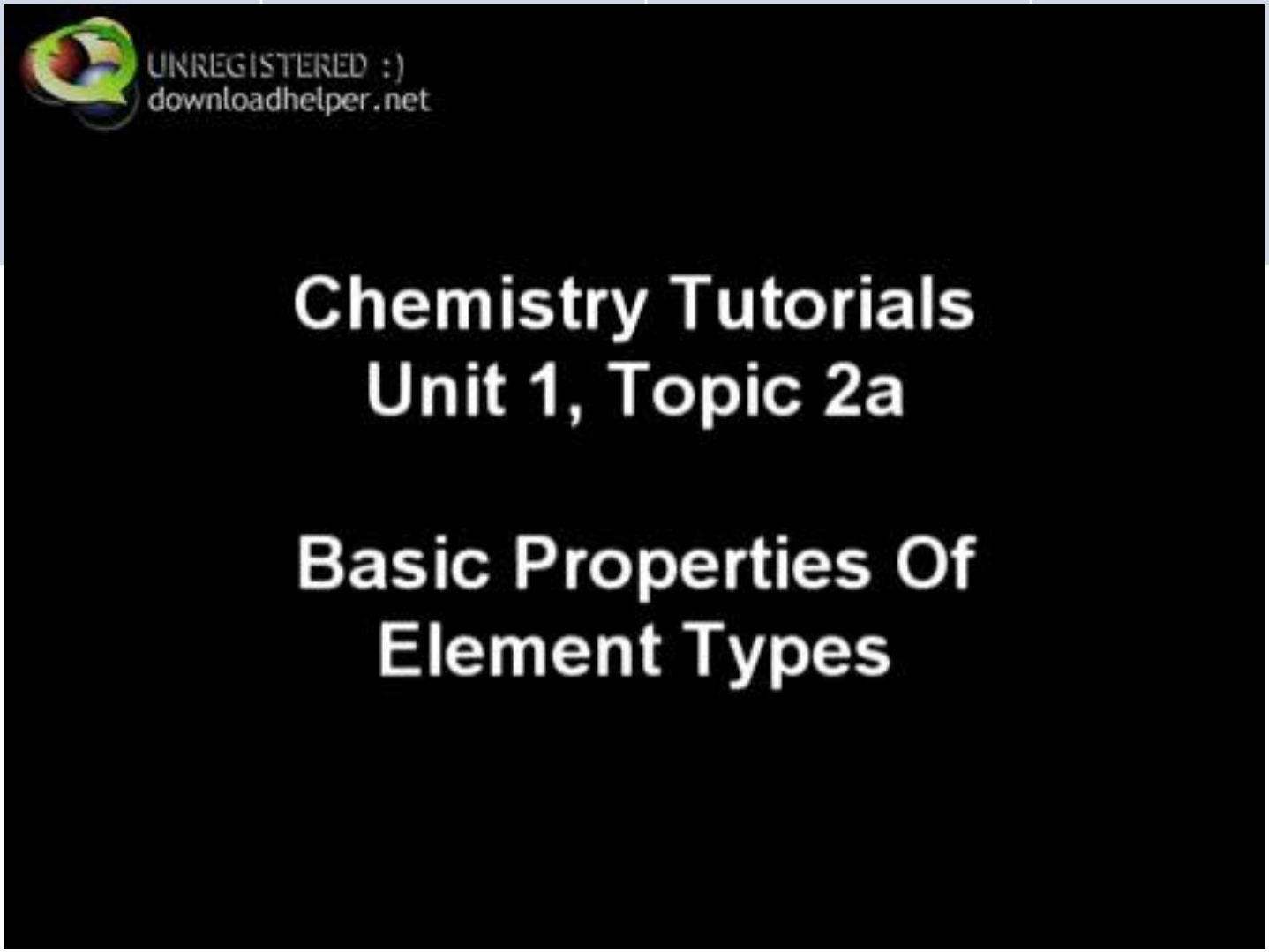


Concept Check

- If you had to make an educated guess. Which one of these elements is most similar to the element carbon?
  a. Nitrogen
  b. Helium
  c. Silicon
  d. Boron

Periodic Properties of Elements

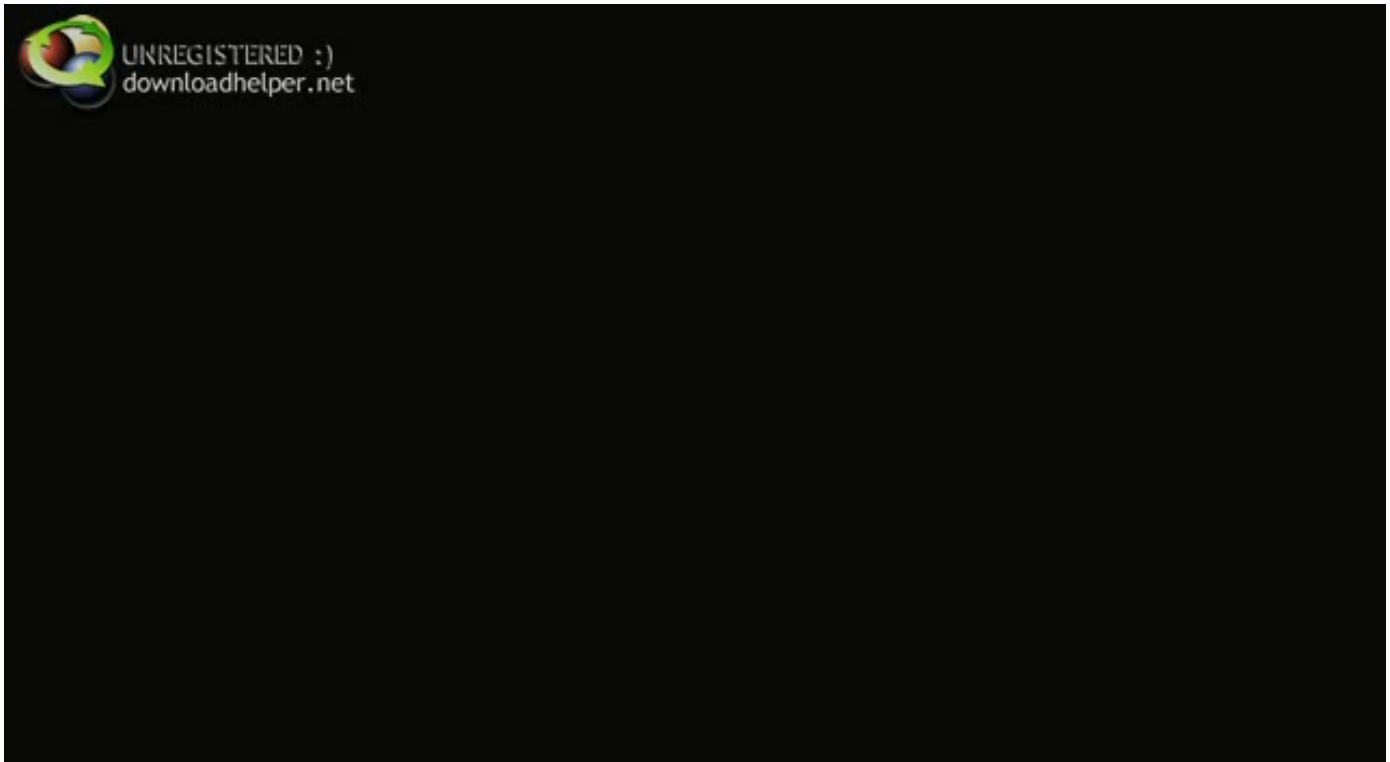
Metals "Left of Zig-Zag"	Non-Metals "Right of Zig-Zag"	Metalloids "On Zig-Zag"	Nobel Gases "Right Group"
- - - - -			



Difference Between Conductors & Insulators

Metals & Metal Alloys

- Conductor: allows energy/heat/electrons/energy to pass through them; ex. metals
- Insulator: opposite of conductor; ex. Non-metals
- Alloy: mixture of >1 element
  - Ex. Steel: alloy of iron &carbon



YouTube
"Magical metals: how shape memory alloys work"

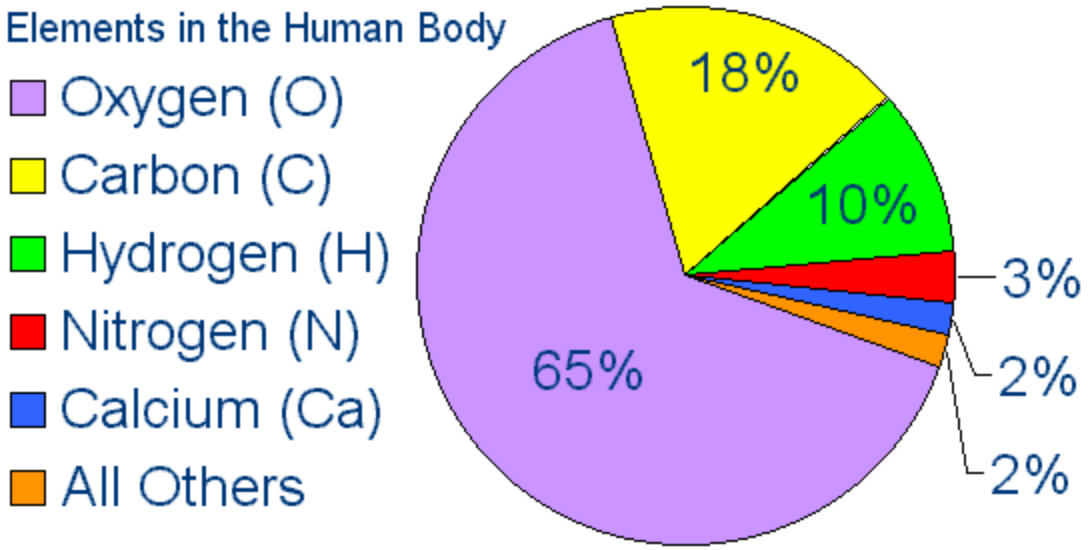
Carbon = The Element of Life

- Carbon has 4 valence e- and wants to bond with other elements and/or itself to fill it's outer shell (8=full)
- Organic Chemistry: study of living things; "carbon chemistry"

YouTube:
"Carbon: The element of Life"

Nitrogen, Oxygen, and Phosphorous

Oxygen	Nitrogen	Phosphorous
21% of earth's atm. 46% of earth's crust 61% of human body (H2O)	77% of earth's atm. Nitrogen cycle	DNA Cell Membranes ATP (E of the cell)



http://www.classzone.com/books/ml_science_share/vis_sim/em05_pg20_nitrogen/em05_pg20_nitrogen.swf

http://www.sumanasinc.com/webcontent/animations/content/phosphorouscycle.html

Video

1. Chemical reactions involve _____ electrons
2. The _____ are a very unreactive group
3. The _____ are a very reactive group
5. “Halogen” stands for _____.
7. What is ionization energy?
8. What is the periodic trend for ionization E?
9. Why are metals good conductors of heat or electricity?

Turn to page 347 in your book

Going to go over as a class