

Sept 12, 2019

- Review Periodic Table/Bohr Diagrams
- Ions/Bohr Diagrams of Ions

Warm-Up

Draw the Bohr diagram and list the # of valance electrons for each of the following:

phosphorous

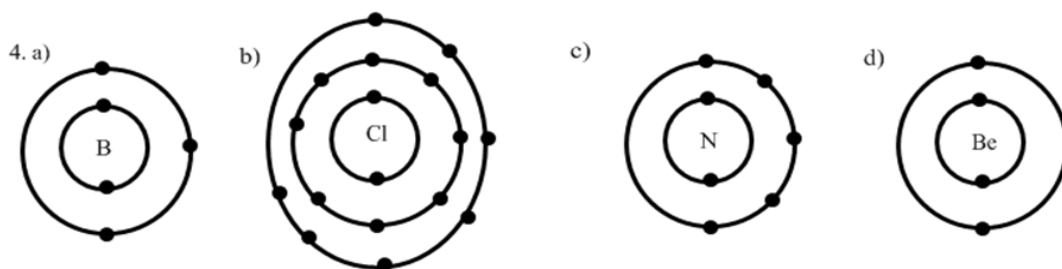
neon

carbon

answers pg 187 #2,3,4

2. Hydrogen is in the metallic area of the periodic table, but has non-metallic properties.

element	orbit 1	orbit 2	orbit 3
Hydrogen	1		
Helium	2		
lithium	2	1	
beryllium	2	2	
boron	2	3	
carbon	2	4	
nitrogen	2	5	
oxygen	2	6	
fluorine	2	7	
neon	2	8	
sodium	2	8	1
magnesium	2	8	2
aluminum	2	8	3
silicon	2	8	4
chlorine	2	8	5
sulphur	2	8	6
chlorine	2	8	7
argon	2	8	8
potassium	2	8	8
calcium	2	8	8



Answers Bohr Diagram Worksheet

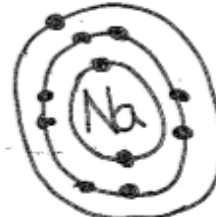
valance electrons

1. Magnesium



Valance electrons = 2

2. Sodium



Valance electrons = 1

3. Sulfur



Valance electrons = 6

4. Fluorine



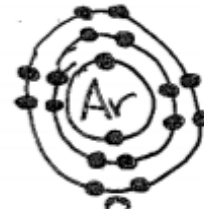
Valance electrons = 7

5. Calcium



Valance electrons = 2

6. Argon



Valance electrons = 8

7. Oxygen



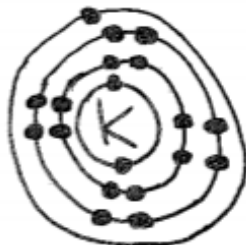
Valance electrons = 6

8. Lithium



Valance electrons = 1

9. potassium

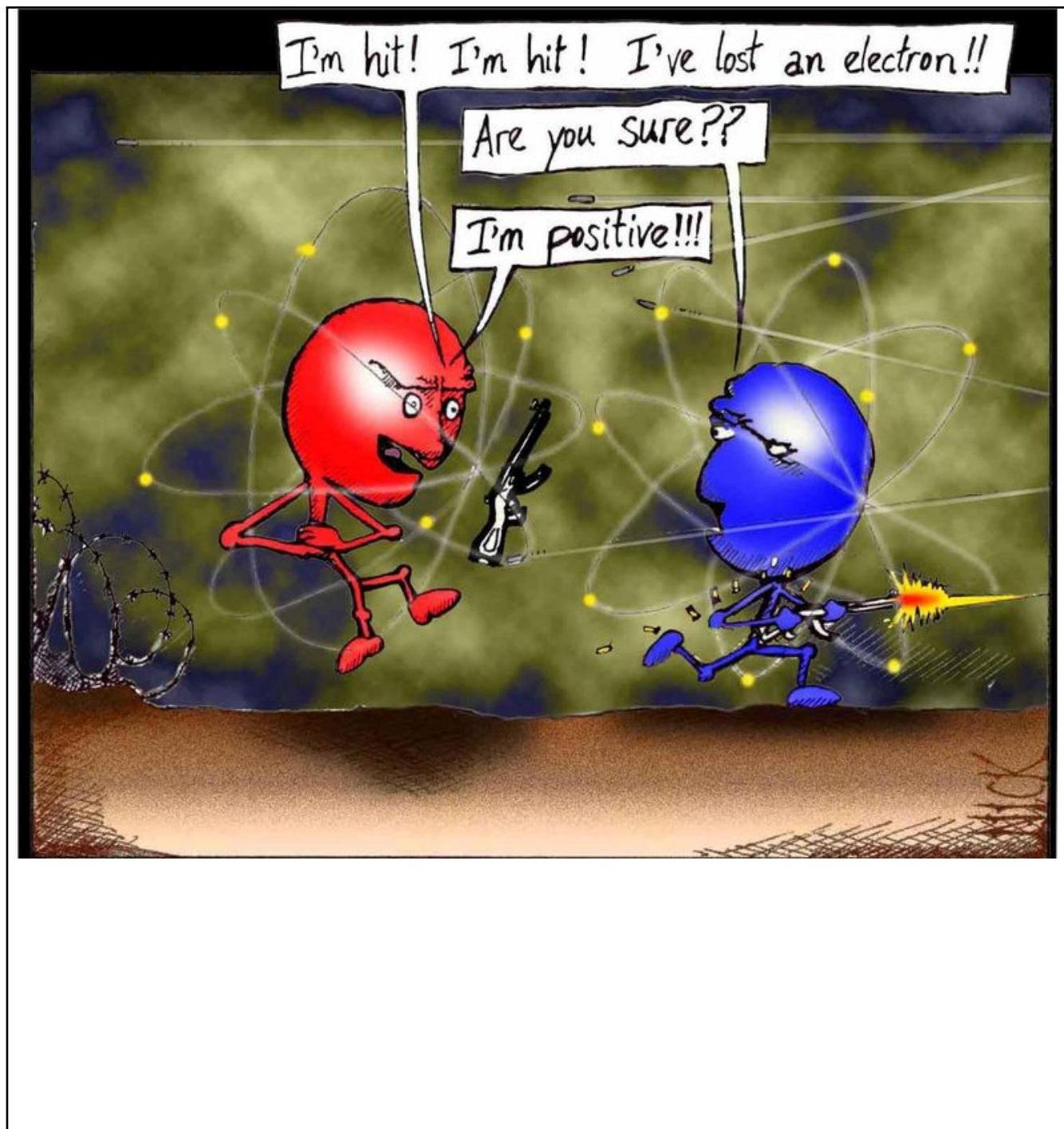


Valance electrons = 1

10. Helium



Valance electrons = 2



Ions

- when an element's valence is full it is stable and happy
- elements are willing to give up or gain e^- in order to have the appearance of a filled outermost orbit (stable)
- when e^- are gained or lost, an atom is then called an **ion**
- a positively charged ion is called a **cation (name stays the same)**
- a negatively charged ion is called an **anion (its name changes to an -ide ending) i.e. fluorine becomes fluoride, bromine becomes bromide**

Why do Ions form?

Elements want to have their outer orbits (valence) full. They will gain or lose electrons from their valence (outer most orbit) to do this.

Draw the bohr diagram for sodium in your notebook.

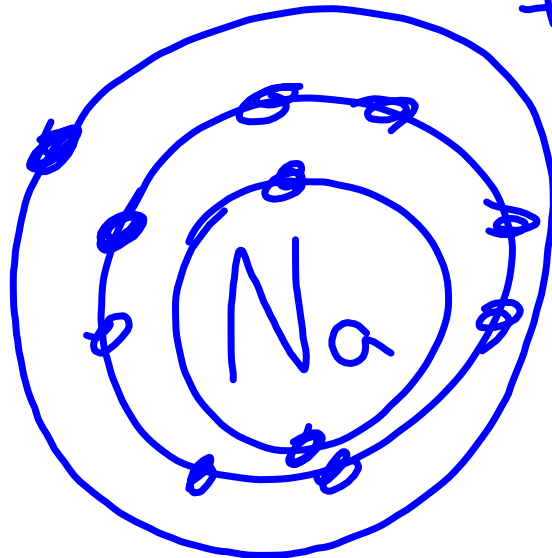
Answer the following questions:

Is its outer orbit (valence) full? **NO**

How many electrons are missing in order to make it full? **7**

Do you think sodium will gain or **lose electrons?**

What charge will sodium have? **+1**



Charged Atoms

Because sodium loses an electron to have a full valence. It still has 11 protons, but only 10 electrons therefore the sodium ion has a charge of +1.

It has one more proton than electron.



Anytime you lose electrons the ion will have a positive charge.

Anytime you gain electrons the ion will have a negative charge.

Bohr Diagram of Stable Ions

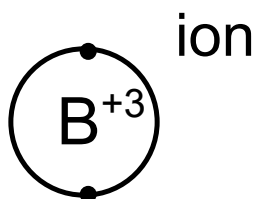
Look at the group # and determine how many valence electrons there are (Boron is in group 13 so it has 3 valence electrons)

Decide if the Atom is going to lose or gain electrons in order to become stable i.e. if it has 3 in its valence and the valence holds 8 it will lose 3)

Draw the Bohr diagram showing the extra or lost electrons (only 1 orbit with 2 electrons in it)

In the center put the ionic symbol (the symbol of the element showing how many electrons it has gained or lost i.e. Li^{+1} , M^{-2} etc)

Example: Boron

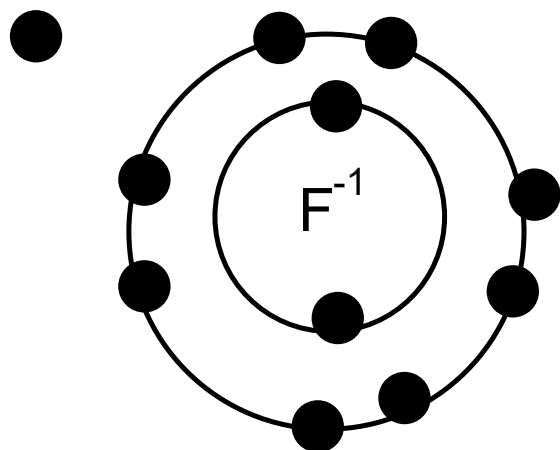


Example: fluorine

group #17 so 7 valence electrons

fluorine will gain 1 to have a full valence

draw fluorine with 10 electrons instead of 8



pg 187 #5,6

Attachments

S10 answers pg 187 #1-4.doc

answers pg 187 #1,2,4.doc