

Name:

Key

Date:

Pd:

# ATOMIC BASICS PRACTICE

Parts of the Atom:

SUBATOMIC PARTICLE	ELECTRIC CHARGE	LOCATION IN ATOM
Protons	+1	nucleus
neutrons	0	nucleus
electrons	-1	electron cloud

Complete the table for the elements:

atoms have no charge

sublevels  
energy levels  
outside nucleus

ELEMENT NAME	ATOMIC NUMBER	AVERAGE ATOMIC MASS	PROTONS	ELECTRONS
Hydrogen	1	1.00794	1	1
Boron	5	10.811	5	5
Nitrogen	7	14.0067	7	7
Oxygen	8	15.9994	8	8
Neon	10	20.1797	10	10

Why are we unable to predict the number of neutrons for ALL atoms of each element above? (Ex. Why can't we predict the number of neutrons in every nitrogen atom?)

isotope - some atoms of the same element have diff # n

For each of the following ions, indicate the total number of protons and electrons in the ion:

Ion	Number of Protons	Number of Electrons
Cl <sup>-1</sup>	17	18
K <sup>-1</sup> K <sup>+</sup>	19	18
S <sup>-2</sup>	16	18
Sr <sup>-2</sup>	38	36
Al <sup>-3</sup>	13	10
P <sup>-3</sup>	15	18

Here are three isotopes of an element:



- The element is: Carbon
- The number 6 refers to the atomic #, # of p
- The numbers 12, 13, and 14 refer to the mass # = p + n
- How many protons and neutrons are in the first isotope? 6p 6n
- How many protons and neutrons are in the second isotope? 6p 7n
- How many protons and neutrons are in the third isotope? 6p 8n

Complete the following chart:

P+n

Isotope name	atomic #	mass #	# of protons	# of neutrons	# of electrons	Isotopic Symbol
uranium-235 ↑ mass #	92	235	92	143	92	${}^{235}_{92}\text{U}$
uranium-238	92	238	92	146	92	${}^{238}_{92}\text{U}$
boron-10	5	10	5	5	5	${}^{10}_5\text{B}$
boron-11	5	11	5	6	5	${}^{11}_5\text{B}$

Fill in the following chart:

P+n

Element/ion	Atomic Number	Number of Protons	Number of Neutrons	Number of Electrons	Mass Number
${}^1_1\text{H}$	1	1	0	1	1
${}^1_1\text{H}^-$	1	1	0	2	1
${}^7_3\text{Li}$	3	3	4	3	7
${}^{35}_{17}\text{Cl}^-$	17	17	18	18	35
${}^{24}_{12}\text{Mg}^{2+}$	12	12	12	10	24
${}^{75}_{33}\text{As}$	33	33	42	33	75
${}^{108}_{47}\text{Ag}^+$	47	47	61	46	108
${}^{32}_{16}\text{S}^{2-}$	16	16	16	18	32
${}^{66}_{30}\text{Zn}^{+2}$	30	30	36	28	66
${}^{190}_{76}\text{Os}$	76	76	114	76	190

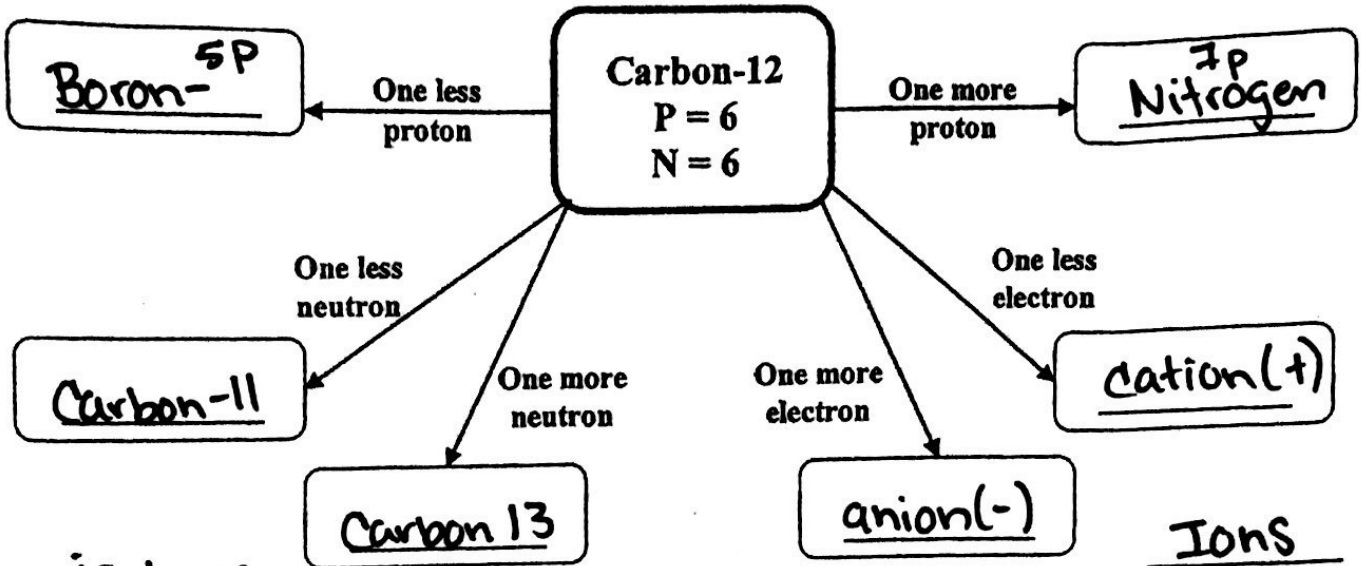
↑ assume atom

Complete the following diagram:

What happens to an atom if we lose or gain protons, neutrons, or electrons? Use the words in the word bank to complete this worksheet.

Anion (-)  
 Boron ✓  
 Carbon-11  
 Carbon-13

Cation (+)  
 Ions  
 Isotopes  
 Nitrogen ✓



isotopes  
 Atoms with different numbers of neutrons

Ions  
 Atoms that have lost or gained electrons

Flowchart:

