Name: KEY

Period: _____

Atomic Structure and Notation

1. For each of the following chemical symbols complete the table

Symbol	Protons	Neutrons	Electrons	Elements Name
V	23	26	23	Vanadium
Mn	25	30	25	Magnese
Ir	77	115	77	Iridum
S	16	16	16	Sulfur

2. Composition of Various Isotopes

Isotope	Atomic #	Mass #	# of p^+	# of n^0	# of e^-
S-32	16	32	16	16	16
Ca-44	20	44	20	24	20
Zn-63	30	63	30	33	30
F-19	9	19	9	10	9
Na-23	11	23	11	12	11

3. Complete the following chart

	Electrons	Protons	Neutrons	Isotopes (yes or no)
Gallium-64	31	31	33	yes
Fluorine-23	9	9	14	yes
Titanium-48	22	22	26	no
Heliem-8	2	2	6	yes

4. Complete the following chart

	Electrons	Protons	Neutrons	Isotope (yes or no)
$^{132}_{55}Cs$	55	55	77	yes
$^{163}_{69}Tm$	69	69	94	yes
$^{70}_{30}Zn$	30	30	40	yes
$^{59}_{27}Co$	27	27	32	yes

5. Why is the number of protons in an atom just like your fingerprints? Explain
the number of protons is specific to each element. Change protons and you change the element.

6. Iron has 26 protons. Predict what element you would have if you subtracted 3 electrons.
Still have Iron, changing electrons dosen't change the identity of the element

7. How many protons, electrons and neutrons does sulfur have if it has a -2 charge?

p = 16

n = 16

e = 16 + 2 = (18)

Ions Continued

Complete the following:

1. For each of the positive ions listed in column 1, use the periodic table to find in column 2 the total number of electrons that ion contains. The same answer may be used more than once.

B 1. Al^{+3}	A. 2
D 2. Fe^{+3}	B. 10
B 3. Mg^{+2}	C. 21
H 4. Sn^{+2}	D. 23
F 5. Co^{+2}	E. 24
E 6. Co^{+3}	F. 25
A 7. Li^{+1}	G. 36
C 8. Cr^{+3}	H. 48
G 9. Rb^{+1}	I. 76
I 10. Pt^{+2}	J. 81

Element/Ion	Atomic Number	Number of Protons	Number of Neutrons	Number of Electrons	Mass Number
$^{1}_{1}H$	1	1	0	0	1
$^{1}_{1}H^{+}$	1	1	0	18	35
$^{35}_{17}Cl^{-}$	17	17	18	10	24
$^{24}_{12}Mg^{2+}$	12	12	12	46	109
$^{108}_{47}Ag^{+}$	47	47	61	18	32
$^{32}_{16}S^{2-}$	16	16	16	28	66
$^{66}_{30}Zn^{+2}$	30	30	96	76	190
$^{190}_{76}Os$	76	76	114		

Answer the following questions:

1. Define an ion.

2. a. How can you tell if an atom has a negative charge? What type of Ion is this?

   b. How can you tell if an atom has a positive charge? What type of ion is this?

ATOMIC STRUCTURE WORKSHEET

Complete the table. There is enough information given for each element to determine all missing numbers.

Symbol	Atomic Number	Mass Number	Number of Protons	Number of Electrons	Number of Neutrons
^{23}Na	11	23	11	11	12
K	19	40	19	19	21
^{90}Sr	38	90	38	38	52
^{19}F	9	19	9	9	10
$^{41}Ca^{+2}$	20	41	20	18	21
Sn	50	122	50	50	72
^{131}I	53	131	53	53	78
^{26}Mg	12	26	12	12	14
$^{109}Ag^{+2}$	47	109	47	46	62
H	1	2	1	1	1
^{36}S	16	36	16	16	20
^{62}Fe	26	62	26	23	32
^{27}Al	13	27	13	13	14
^{4}He	2	4	2	2	2
^{53}Cr	24	53	24	24	29