Most Common Isotope Worksheet #1 Name: _____

Use the following terminology for this worksheet:

Element: Iron *Symbol: Fe* *Isotope symbol: Iron-56* *Nuclear symbol:* $^{56}_{26}\text{Fe}$

Part A. Write the most common isotope in hyphen notation for the following elements. The most common isotope can be found by rounding the atomic weight found on the periodic table of elements to the nearest whole number. The first one has been done for you.

1. Sodium: Na - 23
2. Aluminum: _____
3. Arsenic: _____
4. Radon: _____
5. Carbon: _____
6. Cesium: _____

Part B. Write the most common isotope in nuclear symbol notation for the following elements.

7. Uranium: $^{238}_{92}U$
8. Plutonium: _____
9. Fluorine: _____
10. Zinc: _____
11. Iodine: _____
12. Hydrogen: _____

Part C. Calculate the number of protons and neutrons in the following isotopes. Then determine is the isotopes is the most common isotope - Mark yes or no in the last column.

				yes / no
13.	H-3:	protons: 1	neutrons: 2	no
14.	C-14:	protons: ____	neutrons: ____	_____
15.	Oxygen-16:	protons: ____	neutrons: ____	_____
16.	Osmium-190:	protons: ____	neutrons: ____	_____
17.	Lead-207:	protons: ____	neutrons: ____	_____
18.	C-12:	protons: ____	neutrons: ____	_____
19.	$^{23}_{11}Na$:	protons: ____	neutrons: ____	_____
20.	$^{4}_{2}He$:	protons: ____	neutrons: ____	_____
21.	$^{7}_{3}Li$:	protons: ____	neutrons: ____	_____
22.	$^{54}_{25}Mn$:	protons: ____	neutrons: ____	_____
23.	$^{20}_{10}Ne$:	protons: ____	neutrons: ____	_____
24.	$^{73}_{32}Ge$:	protons: ____	neutrons: ____	_____
25.	$^{10}_{4}Be$:	protons: ____	neutrons: ____	_____

Use the following terminology for this worksheet:

Element: Iron *Symbol: Fe* *Isotope symbol: Iron-56* *Nuclear symbol:* $^{56}_{26}Fe$

*Part D. List **all** of these choices that apply:*

A) proton B) neutron C) electron D) none of the above

_____ a. Has no charge

_____ b. Is found in the nucleus

_____ c. Contributes to the mass number

_____ d. Similar in mass

_____ e. Determines the atomic number

_____ f. Two isotopes can have different numbers of these

_____ g. Has a negative charge

_____ h. Were known to Rutherford

_____ i. Were known to Dalton

_____ j. Has the highest mass

_____ k. Discovered in a cathode ray tube

Part E. Complete the following table: Assume all atoms are neutral.

isotope symbol	nuclear symbol	mass number	number of protons	number of neutrons	number of electrons	atomic number
carbon-12						
	$^{40}_{18}Ar$					
iodine- 128						
	$^{60}_{28}Ni$					
		34	16			
				21		19
				14	13	

Challenge Round - does need to be completed.

1. What is the atomic number of iron-56? _____
2. What is the mass number of boron-11? _____
3. How many protons are found in an atom of strontium? _____
4. How many protons are found in an atom of sulfur-32? _____
5. How many electrons are found in a neutral atom of mercury-200? _____
6. What element can be represented by 45 n^o, 34 p^+, 34 e^- _____
7. What isotope symbol can be represented by, $7p^+$, $7e^-$, 7 n^o _____
8. What nuclear symbol can be represented by $40p^+$, 52 n^o _____
9. What is the nuclear symbol of a Vanadium atom with 25 neutrons? _____
10. Based on the periodic table, what is probably the most common isotope of Molybdenum? _____

Most Common Isotope Worksheet #1 Name: Key

Use the following terminology for this worksheet:

Element: Iron *Symbol: Fe* *Isotope symbol: Iron-56* *Nuclear symbol:* $^{56}_{26}\text{Fe}$

Part A. Write the most common isotope in hyphen notation for the following elements. The most common isotope can be found by rounding the atomic weight found on the periodic table of elements to the nearest whole number. The first one has been done for you.

1. Sodium: Na - 23
2. Aluminum: Al - 27
3. Arsenic: As - 75
4. Radon: Rn - 222
5. Carbon: C - 12
6. Cesium: Cs - 133

Part B. Write the most common isotope in nuclear symbol notation for the following elements.

7. Uranium: $^{238}_{92}U$
8. Plutonium: $^{244}_{94}Pu$
9. Fluorine: $^{19}_{9}F$
10. Zinc: $^{65}_{30}Zn$
11. Iodine: $^{127}_{53}I$
12. Hydrogen: $^{1}_{1}H$

Part C. Calculate the number of protons and neutrons in the following isotopes. Then determine is the isotopes is the most common isotope - Mark yes or no in the last column.

		protons:	neutrons:	yes / no
13.	H-3:	1	2	no
14.	C-14:	6	8	no
15.	Oxygen-16:	8	8	yes
16.	Osmium-190:	76	114	yes
17.	Lead-270: (207)	82	125	yes
18.	C-12:	6	6	yes
19.	$^{23}_{11}Na$:	11	12	yes
20.	$^{4}_{2}He$:	2	2	yes
21.	$^{7}_{3}Li$:	3	4	yes
22.	$^{54}_{25}Mn$:	25	29	No
23.	$^{20}_{10}Ne$:	10	10	yes
24.	$^{73}_{32}Ge$:	32	41	yes
25.	$^{10}_{4}Be$:	4	6	No

Use the following terminology for this worksheet:

Element: Iron *Symbol: Fe* *Isotope symbol: Iron-56* *Nuclear symbol:* $^{56}_{26}Fe$

*Part D. List **all** of these choices that apply:*

A) proton B) neutron C) electron D) None of above

B	a. Has no charge	C	g. Has a negative charge
A B	b. Is found in the nucleus	C A	h. Were known to Rutherford
A B	c. Contributes to the mass number	D —	i. Were known to Dalton
A B	d. Similar in mass	A B	j. Has the highest mass
A	e. Determines the atomic number	C	k. Discovered in a cathode ray tube
B	f. Two isotopes can have different numbers of these		

Part E. Complete the following table: Assume all atoms are neutral.

isotope symbol	nuclear symbol	mass number	number of protons	number of neutrons	number of electrons	atomic number
carbon-12	$^{12}_{6}C$	12	6	6	6	6
argon-40	$^{40}_{18}Ar$	40	18	22	18	18
iodine-128	$^{128}_{53}I$	128	53	75	53	53
Nickel-60	$^{60}_{28}Ni$	60	28	32	28	28
sulfur-34	$^{34}_{16}S$	34	16	18	16	16
~~chromium-52~~	~~$^{52}_{24}Cr$~~	~~52~~	~~24*~~	~~28~~	~~24~~	~~24~~
potassium-40	$^{40}_{19}K$	40	19	21	19	19
aluminum-27	$^{27}_{13}Al$	27	13	14	13	13

* assume only one isotope exists

Challenge Round - does need to be completed.

1. What is the atomic number of iron-56? — 26
2. What is the mass number of boron-11? — 11
3. How many protons are found in an atom of strontium? — 38
4. How many protons are found in an atom of sulfur-32? — 16
5. How many electrons are found in a neutral atom of mercury-200? — 80
6. What element can be represented by 45 n^o, 34 p^+, 34 e^- — Selenium
7. What isotope symbol can be represented by, 7p^+, 7e^-, 7 n^o — N - 14
8. What nuclear symbol can be represented by 40p^+, 52 n^o — $^{92}_{40}Zr$
9. What is the nuclear symbol of a Vanadium atom with 25 neutrons? — $^{48}_{23}V$
10. Based on the periodic table, what is probably the most common isotope of Molybdenum? — Mo -96