

Name _____ Period _____

CP Chemistry of the Earth

Assignment 1S – Unit 1 Review

20 Points

Answer the following questions based on the in class notes *Same Mass # - Atomic #

Isotope A - X		Atomic # [*]	Mass #	Protons (p ⁺) [*]	Electrons (e ⁻) [*]	Neutrons (n ^o)	Atomic Mass (amu) (Mass#)	
51	V	23	51	23	23	51-23	28	51 amu
23						28		
Zinc-65		30 [*]	65	30	30	65-30	35	65 amu
		74	184					
Tin - _____				50		69		

Mass #
p⁺ + n^o
Atomic #
p⁺

Atomic #
on PT

*Zn is
element 30

Complete the following Chart to find the average atomic mass

Cobalt has the following isotopes

Isotope	Fractional Abundance
Co-57	0.098
Co-58	0.182
Co-59	0.720

Calculate the Average Atomic Mass of ⁵⁹Co

Isotope	Atomic Mass
Co-57	57 amu
Co-58	58 amu
Co-59	59 amu

Frac. Abund.
0.098
0.182
0.720

Ratio
5.586 amu
10.556 amu
42.48 amu

Ratio Co-57
5.586 amu

Ratio Co-58
10.556 amu

Ratio Co-59
42.48 amu

Avg Atomic Co
58.616 amu

5.586 amu + 10.556 amu + 42.48 amu = 58.616 amu

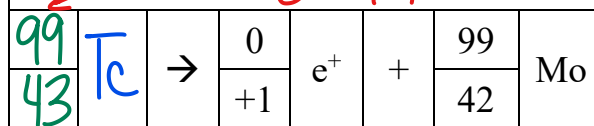
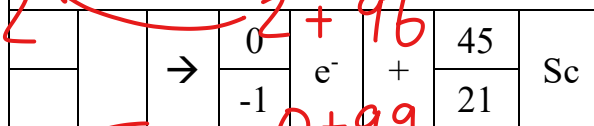
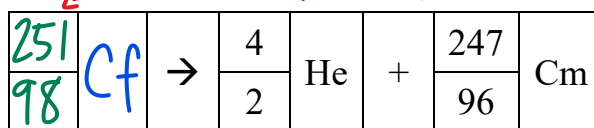
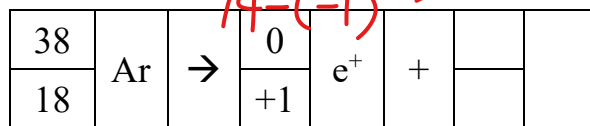
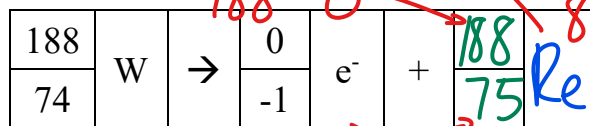
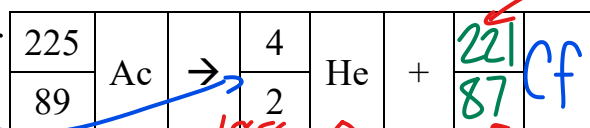
Don't Round!

Don't Round!

Alpha ${}^4_2\text{He}$ Beta- = ${}^0_{-1}\text{e}^-$ Beta+ = ${}^0_{+1}\text{e}^+$ (positron)

Decay Type

Complete the following nuclear decay equations



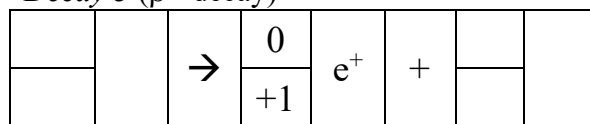
Complete the following nuclear decay chain

Not on Test
Cesium-135 Decay Chain

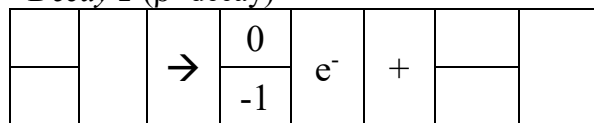
Decay 1 (α decay)



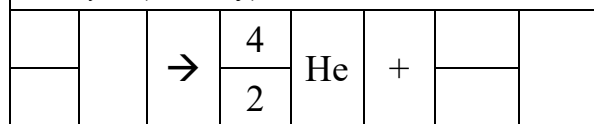
Decay 3 (β+ decay)



Decay 2 (β- decay)



Decay 4 (α decay)



Complete the following charts based on the half-life of nuclear particles

Not on Test

Isotope	Starting Particles (N^o)	Number HL passed (n)	Remaining Particles (N_t)	Number HL passed (n)	Remaining Particles (N_t)
${}^{10}\text{Be}$	100000	4		8	

On Test

Isotope	Starting Particles (N^o)	HL Time	Total Time	# HL Passed (n)	Remaining Particles (N_t)
${}^{33}\text{P}$	100000	15.6days	93.6days	6	1563

①
$$\#HL = \frac{\text{Total T}}{\text{HLT}} = \frac{93.6\text{day}}{15.6\text{day}} = 6$$

②
$$N_t = \frac{N_o}{2^n} = \frac{100000}{2^6} = 1562.5 = 1563 \leftarrow \text{Rnd}$$