Names:_____

UBSP-Chemistry quiz

1. If a material has a half-life of 24 hours, how long do you have to wait until the amount of radioisotope is 1/8 its original amount? Show your work/reasoning

1 → **1/2** → ¼ → 1/8
24hrs + 24hrs + 24hrs = 72 hrs

2. How many half-life cycles would be required for a 860.0 gram sample of radioactive thorium to decay until less than 15.0 grams remain?

860g 430g 215g 107.5 53.75 26.875 13.4375
0 1 2 3 4 5 6

3. Fill in the chart below for each of the following isotopes.

Atomic Notation	Atomic #	Mass #	#Protons	#Neutrons	#Electrons
$^{131}_{53}I$	_____	_____	_____	_____	_____
_____	_____	99	_____	_____	43
$^{131}_{53}I$	**53**	**131**	**53**	**78**	**53**
$^{99}_{43}Tc$	43	99	**43**	**56**	43

4. Write the equation for the alpha decay for these two elements

A) $^{209}_{85}At \rightarrow {}^{205}_{83}Bi + {}^{4}_{2}He$

5. Write the equation for the beta decay for these two elements

A) $^{140}_{56}Ba \rightarrow {}^{140}_{57}La$ + Beta

6. Bonus-CALCULATE the ***AVERAGE ATOMIC MASS*** of an element given the following information:

Isotope #	atomic mass	percent abundance
1	10.0129 amu	19.78%
2	11.00931 amu	80.22%

(YOU MUST SHOW WORK TO GET CREDIT!!!)

(10.0129 amu)(0.1978) + (11.00931 amu)(0.8022) = 10.812 amu

→ **b) What element is this?** **Boron**