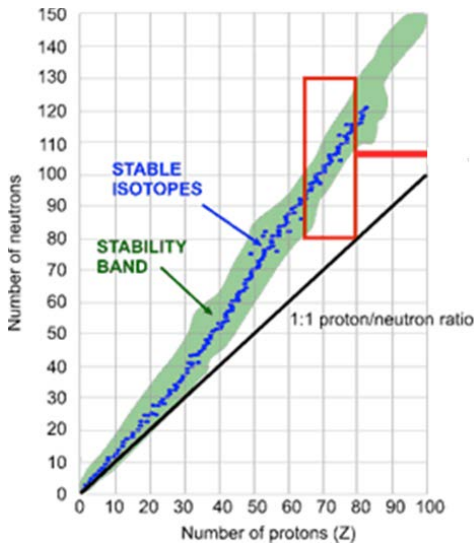


Name: _____

Period: _____

Date: _____

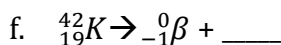
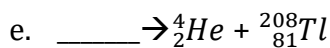
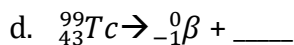
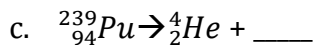
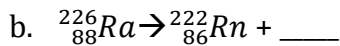
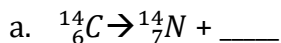
Worksheet on Nuclear Stability

1. Use the stability band shown on the left to answer the following questions.
 - a. Will a nucleus with 60 protons and 70 neutrons be stable?
 - b. Will Zn-70 isotope be stable?
 - c. Which of the following isotopes will be radioactive? Circle which ones will be radioactive. Ne-21, Nd-130, K-39, Zr-120.

2. Fill in the table below.

Radiation Type	Symbol	Mass (amu)	Charge
	${}^4_2\text{He}$	4	+2
		1/1840	-1
Gamma	${}^0_0\gamma$		

3. Fill in missing parts for the following nuclear equations:



4. What is the new isotope if Polonium-210 undergone the following radioactive decay?
- α -decay
 - β -decay
5. Fill in missing parts for the following nuclear equations and specify what type of nuclear decay:
- ${}_{13}^{28}\text{Al} \rightarrow {}_{11}^{24}\text{Na} + \text{_____}$
 - ${}_{92}^{238}\text{U} \rightarrow {}_2^4\text{He} + \text{_____}$
 - ${}_{35}^{80}\text{Br} \rightarrow {}_{36}^{80}\text{Kr} + \text{_____}$
 - ${}_{53}^{127}\text{I} \rightarrow {}_{-1}^0\beta + \text{_____}$
 - $\text{_____} \rightarrow {}_2^4\text{He} + {}_{71}^{175}\text{Lu}$
 - ${}_{9}^{19}\text{F} \rightarrow {}_{-1}^0\beta + \text{_____}$
6. An isotope produced via one alpha-decay has 73 protons and 104 neutrons. What is the original isotope before the radioactive decay? Show your work and specify isotopes using nuclear notations.
7. The starting isotope has 75 protons in its nucleus with a mass number of 186. What is the product after the isotope undergoes three beta-decays? Show your work and specify isotopes using nuclear notations.