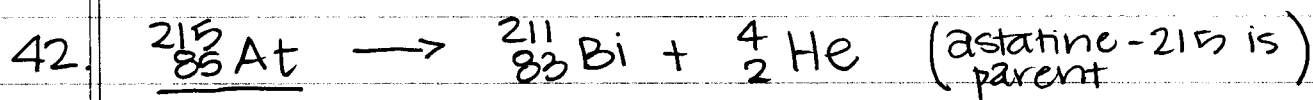
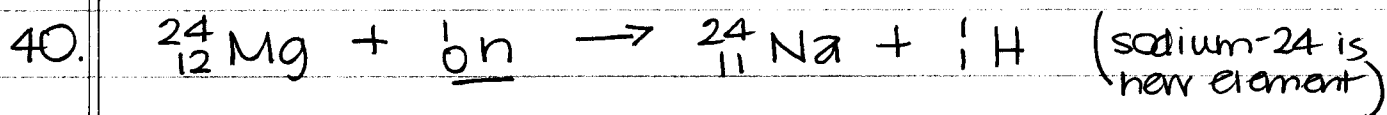
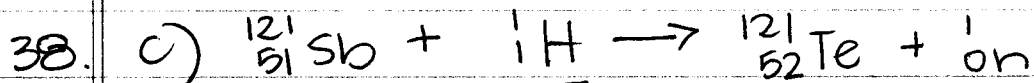
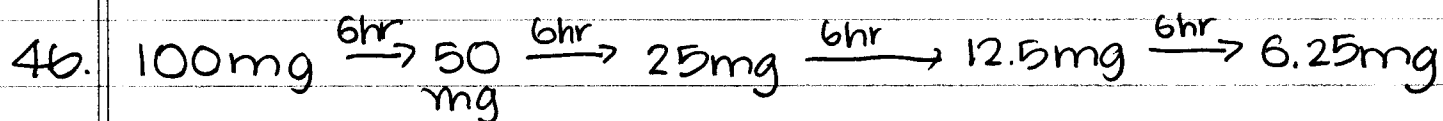


Chem 30A: Answers to Homework NOT FOUND in TextChapter 4

18. a) beta particle emission  $\rightarrow$  nucleon # is unchanged;  
atomic # increases by 1
- b) neutron emission  $\rightarrow$  nucleon # decreases by 1;  
no change in atomic #.
- c) proton emission  $\rightarrow$  both nucleon # & atomic # decrease by 1.
20. Diagnostic testing and destroying cancer cells.
22. skip
24. alpha particles
36. a)  ${}_{82}^{209}\text{Pb} \rightarrow {}_{83}^{209}\text{Bi} + {}_{-1}^0\text{e}$  (or  ${}_{-1}^0\beta$ )
- b)  ${}_{90}^{225}\text{Th} \rightarrow {}_{88}^{221}\text{Ra} + {}_{2}^4\text{He}$  (or  $\alpha$ )
- c)  ${}_{79}^{186\text{m}}\text{Au} \rightarrow {}_{79}^{186}\text{Au} + \gamma$   
 $\nwarrow$  higher energy
 $\nwarrow$  lower energy
38. a)  ${}_{79}^{179}\text{Au} \rightarrow {}_{77}^{175}\text{Ir} + {}_{2}^4\text{He}$
- b)  ${}_{10}^{23}\text{Ne} \rightarrow {}_{11}^{23}\text{Na} + {}_{-1}^0\text{e}$



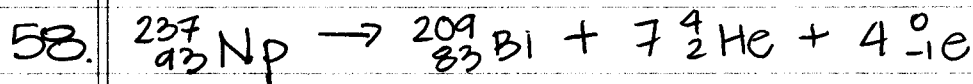
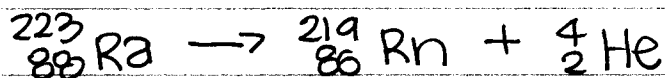
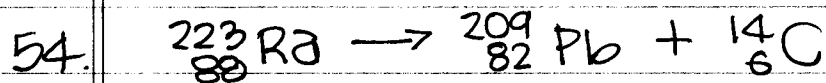
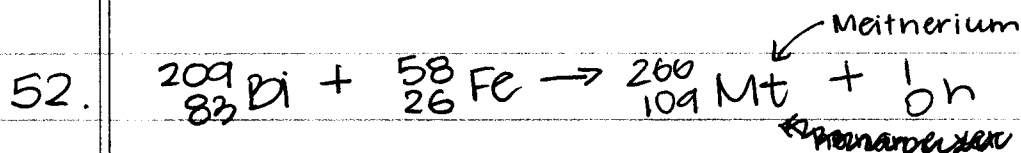
44. After 4.5 s  $\rightarrow$  1500 atoms (undergoes 1 half-life)  
 After a total of 9.0 seconds  $\rightarrow$  750 atoms  
 (undergoes 2 half lives)

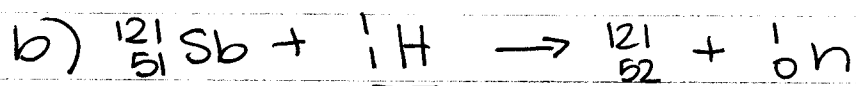
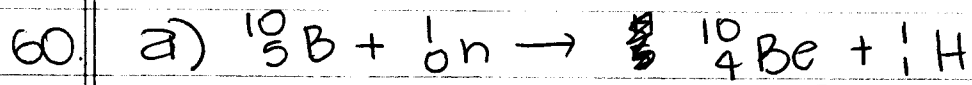


total time = 24 hours.

48. 1 half-life has passed; 5730 years

50. 50%  $\rightarrow$  5730 years; 25%  $\rightarrow$  11,460 years





### Chapter 14 :

