1) Fluorine-21 has a half life of approximately 20 seconds. If you start with 36 grams how much would remain after 1 minute?

2) Iodine-131 has a half life of 8 days. If you start with 125 atoms how much would remain at the end of 32 days?

3) The half-life of chromium-51 is 28 days. If the sample contained 510 grams, how much chromium would remain after 56 days? How much would remain after 1 year?

4) If 20.0 g of a radioactive isotope are present at 1:00 PM and 10.0 g remain at 2:00 PM, what is the half life of the isotope?

5) Chromium-48 decays. After 6 half-lives, how much of the original nuclei would remain if you started with 900 lbs.

6) The half life of iodine-125 is 60 days. What fraction of iodine-125 nuclides would be left after 360 days? (hint: start with 1 or 100%)

7) A medical institution requests 1 g of bismuth-214, which has a half life of 20 min. How many grams of bismuth-214 must be prepared if the shipping time is 2 h?

8) The half life of radium 226 is 1500 years. If you have 500 grams of radium today how many grams would have been present 6000 years ago?
Decay Practice Worksheet #1

Types of Decay Reactions
State whether each of the following decay reactions is alpha, beta, or gamma decay.

1. $^{232}_{92}U \rightarrow ^4_2He + ^{228}_{90}Th$
2. $^{130}_{52}Te \rightarrow ^0_e + ^{130}_{53}I$
3. $^3_1H \rightarrow ^0_e + ^3_2He$

Balancing Decay Reactions
Fill in the blank in each of the following decay reactions with the correct decay particle or decayed nucleus that will balance the decay reaction, and also state whether it is alpha or beta decay.

4. $^{184}_{74}W \rightarrow ^4_2He + _____$
7. $^{14}_{6}C \rightarrow ^0_e + _____$
5. $^{210}_{82}Pb \rightarrow _____ + ^{206}_{80}Hg$
8. $^{35}_{16}S \rightarrow _____ + ^{35}_{17}Cl$
6. _____ $\rightarrow ^4_2He + ^{207}_{81}Tl$
9. _____ $\rightarrow ^0_e + ^{60}_{28}Ni$

Writing Balanced Decay Reactions
Write the balanced decay reaction formula when each of the following radioactive isotopes decays in the manner stated.

10. $^{45}_{20}Ca$ (beta)
12. $^{210}_{84}Po$ (alpha)
11. $^{234}_{94}Pu$ (alpha)
13. $^{24}_{11}Na$ (beta)

Predicting Decay Products
14. What is the name of the product isotope formed when Radon-222 decays by alpha decay?
15. What is the name of the product isotope formed when Thorium-234 decays by beta decay?