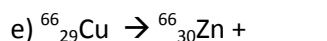
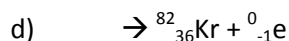
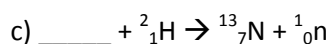
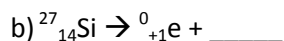
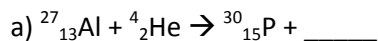


Half-life

$$\frac{N}{N_0} = \left(\frac{1}{2}\right)^{\frac{t}{T_{1/2}}}$$

- Carbon 14 has a half-life of 5,730 years. If an original sample was $100\mu\text{g}$ of C^{14} and it is now $0.781\mu\text{g}$ of C^{14} , how old is your sample?
- If 28,650 years have passed since an animal died, and if on that day there was $48\mu\text{g}$ of C^{14} in its body, how much C^{14} is left in μg ?
- A radioactive element has a half-life of 20 days. How much of a $16\mu\text{g}$ sample would be undecayed after 80 days?
- Strontium-90 Has half-life of 28 years. If a 1.00-mg sample was stored for 112 years. What mass of Sr-90 would remain?
- The half-life of ^{239}Pu (plutonium-239) is 24,110 years. How many years would it take for 200 g of radioactive ^{239}Pu to decay so that only 6.25 g of the sample would be radioactive?
- Sodium-24 has a half-life of 15 hours. How much sodium-24 will remain in an 18.0 g sample after 60 hours?
- After 42 days a 2.0 g sample of phosphorus-32 contains only 0.25 g of the isotope. What is the half-life of phosphorus-32?
- Polonium-214 has a relatively short half-life of 164 seconds. How many seconds would it take for 8.0 g of this isotope to decay to 0.25 g?
- How many days does it take for 16 g of palladium-103 to decay to 1.0 g? The half-life of palladium-103 is 17 days.
- In 5.49 seconds, 1.20 g of argon-35 decay to leave only 0.15 g. What is the half-life of argon-35?

I-- Complete and balance these nuclear equations by supplying the missing particles:



II. Write nuclear equation for the alpha decay of



III. Write nuclear equations for the beta decay of



IV. Determine the type of emission or emissions (alpha, beta, or gamma) that occurred in the following transitions:

