- Polonium-210 has a half-life of 140 days. A scientist has 25 grams of Polonium-210. How many grams will remain after one year?

$$P(t) = P_o \, a^t$$

$$P_o = 25$$

$$\frac{1}{2} = a^{140} \quad \Rightarrow \quad a = \sqrt[140]{\frac{1}{2}}$$

$$\approx 0.9950611$$

$$P(t) = 25\left(0.9950611^t\right)$$

$$P(365) = 25\left(0.9950611^{365}\right) = \boxed{4.1 \text{ grams}}$$

↑

1 year is 365 days