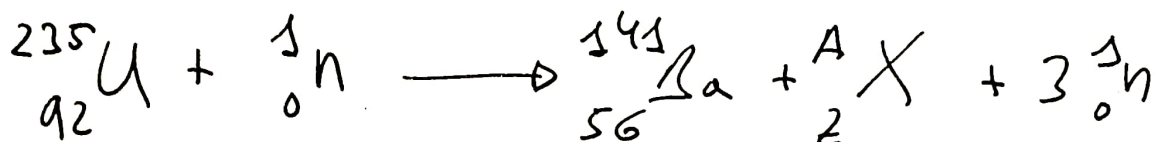


1.-

b) é a correcta. A masa do núcleo é menos que as partículas que o constitúen.

2.-



	REACTIVOS			PRODUCTOS :		
	U	n		Ba	n.	X
Z	92	0		56	0	$92 - 56 = 36$
A	235	1		141	3	$235 + 1 - [141 + 3 \times 1] =$

$\underline{= 92}$

Verdadeira. a b)

a) FALSA é unha reacción de fisión

c) FALSA

$\begin{matrix} 92 \\ 36 \end{matrix} \times$



4.-

$$N_0 \rightarrow N_0/16$$

$$\ln \frac{N}{N_0} = -\lambda t$$

$$N = N_0/16 \Rightarrow t = 24 \text{ horas.}$$

$$t_{1/2} \Rightarrow N = \frac{N_0}{2}$$

$$\lambda = \frac{-\ln N/N_0}{t} = -\frac{\ln \frac{N_0}{16 N_0}}{24h} = \frac{2.77}{24h} = 0.116 h^{-1}$$

$$\ln \frac{N}{N_0} = -\lambda t$$

$$t = \frac{\ln N/N_0}{-\lambda}$$

$$t_{1/2} \Rightarrow N = \frac{N_0}{2} ; (t_{1/2} \text{ tiempo de semidesintegración})$$

$$t_{1/2} = \frac{\ln 1/2}{-\lambda} = \underline{5.97 \text{ horas}}$$

$$b) \underline{\underline{6h}}$$

5.- N_0 : número de núcleos inicial.
10 anos ~~$N_0 \neq \frac{N_0}{2}$~~ $\frac{N_0}{2}$

Faz 20 anos

$$\ln \frac{N}{N_0} = -\lambda \cdot t$$

$$t_{1/2} \rightarrow N = \frac{N_0}{2}$$

$$\lambda = \frac{-\ln \frac{N_0/2}{N_0}}{10 \text{ anos}} = 6,93 \cdot 10^{-2} \text{ anos}^{-1}$$

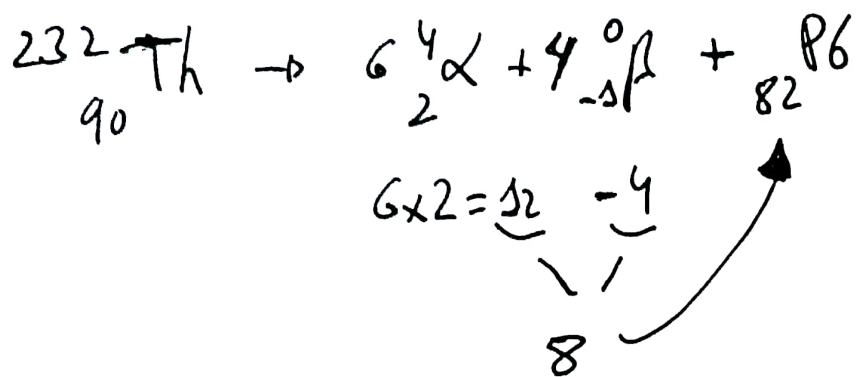
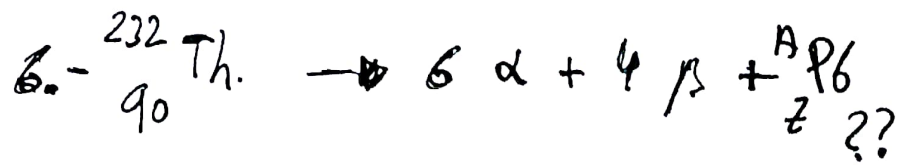
$$\ln \frac{N}{N_0} = -\lambda t \quad \frac{N}{N_0} = e^{-\lambda t}$$

$$\cancel{\ln \frac{N_0}{N}} \quad t = 30 \text{ anos}$$

$$\frac{N}{N_0} = e^{-6,93 \cdot 10^{-2} \text{ anos}^{-1} \cdot 30 \text{ anos}}$$

$$\frac{N}{N_0} = 0,125 \Rightarrow \frac{N_0}{N} = 8$$

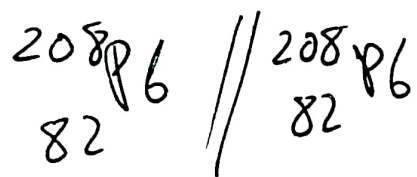
Resposta correta c)



para o número máximo

$$6 \times 4 = 24.$$

$$222 - 24 = 208$$



Resposta correta a)

7.- ^{90}Sr

$$t_{1/2} = 28 \text{ anos}$$

2 mols de ^{90}Sr ; número de átomos que
quedaram depois de 112 anos.?

$$2 \text{ mols de } ^{90}\text{Sr} \quad \frac{6.022 \cdot 10^{23} \text{ átomos de } ^{90}\text{Sr}}{1 \text{ mol de } ^{90}\text{Sr}} = 1.2 \cdot 10^{24} \text{ átomos}$$

$$\ln \frac{N}{N_0} = -\lambda t$$

$$\frac{N}{N_0} = e^{-\lambda t} \Rightarrow N = N_0 e^{-\lambda t}$$

λ ? há que calculá-lo

$$\ln \frac{N}{N_0} = -\lambda t \Rightarrow \lambda = -\frac{\ln N/N_0}{t} \Rightarrow \lambda = -\frac{\ln 1/2}{28 \text{ anos}} =$$

$$\lambda = 2.48 \cdot 10^{-2} \text{ anos}^{-1}$$

$$\Rightarrow N = 1.2 \cdot 10^{24} \text{ átomos} e^{-2.48 \cdot 10^{-2} \text{ anos}^{-1} \cdot 112 \text{ anos}} \Rightarrow$$

$$N = 7.5 \cdot 10^{22} \text{ átomos}$$

$$\frac{N}{N_0} = e^{-\lambda t} \Rightarrow \frac{N}{N_0} = e^{-2.48 \cdot 10^{-2} \text{ anos}^{-1} \cdot 112 \text{ anos}}$$

$$\frac{N}{N_0} = 0.0625 \Rightarrow \frac{N}{N_0} = \frac{1}{16}$$

8.- O tempo de ~~semidesintegração~~ é o tempo que leva um número de núcleos N_0 em converter-se na metade $N_0/2$

$$-dN = -\lambda N dt \Rightarrow \frac{dN}{dt} = -\lambda \cdot N$$

$$A = \frac{dN}{dt} ; A = -\lambda \cdot N$$

$$\Rightarrow \frac{dN}{N} = -\lambda \cdot dt \text{ integrando}$$

$$\int \frac{dN}{N} = -\lambda dt \Rightarrow \left[\ln N \right]_{N_0}^N = -\lambda \cdot [t]_0^t$$

$$\ln \frac{N}{N_0} = -\lambda \cdot t$$

$$N = \frac{N_0}{2} \Rightarrow \ln \frac{1}{2} = -\lambda \cdot \underset{\uparrow}{t_{1/2}}$$

tempo de semidesintegração

A vida média de um núcleo é o tempo que "vive" por promedio um núcleo

$$\tau = \frac{1}{\lambda}$$

9.-

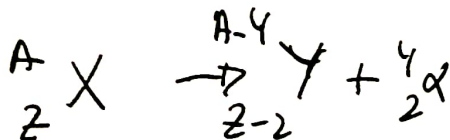
a) Verdadeiro

$$A = -\frac{dN}{dt} ; A = \lambda \cdot N$$

b) Non $t_{s/2} = \frac{1}{\lambda}$

c) radiação γ (gamma e radiação electromagnética)

10.-



$$t_{s/2} = 28 \text{ anos}$$

$$\ln \frac{N}{N_0} = -\lambda \cdot t \Rightarrow \ln \frac{1}{2} = -\lambda t_{s/2}$$

$$-\lambda = \frac{\ln \frac{1}{2}}{t_{s/2}} \Rightarrow \lambda = -\frac{\ln \frac{1}{2}}{t_{s/2}}$$

$$\lambda = 2'48 \cdot 10^{-2} \text{ anos}^{-1}$$

$$N = 0'75 N_0$$

$$\ln \frac{N}{N_0} = -\lambda \cdot t \Rightarrow t = \frac{\ln N/N_0}{-\lambda} = -\frac{\ln 0'75}{2'48 \cdot 10^{-2} \text{ anos}^{-1}}$$

$$t = 11'6 \text{ anos}$$