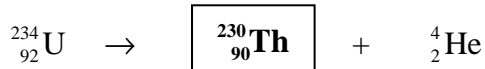
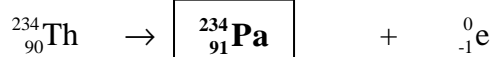


- Balance the following nuclear reactions by identifying the missing nuclear particle.

Marks
2



- A nugget contains 2.6×10^{24} atoms of gold. What amount of gold (in mol) is in this nugget and what is its mass (in kg)?

2

One mole of gold corresponds to Avogadro's number, 6.022×10^{23} , atoms. 2.6×10^{24} atoms therefore corresponds to:

$$\text{number of moles} = \frac{\text{number of atoms}}{\text{Avogadro's number}} = \frac{2.6 \times 10^{24}}{6.022 \times 10^{23}} = 4.3 \text{ mol}$$

As one mole of gold has a mass, corresponding to the atomic mass, of 196.97 g. 4.3 mol of gold therefore corresponds to:

$$\text{mass} = \text{number of moles} \times \text{atomic mass} = 4.3 \times 196.97 = 850 \text{ g} = 0.85 \text{ kg}$$

(Note that the number of atoms is given to 2 significant figures in the question and this is reflected in the answers).

Amount: **4.3 mol**

Mass: **0.85 kg**