**6.1 CLASS WORKSHEET**

**1. Nuclear symbols - a review**

**Use this template for nuclear symbols and equations:** $$ ⟶ $$ + $$

|  |  |  |
| --- | --- | --- |
| (a) | Define the term “atomic number”. |   |
| (b) | Define the term “mass number”. |   |
| (c) | Define the term “isotopes”. |   |
| (d) | Write the symbol for an atom containing90 protons and 131 neutrons  |   |
| (e) | Give the name of the atom in (d) |   |
| (f) | Deduce the number of protons and neutrons in $$ |   |

**2. Principles of nuclear stability and radioactivity**

|  |  |  |
| --- | --- | --- |
| (a) | Describe an alpha particle and give its chemical symbol. |   |
| (b) | Describe a beta particle and give its chemical symbol. |   |
| (c) | Describe what happens inside a nucleus as a beta particle is emitted. |   |
| (d) | What is gamma radiation? Why is gamma radiation sometimes released alongside alpha and beta particles? |   |

**HOMEWORK 6.1A**

1. **Nuclear equations vs Chemical Equations**

Briefly summarise the main differences between nuclear equations and chemical equations in the table below:

|  |  |
| --- | --- |
| Nuclear equations | Chemical Equations  |
|  |  |

1. **Writing nuclear equations**

|  |  |  |
| --- | --- | --- |
| (a) | Complete the nuclear equation to show the emission of an alpha particle by radium-224 |  $\_{88}^{224}Ra$ ⟶ $\_{2}^{4}α\_{}^{}$+ .......... |
| (b) | Write a nuclear equation to show the emission of an alpha particle by americium-241 |   |
| (c) | Complete the nuclear equation to show the emission of a beta particle by actinium-228 |  $\_{89}^{228}Ac$ ⟶ $\_{-1}^{0}β\_{}^{}$+ .......... |
| (d) | Write a nuclear equation to show the emission of an beta particle by oxygen-18 |   |
| (e) | Polonium-216 is formed when another atom releases an alpha particle. Complete the nuclear equation for this reaction. |  ………… ⟶ $\_{2}^{4}α\_{}^{}$+ $\_{84}^{216}Po$ |
| (f) | Nitrogen-14 is formed when another atom releases a beta particle. Write a nuclear equation for this reaction. |  ………… ⟶ $\_{-1}^{0}β\_{}^{}$+ $\_{7}^{14}N$ |

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