

# P7.3 Changes in the nucleus

**A** Fill in the gaps to complete the sentences.

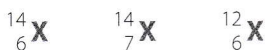
Isotopes of an element are atoms with the \_\_\_\_\_ number of protons but a \_\_\_\_\_ number of neutrons. They have the \_\_\_\_\_ atomic number but \_\_\_\_\_ mass numbers.

When a nucleus emits an alpha particle it loses \_\_\_\_\_ protons and \_\_\_\_\_ neutrons. The mass number goes down by \_\_\_\_\_, and the atomic number goes down by \_\_\_\_\_.

When a nucleus emits a beta particle a \_\_\_\_\_ changes to a \_\_\_\_\_ and emits an \_\_\_\_\_. The mass number \_\_\_\_\_, and the atomic number goes up by \_\_\_\_\_.

**B a** Here are some symbols for atoms. The names of the elements have been replaced with an 'X'.

Circle the **two** isotopes of the same element.



**b** Explain the decision you made in part **a**.

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**C** Compare alpha decay and beta decay by describing the changes in the nucleus.

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