

- 8** An isolated stationary nucleus X decays by emitting an α -particle to form a nucleus Y.

Nucleus Y and nucleus Z are isotopes of the same element.

- (a)** By comparing the number of protons in each nucleus, state and explain whether the charge of nucleus Y is less than, greater than or the same as the charge of:

- (i)** nucleus Z

.....
.....

[1]

- (ii)** nucleus X.

.....
.....
.....

[2]

- (b)** Use the principle of conservation of momentum to explain why nucleus Y cannot be stationary immediately after the decay of nucleus X.

.....
.....
.....
.....

[2]