

- 39** When a nucleus emits an  $\alpha$ -particle, how do the proton number and the nucleon number of the original nucleus change?

|          | proton number | nucleon number |
|----------|---------------|----------------|
| <b>A</b> | -4            | -2             |
| <b>B</b> | -2            | -2             |
| <b>C</b> | -2            | -4             |
| <b>D</b> | +1            | no change      |

- 40** A simple theory of  $\alpha$ -particle scattering by a thin metal foil uses the four assumptions given