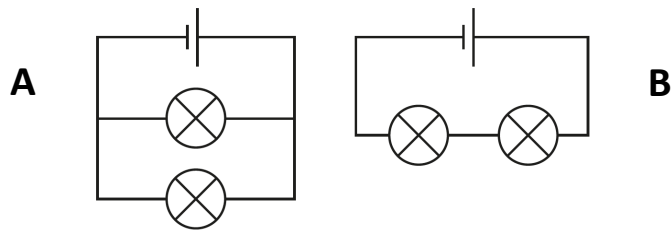


A student investigates if lamps are brighter in a series circuit or a parallel circuit. He sets up two different circuits, A and B.



- i. State which circuit will have the brightest lamps and explain why.

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- ii. State **two** variables that the student needs to control to ensure the experiment is valid.

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Explain what is meant by the half-life of a radioactive isotope. 	In the space below draw the diagram <u>and</u> symbol for a concave lens.
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Some isotopes of cobalt are radioactive.

The isotope cobalt-60 has the symbol:

$$^{60}_{27}\text{Co}$$

The isotope cobalt-57 has the symbol:

$$^{57}_{27}\text{Co}$$

i. State the number of protons in a nucleus of Co-60

Number of protons:

ii. Give **one similarity** and **one difference** between the nucleus of Co-57 and the nucleus of Co-60.

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