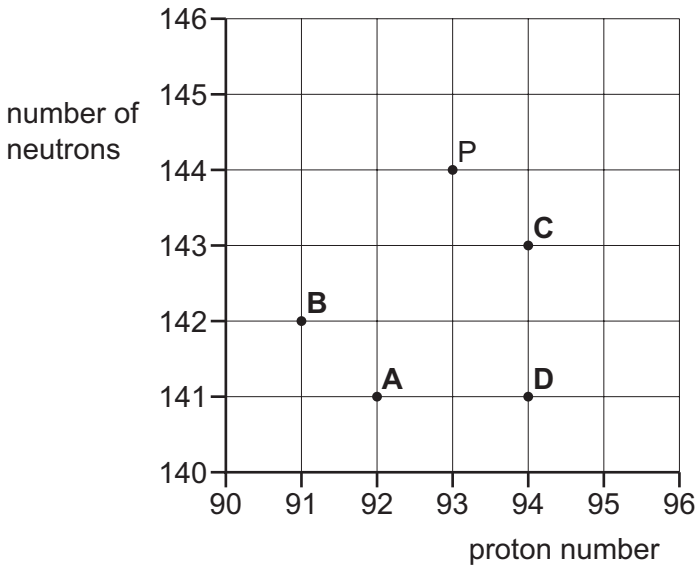
**38** Nucleus P has 144 neutrons and 93 protons. Nucleus P is unstable and undergoes $\alpha$-decay to form nucleus Q. Nucleus Q then undergoes $\beta^-$ decay to form nucleus R.

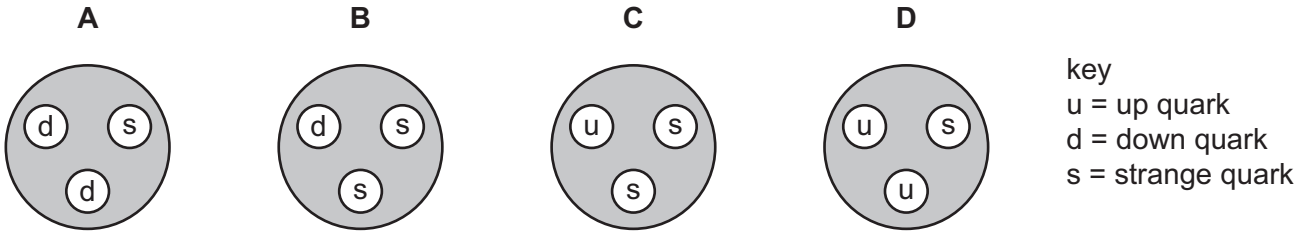
Nucleus P is represented by point P on the graph.

Which point on the graph represents nucleus R?




**39** The diagrams show the quark composition of four different hadrons. One of the hadrons is a $\Sigma^+$ particle. It has a charge of $+e$, where $e$ is the elementary charge.

Which hadron could be the $\Sigma^+$ particle?




**40** Which type of particle is comprised of the most quarks?

**A** antiquark

**B** baryon

**C** lepton

**D** meson