**10** An object of mass $m$ moving with velocity $9.0\,\mathrm{m\,s^{-1}}$ has a head-on elastic collision with a stationary object of mass $2m$.

After the collision, both objects are moving. No external forces act on the system.

What is the velocity of the object of mass $2m$ after the collision?

**A** $-6.0\,\mathrm{m\,s^{-1}}$ **B** $-3.0\,\mathrm{m\,s^{-1}}$ **C** $4.5\,\mathrm{m\,s^{-1}}$ **D** $6.0\,\mathrm{m\,s^{-1}}$