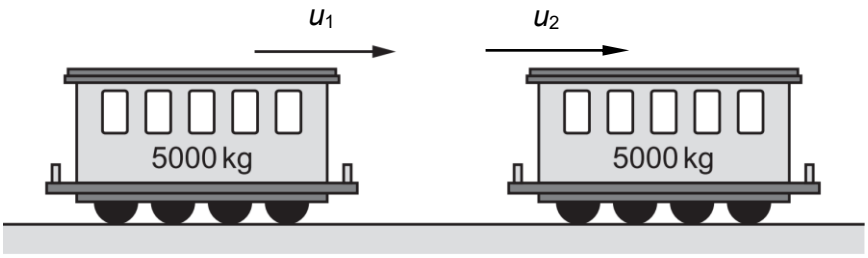
6 Two train carriages each of mass 5000 kg roll toward one another on a horizontal frictionless track. One is travelling at a velocity of u_1 and the other at a velocity of u_2, as shown.



They collide and join together and have a final speed of 0.50 m s^{-1} towards the right after the collision. During the collision, 11 250 J of kinetic energy was lost.

Taking rightward to be positive, what is u_2?

A − 2.0 m s^{-1} **B** − 1.0 m s^{-1} **C** 1.0 m s^{-1} **D** 2.0 m s^{-1}