10 Objects X and Y are of equal mass and travelling directly towards each other on a flat, horizontal frictionless surface. Before they collide they are approaching each other at a relative speed of $3.0\,m\,s^{-1}$. When they meet they collide elastically.

Which of the speeds and directions of travel of X and Y are possible after the collision?

	object X	object Y
A	$0.5\,m\,s^{-1}$ right	$2.5\,m\,s^{-1}$ right
B	$1.0\,m\,s^{-1}$ left	$2.0\,m\,s^{-1}$ right
C	$1.0\,m\,s^{-1}$ right	$2.0\,m\,s^{-1}$ right
D	$1.5\,m\,s^{-1}$ left	$4.5\,m\,s^{-1}$ right