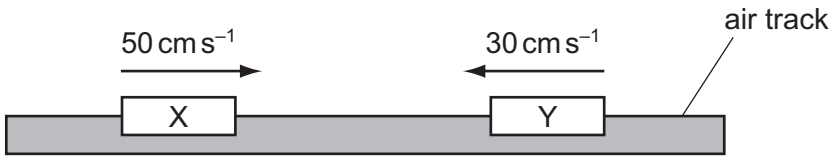
12 Two equal masses X and Y are moving towards each other on a frictionless air track as shown. The masses make an elastic collision.



Which row gives possible velocities for the two masses after the collision?

	velocity of X	velocity of Y
A	zero	20 cm s^{-1} to the right
B	10 cm s^{-1} to the right	10 cm s^{-1} to the right
C	20 cm s^{-1} to the left	zero
D	30 cm s^{-1} to the left	50 cm s^{-1} to the right

13 Which statement is correct with reference to perfectly elastic collisions between two bodies?

A Neither total momentum nor total kinetic energy need be conserved but total energy must be conserved.

B Total momentum and total energy are conserved but total kinetic energy may be changed into some other form of energy.

C Total kinetic energy and total energy are both conserved but total momentum is conserved only if the two bodies have equal masses.

D Total momentum, total kinetic energy and total energy are all conserved.

14 Which statement best describes a couple?

A a pair of forces of equal magnitude acting in opposite directions which produce rotational motion but not translational motion

B a pair of forces of equal magnitude acting in opposite directions which produce translational motion but not rotational motion

C a pair of forces of equal magnitude acting in the same direction which produce rotational motion but not translational motion

D a pair of forces of equal magnitude acting in the same direction which produce translational motion but not rotational motion