1 Block A of mass 2.0 kg moves with a velocity of 10 m s^{-1} on a smooth horizontal table. Block B of mass 3.0 kg moves with a velocity of 5.0 m s^{-1} in front of A in the same direction.

A light spring of force constant 1000 N m^{-1} is attached to B as shown in Fig. 1.1.

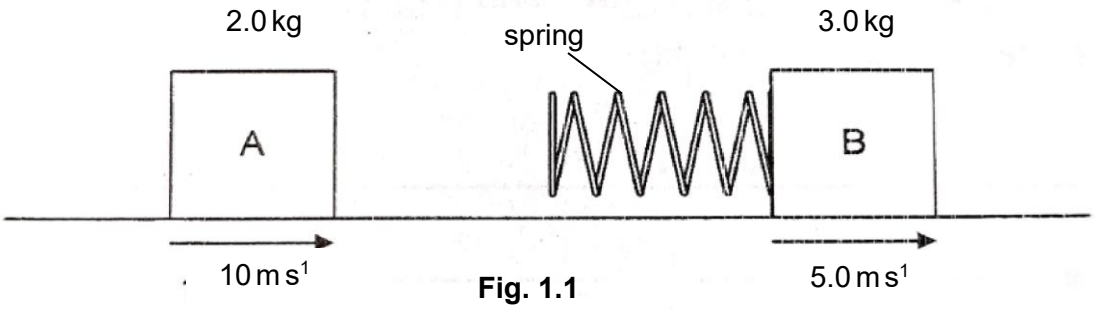

Fig. 1.1

When A collides with B, there will be an instance when the spring experiences maximum compression and both A and B have the same velocity. Assume the collision is elastic.

(a) Determine the velocity of A and B when the spring is at maximum compression.

common velocity of A and B = _____ m s^{-1} [2]

(b) Use the answer in **(a)** to determine the maximum compression of the spring.

maximum compression of spring = _____ m [2]

(c) Determine the velocity of A and B after they were separated.

velocity of A = _____ $m\,s^{-1}$

velocity of B = _____ $m\,s^{-1}$ [3]

[Total: ……7]