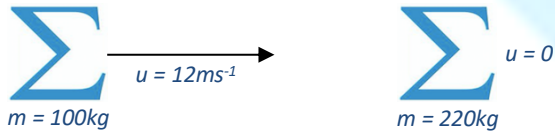# PRELIMINARY PHYSICS SIGMA SCIENCE Q&A

Week 2: Collisions I

Question 1 (3 marks)

An object of mass 100kg travelling at 12ms^{-1} collides with a stationary object of 220kg. If these objects stick together, determine the initial velocity of the wreckage.

$\sum$ $\xrightarrow{\text{u = 12ms}^{-1}}$ $\qquad$ $\sum$ u = 0

m = 100kg $\qquad\qquad\qquad$ m = 220kg

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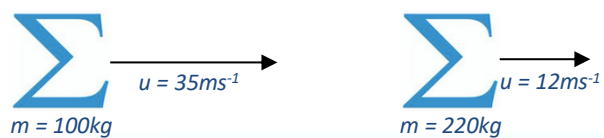……………………………………………………………………………………………..

Question 2 (3 marks)

An object of mass 150kg travelling at 12ms⁻¹ collides with an object of mass 275kg travelling at the same speed in the opposite direction. If these objects stick together, determine the initial velocity of the wreckage.

$u = 12ms^{-1}$

$m = 150kg$

$u = 12ms^{-1}$

$m = 275kg$

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Question 3 (3 marks)

An object of mass 100kg travelling at 35ms^{-1} collides with an object of mass 220kg travelling at 12ms^{-1} in the same direction as the 100kg mass. After the collision, the 220kg object gains 2ms^{-1}, determine the final velocity of the 100kg mass.

$\sum$ $\xrightarrow{}$ *u = 35ms^{-1}*

m = 100kg

$\sum$ $\xrightarrow{}$ *u = 12ms^{-1}*

m = 220kg

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