Name: _____

Impulse Worksheet

Exercise 1: Use **impulse = Force x time** to solve the following problems.

a) A football player kicks a ball with a force of 50N. Find the impulse on the ball if his foot stays in contact with the football for 0.01s.

b) A hockey player applies an average force of 80N to a 0.25kg hockey puck for a time of 0.2s. Determine the impulse experienced by the hockey puck.

c) Aunt Mary needs to hang a picture in her bedroom. She uses a hammer to drive the nail into the wall. Find the force exerted by the hammer on the nail if the hammer stays in contact with the nail for 0.5s and has an impulse of 25Ns.

Exercise 2: Use **impulse = change in momentum** to solve the following:

a) A 0.5kg baseball experiences a 10N force for the duration of 0.1s. What is the change in velocity of the baseball?

b) A space shuttle burns fuel at the rate of 13,000kg in each second. Find the force exerted by the fuel on the shuttle if in 2s the shuttle experiences a change in momentum of 325,000kgm/s.

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Exercise 3: A van of mass 1200kg was moving at a velocity of 8m/s when it was involved in a head on collision with a lorry moving in the opposite direction. Assuming that the van came to stop after the collision,

i. calculate the momentum of the van before the collision _____

ii. work out the momentum of the van after the collision _____

iii. find the change in momentum of the van _____

iv. if the van took 0.3s to stop, calculate the force that acted on each driver.

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