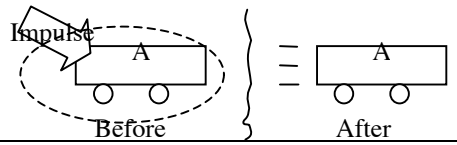
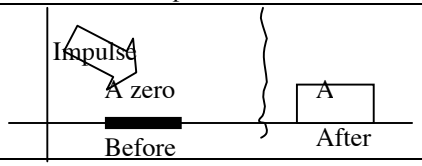
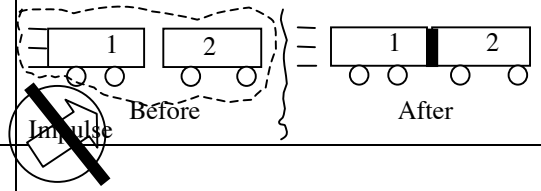
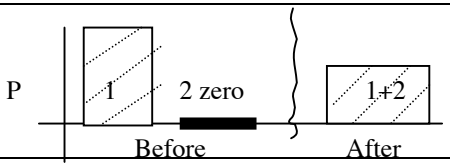
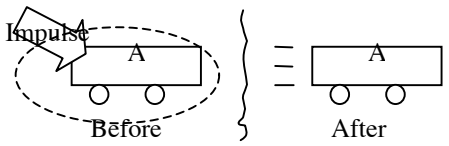
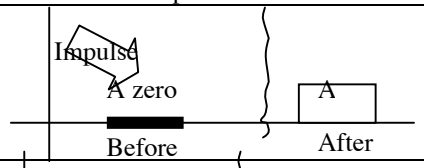
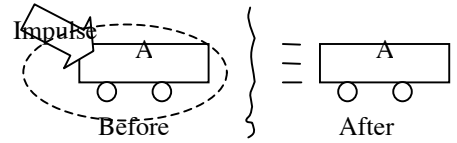
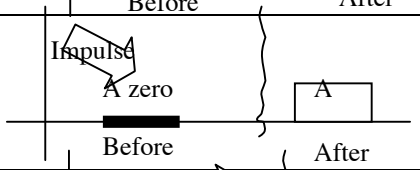
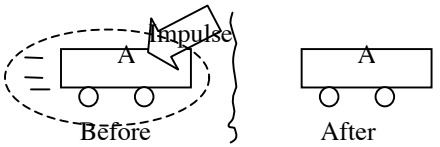
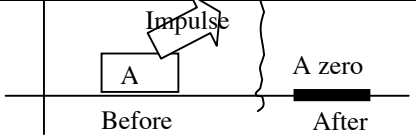
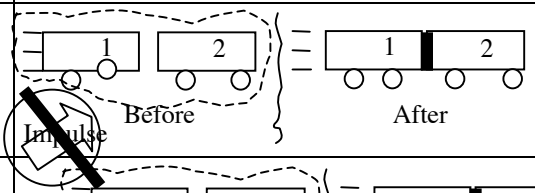
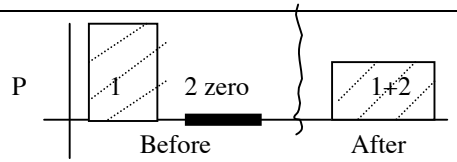
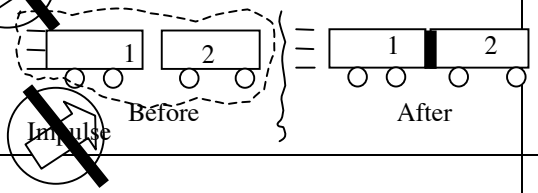
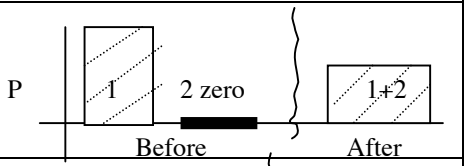
Name(s): _____ Date: _____ Period: _____

Impulse & Momentum Worksheet I

Contributed by Jane Bray Nelson

Type and Sample	Equation	Diagram and Values	Graph and Values
Impulse	$F\Delta t = m\Delta v$		
1) A 5.0 N force is applied on an 8.0 kg cart at rest. The carts ends up going 0.25 m/s. How long was the force applied?_____			
2) A force applied to a 2.0 kg cart traveling at 3.0 m/s for 0.02s causes it to stop. How big was the force? _____			
Momentum	$m_{1i}v_{1i} + m_{2i}v_{2i} = m_{1f}v_{1f} + m_{2f}v_{2f}$ Before After		
3) A 3.0 kg cart moving at 8.0 m/s rams into a 2.0 kg cart setting still. They move off together. What is their speed now? _____			
4) A cart with a mass of 1.5 kg going 3.0 m/s to the right hits a cart going 3.0 m/s to the left. The second cart has a mass of 8.0 kg. It continues left at 2.0 m/s. What is the new velocity of the first cart? _____			

MOMENTUM WORKSHEET I (TEACHER NOTES)

Type and Sample	Equation	Diagram and Values	Graph and Values
Impulse	$F\Delta t = m\Delta v$		
1) A 5.0 N force is applied on an 8.0 kg cart at rest. The carts ends up going 0.25 m/s. How long was the force applied?_____	*$F\Delta t = m\Delta v$* *$5.0\ N * \Delta t = 8.0\ kg * (0.25 m/s - 0\ m/s)$* *$\Delta t = 0.4\ s$*		
2) A force applied to a 2.0 kg cart traveling at 3.0 m/s for 0.02s causes it to stop. How big was the force? _____	*$F\Delta t = m\Delta v$* *$F * 0.02\ s = 2.0\ kg * (0\ m/s - 3.0\ m/s)$* *$F = -1.5N$*		
Momentum	$m_{1i}v_{1i} + m_{2i}v_{2i} = m_{1f}v_{1f} + m_{2f}v_{2f}$ Before After		
3) A 3.0 kg cart moving at 8.0 m/s rams into a 2.0 kg cart setting still. They move off together. What is their speed now? _____	$m_{1i}v_{1i} + m_{2i}v_{2i} = m_{1f}v_{1f} + m_{2f}v_{2f}$ $3.0kg * 8.0\ m/s + 2.0\ kg * 0\ m/s = 3.0kg * X\ m/s + 2.0\ kg * X\ m/s$ $X = 4.8\ m/s$		
4) A cart with a mass of 1.5 kg going 3.0 m/s to the right hits a cart going 3.0 m/s to the left. The second cart has a mass of 8.0 kg. It continues left at 2.0 m/s. What is the new velocity of the first cart? _____	$m_{1i}v_{1i} + m_{2i}v_{2i} = m_{1f}v_{1f} + m_{2f}v_{2f}$ $1.5\ kg * 3.0\ m/s + 8.0\ kg * -3.0\ m/s = 1.5kg * X\ m/s + 8.0\ kg * -2.0\ m/s$ $X = -2.3\ m/s$