

Lesson Plan

Title of lesson Momentum and Energy Hockey Questions	
Purpose To relate hockey terms to the conservation of momentum and energy in real life situations	
Learning outcome(s) The general principle that momentum is always conserved and Energy cannot be destroyed.	
Bridge-in Relating the questions to Hockey situations	
Pre-test The student should have taken Science 10 and be in Physics 11.	
Input from you Conservation of Momentum The total momentum of an isolated system remains constant. Also, if you remember from grade 11, momentum is a product of mass and velocity ($p = mv$). Since velocity is a vector, so is momentum. This vector nature of momentum becomes extremely important in two dimensional collisions. When you analyzed one dimensional collisions, you could show that in an isolated system the momentum of each object before the collision added up to equal the total momentum after the collision. This still applies in two dimensional collisions, but remember that momentum is a vector so it must be added as a vector!! For a collision involving two objects in one dimension, you would write $p_a + p_b = p_{0a} + p_{0b}$ or, since $p = mv$, $mava + mbvb = mav0a + mbv0b$ where primed quantities (0) mean after the collision and unprimed mean before the collision. The vector nature of the momentum could be addressed in this one dimensional situation using positive or negative values for the velocities.	Guided practice These would be great problems to give a physics 11 class to work on to resemble real world sports. This will make the physics concepts easier to understand in everyday situations.
Closure Conservation of Momentum and Energy related to ice hockey.	
Check for understanding The introduction of hockey questions is used in order to help students understand the real world concepts by relating to sport. The same could be done with many other sports as well.	
Assessment - The hockey questions could be used on a test or assignment to be passed in. - The teacher could get students to come up with their own hockey related physics questions which a partner could answer. Group related ideas...	