## Conservation of Momentum

Practice Problems

Useful Equations: p=m\*v pbefore=pafter

1. What is the momentum of a 1000 kg car traveling at a velocity of 50 m/s?
2. What is the momentum of a 0.2 kg apple that fell 20 meters in 2 seconds to hit Newton on the head? (hint: First calculate the velocity and then use it to calculate the momentum)
3. What is the mass of a baseball with a momentum of 14 kg\*m/s and a velocity of 30 m/s?
4. Two students on skateboards are standing still. Jack has a mass of 80 kg and Jill has a mass of 65 kg. They push off of each other and move in opposite directions. Jack has a speed of 3 m/s after the push. What is Jill’s velocity after the push?
   1. What is Jack’s momentum?
   2. Using Jacks momentum and Jill’s mass, calculate her velocity.
5. A block of balsa wood whose mass is 0.6 kg is hung from a cord of negligible mass. A bullet whose mass is 0.002 kg is fired into this block at close range with a muzzle velocity of 2,800 m/s and becomes embedded in it.
   1. What is the momentum of the bullet?
   2. What is the mass of the piece of wood combined with the bullet?
   3. Assuming the momentum is conserved what is the velocity of the block of wood after impact?