

# *Momentum*

## Physics Chpt 9 rev 3

1. A 37.0 g bullet strikes a 95.0 kg object and exits at 175 m/s. What is the initial speed of the bullet if the 95.0 kg object is pushed back at 0.0100 m/s after it is struck?
2. A 0.16 kg steel ball traveling at 2.3 m/s strikes a 0.44 kg steel ball (initially at rest). What is the speed of the second ball after the collision if the first ball recoils at 0.095 m/s?....recoil is negative!
3. Mr. G has a 975 kg sports car and parks it in the driveway. Not seeing the car Mrs. G backs into the sports car with her 1025 kg family mini van at 2.3 m/s. What is the speed of the couple (the car and van) if they stick together after the collision?
4. A 0.23 kg ball traveling at 3.4 m/s strikes a similar ball initially at rest. What is the speed of each ball after the collision if the first one takes off at  $35^\circ$  after they hit?
5. A 56 kg bad boy (at rest) pushes a geeky 45 kg boy (also at rest) forward at 3.3 m/s. What is the bad boys recoil velocity?
6. A 43 g bullet strikes and embeds in a 1.5 kg block of wood. After the impact the bullet-wood system moves off at 12 m/s. a) What is the speed the bullet before the collision? b) What is  $\mu$  if the bullet-wood system comes to rest is 7.5 m?
7. A 2.5 kg ball moves at 4.5 m/s and strikes a 2.7 kg ball that is stationary. After the collision the second ball takes off to the right at  $27^\circ$ . What is the velocity of each ball after the collision?
8. A 24.0 kg dog running at 3.0 m/s jumps on a stationary skateboard (mass of 3.6 kg). How long will it take an average force of 9.0 N to stop the skateboard-dog system?...what is  $\mu$