

Collisions PreLab

Name: _____ Lab Section: _____

Date: _____

PreLab Activity (10 points) – Complete prior to your lab session & hand in at the START of lab.

1. Go to this website: <http://www.physicsclassroom.com/Class/momentum/U4L1a.cfm>
2. Read the material and answer the following questions (showing your work including units), which are similar to the exercise questions on the above webpage
 - a. What is the momentum of a 1200 kg car moving in the “+x” direction at 25 m/s

In a football game, a running back (mass 45 kg) is running in one direction (say, in the positive x-direction) at 7.5 m/s. Roquan Smith (55 kg) is running directly at him in the opposite direction (say, in the negative x-direction) at a speed of 10 m/s to tackle the running back. They collide and bounce off each other with the running back moving in the opposite direction he was initially going with a speed of 2 m/s. Assume both football players move only in the x-direction (and not in the y-direction) before and after the collision.

- c. Using conservation of momentum, in which direction does Roquan Smith end up going? What is his speed?

c. Is energy conserved? Show your calculation proving whether energy is conserved or not.

d. Is this an elastic or inelastic collision? Explain your reasoning.

END OF PRELAB – HAND IN AT THE BEGINNING OF YOUR LAB SESSION TO GET CREDIT