

CP Physics Quiz -- Momentum

Impulse - Change of Momentum

1. An unlucky driver crashes into a tree at 25m/s, and the airbag deploys, bringing the driver's head to rest in .05 seconds. Assume that the driver's head has a mass of 10kg. What average force did the airbag exert on the driver?

Inelastic Collision Problem

2. Valentina, the Russian Cosmonaut, goes outside her ship for a spacewalk, but when she is floating 15m from the ship her tether catches on a sharp piece of metal and is severed. Valentina tosses her 2.0kg camera away from the spaceship with a speed of 12m/s.
 - a) How fast will Valentina, whose mass is now 68kg, travel toward the spaceship?
 - b) How long will it take Valentina to reach the ship?

Elastic Collision Problem

3. Running at 2.0m/s, Bruce, the 45.0kg quarterback, collides with Biff, the 90.0kg tackle, who is traveling at 7.0m/s in the other direction. Upon collision, Biff continues to travel forward at 1.0m/s. How fast is Bruce knocked backwards?