PHY 2020 Fall Sept 23, 2015

Homework Set #5

1. An automobile, with a mass $M_1 = 2000\,\text{kg}$ is moving to the right with a speed of $30\,\text{m/s}$. A truck, with a mass $M_2 = 6000\,\text{kg}$, is behind the automobile but moving to the right with a speed of $40\,\text{m/s}$. The truck driver is distracted by checking out facebook, and the truck bangs into the back of automobile, and they stick together. What is the speed of the combined auto and truck immediately after the collision?

2. What is the magnitude of the impulse on the automobile from the truck?

3. If the same automobile were moving to the right with a speed of $30\,\text{m/s}$, while the truck was moving to the *left* with a speed of $40\,\text{m/s}$, and the auto and truck had a head-on collision and stuck together, then what would be the speed of the combined auto and truck immediately after the collision?

4. And, in this case what is the magnitude of the impulse on the automobile from the truck?