Physics 11 - Practice Questions

Unit: 5.3 Momentum - Conservation

1. A 53 kg skateboarder on a 2.0 kg skateboard is coasting along at 1.6 m/s. He collides with a stationary skateboarder of a mass 43kg, also on a 2.0 kg skateboard, and the two skateboarders coast off in the same direction that the first skateboarder was travelling. What velocity will the combined skateboarders now have?
2. A 1.5 x 103kg car travelling at 44 m/s collides head-on with a 1.0 x 103 kg car travelling at 22 m/s in the opposite direction. If the cars stick together on impact, what is the velocity of the wreckage immediately after impacts? (Hint: let the velocity of the second car be -22 m/s since it is moving in a direction opposite to the first car.)
3. Two billiard balls roll towards each other. They each have a mass of 0 300g. Ball 1 is moving at 1 m/s to the right and Ball 2 is moving at 0.8 m/s to the left. Calculate the total momentum of the system
4. A rubber ball of mass 800g is dropped and strikes the floor at a velocity of 6 m/s. it bounces back with an initial velocity of 4 m/s. Calculate the change in momentum of the rubber ball caused by the floor.