1. A $100-\mathrm{g}$ lump of clay hits a wall at $70 \mathrm{~cm} / \mathrm{s}$ and sticks. A $100-\mathrm{g}$ rubber ball hits the same wall at $60 \mathrm{~cm} / \mathrm{s}$ and rebounds with a speed of $30 \mathrm{~cm} / \mathrm{s}$. Which object experiences the larger impulse delivered by the wall during the collision? Explain

2. A $0.12-\mathrm{kg}$ ball is moving at $6 \mathrm{~m} / \mathrm{s}$ when it is hit by a bat, causing it to reverse direction and have a speed of $14 \mathrm{~m} / \mathrm{s}$. What is the change in the magnitude of the momentum of the ball?
3. A crane drops a 0.30 kg steel ball onto a steel plate. The ball's speeds just before impact and after are $4.5 \mathrm{~m} / \mathrm{s}$ and $4.2 \mathrm{~m} / \mathrm{s}$, respectively. If the ball is in contact with the plate for 0.030 s , what is the magnitude of the average force that the ball exerts on the plate during impact?
4. A $75-\mathrm{kg}$ swimmer dives horizontally off a $500-\mathrm{kg}$ raft. If the diver's speed immediately after leaving the raft is $4 \mathrm{~m} / \mathrm{s}$, what is the corresponding raft speed?
5. A moderate force will break an egg. However, an egg dropped on the road usually breaks, while one dropped on the grass usually doesn't break. This is because for the egg dropped on the grass:
6. A $2500-\mathrm{kg}$ truck moving at $10.00 \mathrm{~m} / \mathrm{s}$ strikes a car waiting at a traffic light, hooking bumpers. The two continue to move together at $7.00 \mathrm{~m} / \mathrm{s}$. What was the mass of the struck car?
