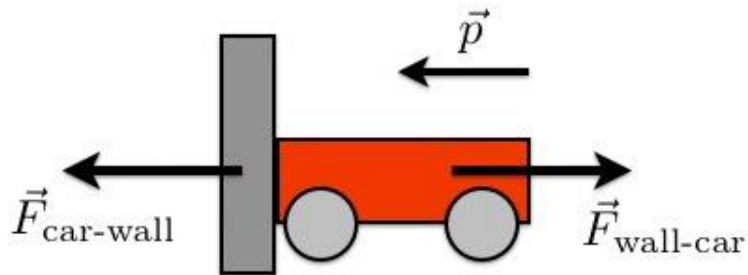# Answer on Question #60739, Physics / Mechanics | Relativity |

If car (a) traveling at 10 km/hr comes to a complete stop instantly after running into a wall, and car (b) also traveling at 10 km/hr comes to a complete stop instantly after running into another car head on coming at 10 km/hr; will both (a) and (b) cars experience the same g forces?
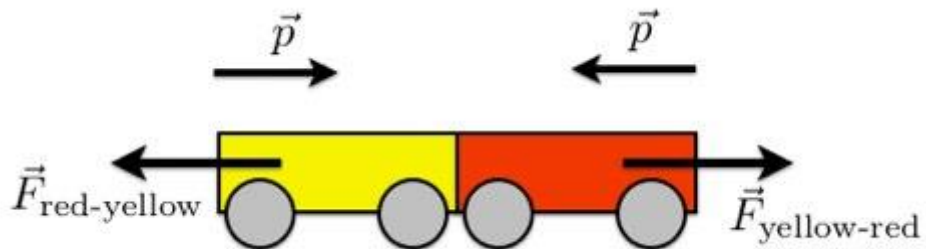
Solution:

The two collisions are completely equivalent.

Suppose a car crashes into a wall with a velocity v. While it is interacting with the wall, the wall exerts a force (F) on the car and the car exert a force F on the wall.

Where the force the wall exerts on the car and the car on the wall have the same magnitude. Now, what if I replace the wall with another identical car traveling at the same speed?

Since the initial momentums are the same and the forces are same, the effects are the same on the two cars. So, two cars are the same as one car into a wall.

Answer: Both crashes produce the same result.