Collisions

Collisions are an example of a process in physics where conservation laws become relevant. In the ideal case, one models two objects hitting each other with initial velocities, uses conservation laws for momentum and kinetic energy, and calculates final velocities. If the collision occurs sufficiently quickly and in the absence of other external forces, the momentum is always conserved. The momentum is the product of mass and velocity. The reason it is preserved is that Newton's third law – force equals counterforce – ensures that the impulse that one object loses is transferred to the other. We distinguish between two extreme cases of collisions: elastic, and completely inelastic. In elastic collisions, both momentum and kinetic energy are conserved. In completely inelastic collisions, minimal kinetic energy is conserved and the objects that collide will be attached to each other after the collision. If you have stated what type of collision it is, you have enough information to calculate the full configuration after the collision.