CHAPTER OVERVIEW

31: Collisions

As mentioned earlier, a collision is an event in which two bodies briefly come into direct contact with each other. During the collision, it's possible that some of the initial kinetic energy of the bodies may be converted into heat and sound energy, and energy that does work in deforming the colliding bodies. Based on the extent to which this happens, we classify collisions into three categories:

- A perfectly elastic collision is one in which none of the initial kinetic energy is converted into heat or deformation.
- A perfectly inelastic collision is one in which all of the initial kinetic energy is converted into heat and deformation.
- Most collisions lie between these two extremes, and some of the initial kinetic energy is converted into heat. Such collisions are called inelastic.

Each of these cases is treated differently mathematically, as we'll see shortly.

31.1: The Coefficient of Restitution
31.2: Perfectly Inelastic Collisions
31.3: Perfectly Elastic Collisions
31.4: Newton’s Cradle
31.5: Inelastic Collisions
31.6: Collisions in Two Dimensions