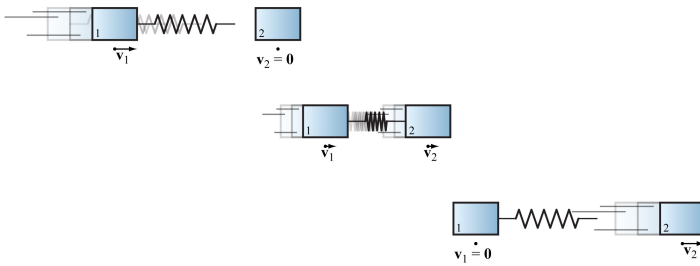


Types of collisions

Elastic



Even though some of the kinetic energy of the system might be temporarily transformed into other forms during the collision process,

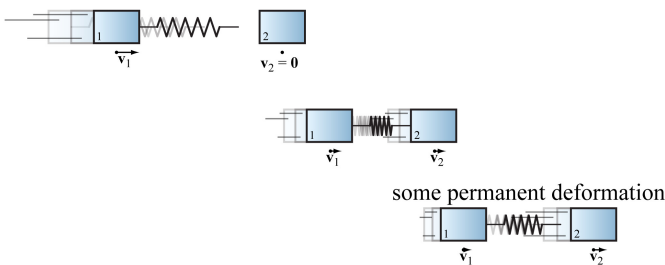
$$\Sigma KE_i = \Sigma KE_f$$

do not stick together

$$v_{1,i} + v_{1,f} = v_{2,i} + v_{2,f}$$

In c.o.m. frame, each of the two velocities reverses

Inelastic

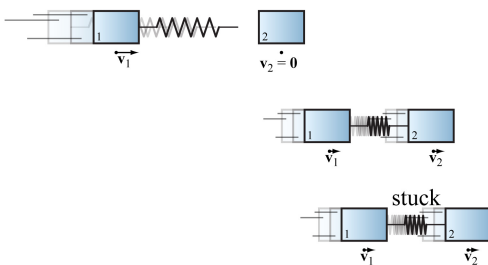


The amount of kinetic energy transformed into other forms of energy during the collision process does not equal the amount of energy transformed back into kinetic energy.

$$\Sigma KE_i \neq \Sigma KE_f$$

do not stick together

Perfectly inelastic



The amount of kinetic energy transformed into other forms of energy during the collision process exceeds, as much as possible, the amount of energy transformed back into kinetic energy.

$$\Sigma KE_i \neq \Sigma KE_f$$

stick together

$$v_{1,f} = v_{2,f}$$