

For one dimensional elastic collision, two particles have the same mass. A moving particle collides with another particle at rest. Is it possible for them to have equal speed after collision?

Answer:

According to the law of conservation energy the total momentum of the particles after collision is equal to total momentum of the particles before collision. In condition of same mass the velocity of particles after collision will be equal.

$$m_1 v_1 + m_2 v_2 = v_3 (m_1 + m_2) \Rightarrow$$

$$v_3 = \frac{1}{2} (v_1 + v_2)$$