Module 08-Lesson 5
Elastic Collisions

Question 1: A 1-kg ball moving at a speed of 4 m/s collides with a stationary 3-kg ball. After the collision, the balls are found to be moving in opposite directions with equal speeds of 2 m/s. Was this an elastic collision? Explain your answer.

Question 2: A head-on, elastic collision between two particles that move with the same speed of 2 m/s, leaves the more massive particle at rest. Find the ratio of the particles' masses.

Problem: A neutron moving with velocity v_0 collides head-on with a stationary carbon nucleus of mass 12 times larger than the neutron. Assume that the collision is elastic. (a) What is the fraction of neutron's kinetic energy transferred to the carbon nucleus? (b) What are the velocities of the neutron and the carbon nucleus after the collision?