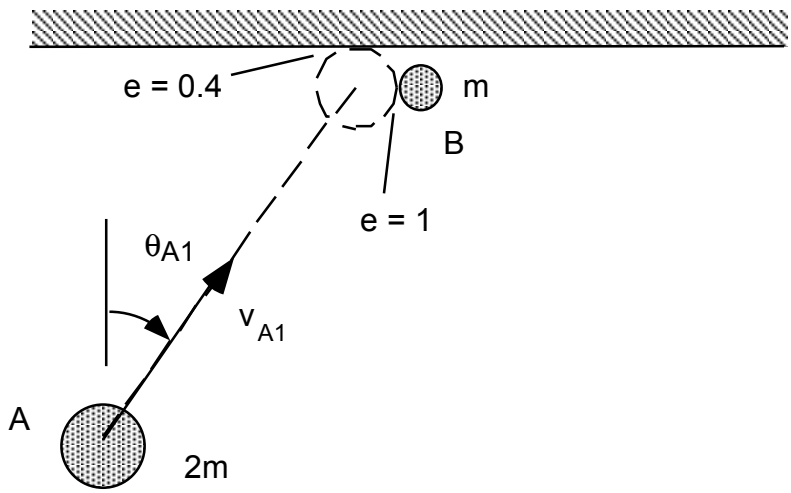
Homework H.4.O

Given: Spheres A and B (having masses of $2m$ and m, respectively) are able to move on a smooth HORIZONTAL surface. Sphere A is given an initial velocity of v_{A1}, as shown below. Sphere A impacts sphere B at exactly the same instant that A also impacts a smooth bumper, with the line of impact of A and B being parallel to the bumper. The coefficient of restitution between A and the bumper is $e = 0.4$, and the coefficient of restitution between spheres A and B is $e = 1$.

Find: Determine the velocities of spheres A and B after the impacts described above.



Use the following parameters in your analysis: $v_{A1} = 15$ m/s and $\theta_{A1} = 36.87°$.