Since momentum is conserved, $M_a V_o = M_a V_a + M_b V_b$. Combining this with the definition of COR, usually denoted by symbol e, gives

$$V_a = \frac{V_o(M_a - eM_b)}{(M_a + M_b)} \qquad \text{and} \qquad V_b = \frac{V_o(1+e)M_a}{(M_a + M_b)}$$

Note that ball A comes to rest if $M_a = eM_b$. If $e = 0.5$ then ball A comes to rest only if ball B is twice as heavy as ball A. For billiard ball collisions e is close to 1.0 but the actual result depends on how fast the incident ball is spinning, and in what direction.