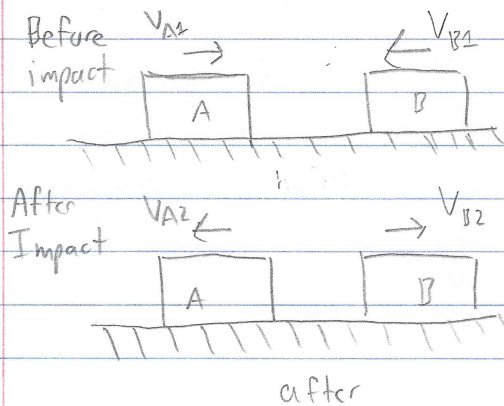


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of equal mass

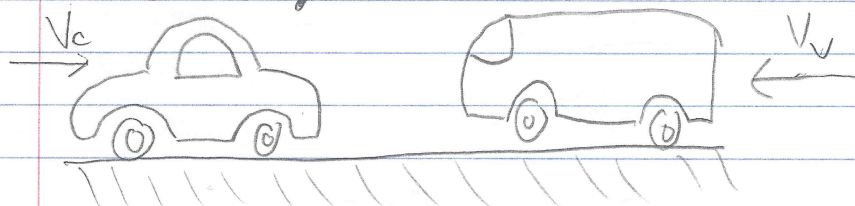


Two blocks are sliding towards each other on a frictionless floor. The speeds of block A and B were 5 m/s and 4 m/s before the impact. After the impact, the speeds of block A and B are 2 m/s and 6 m/s respectively. Determine the coefficient of restitution, e , between block A and B.

$$e = \frac{(v_B)_2 - (v_A)_2}{(v_A)_1 - (v_B)_1} = \frac{(6) - (-2)}{((5) - (-4))} = 0.88$$

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After years of hard work and research, engineers create the world's strongest car and van. To showcase their strength, the engineers bounce the vehicles off each other in a head on collision. The 2000 kg car and 3000 kg van have an initial speed of 10 m/s and 8 m/s respectively. Determine the final velocities if the coefficient of restitution is $e = 0.7$.



$$e = \frac{(v_B)_2 - (v_A)_2}{(v_A)_1 - (v_B)_1}$$

$$(v_A = v_c \quad v_B = v_v)$$

$$(v_B)_2 = [(v_A)_1 - (v_B)_1]e + (v_A)_2$$

$$(2000)(10) - (3000)(8) = m_c (v_A)_2 + m_v (v_B)_2$$

$$(v_A)_2 = -8.36 \text{ m/s} \quad (v_B)_2 = 4.24 \text{ m/s}$$