Answer on Question #60167-Physics-Mechanics-Relativity

In a collision, two trolleys stick together. What is their velocity after the collision?

BEFORE COLLISION: CART 1(1500kg moving forward at 2m/s) CART 2(2000kg moving backwards at -3m/s)

AFTER COLLISION: 1500kg+2000kg together.

What is their velocity after the collision?

Solution

According to the conservation of momentum:

$$m_1 v_1 + m_2 v_2 = (m_1 + m_2)V$$

$$V = \frac{m_1 v_1 + m_2 v_2}{(m_1 + m_2)} = \frac{(1500(2) + 2000(-3))}{(1500 + 2000)} = -0.86 \frac{m}{s}.$$

Answer: $0.86 \frac{m}{s}$ backwards.