10. This problem also involves a direct application of the principle of the conservation of momentum.

$$p_{before} = p_{after}$$

$$m\,v_1 + m\,v_2 = (m_1 + m_2)\,v_{after}$$

$$(2000\text{ kg})\,v_1 + (1500\text{ kg})\,(0) = (2000\text{ kg} + 1500\text{ kg})\,(6\text{ m / s})$$

$$(2000\text{ kg})\,v_1 = (3500\text{ kg})\,(6\text{ m / s})$$

$$(2000\text{ kg})\,v_1 = 21000\text{ kg m / s}$$

$$v_1 = 10.5\text{ m / s} = 23.5\text{ miles / hr}$$