

11. Let  $m_c$  be the mass of the Chrysler and  $v_c$  be its velocity. Let  $m_f$  be the mass of the Ford and  $v_f$  be its velocity. Then the velocity of the center of mass is

$$v_{\text{com}} = \frac{m_c v_c + m_f v_f}{m_c + m_f} = \frac{(2400 \text{ kg})(80 \text{ km/h}) + (1600 \text{ kg})(60 \text{ km/h})}{2400 \text{ kg} + 1600 \text{ kg}} = 72 \text{ km/h} .$$

We note that the two velocities are in the same direction, so the two terms in the numerator have the same sign.