62. We denote the mass of the car as M and that of the sumo wrestler as m. Let the initial velocity of the sumo wrestler be $v_0 > 0$ and the final velocity of the car be v. We apply the momentum conservation law.

(a) From $mv_0 = (M + m)v$ we get

$$v = \frac{mv_0}{M + m} = \frac{(242\,\text{kg})(5.3\,\text{m/s})}{2140\,\text{kg} + 242\,\text{kg}} = 0.54\ \text{m/s}\ .$$

(b) Since $v_{\text{rel}} = v_0$, we have

$$mv_0 = Mv + m\,(v + v_{\text{rel}}) = mv_0 + (M + m)v$$

and obtain $v = 0$ for the final speed of the flatcar.

(c) Now $mv_0 = Mv + m(v - v_{\text{rel}})$, which leads to

$$v = \frac{m(v_0 + v_{\text{rel}})}{m + M} = \frac{(242\,\text{kg})(5.3\,\text{m/s} + 5.3\,\text{m/s})}{242\,\text{kg} + 2140\,\text{kg}} = 1.1\ \text{m/s}\ .$$