34. Our $+x$ direction is east and $+y$ direction is north. The linear momenta for the two $m = 2.0\,\mathrm{kg}$ parts are then

$$\vec{p}_1 = m\vec{v}_1 = mv_1\,\hat{\jmath}$$

where $v_1 = 3.0\,\mathrm{m/s}$, and

$$\vec{p}_2 = m\vec{v}_2 = m(v_{2x}\,\hat{\imath} + v_{2y}\,\hat{\jmath}) = mv_2(\cos\theta\,\hat{\imath} + \sin\theta\,\hat{\jmath})$$

where $v_2 = 5.0\,\mathrm{m/s}$ and $\theta = 30°$. The combined linear momentum of both parts is then

$$\begin{aligned}
\vec{P} &= \vec{p}_1 + \vec{p}_2 \\
&= mv_1\,\hat{\jmath} + mv_2\left(\cos\theta\,\hat{\imath} + \sin\theta\,\hat{\jmath}\right) = (mv_2\cos\theta)\,\hat{\imath} + (mv_1 + mv_2\sin\theta)\,\hat{\jmath} \\
&= (2.0\,\mathrm{kg})(5.0\,\mathrm{m/s})(\cos 30°)\hat{\imath} + (2.0\,\mathrm{kg})\,(3.0\,\mathrm{m/s} + (5.0\,\mathrm{m/s})(\sin 30°))\,\hat{\jmath} \\
&= \left(8.66\,\hat{\imath} + 11\,\hat{\jmath}\right)\ \mathrm{kg\cdot m/s}\ .
\end{aligned}$$

From conservation of linear momentum we know that this is also the linear momentum of the whole kit before it splits. Thus the speed of the 4.0-kg kit is

$$v = \frac{P}{M} = \frac{\sqrt{P_x^2 + P_y^2}}{M} = \frac{\sqrt{(8.66\,\mathrm{kg\cdot m/s})^2 + (11\,\mathrm{kg\cdot m/s})^2}}{4.0\,\mathrm{kg}} = 3.5\ \mathrm{m/s}\ .$$