3. Magnitude of force is

$$\begin{aligned}\vec{F}_{net} &= m\vec{a}\\ &= (16.0\text{ kg})(2.0\text{ m/s}^2)\\ &= 32\text{ N}\end{aligned}$$

4.
$$\begin{aligned}\vec{F}_{net} &= m\vec{a}\\ \vec{a} &= \frac{\vec{F}_{net}}{m}\\ &= \frac{10.2\text{ N east}}{12.0\text{ kg}}\\ &= 0.850\text{ m/s}^2\text{ east}\end{aligned}$$

5.
$$\begin{aligned}\vec{F}_{net} &= m\vec{a}\\ &= (5.2\text{ kg})(6.0\text{ m/s}^2)\\ &= 31\text{ N}\end{aligned}$$

6.
$$\begin{aligned}\vec{F}_{net} &= m\vec{a}\\ \vec{a} &= \frac{\vec{F}_{net}}{m}\\ &= \frac{2.0\text{ N south}}{18\text{ kg}}\\ &= 0.11\text{ m/s}^2\text{ south}\end{aligned}$$

7. Here south is considered as positive direction

$$\begin{aligned}a &= \frac{\vec{v}-\vec{v}_0}{t}\\ &= \frac{25.0\text{ m/s}-0}{10.0\text{ s}}\\ &= 2.50\text{ m/s}^2\\ \vec{F}_{net} &= m\vec{a}\\ &= (925\text{ kg})(2.5\text{ m/s}^2\text{ south})\\ &= 2.31\times10^3\text{ N south}\end{aligned}$$

8.
$$\vec{d} = \vec{v}_0 t + \frac{1}{2}\vec{a}t^2$$

$$\begin{aligned}132\text{ m north} &= \frac{1}{2}(\vec{a})(12.0\text{ s})^2\\ \vec{a} &= 1.83\text{ m/s}^2\text{ north}\\ \vec{F}_{net} &= m\vec{a}\\ &= (1.08\times10^3\text{ kg})(1.83\text{ m/s}^2\text{ north})\\ &= 1.98\times10^3\text{ N north}\end{aligned}$$

9.
$$\begin{aligned}v^2 &= v_0^2 + 2ad\\ (12\text{ m/s})^2 &= (5.0\text{ m/s})^2 + 2(a)(94\text{ m})\\ a &= 0.633\text{ m/s}^2\\ \vec{a} &= 0.633\text{ m/s}^2\text{ east}\end{aligned}$$

$$\begin{aligned}\vec{F}_{net} &= m\vec{a}\\ &= (1.20\times10^3\text{ kg})(0.633\text{ m/s}^2)\\ &= 7.6\times10^2\text{ N east}\end{aligned}$$

10. Change 48 km/h to m/s:

$$48\text{ km/h}\times1\,000\text{ m/km}\times\frac{1\text{ h}}{3\,600\text{ s}} = 13.3\text{ m/s}$$

$$\begin{aligned}a &= \frac{v-v_0}{t}\\ &= \frac{13.3\text{ m/s}-0}{5.0\text{ s}}\\ &= 2.67\text{ m/s}^2\\ F_{net} &= ma\\ m &= \frac{F_{net}}{a}\\ &= \frac{2.5\times10^3\text{ N}}{2.67\text{ m/s}^2}\\ &= 9.4\times10^2\text{ kg}\end{aligned}$$

11. a)
$$\begin{aligned}\vec{F}_{net} &= m\vec{a}\\ \vec{a} &= \frac{\vec{F}_{net}}{m}\\ &= \frac{6.6\text{ N east}}{9.0\text{ kg}}\\ &= 0.73\text{ m/s}^2\text{ east}\\ v^2 &= v_0^2 + 2ad\\ (12\text{ m/s})^2 &= 2(0.73\text{ m/s}^2)d\\ d &= 6.1\text{ m}\\ \therefore d &= 6.1\text{ m east}\end{aligned}$$

b) The magnitude of acceleration is

$$\begin{aligned}a &= \frac{v-v_0}{t}\\ 0.73\text{ m/s}^2 &= \frac{3.0\text{ m/s}-0}{t}\\ t &= 4.1\text{ s}\end{aligned}$$