1. We apply Newton's second law (specifically, Eq. 5-2).

   (a) We find the x component of the force is

$$F_x = ma_x = ma\cos 20^\circ = (1.00\,\text{kg})(2.00\,\text{m/s}^2)\cos 20^\circ = 1.88\ \text{N}\ .$$

   (b) The y component of the force is

$$F_y = ma_y = ma\sin 20^\circ = (1.0\,\text{kg})(2.00\,\text{m/s}^2)\sin 20^\circ = 0.684\ \text{N}\ .$$

   (c) In unit-vector notation, the force vector (in Newtons) is

$$\vec{F} = F_x\,\hat{\text{i}} + F_y\,\hat{\text{j}} = 1.88\,\hat{\text{i}} + 0.684\,\hat{\text{j}}\ .$$