20. The stopping force $\vec{F}$ and the path of the passenger are horizontal. Our $+x$ axis is in the direction of the passenger's motion, so that the passenger's acceleration (''deceleration") is negative-valued and the stopping force is in the $-x$ direction: $\vec{F} = -F\,\hat{\mathrm{i}}$. We use Eq. 2-16 and SI units (noting that v_0 = 53(1000/3600) = 14.7 m/s and $v = 0$).

$$v^2 = v_0^2 + 2a\Delta x \quad \Rightarrow \quad a = -\frac{v_0^2}{2\Delta x} = -\frac{14.7^2}{2(0.65)} = -167 \text{ m/s}^2 .$$

Assuming there are no significant horizontal forces other than the stopping force, Eq. 5-1 leads to

$$\vec{F} = m\vec{a} \quad \Rightarrow \quad -F = (41 \text{ kg})\left(-167 \text{ m/s}^2\right)$$

which results in $F = 6.8 \times 10^3$ N.