16. An excellent analysis of the accelerating elevator is given in Sample Problem 5-8 in the textbook.

(a) From Newton's second law

$$N - mg = ma \quad \text{where} \quad a = a_{\max} = 2.0 \text{ m/s}^2$$

we obtain $N = 590$ N upward, for $m = 50$ kg.

(b) Again, we use Newton's second law

$$N - mg = ma \quad \text{where} \quad a = a_{\max} = -3.0 \text{ m/s}^2 \ .$$

Now, we obtain $N = 340$ N upward.

(c) Returning to part (a), we use Newton's third law, and conclude that the force exerted by the passenger on the floor is $\vec{F}_{PF} = 590$ N downward.