

6. The magnitude  $F$  of the force required to pull the lid off is  $F = (p_o - p_i)A$ , where  $p_o$  is the pressure outside the box,  $p_i$  is the pressure inside, and  $A$  is the area of the lid. Recalling that  $1 \text{ N/m}^2 = 1 \text{ Pa}$ , we obtain

$$p_i = p_o - \frac{F}{A} = 1.0 \times 10^5 \text{ Pa} - \frac{480 \text{ N}}{77 \times 10^{-4} \text{ m}^2} = 3.8 \times 10^4 \text{ Pa} .$$