

66. Probably the most appropriate picture in the textbook to represent the situation in this problem is in the previous chapter: Fig. 5-9. We adopt the familiar axes with $+x$ rightward and $+y$ upward, and refer to the 85 N horizontal push of the worker as P (and assume it to be rightward). Applying Newton's second law to the x axis and y axis, respectively, produces

$$\begin{aligned}P - f_k &= ma \\ N - mg &= 0 \quad .\end{aligned}$$

Using $v^2 = v_0^2 + 2a\Delta x$ we find $a = 0.36 \text{ m/s}^2$. Consequently, we obtain $f_k = 71 \text{ N}$ and $N = 392 \text{ N}$. Therefore, $\mu_k = f_k/N = 0.18$.