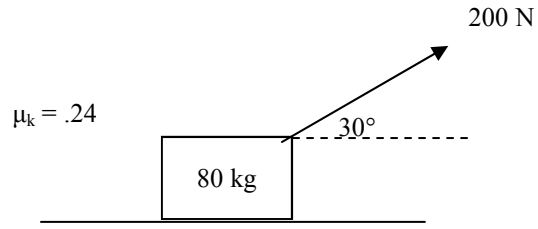


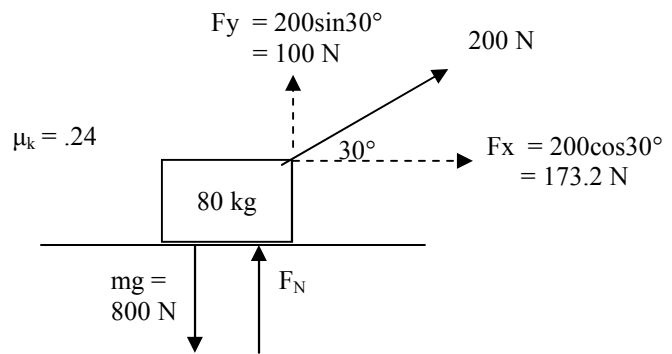
This is designed to show you how to solve harder problems step-by-step. Keep organized and problems get easier.

Angled Force Walk Thru

Question: find acceleration.



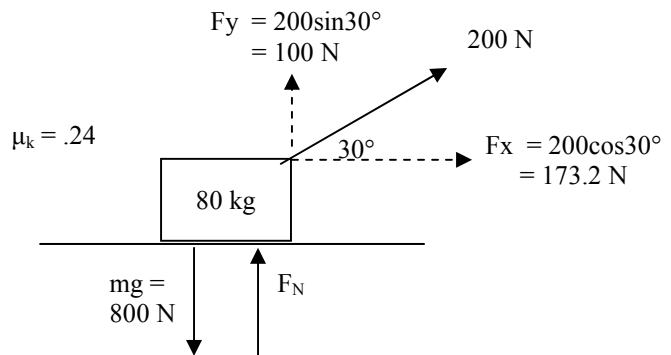
1) Draw forces and find components.



2) Write $F = ma$ for both directions.

$$\begin{aligned} \sum F_x &= ma_x \\ 173.2 - F_k &= ma_x \\ \text{NEED } F_k \end{aligned}$$

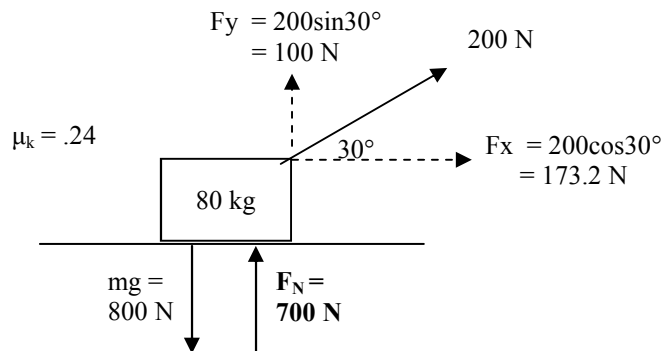
$$\begin{aligned} \sum F_y &= ma_y \\ 100 - mg &= ma_y \\ 100 - 800 + F_N &= 0 \end{aligned}$$



2) Solve for normal force and label it on the diagram

$$\begin{aligned} \sum F_x &= ma_x \\ 173.2 - F_k &= ma_x \\ \text{NEED } F_k \end{aligned}$$

$$\begin{aligned} \sum F_y &= ma_y \\ 100 - mg &= ma_y \\ 100 - 800 + F_N &= 0 \\ \mathbf{F_N = 800 - 100 = 700 \text{ N}} \end{aligned}$$

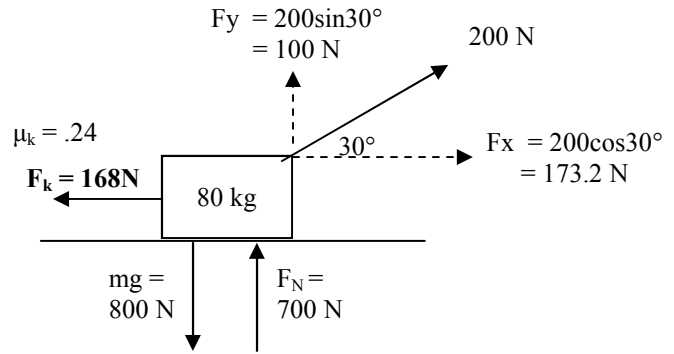


2) Use F_N to calculate and label F_k .

$$\begin{aligned}\sum F_x &= ma_x \\ 173.2 - F_k &= ma_x \\ \text{NEED } F_k\end{aligned}$$

$$\begin{aligned}\sum F_y &= ma_y \\ 100 - mg + F_N &= 0 \\ F_N &= 800 - 100 = 700 \text{ N}\end{aligned}$$

$$\begin{aligned}F_f &= \mu F_N \\ F_f &= .24(700) = 168 \text{ N}\end{aligned}$$



2) Now you can calculate the acceleration (a_x)

$$\begin{aligned}\sum F_x &= ma_x \\ 173.2 - F_k &= ma_x \\ \text{NEED } F_k \\ 173.2 - 168 &= 80a_x \\ 5.2 &= 80a_x \\ a_x &= .065 \text{ m/s}^2\end{aligned}$$

$$\begin{aligned}\sum F_y &= ma_y \\ 100 - mg + F_N &= 0 \\ F_N &= 800 - 100 = 700 \text{ N}\end{aligned}$$

$$\begin{aligned}F_f &= \mu F_N \\ F_f &= .24(700) = 168 \text{ N}\end{aligned}$$

