

Name: _____

Class #: _____

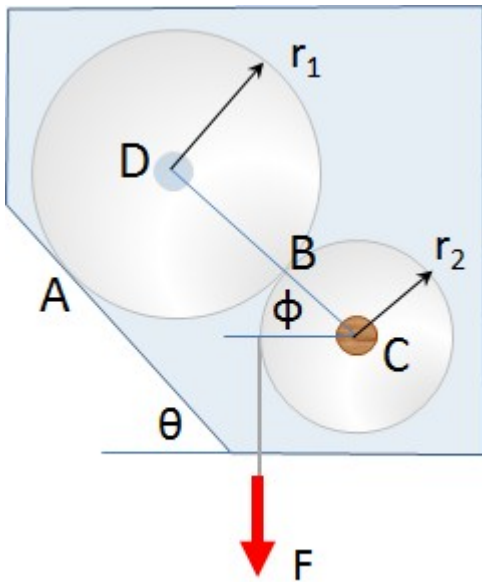
Instructor: Parker Schnepf

Class: _____

Section #: _____

Assignment: 8.3 Homework Exercises

Question 1: (10 points)

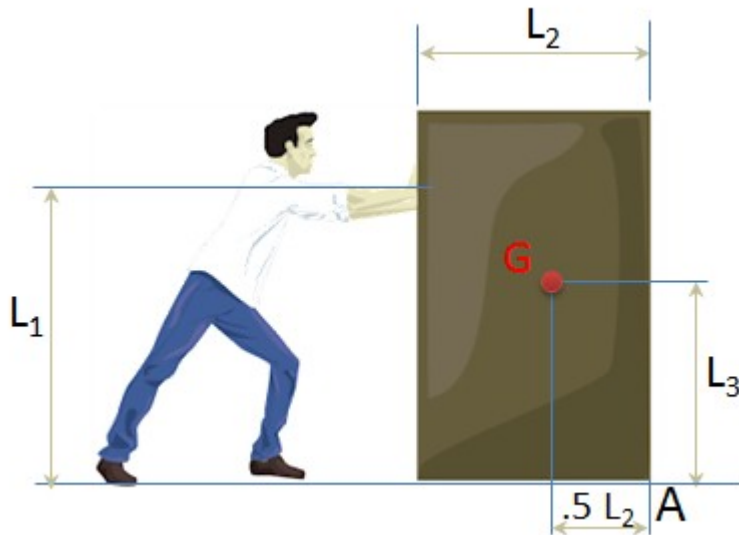


The paper towel dispenser carries 2 rolls of paper. Roll **C** is pinned in the center. Roll **D** contacts roll **C** at point **B** and the dispenser frame at point **A**. Find the force **F** necessary to pull down a sheet of paper, given:

$W_D = 8 \text{ lbs}$, $W_C = 3 \text{ lbs}$, $r_1 = 6 \text{ in}$, $r_2 = 4 \text{ in}$, $\mu_A = 0.25$, $\mu_B = 0.45$, $\Phi = 45^\circ$, $\theta = 50^\circ$.

(ans: $F = 1.95 \text{ lbs}$, *** Be sure to perform check to validate your assumptions ***)

Select problem completion status from drop-down list:

Question 2: (10 points)

A man pushes on a refrigerator. Determine if the refrigerator moves or if the man's shoes slip. If the refrigerator moves, determine whether it slips or tips. Support your answer analytically! Given:

$M_{\text{fridge}} = 100 \text{ kg}$, $M_{\text{man}} = 80 \text{ kg}$, $L_1 = 1.5 \text{ m}$, $L_2 = 1 \text{ m}$, $L_3 = 0.75 \text{ m}$, $\mu_{\text{fridge-to-floor}} = 0.3$, $\mu_{\text{shoes-to-floor}} = 0.4$
 (ans: Shoes don't slip: Refrigerator Moves, Refrigerator Slips before Tipping, $P_{\text{slip}} = 294 \text{ N}$, $P_{\text{tip}} = 327 \text{ N}$)

Select problem completion status from drop-down list:
