

Name: _____

Class #: _____

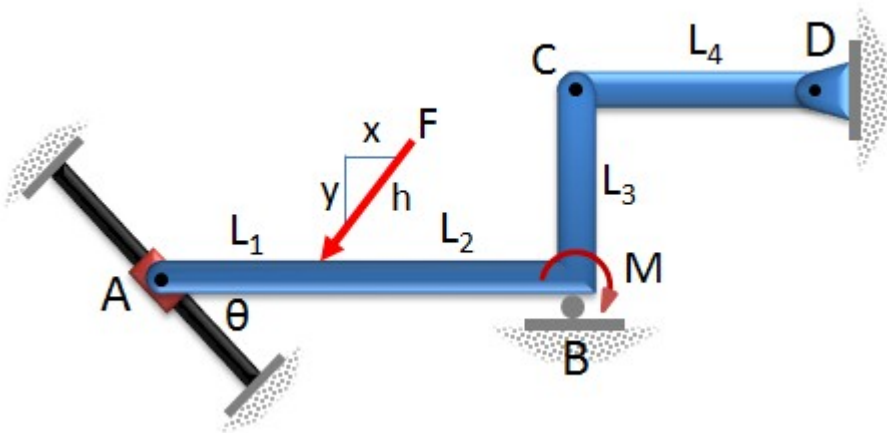
Instructor: Parker Schnepf

Class: _____

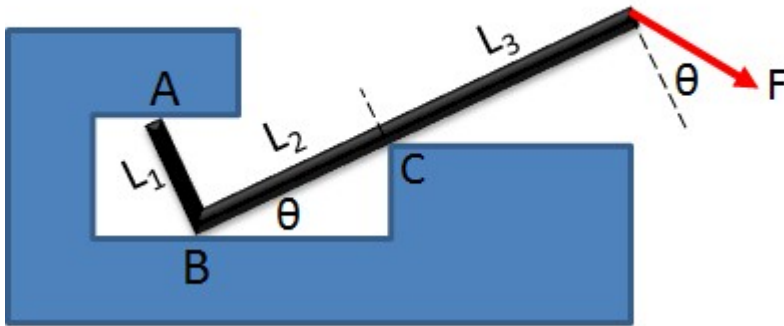
Section #: _____

Assignment: 6.2 Homework Exercises

Question 1: (10 points)

Find the reactions at **A** and **B** of the structure, given: $F = 125 \text{ lbs}$, $M = 20 \text{ lb}\cdot\text{ft}$, $L_1 = 2 \text{ ft}$, $L_2 = 3 \text{ ft}$, $L_3 = 2.5 \text{ ft}$, $L_4 = 3.5 \text{ ft}$, $\theta = 40^\circ$, $x, y, h = 3, 4, 5$, respectively(ans: $N_A = 41.6 \text{ lbs}$, $F_{CD} = 48.3 \text{ lbs}$, $B_Y = 68.1 \text{ lbs}$)

Select problem completion status from drop-down list:

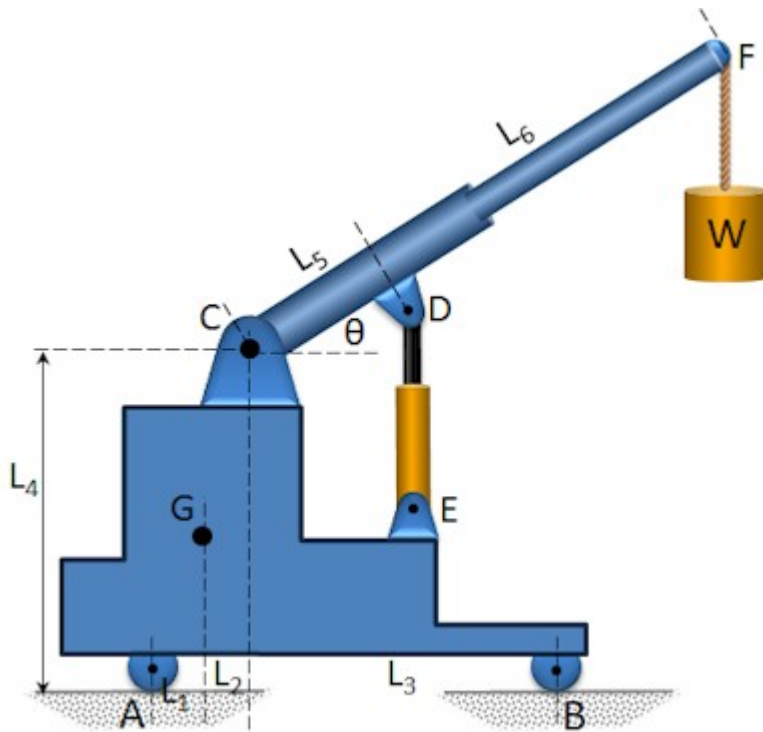
Question 2: (10 points)

Find the reactions at smooth contact points **A**, **B**, and **C**, when force **F** is applied, given:

$$F = 75 \text{ lbs}, \quad L_1 = 6 \text{ ft}, \quad L_2 = 10 \text{ ft}, \quad L_3 = 14 \text{ ft}, \quad \theta = 25^\circ$$

(ans: $N_A = 107 \text{ lbs}$, $N_B = 32.2 \text{ lbs}$, $N_C = 136 \text{ lbs}$)

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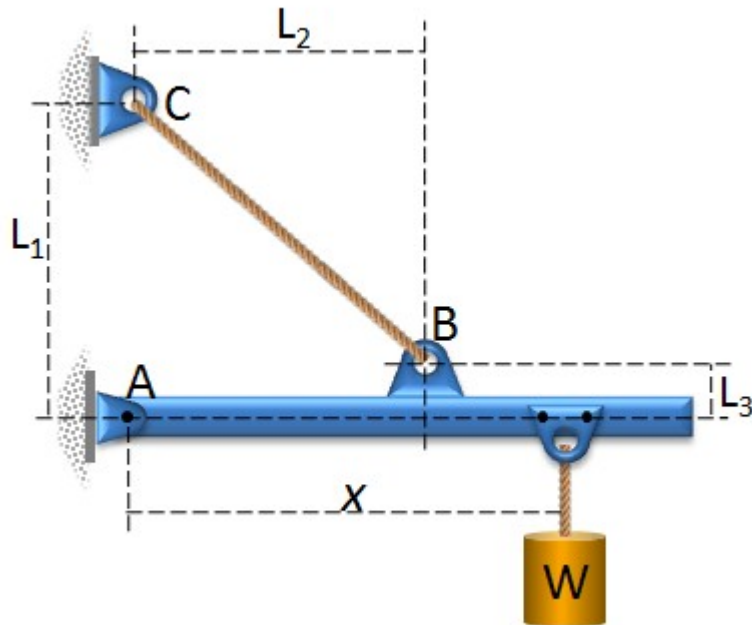
Question 3: (10 points)

The floor crane has a total weight of $\mathbf{W_G = 8\ kN}$, with a center of gravity of point \mathbf{G} . Find the largest weight, \mathbf{W} , that can be lifted without tipping the crane, given:

$\mathbf{L_1 = 0.5\ m}$, $\mathbf{L_2 = 0.6\ m}$, $\mathbf{L_3 = 3.4\ m}$, $\mathbf{L_4 = 2\ m}$, $\mathbf{L_5 = 1.4\ m}$, $\mathbf{L_6 = 4.6\ m}$, $\mathbf{\theta = 45^\circ}$

(ans: $\mathbf{W = 38\ kN}$)

Select problem completion status from drop-down list:

Question 4: (10 points)

The jib crane shown above, is supported by a pin at **A** and cable **BC**. The cable can withstand a maximum tension of 6,000 *lbs*. Find the maximum distance, **x**, and the corresponding reactions at pin **A**, given:

$$W = 3,000 \text{ lbs}, \quad L_1 = 3.8 \text{ ft}, \quad L_2 = 4.8 \text{ ft}, \quad L_3 = 0.1 \text{ ft}$$

$$(\text{ans: } A_x = 4,750 \text{ lbs}, \quad A_y = -663 \text{ lbs}, \quad x = 6.02 \text{ ft})$$

Select problem completion status from drop-down list:
