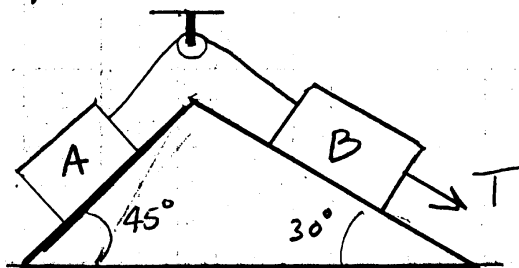
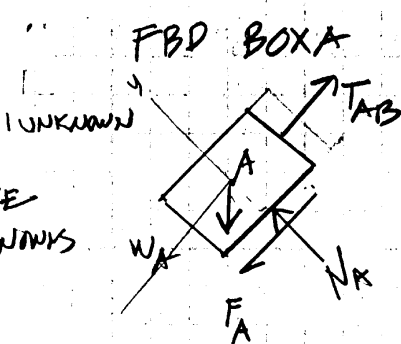


GIVEN: BOXES CONNECTED BY A FLEXIBLE CORD THAT PASSES OVER A FRICTIONLESS PULLEY.
 BOX A WEIGHS 600N
 BOX B WEIGHS 800N
 μ_s BOTH BOXES = 0.5
 μ_k BOTH BOXES = 0.2
 TENSION IS PLACED ON BOX B AS SHOWN.

REQD: WHAT FORCE T WILL CAUSE BOX B TO MOVE?



ASSUME: IMPENDING MOTION AT B AND A TYPE II PROBLEM



START HERE
LETS UNKNOWN

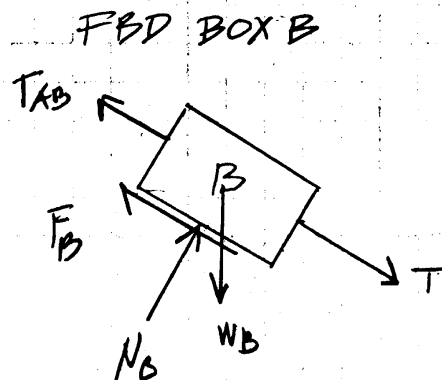
$$\sum F_y = 0 \quad -W_A \cos 45 + N_A = 0$$

$$600 \cos 45 = N_A = 424 \text{ N}$$

$$F_A = F_{A \text{ max}} = \mu_s N_A = 424 \cdot 0.5 = 212 \text{ N}$$

$$\sum F_x = 0 \quad T_{AB} - W_A \sin 45 - F_A = 0$$

$$T_{AB} = 424 + 212 = 636 \text{ N}$$



2 UNKNOWN
T T_AB

$$\sum F_y = 0 \quad N_B - W_B \cos 30 = 0$$

$$N_B = 692 \text{ N}$$

$$F_B = F_{B \text{ max}} = \mu_s N_B$$

$$= 0.5 \cdot 692 = 346 \text{ N}$$

$$\sum F_x = 0 \quad -T_{AB} - F_B + T + W_B \sin 30 = 0$$

$$T = 636 + 346 - 800 \sin 30$$

$$T = 582 \text{ N}$$

**T = 582 N MIN FORCE
TO MOVE BLOCK B : A**