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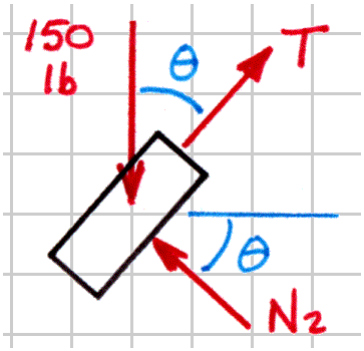
The equations of equilibrium for the two blocks are

$$\rightarrow \Sigma F_x = 0: \qquad T\sin\theta - N_2\cos\theta = 0$$

$$-T\cos\theta + N_1\sin\theta = 0$$

$$\uparrow \Sigma F_y = 0: \qquad T\cos\theta + N_2\sin\theta - 150 = 0$$

$$T\sin\theta + N_1\cos\theta - 200 = 0$$

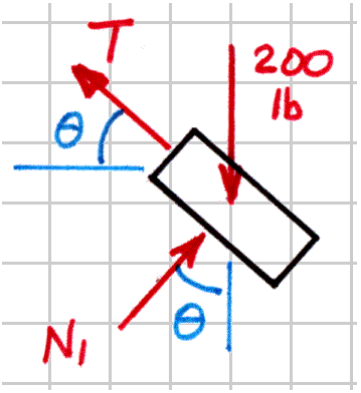


Adding the second and third equation together gives

$$N_1\sin\theta + N_2\sin\theta = 150$$

while subtracting the first equation from the last equation gives

$$N_1\cos\theta + N_2\cos\theta = 200$$



Dividing these two equations gives

$$\frac{(N_1+N_2)\sin\theta}{(N_1+N_2)\cos\theta} = \tan\theta = \frac{150}{200}$$

$$\theta = 36.87°$$

$$N_1 + N_2 = 250 \text{ lb}$$

Now the first two equations can be rewritten

$$T\sin^2\theta - N_2\sin\theta\cos\theta = 0$$

$$-T\cos^2\theta + N_1\sin\theta\cos\theta = 0$$

and subtracting the second equation from the first gives

$$T\left(\sin^2\theta + \cos^2\theta\right) = (N_1+N_2)\sin\theta\cos\theta$$

$$T(1) = (250)(0.6000)(0.8000)$$

$$T = 120 \text{ lb}$$

(a) $N_1 = 160$ lb ..... $N_2 = 90$ lb ..... **Ans.**

(b) $T = 120$ lb ..... **Ans.**

(c) $\theta = 36.87°$ ..... **Ans.**