Summary: Vertical component of the lifting force on the table ($4T\sin\theta$) is at a <u>minimum</u> when the buckets are touching the table. Pushing the table away from the buckets would increase the force and lift the table back up to the buckets!

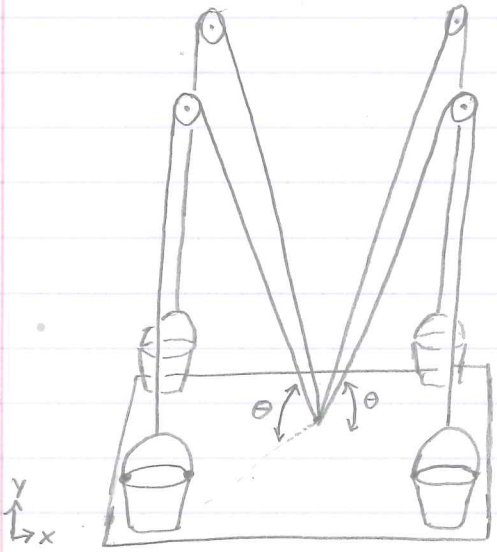


Figure 1

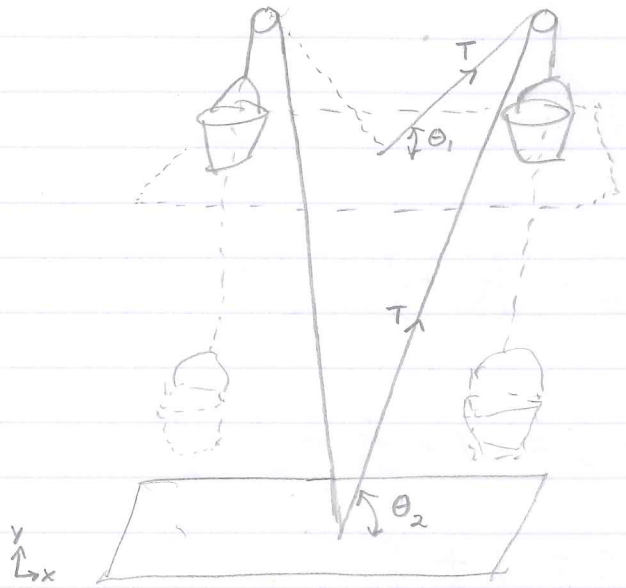
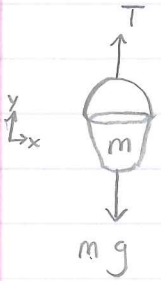


Figure 2

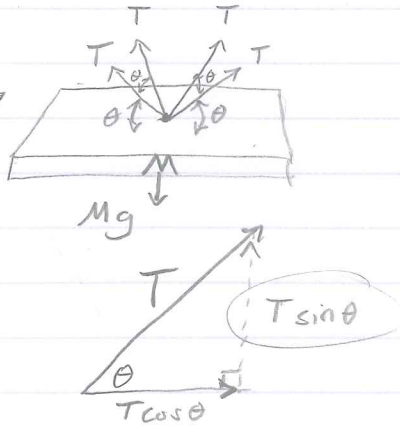
$\theta_2 > \theta_1$

Since $\theta_2 > \theta_1$ the angle increases as the table drops away from the buckets. $T\sin\theta_2 > T\sin\theta_1$

Free Body Diagram $\Sigma F_y = 0$ because it is not moving.



since tension is the same at all points in a rope...



$T = mg$

plug in mg for T

$4T\sin\theta = Mg$

$4mg\sin\theta = Mg$

$$m = \frac{M}{4\sin\theta}$$

From Figure 2

say $\theta_1 = 15°$ and $\theta_2 = 75°$

$\sin(15) = 0.26$ $\sin(75) = 0.96$

$T\sin\theta_2 > T\sin\theta_1$