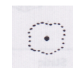
Single Body Analysis Worksheet Help Name:_________________________ #:____

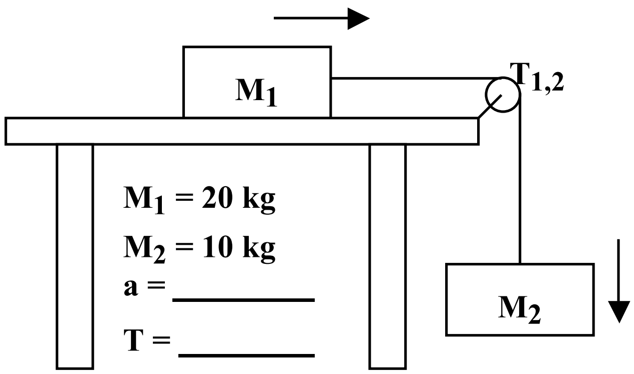
Use $T_{1,2}$ for the force between box 1 and box 2 instead of _____________ or _______________.

Step 1 – ______________________________.

Step 2 – Define direction of ____________ for __________. Notice how it changes when it hits the ______________.

Step 3 - ______________ for mass 1





Step 4 - Force equation for box 1 in X-direction

_____________ = m_1a_x

Step 5 - Force diagram for mass 2

Step 6 - Force equation for box 2

___________ - __________ = m_2a

Step 7 - Combine both _______________ so you can find the __________________ of the system.

__________ = m_1a

+ m_2g – __________ = m_2a

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m_2g = _______________ Pull out the _____________

m_2g = _______________ Divide both sides by ____________

___________ = a Now plug the numbers in for the _____________ and _______.

Step 8 – Plug thy numbers in to find acceleration.

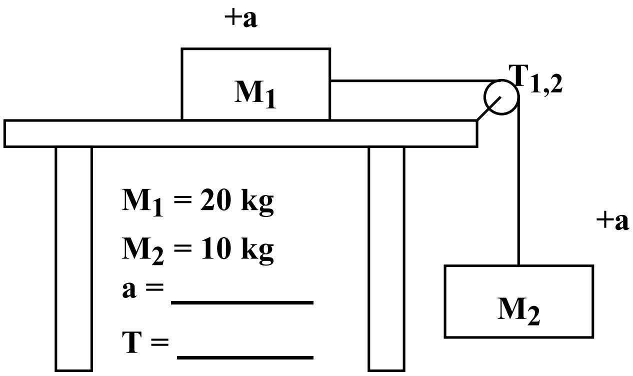
$m_2g / (m_1 + m_2) = a$ a = (______________)/ (______________)

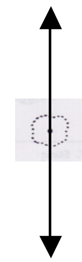
a =

Step 9 - Now plug the value you found for acceleration into one of the F = ma equations and solve for $T_{1,2}$.

$T_{1,2}$ = __________ $T_{1,2}$ = ______________________ = _________

2. Friction is present. (μ = **0.15**)





Force equation for box 1 in Y-direction

__________ - __________ = m_1a_y **0**

__________ = m_1g

SO if ____________ Force equals ____________ then

________________ = μ* ____________

Friction equation

__________ = μ*____________

Force equation for box 1 in X-direction

__________ – ______________ = m_1a_x

Substitute what friction is equal to in to the ______________ equation.

$T_{1,2}$ – ________________ = m_1a_x

Now repeat steps 5 thru 9 from the front of the page.