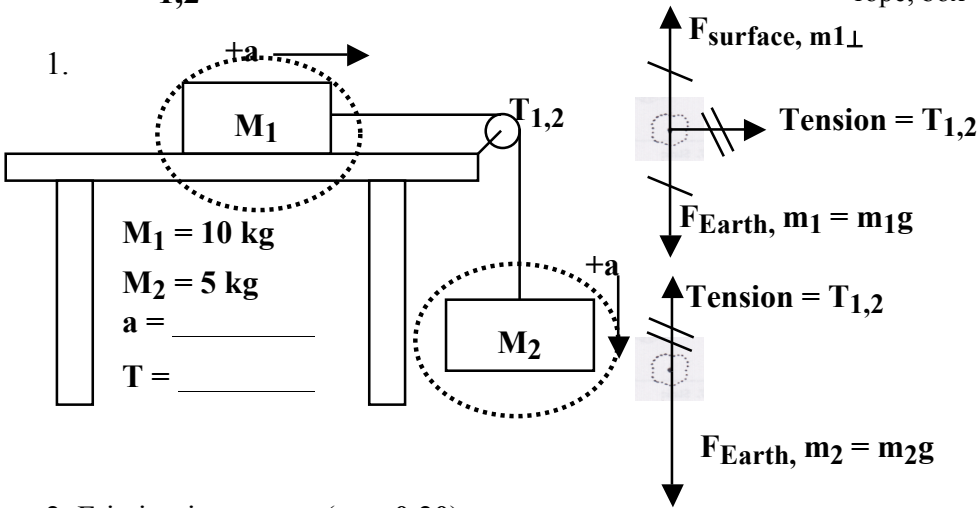


For each of the problems circle your system(s), define the direction of positive, Net Force and acceleration for each object, make a free body diagram, write out a Newton's 2<sup>nd</sup> Law equation for each object, then solve for the acceleration of the system and the tension in each rope. (Assume all situations are frictionless, unless otherwise noted.)

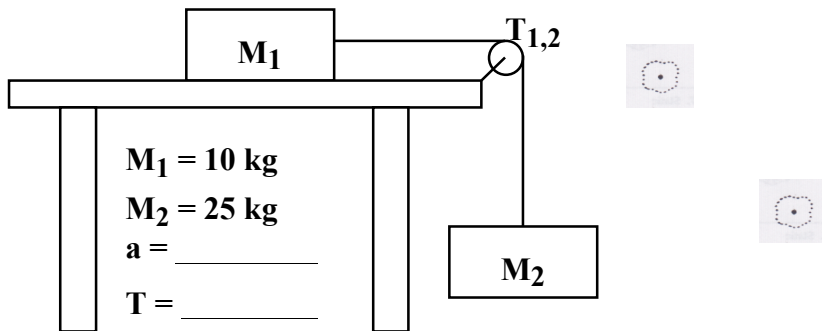
Use  $T_{1,2}$  for the force between box 1 and box 2 instead of  $F_{\text{rope, box}}$  or  $F_{\text{box1, box2}}$ .



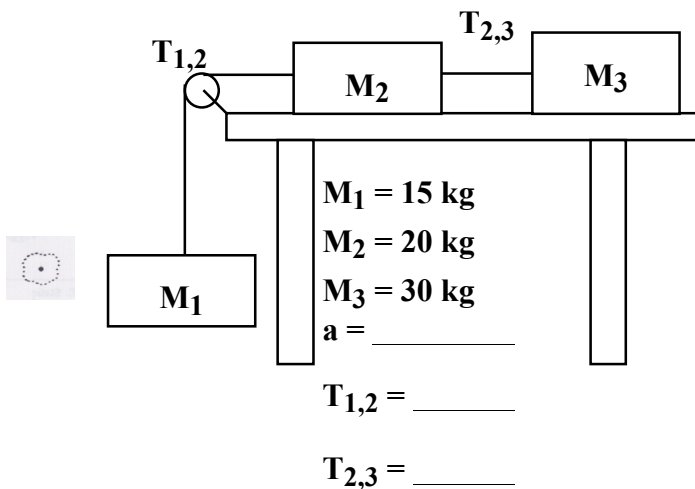
Here is a partial solution to #1

$$\begin{aligned}
 T_{1,2} &= m_1 a \\
 + m_2 g - T_{1,2} &= m_2 a \\
 \hline
 m_2 g &= m_1 a + m_2 a \\
 m_2 g &= (m_1 + m_2) a \\
 m_2 g / (m_1 + m_2) &= a
 \end{aligned}$$

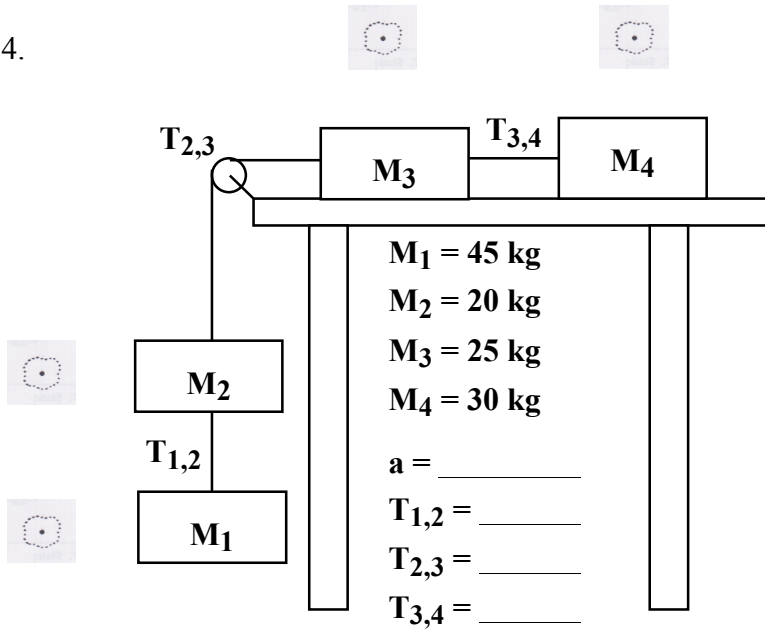
2. Friction is present. ( $\mu = 0.20$ )



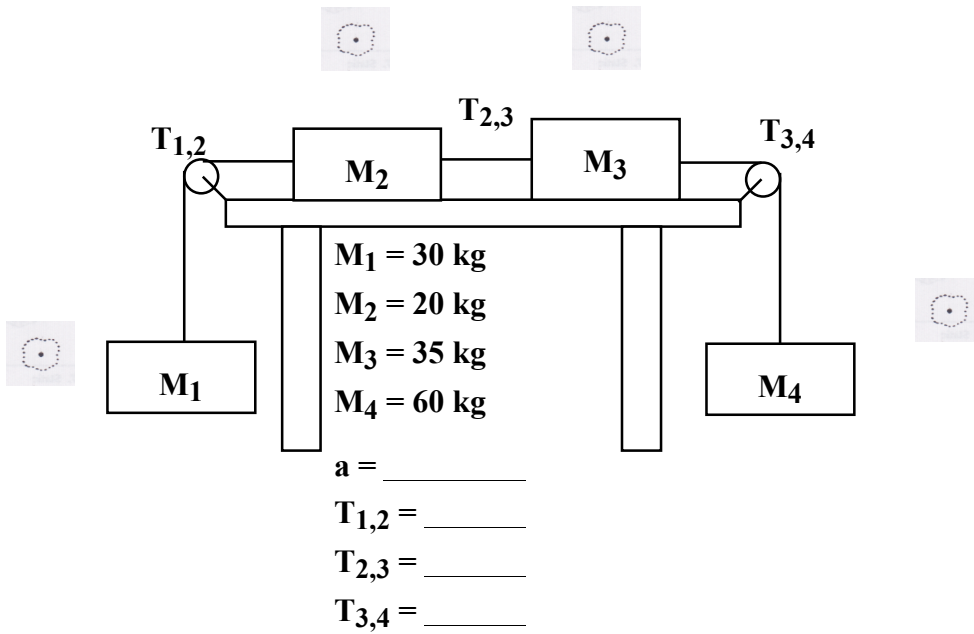
3.



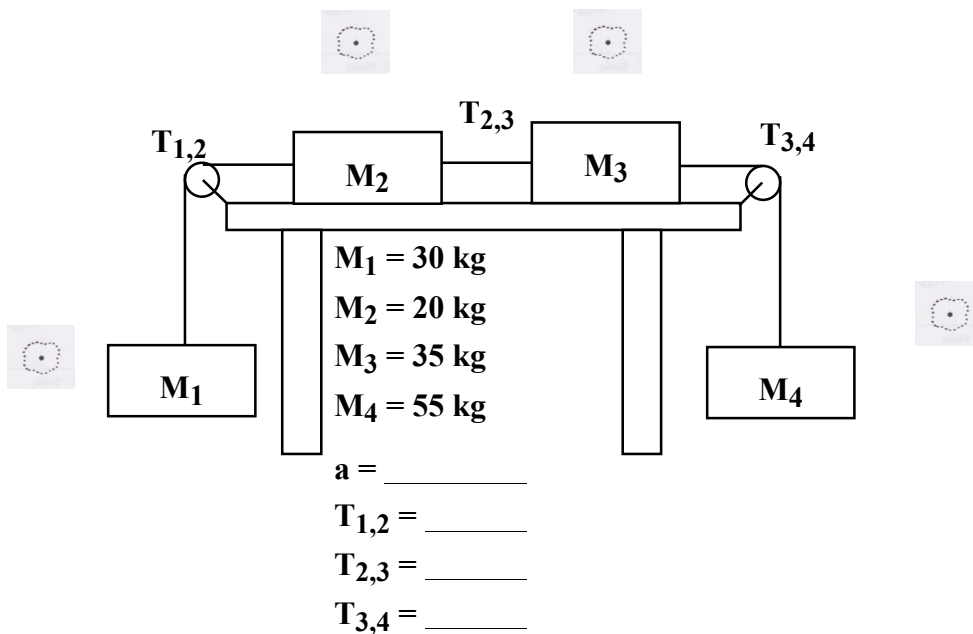
4.



5.



6. Friction is present. ( $\mu = 0.20$ ) Mark which way each block is accelerating.



7.

