1. Two masses, $M_{1}$ and $M_{2}$ are connected by a massless string, which hangs over a pulley as shown. The mass of the pulley is negligible. $M_{1}$ slides on a frictionless ramp making an angle $\theta$ with respect to the horizontal, and $M_{2}$ hangs from the string. Compute the acceleration of the masses as a function of $M_{1}, M_{2}, \theta$ and $g$. Be sure to specify your sign conventions so we can tell whether e.g. $M_{2}$ is moving up or down.
Find the relationship between $M_{1}$ and $M_{2}$ such that if the blocks are released from rest, they remain at rest.

