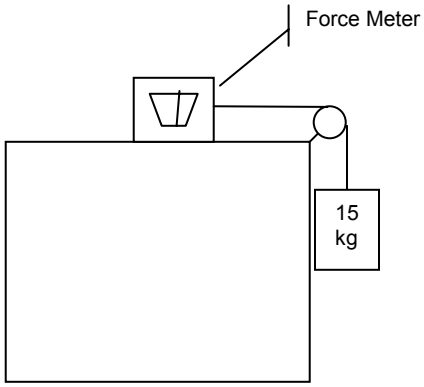
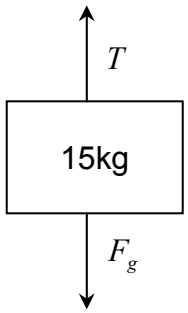
These types of questions use Newton's 2nd and 3rd laws extensively.

Example 1: Find the force reading on the force meter assuming the force meter is not moving

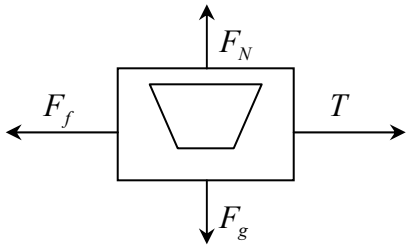


This question must be broken in to two FBD (Free Body Diagrams).

FBD (1) 15kg

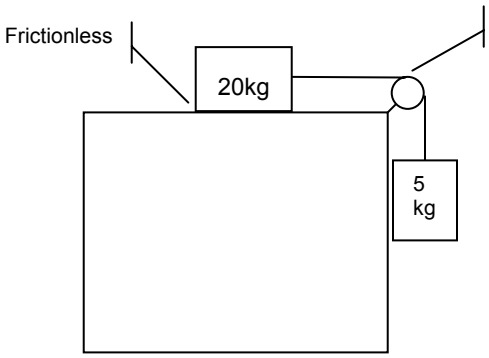


FBD (2) Force Meter



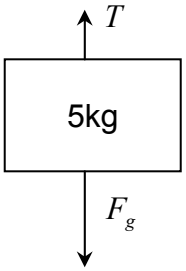
Because of Newton's 3rd law, the two T s are the same magnitude but act in opposite directions.

Example 2: Find the tension between the two masses and find the acceleration of the system.

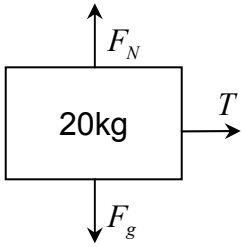


This question must be broken in to two FBD (Free Body Diagrams).

FBD (1) 15kg

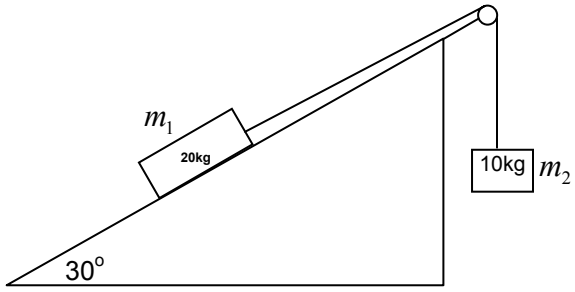


FBD (2) 20kg Mass



Because of Newton's 3rd law, the two Ts are the same magnitude but act in opposite directions.

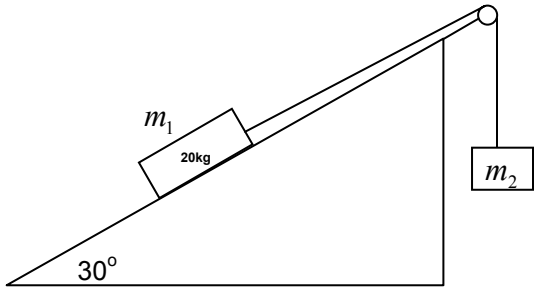
Example 3:



a) Find the acceleration of the system (assume no friction)

b) Find the tension in the string.

Example 4:



Find the maximum mass of m_2 before the system begins to slide ($\mu_s = 0.40$)