Show ALL your work. Writing just the final answer receives no credit. DON'T FORGET TO DRAW YOUR FREE BODY DIAGRAMS!
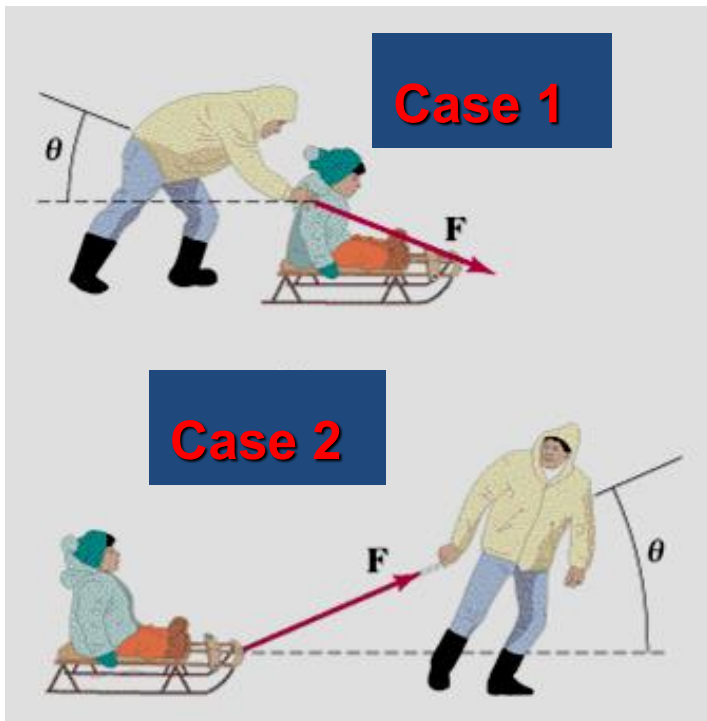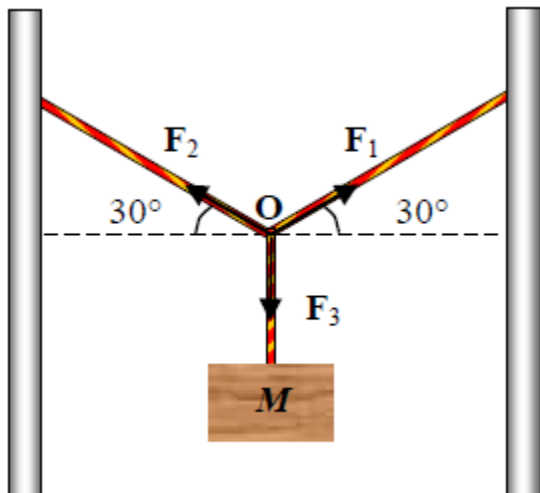
1) Which case is easier to move the sled? Why? Assume μ>0. Make sure to discuss all the necessary forces (hint: normal force) in your written response. *(5 marks)*

2) A mass is hanging from 3 ropes as shown below. If the mass is 11.5kg, what is the tension in either rope? *(3 marks)*

3) A 3.55kg block is pushed up an incline at θ = 32°. If the coefficient of friction is 0.35, what is the minimum force needed to push the block up the incline at constant velocity? *(6 marks)*
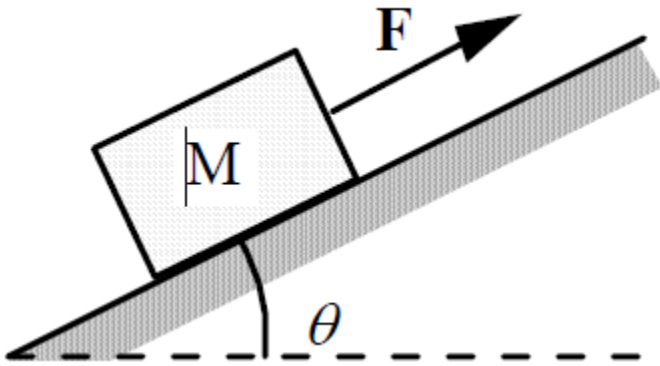
4) Three masses are tied together as shown below. The following measurements were taken: m_1 = 5.2kg, m_2 = 1.2kg, and m_3 = 4.72kg *(6 marks)*

Assuming no friction, what is the acceleration of the system? (Hint: different rope, different tension force)