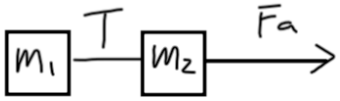
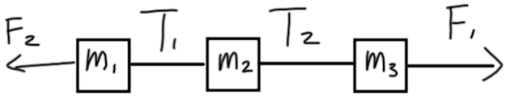
AP Physics: Tension, pulleys and ramps practice Name: _____

Assume no friction throughout these problems.

1. m1 = 4 kg, m2 = 10 kg, Fa = 10 N



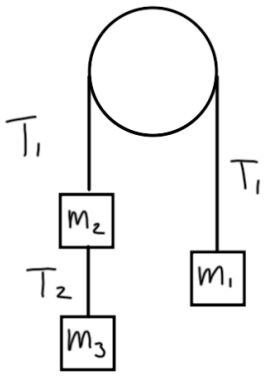
a) What is the acceleration of the two-block system?
b) Draw a free body diagram for each block
c) Determine the tension in the cable, T.



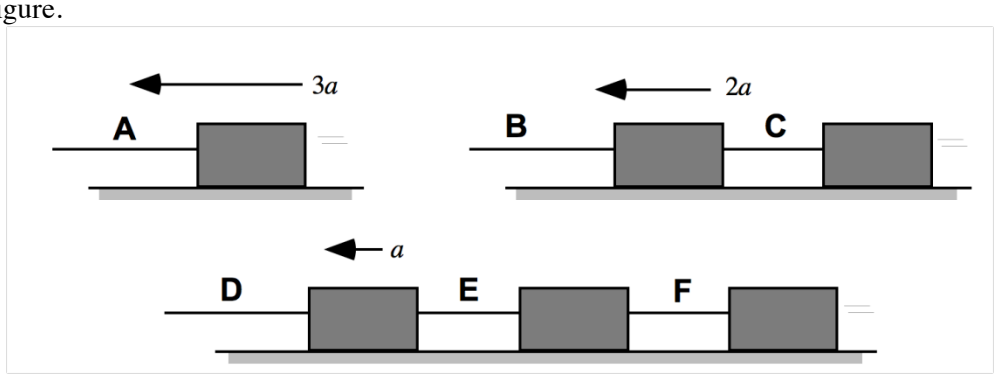
2. F2 = 19.6 N, F1 = 9.8 N, m1 = 3 kg, m2 = 2 kg, m3 = 8 kg.
a) What is the acceleration of the three block system?
b) Draw a free body diagram for each block.
c) Determine the tension in the two cables, T1 and T2.

AP Physics: Tension, pulleys and ramps practice Name: _____

3. m1 = 6 kg, m2 = 3 kg, m3 = 2 kg.
a) Select a direction of motion to be positive.
b) Draw a free body diagram for each block.
c) Set up a=Fnet/m for each block. Determine acceleration of the system.
d) Determine the tensions T1 and T2.

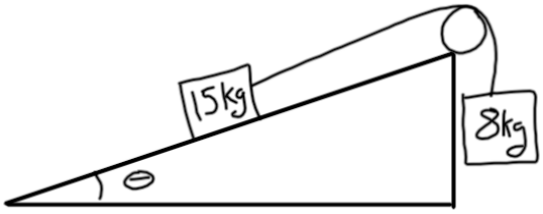


Shown below are boxes that are being pulled by ropes along frictionless surfaces, accelerating toward the left. All of the boxes are identical, and the accelerations of the boxes are indicated in each figure.



Rank the magnitude of the tension in these ropes. Explain your reasoning.

AP Physics: Tension, pulleys and ramps practice Name: _____



4. Given the two masses are 8 kg and 15 kg as shown, determine the angle of the ramp so that they do not accelerate.