Free Body Diagram



- 1. Choose the coordinate system (for each object).
- 2. Show all forces applied to each object.
- 3. Write 2nd Newton's Law for each object, and each axis.
- 4. Solve equations to find acceleration.



Homework

Problem 1.

Construct free body diagrams, and find accelerations of the blocks in the figure. Masses of the blocks are $M_1=0.8$ kg; $M_2=1$ kg and $M_3=0.5$ kg.

Note that the tension is different between the two strings, but it does not change as a string goes around the pulley.



Problem2.

Find acceleration of block "1" in both cases in the Figure. All pulleys are weightless and rotate without friction.

Important hint: the accelerations of two blocks in the case (b) are not the same! Imagine that you move block "2" by distance x upward. How much did the block "1" moved? This consideration will allow you to find the relationship between the two accelerations.

