# PHYS 111 K
HOMEWORK #6

Due : 13 October 2015

1. Imagine you are standing on a train that is moving at constant speed on a level track. The train suddenly speeds up. Will you tend to fall forward or backward? Make sure your answer explicitly includes discussion of the appropriate law (s) of motion.

2. In the figure below, two masses (the red block has a mass of 1 kg and the blue block has a mass of 2 kg) are resting on a frictionless surface and are touching. A force F of 3 N acts on the system as shown. Find the force of contact between the two blocks. Now, consider the force F acting on the blue block. What will be the force of contact between the two blocks. Explain why your answers are different in the two cases.
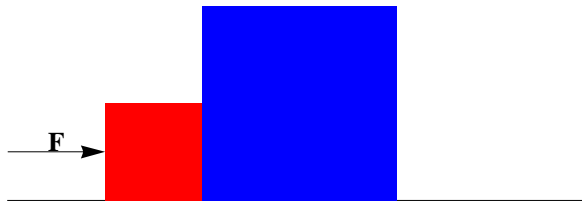
3. Three masses as shown below are resting on a horizontal, frictionless surface. The blocks are connected by massless, frictionless ropes. A force F of 60 N acts on the system as shown. Find the tensions in each of the other two ropes. m_1= 10kg, m_2 = 20 kg and m_3 = 30 kg.
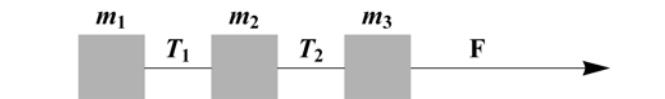
4. How could a 1000 N object be lowered from a roof using a cord whose breaking strength is only 800 N (this means that the cord would snap if a weight greater than 800 N were suspended from it).

5. Question 10 , p. 161, all parts.

6. Question 14, p. 162

7. Question 28, p. 162

8. Question 55, p. 164