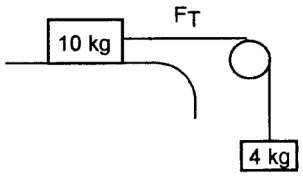
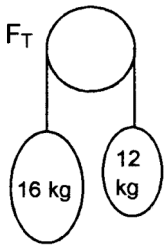
STRING THEORY

1. In the diagram to the right, the surface and the pulley are considered to be frictionless.
    a. What is the acceleration of the 4 kg block?
    b. What is the tension in the rope?

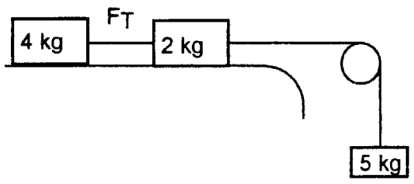


2. Consider an opposing force of friction of 10 N to be present between the 10 kg block and the surface above.
    a. What is the acceleration of the 10 kg block?
    b. What is the tension in the rope for this situation?

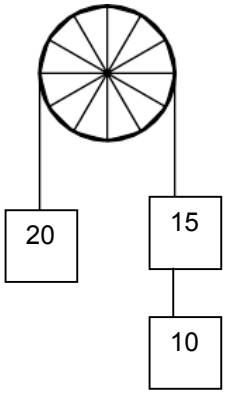


3. Consider the pulley in the diagram to the left to be frictionless.
    a. What is the acceleration of the 16 kg mass?
    b. What is the tension in the rope?

4. Assume the surface in the diagram to the right to be frictionless.
    a. What is the tension in the rope between the 4-kg and the 2-kg block?
    b. What is the tension in the rope between the 2-kg and the 5-kg block?



5. Consider the pulley in the diagram to the right to be frictionless.
    a. What is the tension in the rope between the 20-kg mass and the 15-kg mass?
    b. What is the tension in the rope between the 15-kg mass and the 10-kg mass?



ANSWERS: 1. 2.8 m/s^2, 28 N 2. 2.1 m/s^2, 31 N 3. 1.4 m/s^2, 134 N 4. 17.8 N, 26.8 N 5. 217. 8 N, 87.1 N