

Name: \_\_\_\_\_

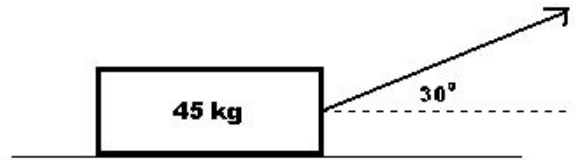
Period: \_\_\_\_\_

## **IB Physics Equilibrium problems**

Answer each question in the space provided. For each problem, be sure to draw a free body diagram and  $\Sigma F=0$  equations for each dimension.

### **Part I: Tension Problems**

1. A 45 kg box is pulled by a rope at an angle of  $30^\circ$  from the horizontal on a *frictionless* surface with a force of 350 N. What are the components of the forces in the horizontal and the vertical?



2. A 50 kg mass is being hung by a single rope. What the tension in that rope?

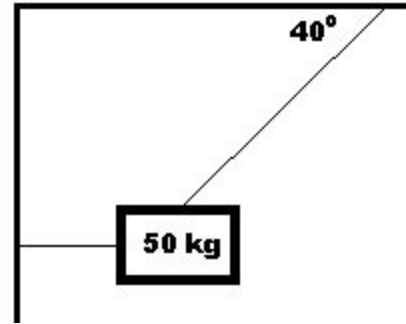


3. A 50 kg mass is suspended from two wires, as in the diagram below. If the tension in the right wire ( $T_2$ ) is 350 N, what is the tension in the left wire ( $T_1$ )?

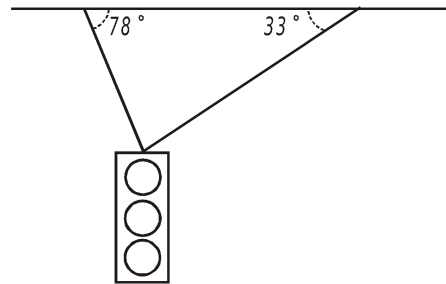


Pre-AP Physics Forces Group Problems Part 2

4. A 50 kg mass is suspended from two wires, as in the diagram below. If the tension in the right wire ( $T_2$ ) is 778 N, what is the tension in the left wire ( $T_1$ )?



5. A traffic light hangs from two cables, as in the diagram below. If the tension in the right cable is 112.5 N, what is the tension in the left cable?



What is the mass of the traffic light?

6. A 20 kg rock is suspended from two ropes. What is the tension in the right rope?

