AP Physics Unit 9 – Worksheet 2
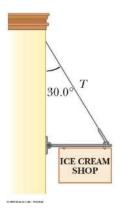
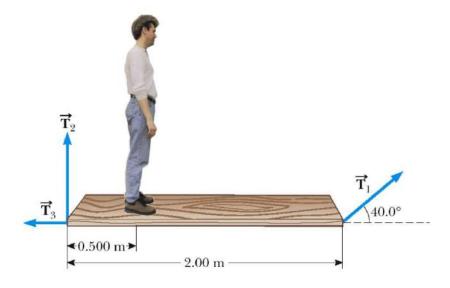### *Draw force diagrams and show all steps needed to solve the following problem.*

1. A 500 N uniform rectangular sign 4.00 m wide and 3.00 m high is suspended from a horizontal, 6.00-m-long, uniform, 100 N rod. The left end of the rod is supported by a hinge, and the right end is supported by a thin cable making a 30.0° angle with the vertical.

a) Draw a force diagram for the rod.

b) Find the tension F_T in the cable.

c) Find the horizontal and vertical components of force exerted on the left end of the rod by the hinge.

2. A uniform plank of length 2.00 m and mass 30.0 kg is supported by three ropes. Find the tension F_T in each rope when a 700 N person is 0.500 m from the left end.

$\vec{T}_2$

$\vec{T}_1$

$\vec{T}_3$

40.0°

0.500 m

2.00 m