**2 Dimensional Forces**

1. A sign is hung as shown. If the mass of the sign is 10 kg, find the tension in each string.

sign

60°

2. A block of mass *8 kg* is being pulled by a string with a force of 50 N that makes an angle of *20 degrees* above the horizontal. The coefficient of friction between the block and the surface is 0.2.

a. Draw a FBD for the block

b. How much of the 50 N force is in the horizontal direction?

c. How much of the 50 N force is in the vertical direction?

d. What is the normal force on the object?

e. What is the force of friction acting on the block?

f. What is the acceleration of the block?

30°

8 kg

3. An 8kg block is at rest on an inclined plane and is held in place by a string.

a. Draw a free body diagram of the mass.

b. Is the normal force acting on the mass greater than, less than, or equal to the weight of the block? Explain why or why not in a short paragraph.

c. What will happen to the tension in the string as the angle is increased? Explain in a short paragraph.