Incline Planes Assignment

1. With an incline of 45^0, and a mass of 40kg, find
   a. F_g
   b. F_{gx}
   c. F_{gy}
   d. F_N

2. With an incline of 60^0, and a mass of 300kg, find
   a. F_g
   b. F_{gx}
   c. F_{gy}
   d. F_N

3. What is the acceleration for #1?

4. What is the acceleration for #2?

5. A 10kg frictionless cart is placed on an incline of 15^0. What force must I apply to the cart so that it remains stationary? What direction is this force I am applying?

6. A frictionless block of wood is resting at the top of a 30m ramp with an incline of 25^0. Find
   a. The acceleration
   b. The time it takes to reach the bottom
   c. The velocity it has at the bottom

7. A frictionless block of wood is resting at the top of a 3.5m ramp with an incline of 5.2^0. Find
   a. The acceleration
   b. The time it takes to reach the bottom
   c. The velocity it has at the bottom

8. A cart at the bottom of a 20^0 ramp is given an initial velocity of 20m/s up the ramp.
   a. Find the acceleration
   b. Find how far up the ramp the block will travel
   c. Find the velocity as it reaches the bottom of the ramp again
   d. Find the time it takes from the top to the bottom

9. An astronaut has landed on a new planet. She sets up an experiment with a nearly frictionless cart and an incline plane of 10^0. If she records that it takes the cart 3.18 seconds for the cart to travel 5.00m down the ramp from a starting speed of 0, find the gravity of this planet. (Hint, find acceleration first)