1. A 562 N trunk is on a frictionless plane inclined at 30.0° from the horizontal. What is the acceleration of the trunk down the ramp?

2. If the trunk in question 1 is placed on a slope of 66.0°. What is the acceleration of the trunk down the ramp? Is the acceleration greater than it was at 30.0°?

3. The roof on a house rises 1.00 m for each 3.50 m in a horizontal direction.
   a. What is the angle of the roof relative to the horizontal?
   b. A 71.0 kg roofer stands on the roof. What is the normal force on the roofer?

4. A car weighing $1.2 \times 10^4$ N is parked on a hill with a slope 36°.
   a. How great is the force down the hill?
   b. What is the normal force? ($F_N$)
   c. If the car’s parking brake fails, at what rate will it accelerate? [$a = \frac{F}{m}$]

5. A 2.5 kg block slides down an inclined plane that has an slope of 25° to the horizontal. The block starts at rest and reaches a velocity of 0.65 m/s. The length of the incline is 1.6 m.
   a. What is the acceleration of the block? [$v_f^2 = v_i^2 + 2ad$]
   b. What is the weight of the block?
   c. What is the normal force? $F_N$?