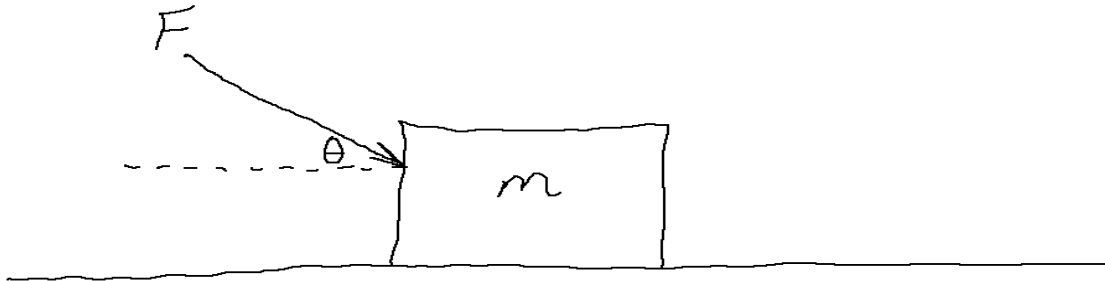


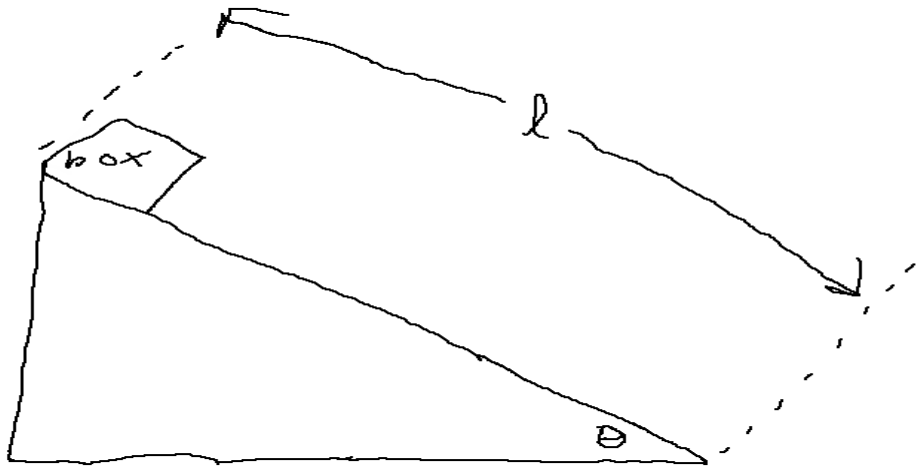
Newton's second law problems  
Homework problems for video (1)  
Solutions discussed in video (2)

1.

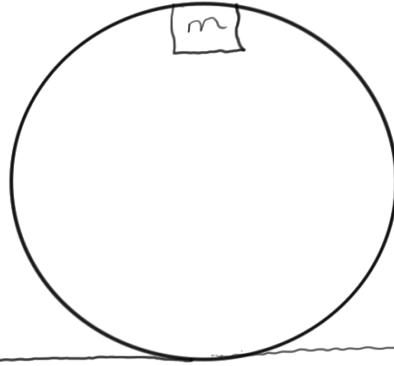


Starting from rest, Bob pushes down on a box of mass  $m$  at an angle  $\theta$  with force  $F$ , so that the box slides across the floor. Bob continues pushing for time  $t$ . The floor's coefficient of static friction is  $\mu_s$ . The floor's coefficient of kinetic friction is  $\mu_k$ . Figure stuff out.

2.

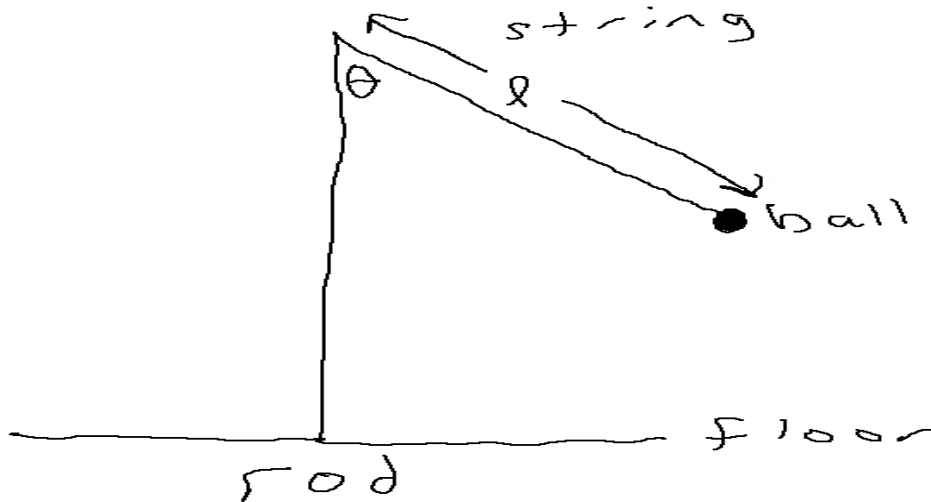


A box is released at the top of an inclined plane of length  $l$  and slides to the bottom. The plane's angle of inclination is  $\theta$ . The plane's coefficient of static friction is  $\mu_s$ . The plane's coefficient of kinetic friction is  $\mu_k$ . Figure stuff out.



3. A box with mass  $m$  slides along a circular track of radius  $R$ . At the top of the track, the box's speed is  $v$ . The track's coefficient of static friction is  $\mu_s$ . The track's coefficient of kinetic friction is  $\mu_k$ . Figure stuff out.

4.



A ball is attached to a vertical rod by a string of length  $l$ . The ball moves in a horizontal circle around the rod. The string makes an angle of  $\theta$  with the rod. Ignore friction and air resistance. Figure stuff out.

Don't look at the next page until you've finished this problem.

5. Here is some additional stuff to figure out about problem 4, if you haven't already:
- (a) What is the circumference of the circle?
  - (b) How long does it take the ball to complete one revolution around the rod?