Static Friction Lab

Goal: To Determine the coefficient of static friction for (4) different surfaces

- You goal here is to determine the coefficient of static friction between the bottom of a wooden block and (4) different surfaces; cardboard, cork, sponge and sandpaper

1) Draw a freebody diagram for this experiment
2) Write the Force or Friction equation and solve it for the coefficient of static friction
3) Obtain a friction board and wooden block, a 2.5 N spring scale and (2) 100 gram mass disks
40 Record the mass of block and 100 gram mass disks in kilograms. Calculate the Force Normal.
4) Set the masses on the wooden block, attach the spring scale and place this on one of the surfaces
5) Pull the spring scale until the block begins to move. Record the value in Newtons when the block begins to initially move.
6) Find the average of three trials and solve for the coefficient of static friction for each surface.

a) Draw a freebody diagram

b) Mass in kilograms. _____ Kg. Calculate the Normal Force and show your work HERE.

	Cork	Sandpaper	Sponge	Cardboard
Trial 1 (N)				
Trial 2 (N)				
Trial 3 (N)				
Average				
Coefficient				

Calculate the coefficient for each surface below. Show all work including equation and substitution with units.
Use the average of the (3) trails for your calculations.

Surface: Cork   Surface: Sandpaper

Surface: Sponge   Surface: Cardboard

Postlab Questions:

1. Which surface required more force to make the block move?

2. Since the mass did not change, what did change in the experiment?

3. How does the coefficient of friction relate to force of friction?

4. Rank the surfaces from most friction (highest coefficient) to least friction (lowest coefficient).

4. A 110-kg Grandfather clock initially at rest on a horizontal floor requires a 650 N horizontal force to set it in motion. After the clock is in motion, a horizontal force of 560 N keeps it moving with a constant velocity.

Determine the coefficient of static friction

Determine the coefficient of kinetic friction
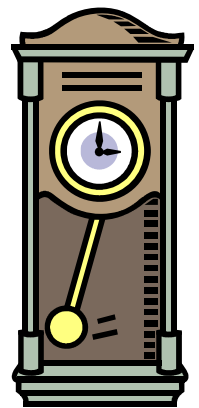
What is the net force when the clock is in motion as described?