PHYS 211L Pre-Lab for Friction Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Read sections 6-2 & 6-3, pages 117-119, in your text (HRW) and answer the following questions:

1. What percentage of gasoline used in an automobile is needed to counteract friction in the engine and drive train?

1. State two advantages and two disadvantages of friction.
2. What is the direction of the frictional force on a moving object (circle one)?  
   a. In the direction of the velocity of the object  
   b. In the direction opposite to the velocity of the object
3. You push horizontally on a heavy crate in a floor. The crate does not move. Sketch the floor and crate. Show and name all the forces acting on the crate.
4. You push horizontally on a heavy crate. The crate does not move. Which of the following frictional forces balances your push (circle one)?  
   a. Static frictional force  
   b. Kinetic frictional force
5. You push horizontally on a heavy crate. The crate moves. Which of the following frictional forces acting on the crate (circle one)?  
   a. Static frictional force  
   b. Kinetic frictional force
6. What is cold-welding?

1. Express the magnitude of the kinetic frictional force (*fk*) in terms of the coefficient of kinetic friction (*μk*) and the magnitude of the normal force (*FN*).