Physics 11 **Friction Worksheet #1** Name:
Block:

For each of the problems below, draw a free body diagram (force diagram) of the situation before answering the question:

1. What friction force is acting between a box and a table if the normal force is 200 N and the coefficient of friction between sliding surfaces is 0.55?

2. If the friction force is 350 N, and the normal force is 1000 N, what is the coefficient of friction?

3. If the friction force is 500 N, and the mass of the object is 200 kg, what is the coefficient of friction between these surfaces?

4. If the coefficients of kinetic and static friction are $\mu k = 0.3$ and $\mu s = 0.6$, what force is required to start an object moving if the object has a weight of 2000 N? Once it is moving, how much force is needed to keep it moving at a constant speed?

5. What is the net force acting on a car weighing 10,000 N which is stopping for a traffic light given that the car is rolling on a level surface and the average coefficient of friction for braking is 0.6? What is the acceleration of the car?

6. If you applied a force of 200 N to push a box along the floor at a constant velocity, what is the net force on the box? What is the force of friction on the box?

7. Two men are arguing over where to put a large container (mass = 250 kg). One man pushes with a force of 400 N in one direction while the other man pushes with a force of 600 N in the other direction. If the coefficient of friction is 0.4, what is the net force on the object? What is the acceleration of the object?

8. If the net force on an object is 75 N and a force of 100 N is applied to push the object across a table, what is the force of friction acting on the object? If the mass of the object is 5.0 kg, what is the coefficient of friction?

9. An object with mass = 10.5 kg accelerates across a surface at a rate of 0.5 m/s/s. If the force of friction is 6.0 N, what is the force applied to the object to make it move?

10. 10 men pull on a cart each with a force of 200 N. Five woman pull on the same cart from the other direction each with a force of 405 N. If the cart has a mass of 25 kg and the coefficient of static friction is 0.2, will the cart be moved? If not, why? what coefficient of static friction would be necessary in order for the cart to be moved with these applied forces?