Friction Pre-lab Assignment

Your name: _____

Please print this page, fill it in, and show it to your TF at the start of your lab session.

Part of this experiment involves determining the coefficient of static friction by measuring the *limiting angle of repose*, the maximum angle an incline plane may be tipped before a block on the plane starts to slide.

Sketch a free-body diagram of a block on a plane inclined at the limiting angle of repose. Choose an appropriate coordinate system, apply Newton's second law, and use the equations to show that the coefficient of static friction equals the tangent of the limiting angle of repose. This is equation (3) in the lab manual.

If the angle of the incline is **less than** the limiting angle of repose, which of these statements is true?

[ ] f_s = the coefficient of static friction multiplied by the normal force

[ ] f_s > the coefficient of static friction multiplied by the normal force

[ ] f_s < the coefficient of static friction multiplied by the normal force

Additional questions - Circle the correct response in each case.

A block is placed on an inclined plane:

1. If a mass is attached firmly to the top of the block, the limiting angle of repose will:

   increase decrease stay the same

2. If an external force pushes down on the block, perpendicular to the inclined plane, the limiting angle of repose will:

   increase decrease stay the same