

2-5 Resolve the forces perpendicular and parallel to the plane. In the direction perpendicular to the plane, (upward direction taken positive) $F_{\text{net}} = 0 = N - mg \cos \theta$. In the direction parallel to the plane (up the plane taken as positive) the frictional force, $f_s - mg \sin \theta = 0$. Solving we see that $f_s = mg \sin \theta$. Answer (F) is correct. If you are confused about this, work the whole problem through. The frictional force $f_s \leq \mu_s N = \mu_s mg \cos \theta$. Now substitute for $f_s = mg \sin \theta$, we get that $\tan \theta \leq \mu_s$.