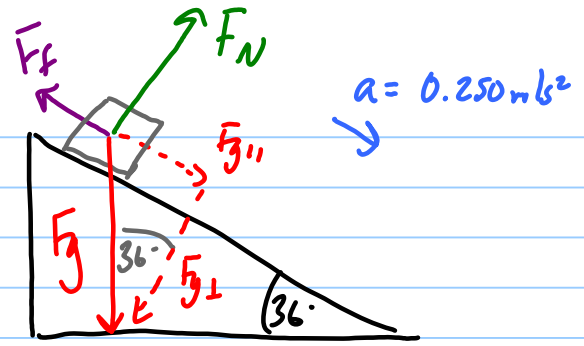
Quiz 3c

Note Title 18/10/2011

A 12.0 kg box is released on a 36° incline and accelerates at 0.250 m/s².

Determine the coefficient of friction between the block and the ramp.



$F_{net} = F_{g\parallel} - F_f = ma$ ✓

$F_{g\parallel} = F_g \sin 36^\circ = mg \sin 36 = (12)(9.8)\sin 36^\circ = 69.12\ N$ ✓

$F_f = F_{g\parallel} - ma = 69.12 - (12)(0.25) = 66.12\ N$ ✓

$F_N = F_{g\perp} = mg \cos 36^\circ = (12)(9.8)\cos 36 = 95.14\ N$ ✓

$F_f = \mu F_N \qquad \mu = \frac{F_f}{F_N} = \frac{66.12}{95.14} = \boxed{0.69}$ ✓