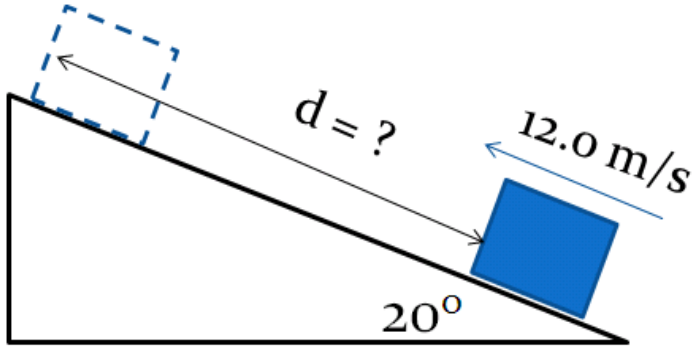
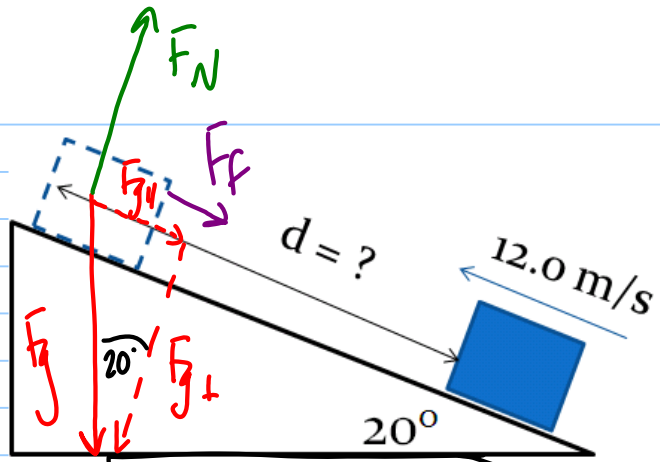
Quiz 3a

Note Title 16/10/2011

An 8.0 kg block is fired up a ramp at 12.0 m/s. The coefficient of friction is 0.28. How far will it slide before coming to a stop?





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

$F_{g\parallel} = F_g \sin 20^\circ = mg \sin 20^\circ = (8.0)(9.8)\sin 20^\circ = 26.8\ N$ ✓

$F_f = \mu F_N = \mu F_{g\perp} = \mu mg \cos 20^\circ = 20.6\ N$ ✓

$a = \dfrac{F_{g\parallel} + F_f}{m} = \dfrac{26.8 + 20.6}{8.0} = 5.929\ m/s^2$ ✓

$V = 0$

$V_0 = 12\ m/s$

$a = -5.929\ m/s^2$

$d = ?$

$t =$

$V^2 = V_0^2 + 2ad$

$d = \dfrac{V^2 - V_0^2}{2a} = \dfrac{0^2 - 12^2}{2(-5.929)}$

$= \boxed{12\ m}$ ✓