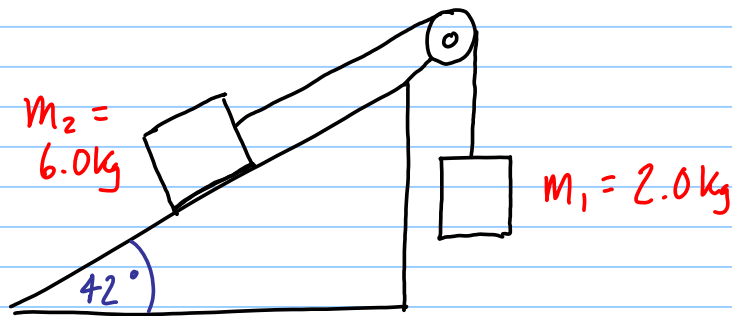


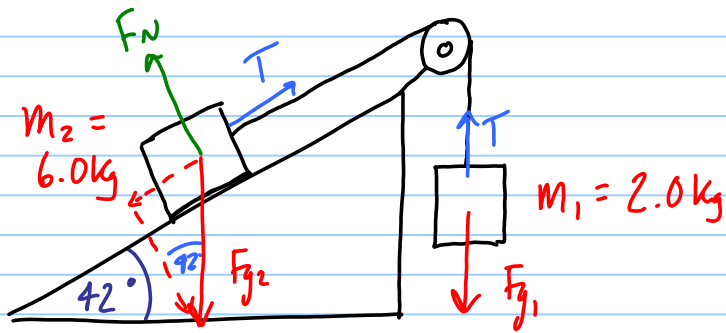
Quiz 4a

Note Title

23/10/2011

Two blocks are attached by a pulley as shown. The coefficient of friction between the ramp and the block is 0.35. Determine the magnitude and direction of the acceleration of the block on the ramp.





$$F_{g1} = m_1 g = (2.0)(9.8) = 19.6 \text{ N} \quad \checkmark$$

$$F_{g2||} = F_{g2} \sin 42^\circ = m_2 g \sin 42^\circ$$

$$= (6.0)(9.8) \sin 42^\circ = \underline{\underline{39.34 \text{ N}}} \quad \checkmark$$

Winner!

$$F_{\text{net}} = F_{g2||} - F_{g1} - F_f = m_+ a \quad \checkmark$$

$$a = \frac{F_{g2||} - F_{g1} - F_f}{m_+}$$

$$= \frac{39.34 - 19.6 - 15.29}{(2.0 + 6.0)}$$

$$= \boxed{0.56 \text{ m/s}^2 \text{ down the ramp}} \quad \checkmark$$

$$F_f = \mu F_N = \mu F_{g2\perp} = \mu m g \cos 42^\circ$$

$$= (0.35)(6.0)(9.8) \cos 42^\circ$$

$$= 15.29 \text{ N} \quad \checkmark$$