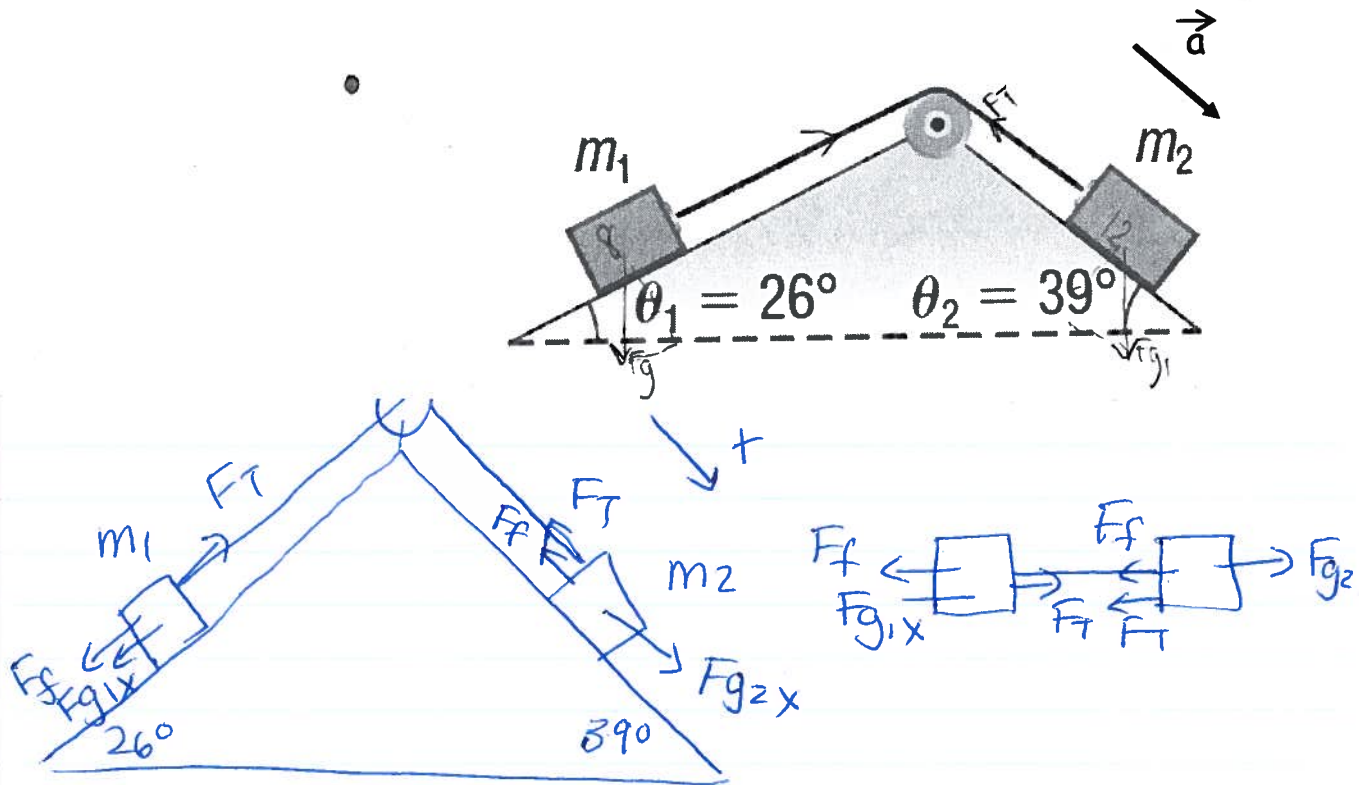


SPHU0 Linked Objects on a Double Inclined Plane.....Just do it!!! Date: _____

Two blocks, connected by a massless string, hang over a pulley that connects two inclines. When released, the blocks begin to move in the direction indicated. Block m_1 is 8.0 kg and block m_2 is 12.0 kg. There is a force of kinetic friction of 14.8 N acting on block 1 and a force of kinetic friction of 19.2 N acting on block 2.

Determine: a) The acceleration of the blocks.
b) The tension in the string.

[ans: 0.28 m/s^2
[51 N]



System:

$$m_T a = \Sigma F = F_{g2x} - F_{f2} - F_{f1} - F_{g1x}$$

$$(8+12) a = m_2 g \sin 39 - 14.8 - 19.2 - m_1 g \sin 26$$

$$a = 0.28 \text{ m/s}^2$$

Block 2:

$$m_2 a = \Sigma F = F_{g2x} - F_f - F_T$$

$$F_T = F_{g2x} - F_f - m_2 a$$

$$= m_2 g \sin 39 - 14.8 - m_2 (0.28)$$

$$= 51 \text{ N}$$