

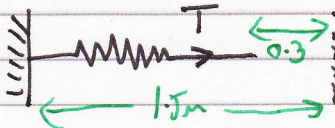
$$\Sigma F_y: T - 1.4g = 0$$

$$T = 1.4g$$

$$HL: 1.4g = \frac{50x}{0.7}$$

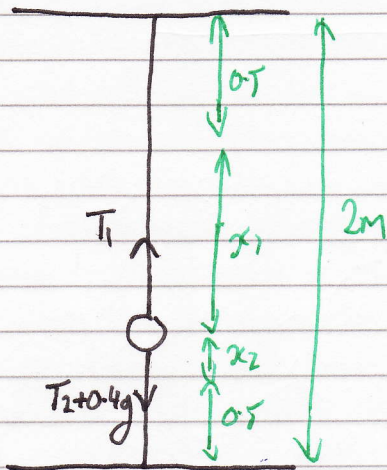
$$x = 0.19 \text{ m}$$

Ex 2



$$T = \frac{25 \times 0.3}{1.5} = 5 \text{ N}$$

Ex 3
(a)



$$x_1 + x_2 + 0.5 + 0.5 = 2$$

$$x_1 + x_2 = 1 \quad \text{--- (1)}$$

$$T_1 - T_2 = 0.4g \quad \text{--- (2)}$$

$$T_1 = \frac{Ax_1}{0.5} \quad T_2 = \frac{Ax_2}{0.5}$$

$$\text{in (2)} \quad \frac{Ax_1}{0.5} - \frac{Ax_2}{0.5} = 0.4g$$

$$A(x_1 - x_2) = 0.2g \quad \text{--- (3)}$$

From (1) $x_2 = 1 - x_1$

$$\text{in (3)} \quad A(x_1 - (1 - x_1)) = 0.2g$$

$$A(2x_1 - 1) = 0.2g$$

$$2Ax_1 - A = 0.2g$$

$$x_1 = \frac{0.2g + A}{2A}$$

$$\therefore x_2 = 1 - \frac{(0.2g + A)}{2A} = \frac{2A - 0.2g - A}{2A} = \frac{A - 0.2g}{2A}$$

(g3) (b) $x_1 = \frac{0.2g + 9.8}{2 \times 9.8} = \frac{1.2g}{2g} = \underline{0.6 \text{ cm}}$

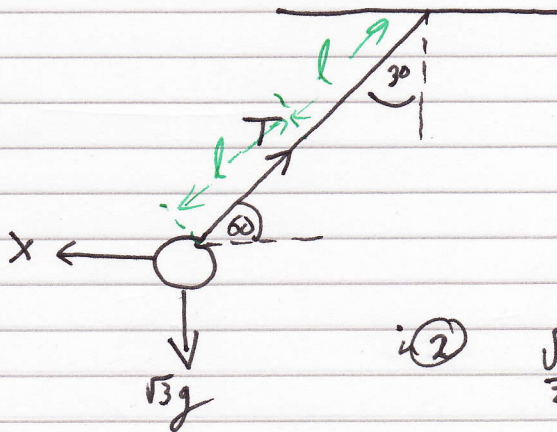
$x_2 = 1 - 0.6 = \underline{0.4 \text{ cm}}$

(c) String will not go slack provided that $x_2 > 0$

$\therefore \frac{1 - 0.2g}{2A} > 0$

$A > 0.2g$

(g4)



$\Sigma F_x: T \cos 60 - X = 0$ — (1)

$\Sigma F_y: T \sin 60 - \sqrt{3}g = 0$ — (2)

$T = \frac{1g}{\frac{1}{2}}$

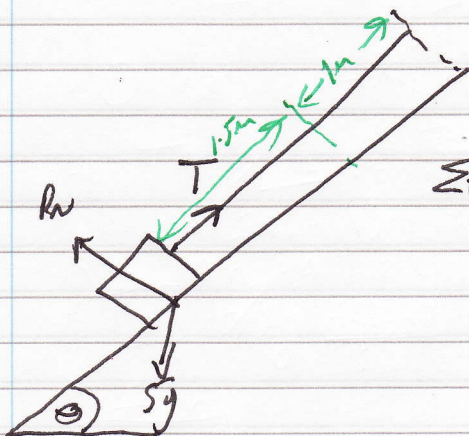
$T = 2g$

(2) $\frac{\sqrt{3}}{2} T = \sqrt{3}g$

$T = 2g \text{ N}$

(1) $X = 2g \cdot \frac{1}{2} = \underline{9.8 \text{ N}}$

(g5)



HL: $T = \frac{4g \times 1.5}{1} = 6g \text{ N}$

$\Sigma F_x: T - 5g \sin \theta = 5a$

$6g - 5g \cdot \frac{3}{5} = 5a$

$a = \frac{3g}{5} = \underline{5.88 \text{ ms}^{-2}}$

If rough then $\Sigma F_x: T - F - 5g \sin \theta = 5a$

$R_n - 5g \cos \theta = 0$

$F = \mu R_n$

$F = 0.25 \times 5g \times \frac{4}{5} = 9.8 \text{ N}$

$\therefore 6g - 9.8 - 5g \cdot \frac{3}{5} = 5a \quad 2g = 5a \quad \underline{a = 3.92 \text{ ms}^{-2}}$

