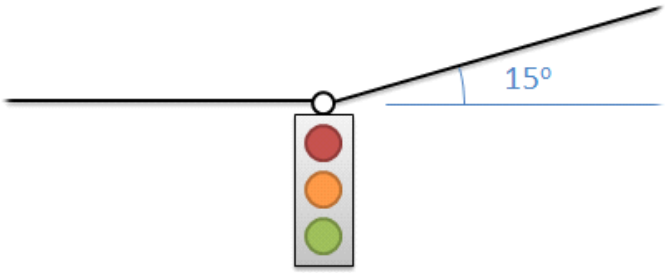
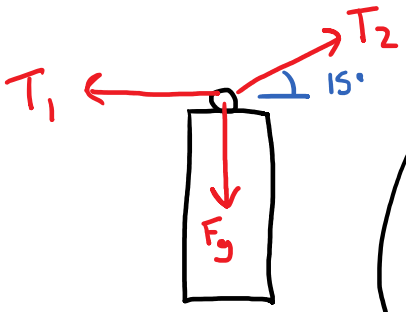
Question 1

A 6 kg traffic light is supported by two cables as shown below. Find the tension in each of the cables supporting the traffic light.



$F_g = (6)(9.81) = 58.86\ N$



$\Sigma F_x = -T_1 + T_2 \cos(15) = 0$

$\Sigma F_y = T_2 \sin(15) - 58.86 = 0$

$T_2 = \frac{58.86}{\sin(15)} = 227.4\ N$

$T_1 = 227.4 \cos(15) = 219.7\ N$

$T_1 = 219.7\ N$

$T_2 = 227.4\ N$