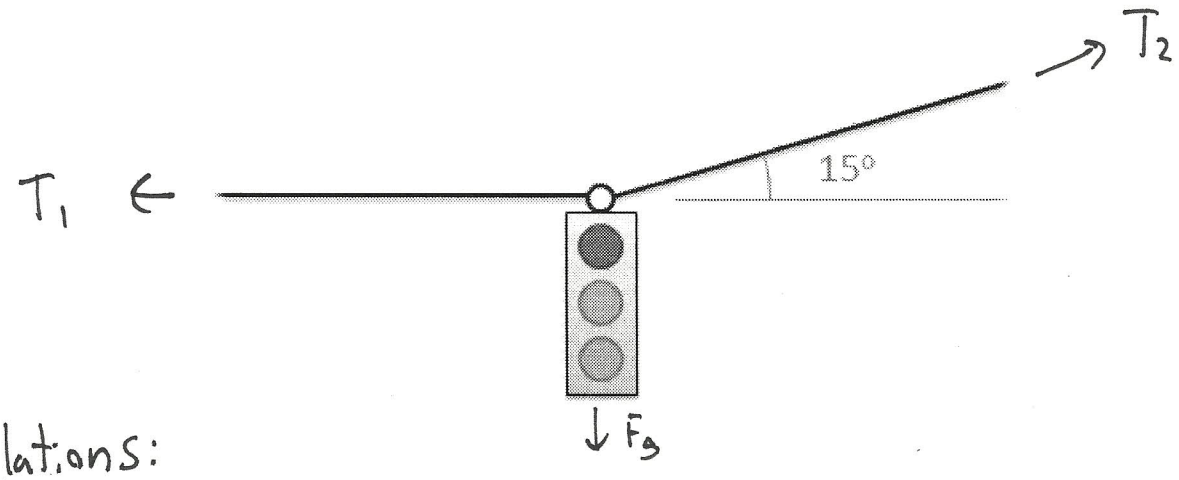
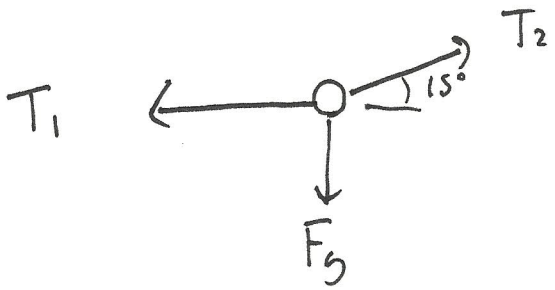
Question 2:

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.



Calculations:

$$F_g = (9.8)(6)$$
$$F_g = 58.8\ N$$



$$\Sigma F_x = -T_1 + T_2 \cos(15^\circ) = 0$$
$$\Sigma F_y = T_2 \sin(15^\circ) - 58.8 = 0$$
$$T_2 = \frac{58.8}{\sin(15)} = 227.2\ N$$
$$-T_1 + 227.2 \cos(15^\circ) = 0$$
$$T_1 = 227.2 \cos(15^\circ) = 219.4\ N$$

Solution:

$$T_1 = 219.4\ N \qquad T_2 = 227.2\ N$$