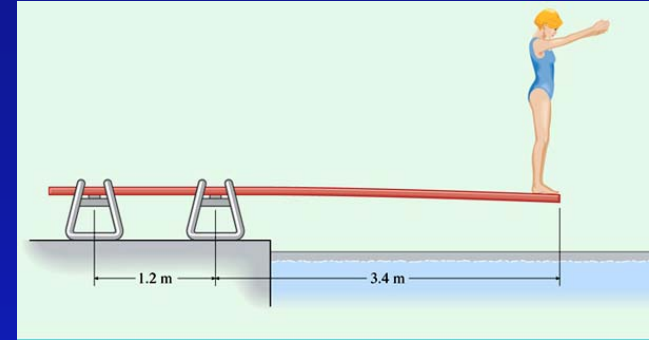# Equilibrium Example

A 50 kg diver stands at the end of a 4.6 m diving board. Neglecting the weight of the board, what is the force on the pivot 1.2 meters from the end?



1) Draw FBD

2) Choose Axis of rotation

3) $\Sigma \tau = 0$      Rotational EQ

$$F_1 (1.2) - mg (4.6) = 0$$

$$F_1 = 4.6 (50 *9.8) / 1.2$$

$$F_1 = 1880 \text{ N}$$

4) $\Sigma F = 0$      Translational EQ

$$F_1 - F_2 - mg = 0$$

$$F_2 = F_1 - mg = 1390 \text{ N}$$