

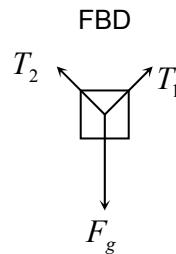
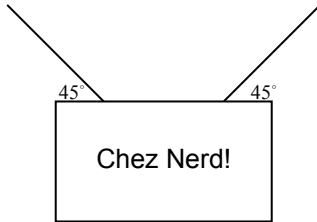
Equilibrium is the state in which the sum of all forces acting on a body is zero. This concept is nothing new since we have worked with several situations where $F_{net} = 0N$. The difference is in how the questions are analysed.

Two types of equilibria, **Static** and **Dynamic**

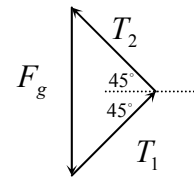
Static Equilibrium: The sum of all forces = 0N and the system is at rest.

Dynamic Equilibrium: The sum of all forces = 0N and the system is moving with constant motion in a straight line

EX: Find the tension on each cable supporting the 50kg sign below if each cable makes an angle of 45° with the sign?



As a vector diagram



Ex 2: A mouse is climbing up a piece of rope that is attached to the wall and a block of cheese as described below. Find the maximum mass of the mouse that can climb up the rope without causing the piece of cheese to slide.

- A 0.50 kg block of cheese sits on a level table, as shown. The coefficient of static friction is 0.60. Three strings are tied together in a knot at K. K_c is horizontal and fastened to the cheese. K_w angles up to the wall at 30° to the horizontal. K_m hangs vertically, supporting a mouse. What is the maximum mass of the mouse, if the cheese and the mouse remain in equilibrium?

