Static Equilibrium

$\vec{F}_R = m\vec{a}^{\,0}$ $\qquad \vec{F}_R = 0$

$\vec{F}_R = \Sigma\vec{F} = 0$

$$\boxed{\Sigma\vec{F} = 0}$$

2-D

$$\boxed{\begin{aligned}\Sigma F_x &= 0\\ \Sigma F_y &= 0\end{aligned}}$$

Can solve for up to two unknowns

3-D

$$\boxed{\begin{aligned}\Sigma F_x &= 0\\ \Sigma F_y &= 0\\ \Sigma F_z &= 0\end{aligned}}$$

Can solve for up to three unknowns

Springs

$F_{spring} = k\,s$

- s: Stretch or compression (Deformation in addition to the unstretched length)
- k: Spring stiffness