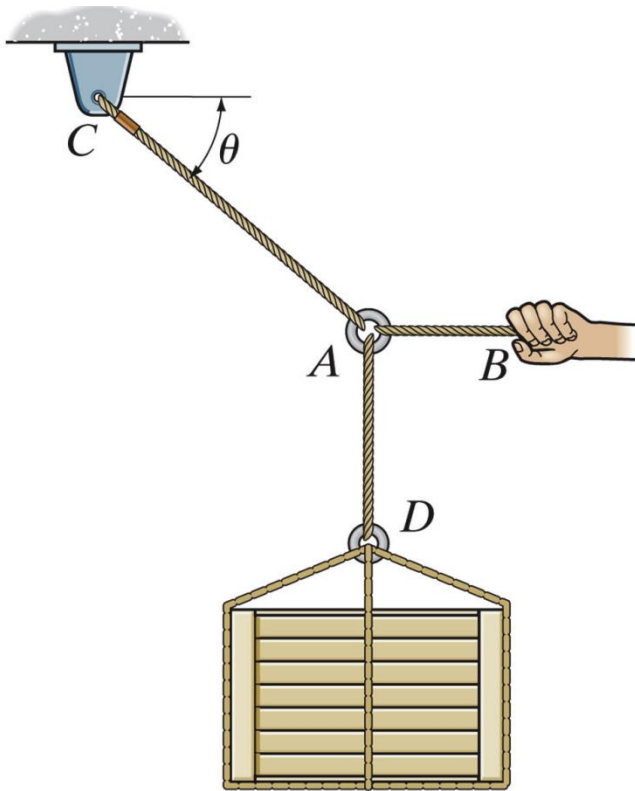


Goals and Objectives

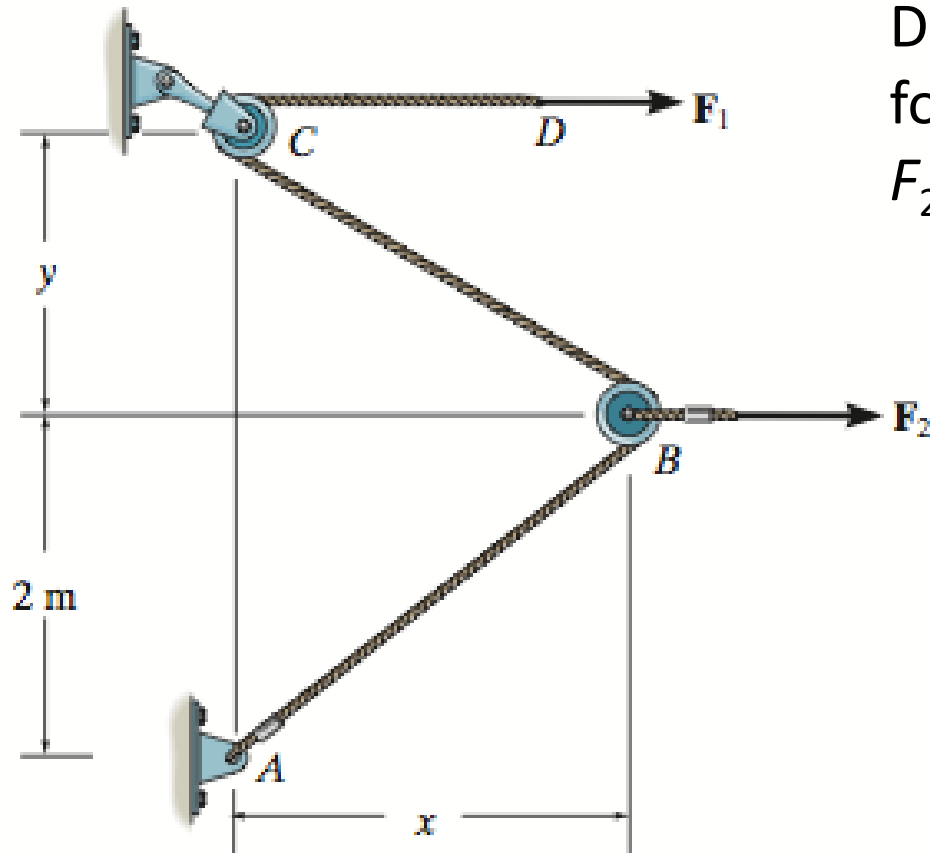
- Solve system of particles at equilibrium problems following general procedure for analysis.

Example



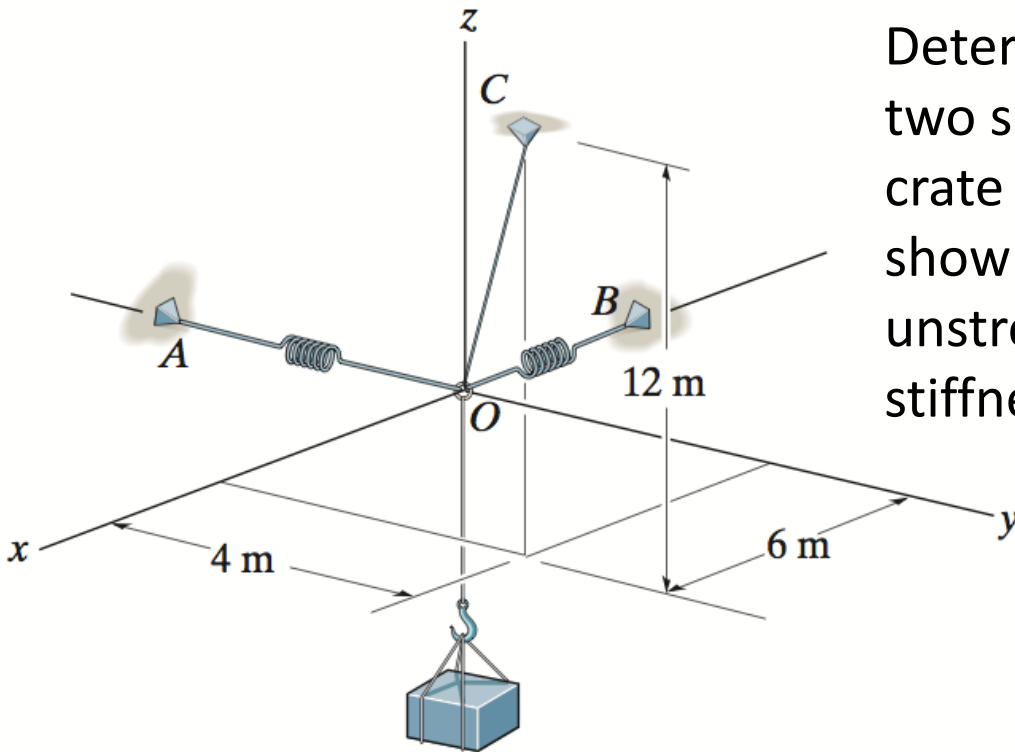
If the box weighs 2 kN, determine the angle of the cable at C when a horizontal force of 3 kN is applied at B to make the system in equilibrium.

Example



Determine the distances x and y for equilibrium if $F_1 = 800\text{ N}$ and $F_2 = 1000\text{ N}$.

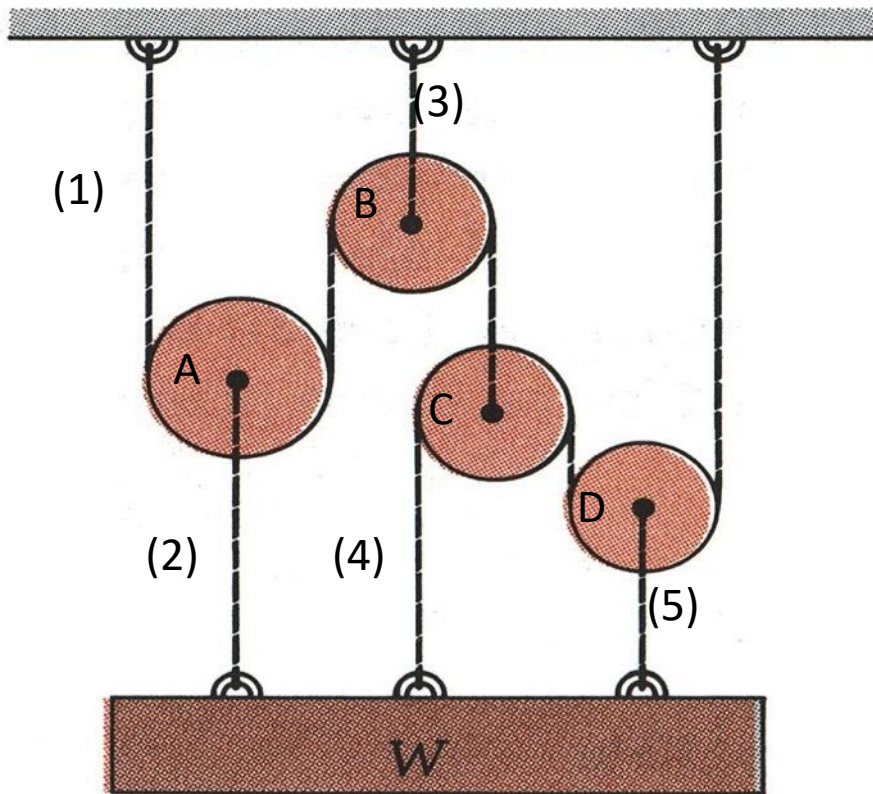
Example – 3D



Determine the stretch in each of the two springs required to hold the 20-kg crate in the equilibrium position shown. Each spring has an unstretched length of 2 m and a stiffness of $k = 360 \text{ N-m}$.

Equilibrium of a system of particles

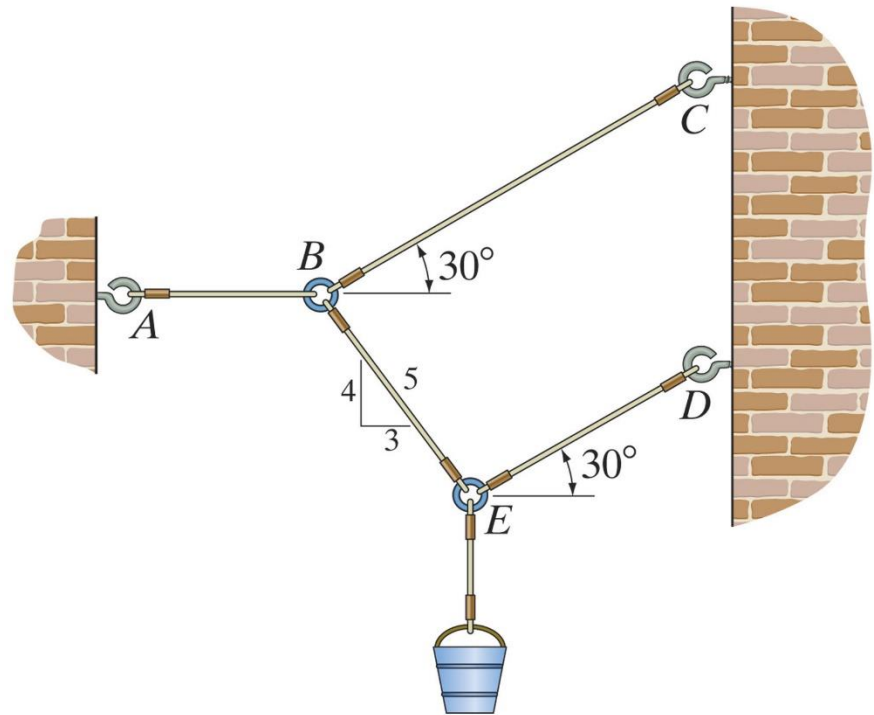
Some practical engineering problems involve the statics of interacting or interconnected particles. To solve them, we use Newton's first law: $\Sigma \mathbf{F} = \mathbf{0}$ on selected multiple free-body diagrams of particles or groups of particles.



The five ropes can each take 1500 N without breaking. How heavy can W be without breaking any?

Example

The 30-kg pipe is supported at A by a system of five cords. Determine the force in each cord for equilibrium.



Example

Determine the tension in each cable for the system below.

