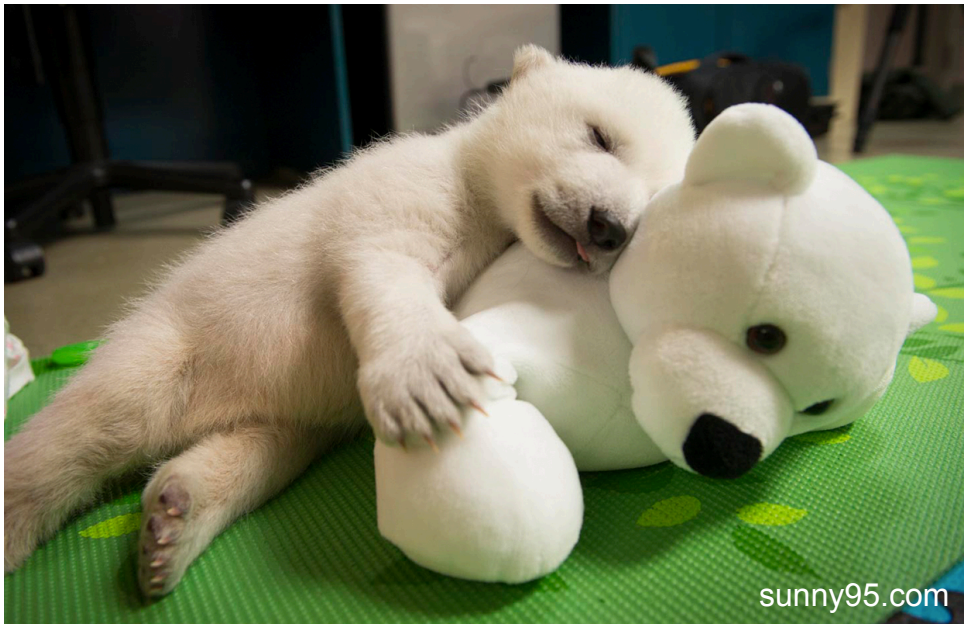
Announcements

- Quiz 1 This Week!!!
  - Are you signed up?
  - Know your MATLAB commands
  - Practice quiz available on PL

❑ Upcoming deadlines:

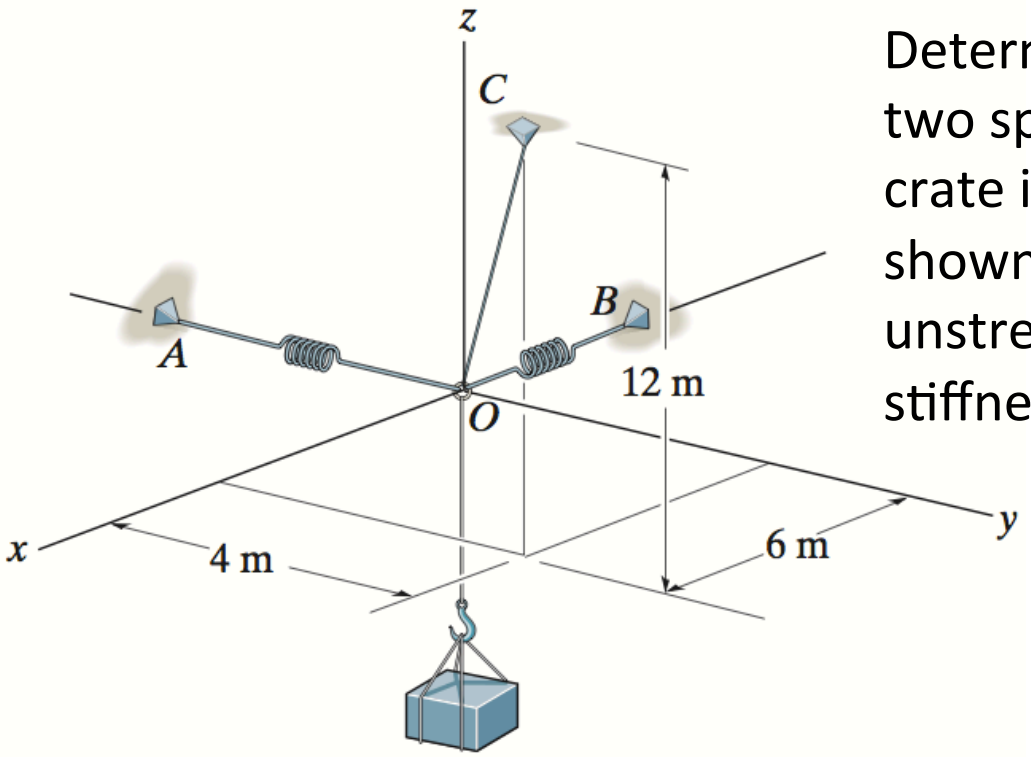
- Tuesday (9/12)
  - PL HW4
- Thursday (9/14)
  - ME HW5



Recap

- Equilibrium of a particle
- General procedure for analysis
- Free body diagram
- Equation of equilibrium
- Idealizations (pulleys, springs, smooth surfaces)

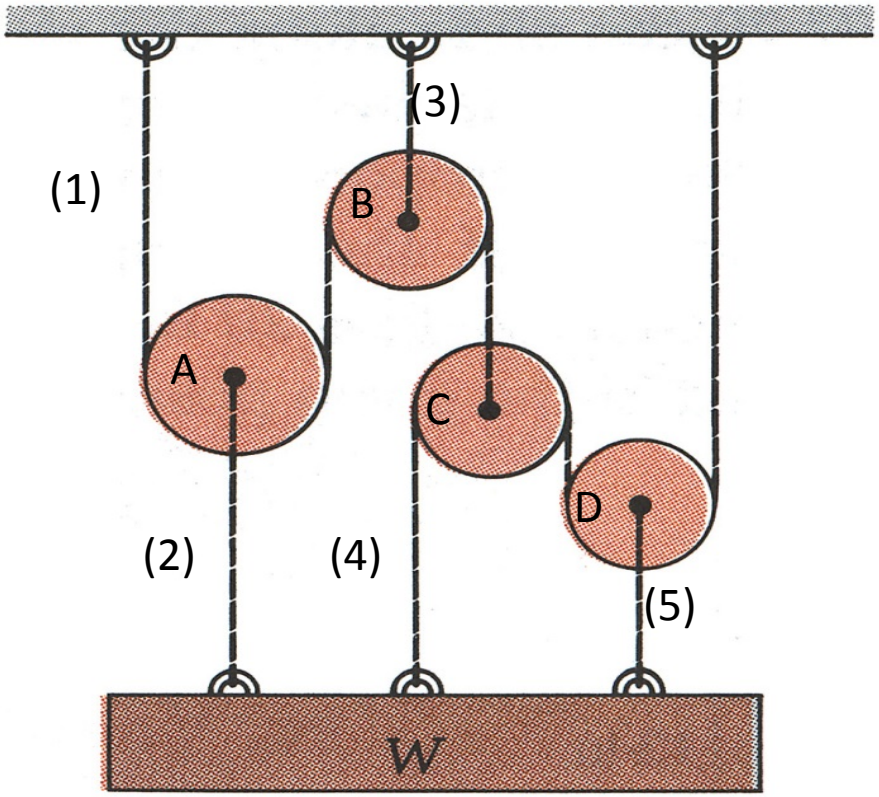
Example – 3D



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 N-m.

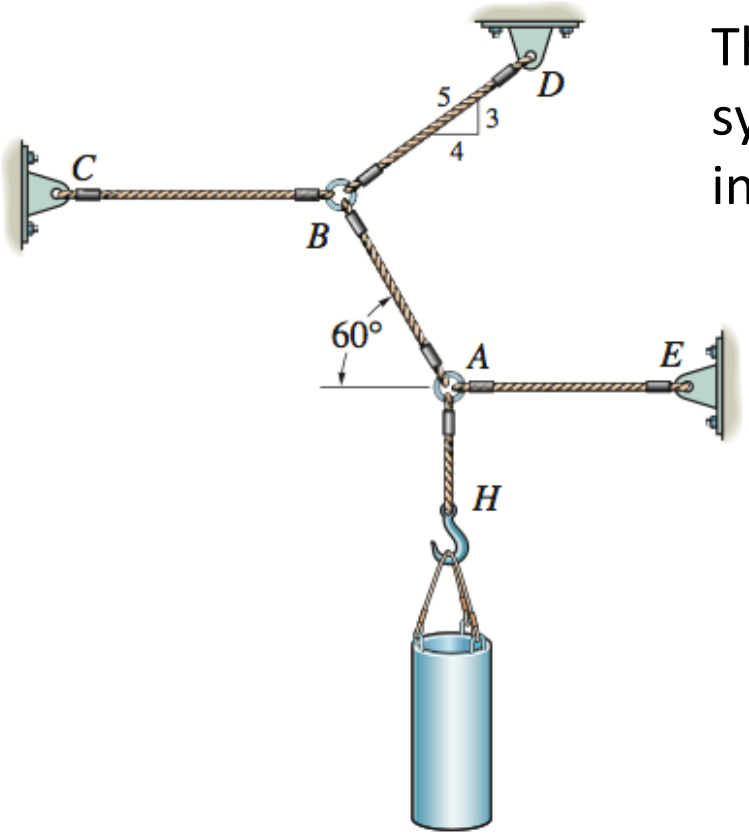
Equilibrium of a system of particles

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.