

To do ...

- Quiz 1 – This week!
 - CBTF instructions on website
- i>clickers
- HW 4PL due **Tues**
- HW 5ME due **Thurs**

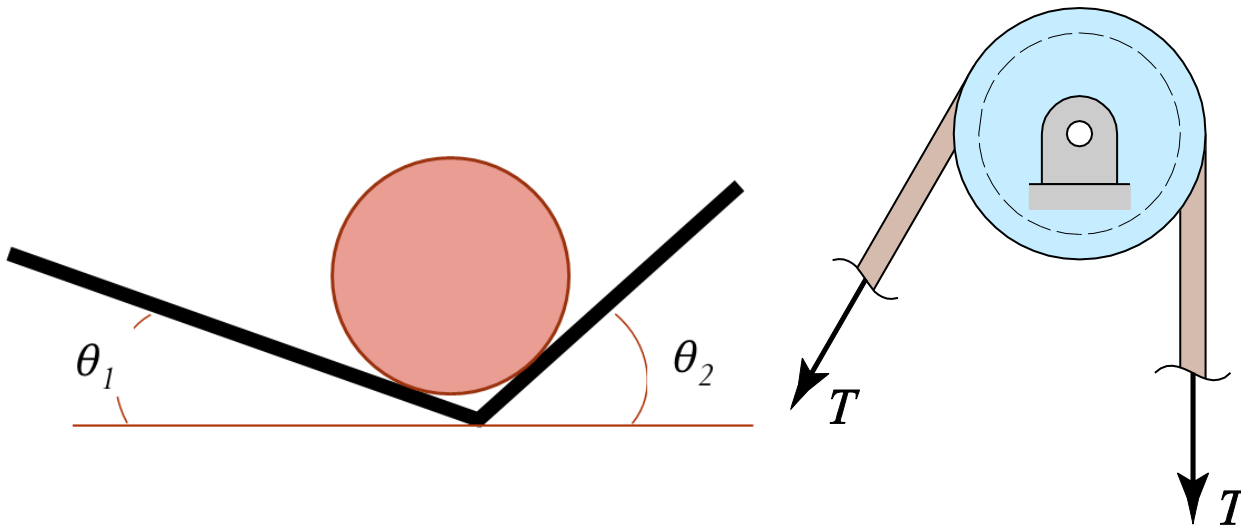
Recap

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

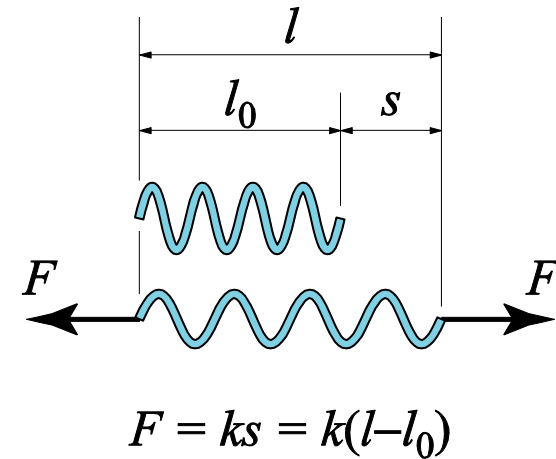
Idealizations

Pulleys are (usually) regarded as frictionless; then the tension in a rope or cord around the pulley is the same on either side.

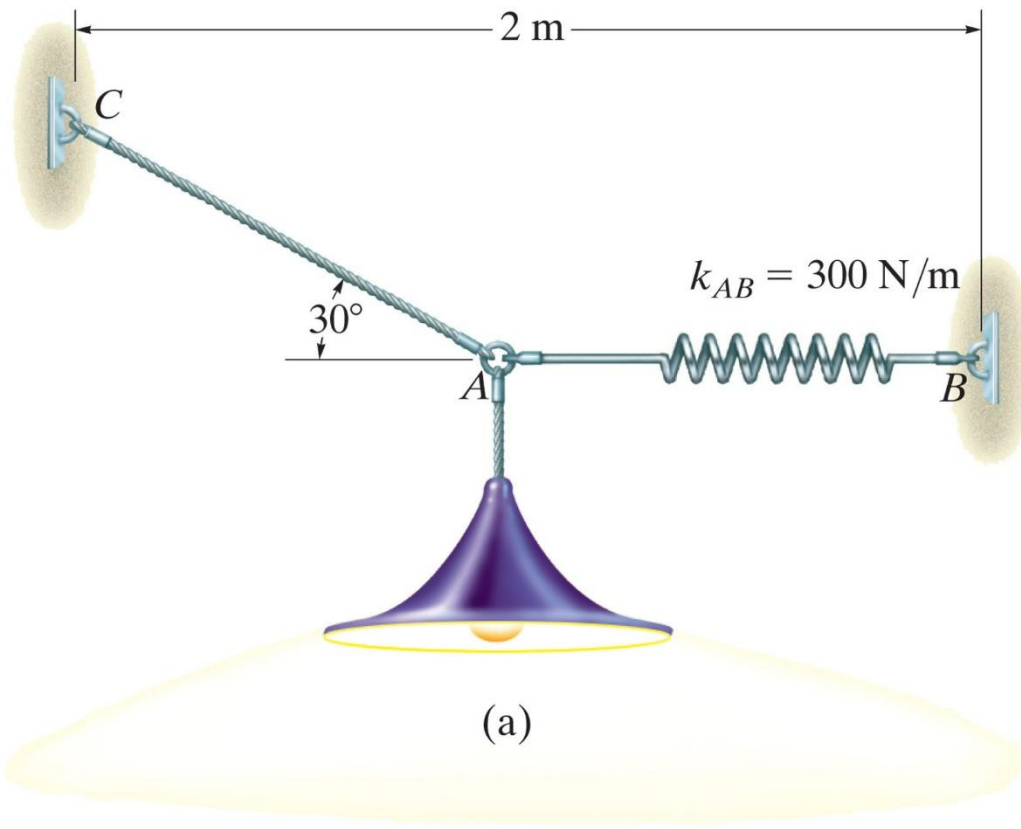
Springs are (usually) regarded as linearly elastic; then the tension is proportional to the *change* in length s .



Frictionless pulley

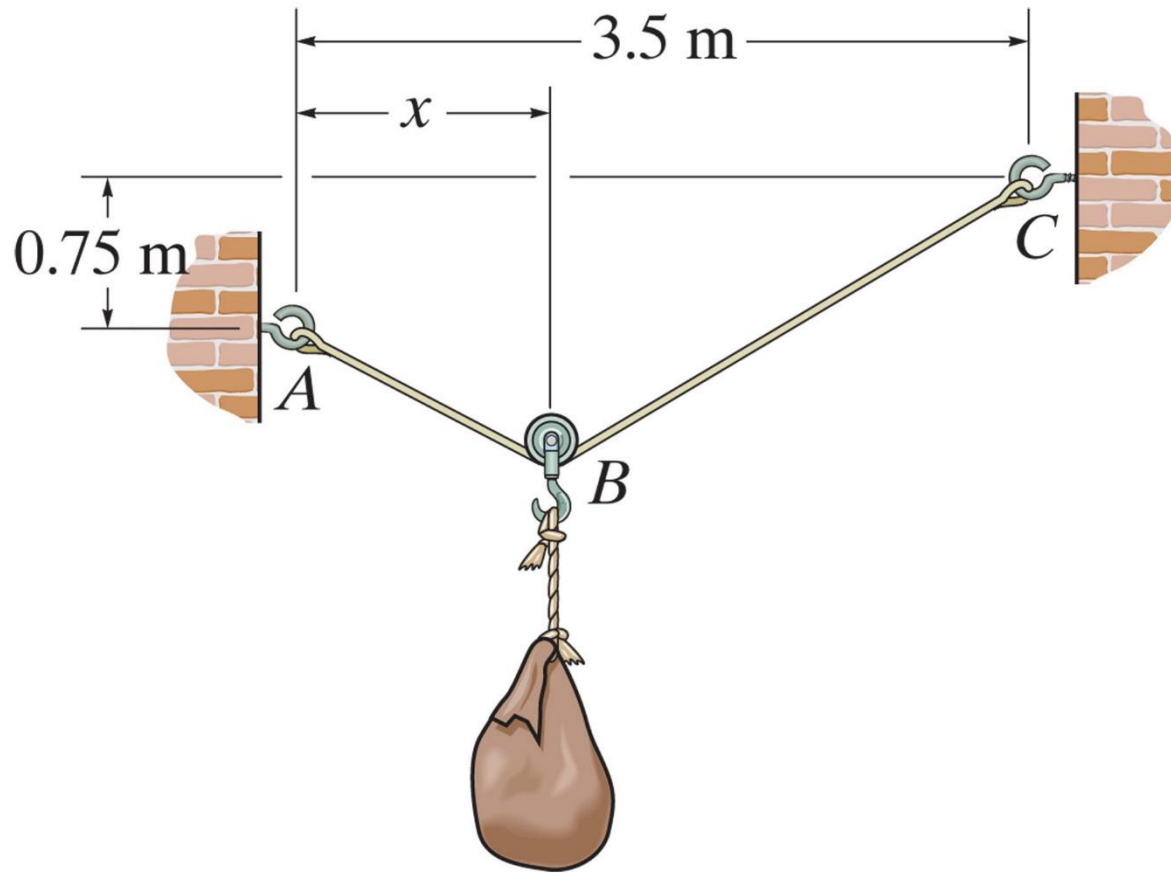


Linearly elastic spring



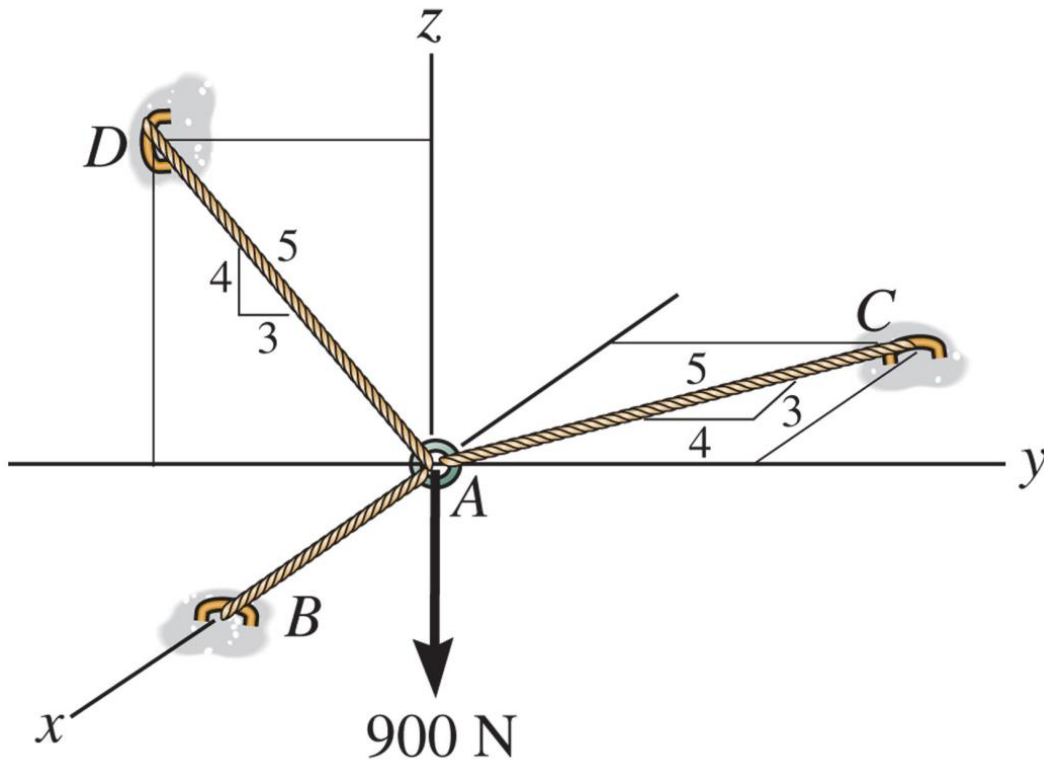
Determine the required length of cord AC so that the 8-kg lamp can be suspended in the position shown. The undeformed spring length is 0.4 m and has a stiffness of 300 N/m.

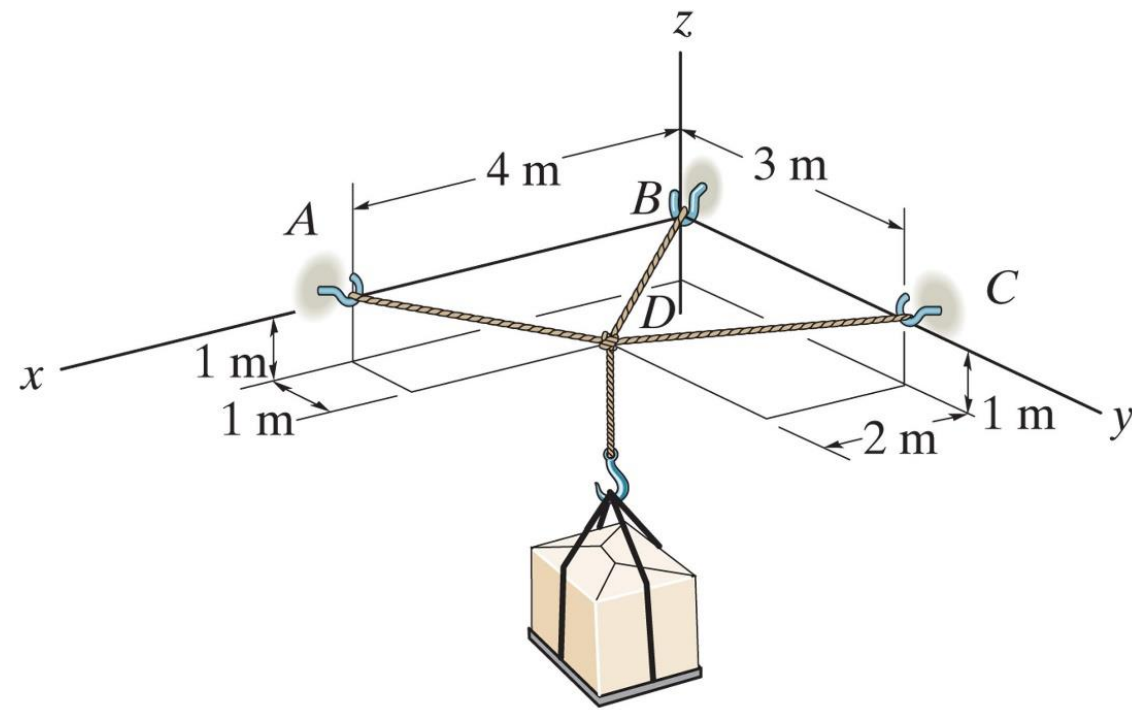
Cable ABC has a length of 5 m. Determine the position x and the tension developed in ABC required for equilibrium of the 100-kg sack.



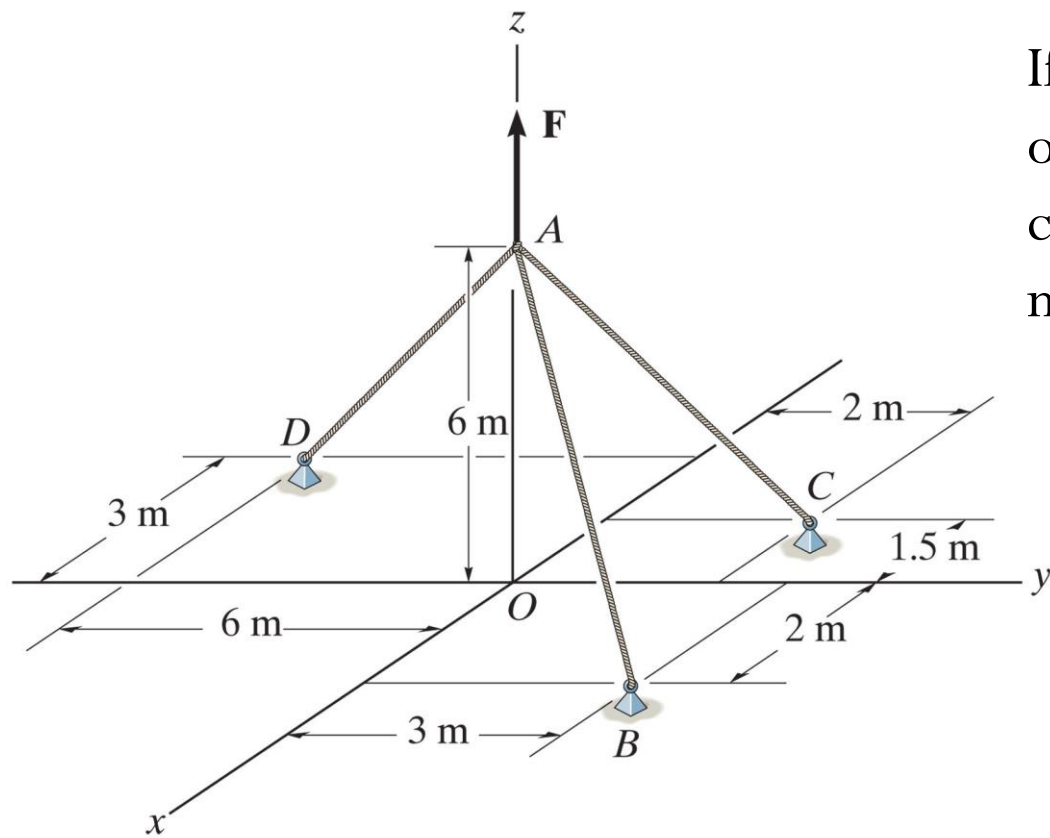
3D force systems

Find the tension developed in each cable





The crate has a mass of 130 kg. Determine the tension developed in each cable for equilibrium.



If cable AB is subjected to a tension of 700 N, determine the tension in cables AC and AD and the magnitude of the vector \mathbf{F}