Hands on Wednesday (HOW)

Week 2 – Equilibrium of a Particle – 4 Stations

Station 1 – Problem solving station- problem TBA

At this station you will be given an equilibrium of a particle related problem to solve. You will have the opportunity to work with your classmates and a leader to help you work through the problem and answer your questions about how to set-up and solve. At the end of this rotation, someone from the station will be asked to present their solving method to help the others in the group.

Station 2 – Balloon Balance

This station is to help you with your qualitative understanding of the hot air balloon wind turbine group project. At this station you will have a balloon connected to three anchors. You will also have a fan to provide a wind load. At this station you should move the balloon around, change the lengths of the anchor cables, and see how different configurations change the location of the balloon as projected on the floor.
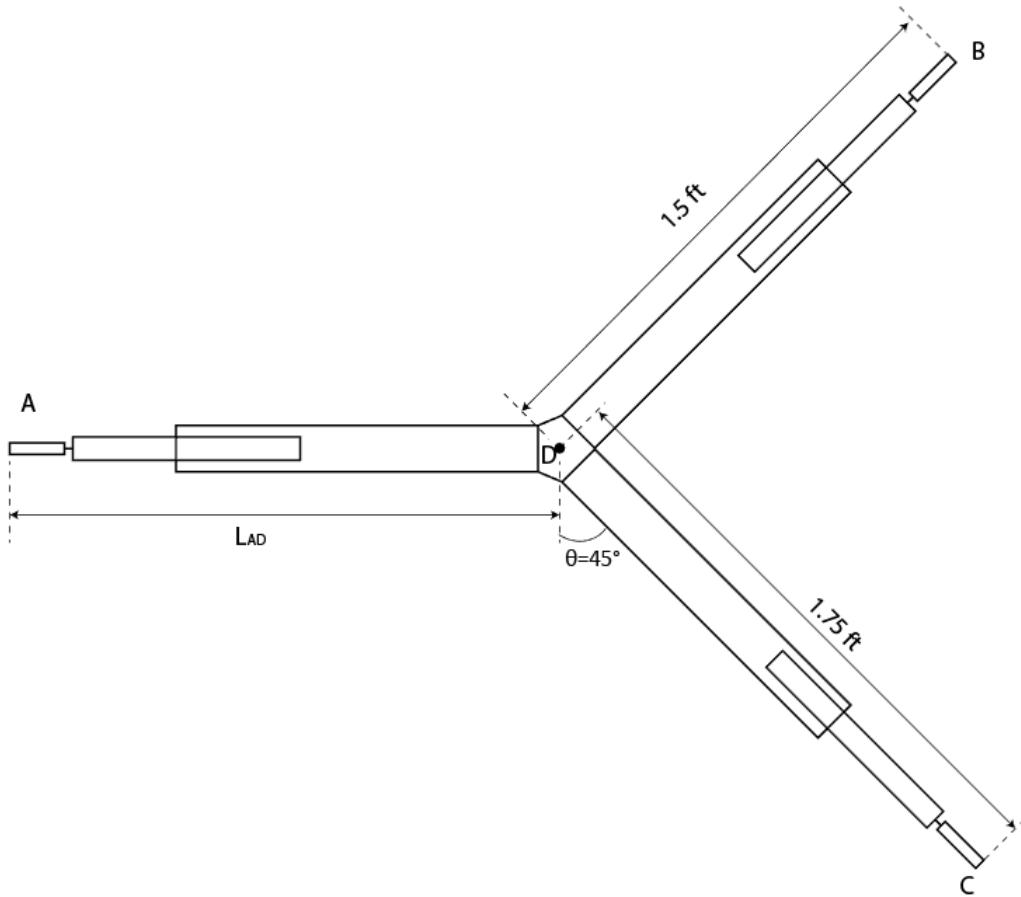
Station 3 – Pole Balance

At this station you will be balancing a pole on a platform with the tension of three cables. You will be given the setup shown below. Determine L_{AD} and F_{OB} required to hold the pole in a vertical position.
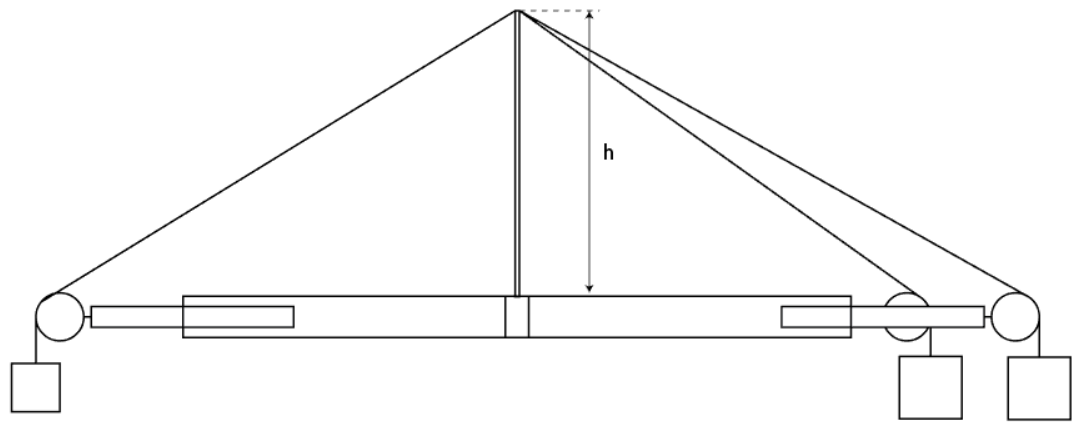
F_{OA} = 5 lb

F_{OC} = 2 lb

h=2 ft

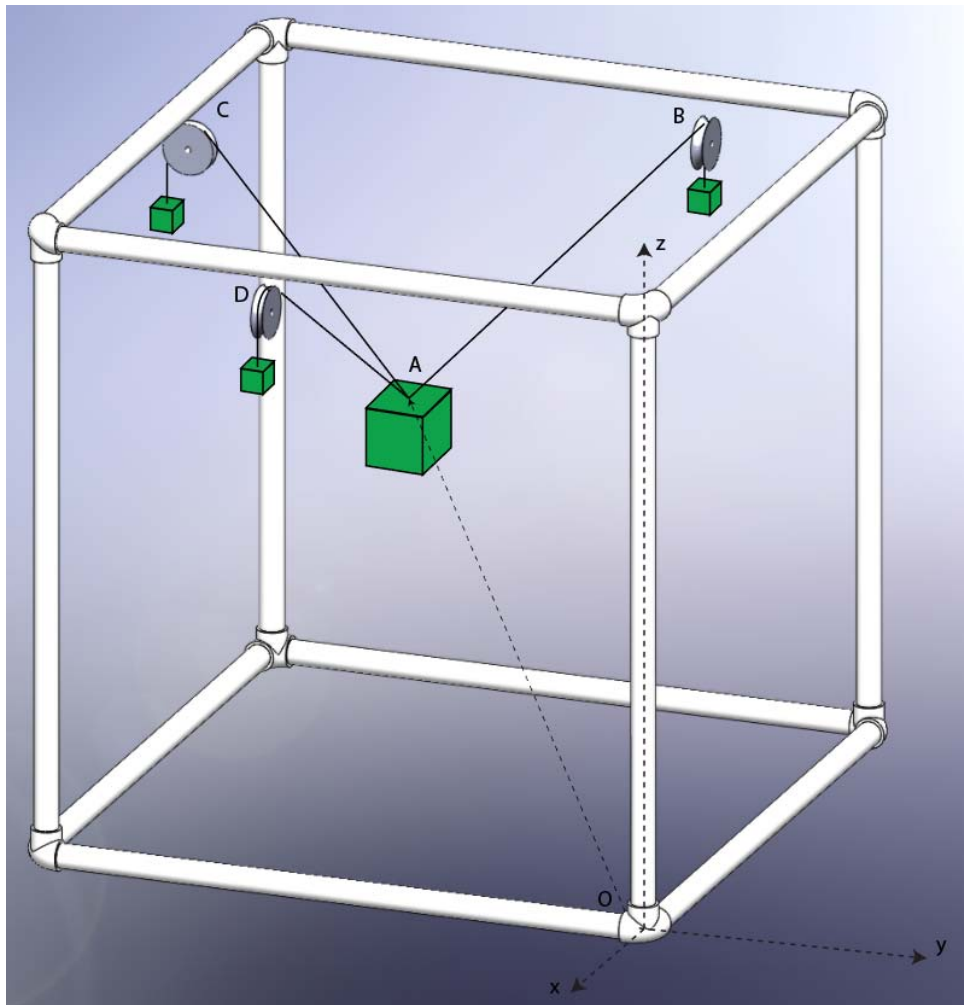Top View

h

Side View

Station 4 – Weight Hang

At this station you will be hanging a 5 lb weight at the given position. You need to determine the weights at B, C and D to achieve this final equilibrium configuration.

r$_{OA}$= -1**i** – 1.5**j** + 0.25**k** ft

r$_{OB}$= -2**i** – .25**j** + 2**k** ft

r$_{OC}$= -1**i** – 2**j** + 2**k** ft

r$_{OD}$= - 1**j** + 2**k** ft

Weight hanging in cube. Note: Figure is <u>NOT</u> to scale or an accurate depiction of the given position vectors.