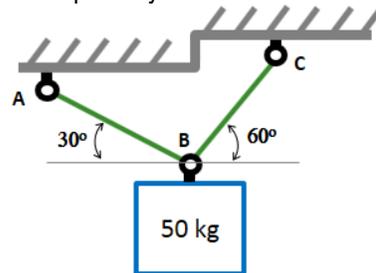
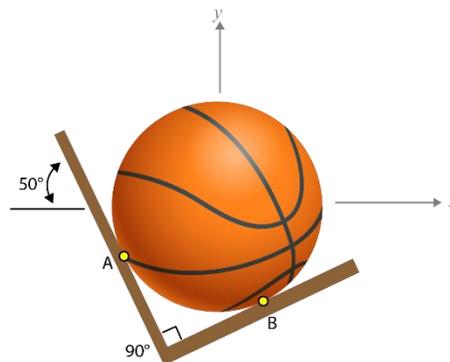


NOTE: Use engineering format for problems 1-4. Use non-engineering format for problems 5-8. This is an individual assignment. If you don't have Mathcad installed yet, then please just work the problems by hand.

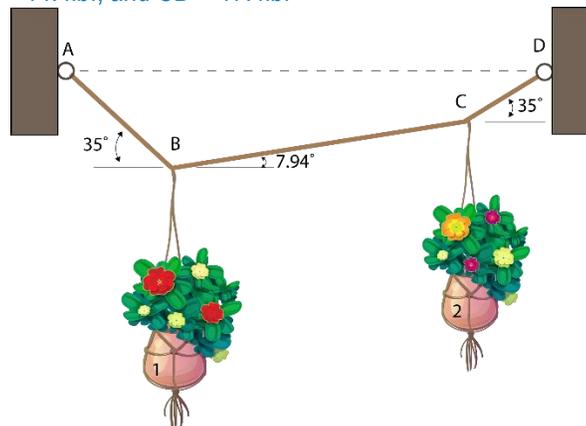
1. If the block shown has a mass of 50kg, then what is the tension in cable BC and cable AB? Remember you should always draw a Free Body Diagram as part of your solution. $A = 245.17\text{N}$ and $C = 424.64\text{N}$



2. Rework problem 1 using a solve block in Mathcad to compute your answers.
3. A right angle shelf which is tilted 50° from the vertical is used as a basketball rack. If the average basketball weighs 6.12N, then what is the force that the rack causes at point A and point B on the basketball? Remember shifting the coordinate system can sometimes make your calculations easier. $A = 3.93\text{N}$ and $B = 4.69\text{N}$



4. Two flower pots are hanging on a rope as shown. If flower pot 1 weighs 12lbf and flower pot 2 weighs 8lbf, then what is the tension in each of the rope segments? Hint: Break up the image into two separate free body diagrams. $AB = 17.4\text{lbf}$, $BC = 14.4\text{lbf}$, and $CD = 17.4\text{lbf}$



5. Research accelerometers, like the one showcased in class. Write a few sentences describing how they work. Include some current and potential applications for accelerometers.
6. Review the list of sensors/devices that can be checked out for the ENGR 122 project. Choose one to research in more depth. Write a few sentences about how the sensor/device works. Include some potential applications for the sensor/device.
7. Come up with one idea for your "Idea Wallet" by thinking about something that could be fixed, improved, or developed in a specific field of study (e.g., medicine, transportation, education, business, food, etc.). For your homework, please name the project idea, state the field to which it applies, write up at least a two-sentence description of the idea, and provide pictures/sketches when it makes sense to do so.

Since this idea requires you to think of something in a specific field, you may need to talk to someone in that field. You are encouraged to go out and talk with the experts in the field to help you think through some potential project ideas. If you consult someone for project ideas, indicate who you spoke to in your homework.

NOTE: You don't need to try to find a solution to the problem at this point!

8. Please complete the Engineering Student Survey found on the META ENGR 122 Moodle page.