Problem

Your are part of a team to help design the atrium of a new building. Your boss, the manager of the project, wants to suspend a 20-lb sculpture high over the room by hanging it from the ceiling using thin, clear fishing line (string) so that it will be difficult to see how the sculpture is held up. The only place to fasten the fishing line is to a wooden beam which runs around the edge of the room at the ceiling. The fishing line that she wants to use will hold 20 lbs (20-lb test) so she suggests attaching two lines to the sculpture to be safe. Each line would come from the opposite side of the ceiling to attach to the hanging sculpture. Her initial design has one line making an angle of 20° with the ceiling and the other line making an angle of 40° with the ceiling. She knows you took physics, so she asks you if her design can work and to suggest improvements if necessary.

Diagram the Problem and Summarize the Available Information
Plan the Solution (a)
Calculate the Solution (a)

Evaluate the Answer (a)
Plan the Solution (b)

Calculate the Solution (b)