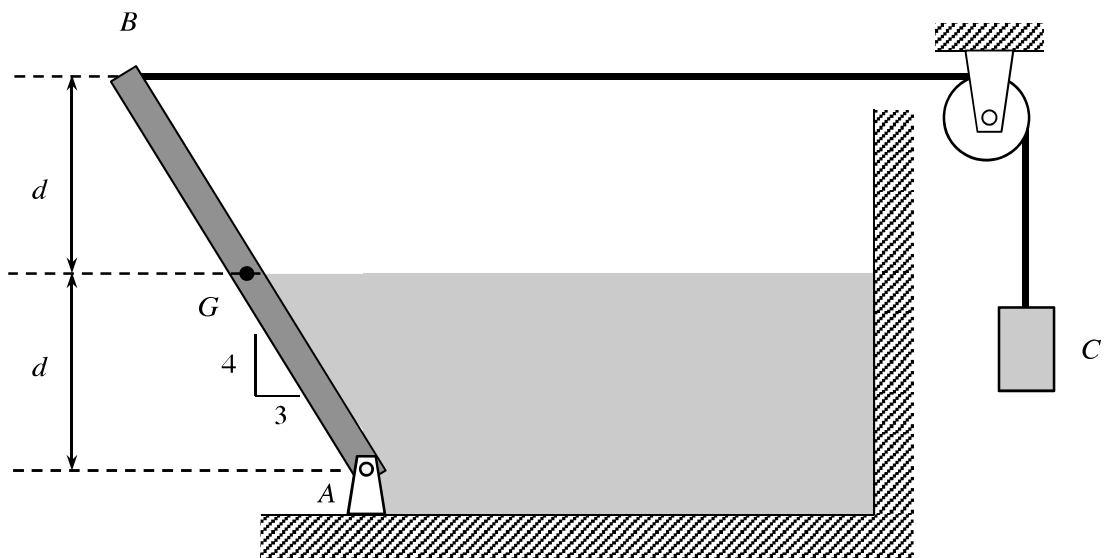


Homework H16.A

Given: A water gate is supported by a pin joint at A and a cable-pulley system at B. A counterweight C is attached to the end of the cable. The gate has a dimension into the page of b . The water has a density of ρ , and the weight of the gate is negligible compared to the weight of the water that it supports.

Find: Determine the weight of C required to hold the gate in equilibrium.

Leave your answer in terms of, at most: d , b , g and ρ .



Homework H16.B

Given: A water gate has a cross section as shown below that is made up of horizontal and angled sections, and has a depth dimension into the page of b . The gate is pinned to ground at O and is held against a fixed stop at A . The water has a density of ρ . The weight of the gate can be assumed to be negligible compared to the hydrostatic forces acting on it.

Find: For this problem:

- Draw a free body diagram of the gate and the water above it, including hydrostatic loadings, weight of the water and the reaction forces.
- Determine the equivalent forces for the hydrostatic forces and their points of application.
- Determine the load carried by the stop at A .

Leave your answers in terms of, at most: d , b , g and ρ .

