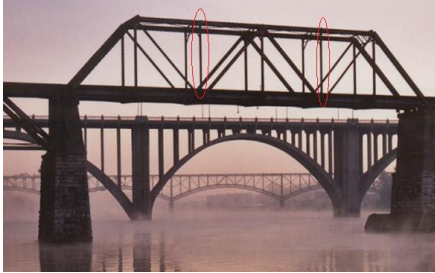


To do ...

- Quiz 7 next week
- WA 4 due **Fri**
- HW 25 ME due **Sat**
- HW 24 PL due **Tues**

Mechanics is a branch of the physical sciences that is concerned with the **state of rest or motion of bodies that are subjected to the action of forces**

SOLIDS



TAM 210/211: Statics

Rigid Bodies

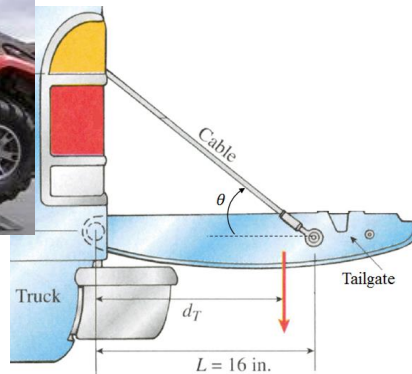


TAM212: Dynamics

Deformable Bodies



TAM 251: Solid Mechanics



FLUIDS



What Makes a Fluid or Solid?



Honey



Rock

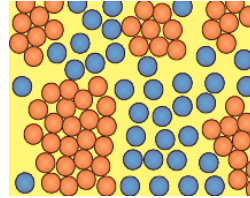
What is Sand?



They look like a fluid...

[Video](#)

cornstarch + water =
(small, hard particles)



Fluids

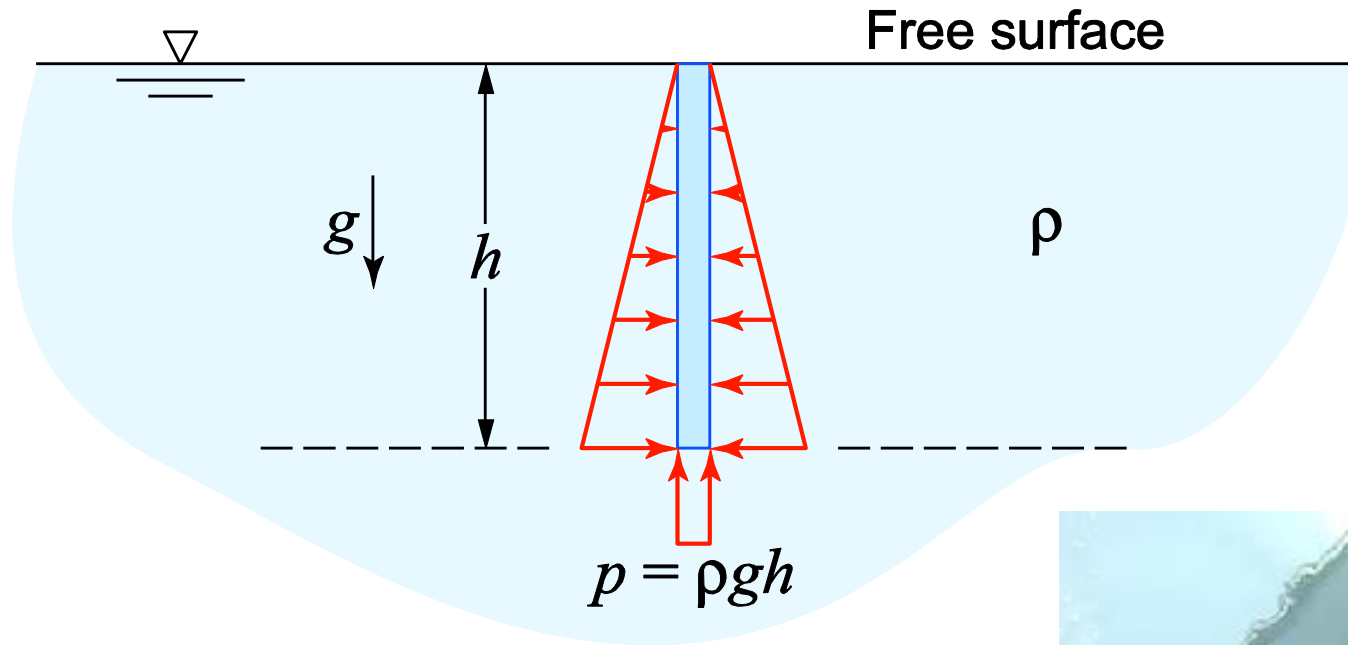
Pascal's law: A fluid at rest creates a pressure p at a point that is the *same* in *all* directions

Incompressible: An incompressible fluid is one for which the mass density ρ is independent of the pressure p . Liquids are generally considered incompressible. Gases are compressible, but may be approximated as incompressible if the pressure variations are relatively small.

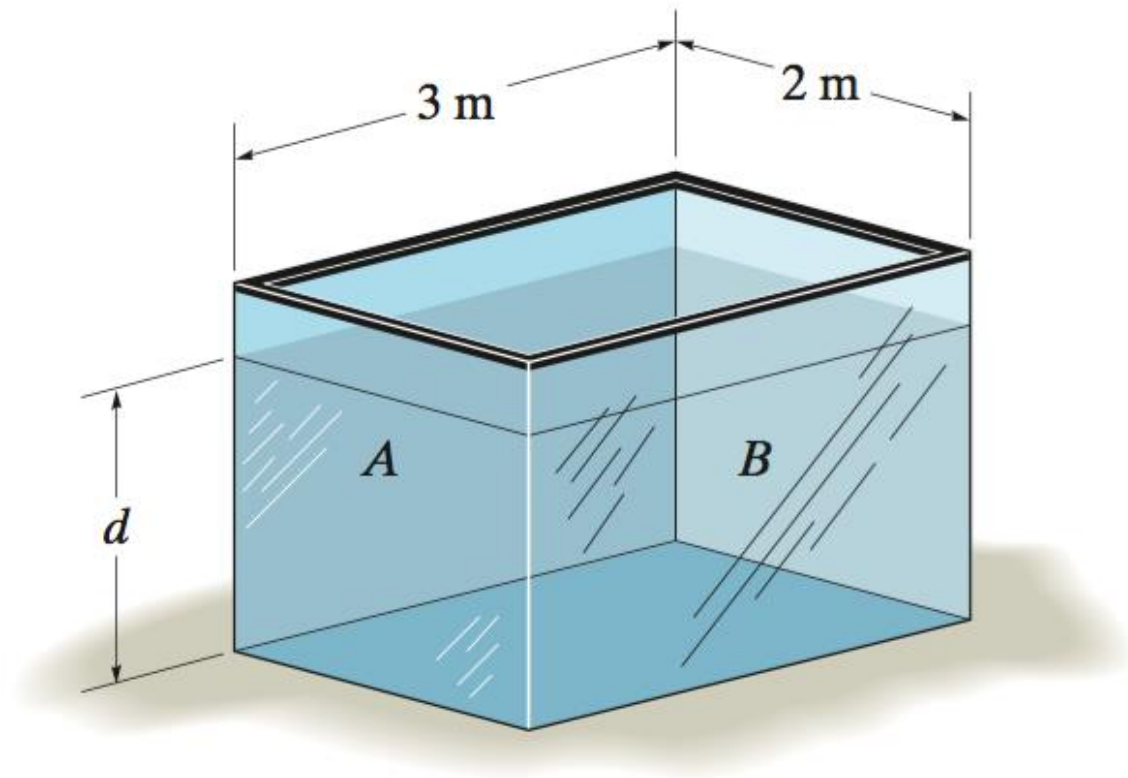
Fluid Pressure

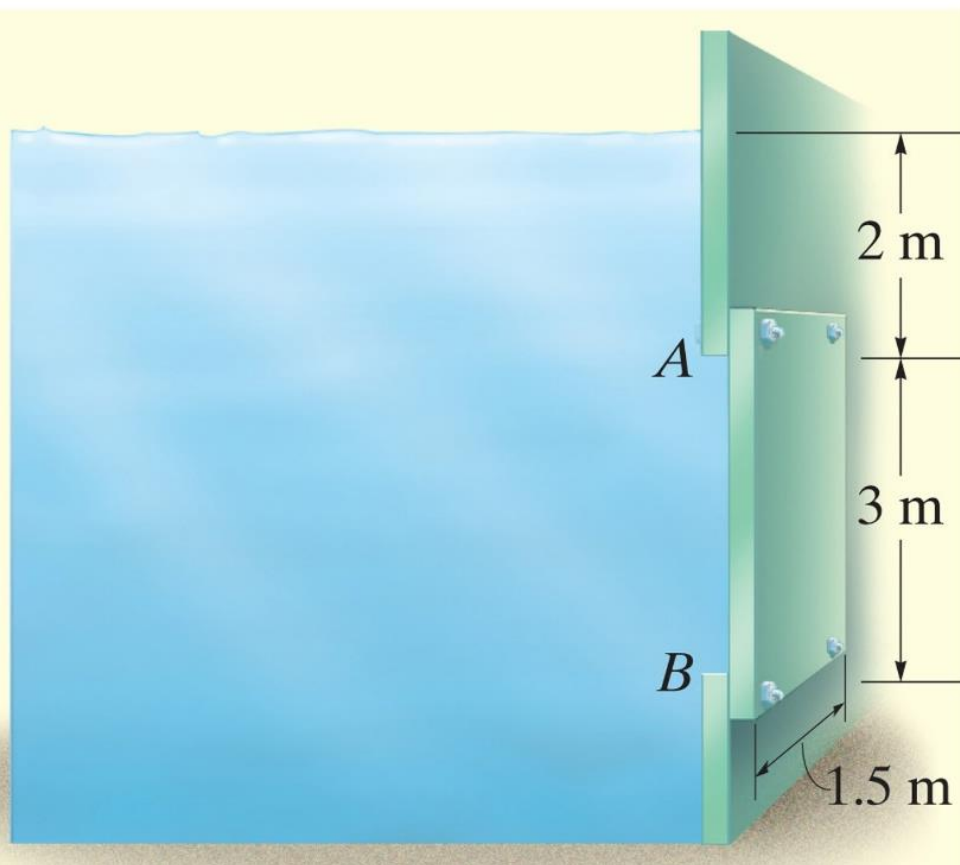
For an incompressible fluid at rest with mass density ρ , the pressure varies linearly with depth z

Observe that the pressure varies *linearly* from the free surface, and is *constant* along any horizontal plane (since h is constant):



The tank is filled with water to a depth of $d = 4$ m. Determine the resultant force the water exerts on side A of the tank. ($\rho = 1000$ kg/m³)





Determine the magnitude and location of the resultant hydrostatic force acting on the submerged rectangular plate AB . The plate has width 1.5m. The density of the water is 1000 kg/m^3