

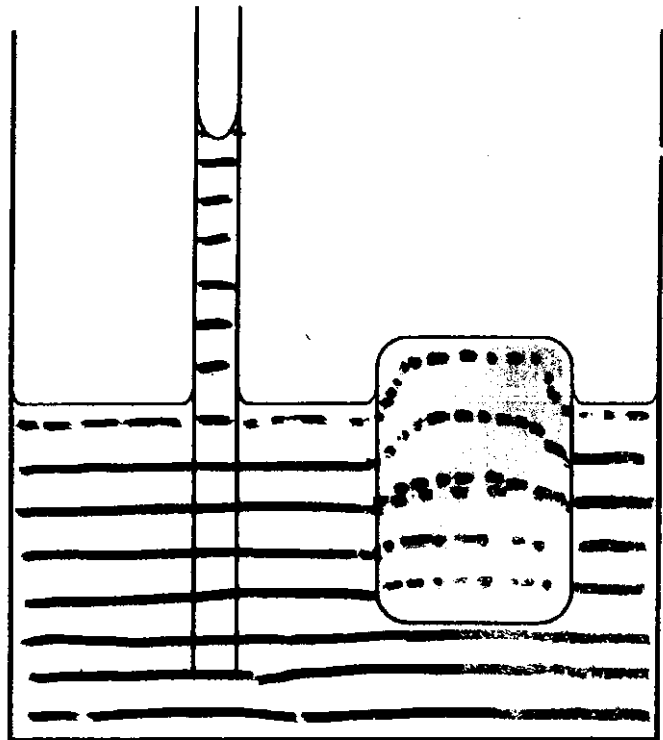
1. The two vessels shown here in cross-section have the same weight when empty, and are filled with the same volume of water to the same depth.



The weight of each filled vessel, as measured by placing it on scales, must be the same. But since B has a larger bottom, the total force exerted on the bottom by the water pressure must be greater for B than for A. Is that right? How can that be?

Yes. In B there's an upwards force from pressure on the sides.

2. Here is a beaker of water containing a thin drinking straw and a floating piece of ice. The water in the straw is held up by capillary action. Draw in pressure contours in the water. What happens in the meniscus? What about the pressure contours in the ice?



3. I have a metal ball bearing, and a metal plate with a hole in the middle. The ball bearing does not quite fit through the hole. If I heat the plate up, will it fit, or will the hole just get smaller? Why?

The hole expands along with the plate. Linear expansion changes the scale but maintains the shape.