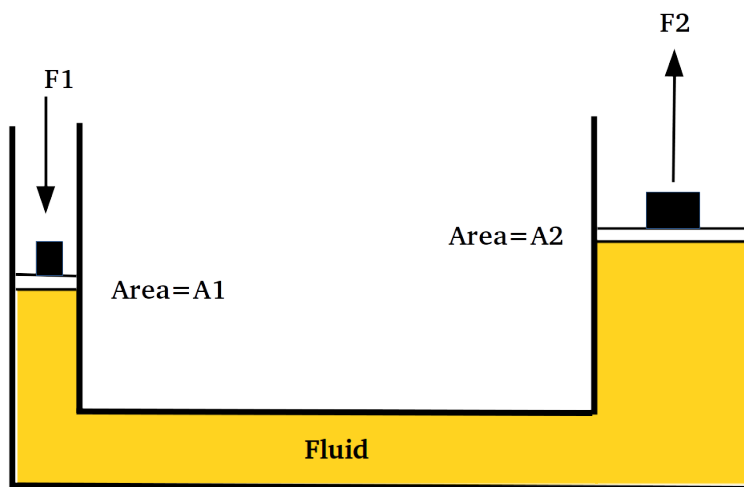


## Additional Material for Fluid Pressure and Flow

**Pascal's Principle** : A change in pressure applied to an enclosed fluid is transmitted undiminished to all portions of the fluid and to the walls of its container.

A hydraulic lift for automobiles is an example of a force multiplied by hydraulic press, based on Pascal's principle.



**Streamline Flow**: In fluid dynamics flow or streamline flow occurs when a fluid flows in parallel layers, with no disruption between the layers. In the streamline flow velocity is constant or varies in regular manner.

**Turbulent flow** is a type of flow, in which the fluid undergoes irregular fluctuations. In turbulent flow, velocity varies with change in shape.

Any surface that opens to the atmosphere has atmospheric pressure,  $P_a$   
The surfaces that have atmospheric pressure are, hydrostatic surface, surface that is in motion, stationary surface, flat or curved surfaces.

Consider the hydrostatic example of a container of water.

The black sphere on the top of the liquid indicates a free surface.

It means that the pressure at the top of the surface is atmospheric pressure,  $P_a$ . Pressure at bottom of the surface is  $P_2$ .

This is the hydrostatics equation:

$$P_2 = P_1 + h\rho g$$

$$P_1 = P_a$$

Pressure at P1 is equal to Atmospheric pressure.

