

CHAPTER 08

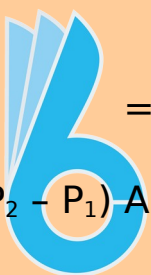
FLOATING BODIES

How a body experiences buoyancy?

If we replace the cylindrical column in the liquid by another object whose density is not equal to the liquid density, the object will experience 'Buoyancy'.

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

$$= h \times \frac{m}{V} \times g$$



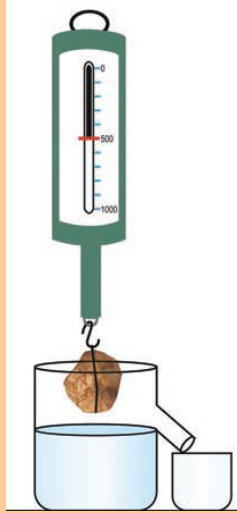
$$(P_2 - P_1) A = mg$$

$$\therefore F = W$$

The force applied on the object by a liquid is equal to the weight of the liquid displaced".

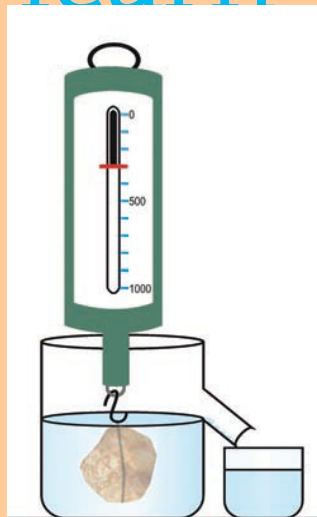
Measuring the weight of the water displaced by the immersed stone:

Suspend a stone from a spring balance (it is better to take a stone that is more than 300 gm). Note the reading on the spring balance. The reading gives the weight of the stone.



Now immerse the stone in the water. Note the reading on the spring balance and measure the volume of water that overflows into the graduated beaker.

The reading of the spring balance gives the weight of the immersed stone and the beaker reading gives the volume of water displaced by the stone.



Archimedes' principle:

“When a body is immersed in a liquid it experiences an upward force or buoyancy equal to the weight of liquid displaced by immersed portion of the body”.

