

### Ex 16.1 (Suction cup)

Under atmospheric pressure, the suction cup will be held with a force of 14 lbs per square inch of suction cup. Since the suction cup has an area of  $\pi (2\text{cm})^2 = 4\pi\text{cm}^2$ , the force holding the cup to the block is 121 N or or 27 lbs.

Ten meters underwater, there is an additional pressure of

$$P = \rho gh \approx 28 \text{ lbs/square inch.}$$

So it could stick to a 55 lb. block without coming off.

(Notice that we are here ignoring the buoyant force acting on the copper block.)