Answer on Question #62133-Physics-Other

A balloon has an internal pressure 1.0 atmospheres and a radius 7.7 centimeters. What is the resultant pressure force on the elastic membrane?

Solution

$$r = 7.7 \; cm = 0.077 \; m.$$

$$p = 1.0 \; atm = 101325 \; Pa.$$

The resultant pressure force on the elastic membrane is

$$F = pA = p(4\pi r^2) = 4\pi(101325)(0.077)^2 = 7.5 \; kN.$$

Answer: $7.5 \; kN$.