Answer on Question 49567, Physics, Other The mass of a planet is 4 times while its radius is 8 times that of the earth. If the weight of an object is 640N on earth, what will be its weight on the planet?

Solution

Let us find how acceleration of free falling is changed on this planet. So we have $m_p = 4m_{earth}$, $r_p = 8r_{earth}$. Hence

$$g_p = G\frac{m_p}{r_p^2} = G\frac{4m_{earth}}{64r_{earth}^2} = 16g_{earth}$$

Hence, weight will be

$$F = 16 \cdot 640 = 10240\,N$$