

**Answer on Question 48977, Physics, Astronomy — Astrophysics**

If the radius of Earth shrinks by 1.5%, mass remaining the same, then how would the value of acceleration due to gravity change? 1. 2% 2. -2% 3. 3% 4. -3%

Solution

Acceleration is

$$g = \frac{GM}{R^2}$$

Hence, decreasing radius on 1.5 % will lead to increasing of gravity on surface:

$$\frac{g_1}{g} = \frac{R^2}{R_1^2} = \frac{1}{0.985^2} \approx 1.03$$

Acceleration will increase on 3 %. Answer is 3. 3%.