9 A communications satellite which takes 24 hours to orbit the Earth is replaced by a new satellite which has twice the mass of the old one.

The new satellite also has an orbit time of 24 hours.

What is the value of $\frac{\text{radius of orbit of new satellite}}{\text{radius of orbit of old satellite}}$?

A $\frac{1}{2}$ **B** $\frac{1}{1}$ **C** $\frac{\sqrt{2}}{1}$ **D** $\frac{2}{1}$