



18. A cube exactly fits inside a sphere and another sphere exactly fits inside this cube. What is the ratio of the volume of the smaller sphere to the volume of the larger sphere?
- A  $1 : 3\sqrt{3}$       B  $1 : 4$       C  $1 : 3$       D  $2 : 3$       E  $1 : 2$

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18. A Let the radii of the two spheres be  $r_1$  and  $r_2$ , as shown.  
Applying Pythagoras' Theorem:  $r_2^2 = r_1^2 + r_1^2 + r_1^2$ , so  $r_2 = \sqrt{3}r_1$ .  
The ratio of the volumes of the spheres =  $r_1^3 : r_2^3 = 1 : (\sqrt{3})^3$ ,  
that is  $1 : 3\sqrt{3}$ .

