

Free Example

of

Don't Solve

from



Question

A large cube is formed from the material obtained by melting three smaller cubes of side 3, 4 and 5 cms. What is the ratio of the total surface areas of the smaller cubes and the large cube?

- a. 4 : 3
- b. 3 : 2
- c. 25 : 27
- d. 27 : 20
- e. 32 : 15

See Next page for **Usual Method**

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The Usual Method

Surface area of cube with side 3 cms = $6 \times 3^2 = 6 \times 9 = 54 \text{ cms}^2$

Surface area of cube with side 4 cms = $6 \times 4^2 = 6 \times 16 = 96 \text{ cms}^2$

Surface area of cube with side 5 cms = $6 \times 5^2 = 6 \times 25 = 150 \text{ cms}^2$

Hence, total surface area of the smaller cubes = $54 + 96 + 150 = 200 \text{ cms}^2$

Volume of cube with side 3 cms = $3^3 = 27 \text{ cms}^3$

Volume of cube with side 4 cms = $4^3 = 64 \text{ cms}^3$

Volume of cube with side 5 cms = $5^3 = 125 \text{ cms}^3$

Hence, total volume of the smaller cubes = $27 + 64 + 125 = 216 \text{ cms}^3$

Hence, side of the larger cube = $\sqrt[3]{216} = 6 \text{ cms}$

Hence, surface area of the larger cube = $6 \times 6^2 = 6 \times 36 = 216 \text{ cms}^2$

Hence, ratio of surface areas = 200 : 216

i.e. 25 : 27

(Ans: c)

Estimated Time to arrive at the answer = 60 seconds.

See Next page for **Smart Technique**

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Using Technique

Add squares of 3, 4 and 5 to get $9 + 16 + 25 = 50$.

50 is a factor of the total surface areas of the three smaller cubes and hence 50 or its factor should be one of the values in the proportion. Only option 'c' has the factor of 50; 25, so option 'c' has to be the answer.

(Ans: c)

Estimated Time to arrive at the answer = 10 seconds.

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