

how do you find the surface area and volume of a large prism X compared to a similar smaller prism Y the scale factor is 1:3 prism Y has a surface area of 125.5 m squared and a volume of 87 m cubed.

The square-cube law can be stated as follows:

When an object undergoes a proportional increase in size, its new volume is proportional to the cube of the multiplier and its new surface area is proportional to the square of the multiplier.

Represented mathematically:

$$V_2 = V_1 \left(\frac{l_2}{l_1}\right)^3$$

where V_1 is the original volume, V_2 is the new volume, l_1 is the original length and l_2 is the new length.

$$A_2 = A_1 \left(\frac{l_2}{l_1}\right)^2$$

where A_1 is the original area, A_2 is the new area

In our case $\frac{l_2}{l_1} = 3$ - the scale factor

$$V_2 = 87 * 3^3 m^3 = 2349 m^3$$

$$A_2 = 125.5 * 3^2 = 1129.5 m^2$$

Answer: surface area and volume equal 1129.5 m^2 and 2349 m^3