Surface Area / Volume of Similar Figures

- Ratio of Sides = $\frac{a}{b}$
- Ratio of Area = $\frac{a^2}{b^2}$
- Ratio of Volume = $\frac{a^3}{b^3}$

- EX → Ratio of Sides = $\frac{3}{4}$

  Area = $\frac{9}{16}$

  Volume = $\frac{27}{64}$

EX → Ratio of Volumes = $\frac{125}{729}$

Ratio of Sides = $\frac{5}{9}$

Area = $\frac{25}{81}$

EX → Ratio of Sides = $\frac{7}{2}$

Area = $\frac{49}{4}$

Volume = $\frac{343}{8}$

EX → R of V = $\frac{1000}{216}$

Sides = $\frac{5}{3} = \frac{10}{6}$

Area = $\frac{25}{9}$

EX → Ratio of volumes of 2 similar figures is $\frac{343}{729}$. If the surface area of the smaller figure is 147 cm^2, what is the surface area of the larger figure?

$\sqrt[3]{\frac{343}{729}} = \frac{7}{9} \Rightarrow \frac{7^2}{9^2} = \frac{49}{81}$ $\quad \frac{49}{81} = \frac{147}{x}$ $\quad 49x = 11907$

$x = 243\ cm^2$

EX → Ratio of the surface areas of 2 similar figures is $\frac{121}{64}$. If the volume of the smaller figure is 2048 in^3, what is the volume of the larger figure?

$\sqrt{\frac{121}{64}} = \frac{11}{8} \Rightarrow \frac{11^3}{8^3} = \frac{1331}{512}$ $\quad \frac{1331}{512} = \frac{x}{2048}$ $\quad 512x = 2725888$

$x = 5324\ in^3$

HW: p. 746 → 5-22, 27, 30, 34-38