

E Michaelmas Similar Areas & Volumes

Remember: If (between two similar shapes) a length is a and the equivalent length is b then the length scale factor k is given by $k = \frac{b}{a}$. Going from the first to the second:
lengths get multiplied by k ,
areas get multiplied by k^2 ,
volumes get multiplied by k^3 .

- Two boxes of cereal are similar in shape. The smaller one has a height of 15 cm. The larger one has a height of 20 cm.
 - Find the length scale factor k going from the smaller to the larger. 4/3
 - If the small box has volume 750 cm^3 , find the volume of the larger box. 1777.7
 - If the label on the front of the smaller box has area 20 cm^2 , find the area of the label on the larger box. 35.5
- Two children's toys are similar in shape. The smaller one has a height of 20 cm. The larger one has a height of 25 cm.
 - Find the length scale factor k going from the smaller to the larger. 5/4
 - If the small toy has surface area 800 cm^2 , find the surface area of the larger toy. 1250
 - If the volume of the larger toy is 250 cm^3 , find the volume of the smaller toy. 128
- Two cones are similar in shape. The height of the larger one is 10 cm. The height of the smaller one is 7 cm.
 - Find the length scale factor k going from the larger to the smaller. 0.7
 - If the larger cone has volume 100 cm^3 , find the volume of the smaller cone. 34.3
- Two flasks are similar in shape. The surface area of the larger one is 100 cm^2 . The surface area of the smaller one is 64 cm^2 .
 - Find the length scale factor k going from the larger to the smaller. 0.8
 - If the volume of the larger one is 94 cm^3 find the volume of the smaller one. 48.128
- Charlie has two similar sized rocks. The smaller has a volume of 2 cm^3 . The larger has a volume of 2.662 cm^3 .
 - If the smaller has a surface area of 4.2 cm^2 , find the surface area of the larger one. 5.082
 - If the larger one has length 1.4 cm, find the length of the smaller one. 14/11
- Tiffany is similar in shape to her daughter Candy. Tiffany's back has surface area 1500 cm^2 . Candy's is 1215 cm^2 .
 - If Candy is 130 cm tall, how tall is Tiffany? 144.4
 - If Tiffany has a volume of 50000 cm^3 , what is Candy's volume? 36450