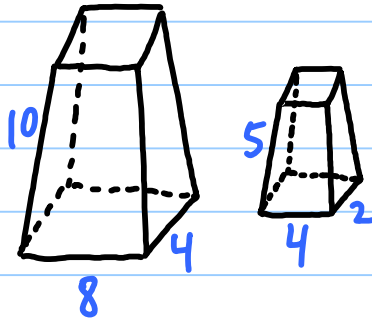


# 12.7] Similarity of Solid Figures

Similar Solids - same shape but not necessarily the same size.

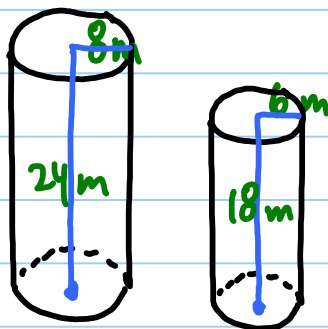
## Thm 12.15



If two solids w/ scale factor of  $a:b$ ,  
 then the ratio of  
 Surface area is  $a^2:b^2$   
 & volume is  $a^3:b^3$

EX 1) Determine whether each pair of solids is similar

a)  
(#1)



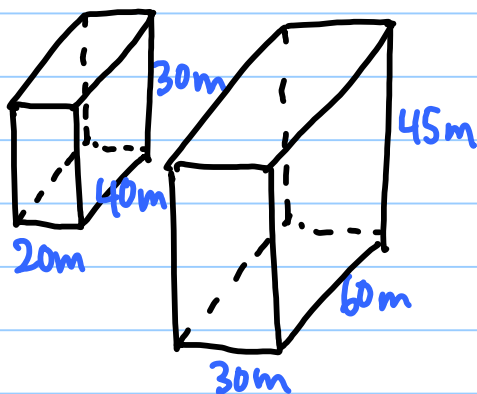
→ Set up a proportion

$$\frac{8}{24} = \frac{6}{18}$$

Check if true

or  $\frac{24}{8}$  or  $\frac{8}{6}$   $8 \cdot 18 \stackrel{?}{=} 24 \cdot 6$   
 $144 = 144$  (✓)

b)  
(#5)



Check all values

$$\frac{30}{40} \stackrel{?}{=} \frac{45}{60}$$

$$\frac{30}{20} \rightarrow \frac{45}{30}$$

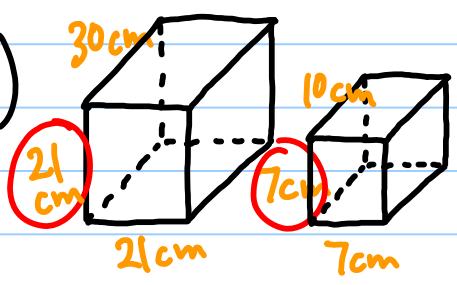
$30 \div 20 = 1.5$

$60 \div 40 = 1.5!$

$45 \div 30 = 1.5!$



ex 2)  
Given:  
Similar  
Prisms



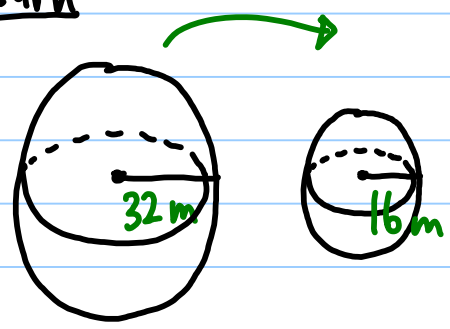
Find the scale factor  
& ratios for surface area  
& volume.  
(left to right)

Scale factor:  $\frac{21}{7} = \frac{3}{1}$  ← a

Surface area:  $\frac{a^2}{b^2} = \frac{3^2}{1^2} = \frac{9}{1}$  ← b

Volume:  $\frac{a^3}{b^3} = \frac{3^3}{1^3} = \frac{27}{1}$

Your Turn  
#7



Scale factor →  $\frac{32}{16} = \frac{2}{1}$  ← a

ratio surface area →  $\frac{a^2}{b^2} = \frac{2^2}{1^2} = \frac{4}{1}$  ← b

Volume ratio →  $\frac{a^3}{b^3} = \frac{2^3}{1^3} = \frac{8}{1}$