12-5: Area and Volume of Similar Solids

C.O.:_____

_____

L.O.:_____

_____

Similar Solids:

_____ _____ are solids that have the same shape but not necessarily the same size.

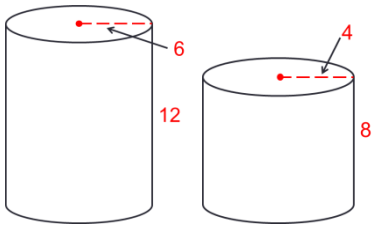
To determine if two solids are similar, you must check

- That their bases are _____
- That corresponding lengths are _____

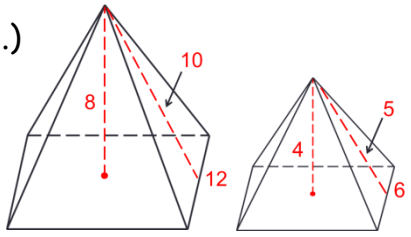
If the solids are similar, we will be able to identify a ratio between their corresponding parts, known as the _____ _____.

Checking for Similarity: Identify whether or not these figures are similar or not.

1.)



2.)



Examining Similarity: Find the scale factor between the values given in each of the first two columns. Identify how these scale factors relate to the original scale factor given.

	Pyramid I	Pyramid II	Scale Factor
Scale Factor:			$^{2}/_{1}$
Base Perimeter:	12	6	/
Lateral Area:	240	60	/ = /
Volume:	384	48	/ = /

Can you see the relationship between the original scale factor and the scale factors for the base perimeter, lateral area, and volume?

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Theorem 12-11: If the scale factor of two similar solids is $a:b$, then

(1) The ratio of corresponding perimeters is ___:__.

(2) The ratio of the base areas, the lateral area, and the total areas is ___:___.

(3) The ratio of the volumes is ___:___.

Practice: Given the following measurements for similar solids, identify the reduced ratio for each of the following.

1.) Given height 2 and height 5.

a. Scale Factor _____

b. Total Areas _____

2.) Given areas 4π and 12π.

a. Scale Factor _____

b. Volumes _____

The following solids are similar. Use the given information to solve for the value.

3.) The scale factor of solid A : solid B is 3:4.

If solid A has a circumference of 18, calculate the circumference of solid B.

4.) The scale factor of solid C : solid D is 6:5.

If solid C has a base area of 108, calculate the base area of solid D.

Group Practice: Given the following measurements for similar solids, identify the reduced ratio for each of the following.

1.) Given height 4 and height 7.

a. Scale Factor _____

b. Total Areas _____

2.) Given areas 3π and 5π.

a. Scale Factor _____

b. Volumes _____

The following solids are similar. Use the given information to solve for the value.

3.) The scale factor of solid A : solid B is 7:8.

If solid A has a perimeter of 35, calculate the perimeter of solid B.

4.) The scale factor of solid C : solid D is 5:1.

If solid C has a lateral area of 100, calculate the lateral area of solid D.

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