LESSON DIGITS 13-7
COMPOSITE SHAPES

4/30/2019

Goal: I will be able to **find the volume and surface area of composite shapes**

Tool Bag: Formulas, equations, Vocabulary, etc

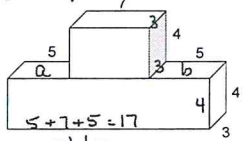
Here's How... Notes & Examples

Standard MG 2.1 – Use formulas to find volume and surface area of three dimensional shapes.

Composite Shapes

a shape made from multiple basic shapes

Example #1



Volume = Vol. base + Vol. top

$= 3 \cdot 4 \cdot 17 + 3 \cdot 4 \cdot 7 = 204 + 84 = 288$

Surface Area = [top block] + [bottom block]

$= [2 \text{ front/back} + 2 \text{ sides} + \text{top}] + [2 \text{ front} + 2 \text{ side} + \text{bottom}]$

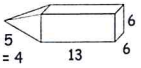
$= [2 \cdot 4 \cdot 7 + 2 \cdot 3 \cdot 4 + 3 \cdot 7] + [2 \cdot 4 \cdot 17 + 2 \cdot 4 \cdot 3 + 3 \cdot 17 + 3 \cdot 5 + 3 \cdot 5]$ (+a+b)

$= 56 + 24 + 21 + 136 + 24 + 61 + 15 + 15 = 352$

We/You Try: Find the surface area and volume of the given shape.

a) r = 5, h = 3

b) Slant = 5, Height = 4, 13, 6, 6



Volume = cylinder + $\frac{1}{2}$ sphere

$= \pi r^2 h + \frac{1}{2}\left(\frac{4}{3}\pi r^3\right)$

$= \pi 5^2 \cdot 3 + \frac{1}{2}\left(\frac{4}{3}\pi 5^3\right)$

$= 75\pi + \frac{250}{3}\pi = 75\pi + 83.\overline{3}\pi = 158.\overline{3}\pi$

Surface Area = circle + side + $\frac{1}{2}$ sphere

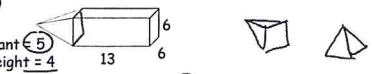
$= \pi r^2 + 2\pi r \cdot h + \frac{1}{2} \cdot 4\pi r^2$

$= \pi 5^2 + 2\pi \cdot 5 \cdot 3 + \frac{1}{2} \cdot 2^2 \pi 5^2$

$= 25\pi + 30\pi + 50\pi = 105\pi$

We/You Try: Find the surface area and volume of the given shape.

b)



Volume = Pyramid + Rect. Prism

$= \frac{1}{3} b \cdot w \cdot h + b \cdot w \cdot h$

$= \frac{1}{3} \cdot 6 \cdot 6 \cdot 4 + 13 \cdot 6 \cdot 6$

$= 48 + 360 + 108 = 516$

Surface Area = 4 triangles + 2 front/back + 2 top/bottom + right side

$= 4\left(\frac{1}{2} \cdot 6 \cdot 5\right) + 2(13 \cdot 6) + 2(13 \cdot 6) + 6 \cdot 6$

$= 60 + \quad +$