

Name: *Magical Graph Paper* for Squoosh Sum Slice "SSS" Volume Lab (Common Core 8.G.C.9)

CUBE

$A = L \times W = 2r \times 2r$

$V_1 = A \times h = L \times W \times h = 2r \times 2r \times 2r$

$V_2 = A \times 2h = 8 \times V_1 = 2^3 \times V_1$

$V_3 = A_3 \times 3h = 27 \times V_1 = 3^3 \times V_1$

$V_n = A_n \times n \times h = n \times V_1$

$H = n \times h$
 $V = A \times H$

$V = L \times W \times H = d^3 = 8r^3$

CYLINDER

$A = \pi r^2$

$V_n = A \times n \times h = n \times V_1$

$H = n \times h$
 $V = A \times H$

$V = \pi r^2 \times H = 2\pi r^2$

PYRAMID

$V = \frac{1}{3} A \times H = \frac{d^3}{3} = \frac{8}{3} r^3$
side length = d

CONE

$A = \pi \left(\frac{m}{h} r\right)^2 \sim A = \pi \left(\frac{m}{h} r\right)^2$

$V = \frac{\pi r^2}{3} H = \frac{2}{3} \pi r^3$

SPHERE

$S = 4\pi r^2$

A sphere can be broken into a bunch of unit pyramids of height r of volume: $V_{unit} = \frac{1}{3} r$

Sum all those icicles over the surface:

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

$V = \frac{4}{3} \pi r^3$

a mathematician's notebook beta
PLATOAR

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