

Grades 5-8 (S), 9-12 (S)

Duration: 10-20 min

Tools: one Logifaces Set / class

Individual work

Keywords: Volume, Truncated prism, Formula

## 517 - Heights and Volumes



### MATHS / 3D GEOMETRY



LOGIFACES  
METHODOLOGY  
Erasmus+

**TEACHER**  
Logifaces

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#### DESCRIPTION

Students consider blocks with shapes of truncated prisms and calculate their volumes using the formula:

$$V = \frac{1}{3}A(h_1 + h_2 + h_3).$$

#### SOLUTIONS / EXAMPLES

All blocks have an equilateral triangle for a base face, with area:  $A = 4\sqrt{3}$

Block	Volume	Block	Volume
111	$V = \frac{1}{3}4\sqrt{3}(1 + 1 + 1) = 4\sqrt{3} \approx 6.928$	122	$V = \frac{1}{3}4\sqrt{3}(1 + 2 + 2) = \frac{20}{3}\sqrt{3} \approx 11.547$
222	$V = \frac{1}{3}4\sqrt{3}(2 + 2 + 2) = 8\sqrt{3} \approx 13.856$	133	$V = \frac{1}{3}4\sqrt{3}(1 + 3 + 3) = \frac{28}{3}\sqrt{3} \approx 16.166$
333	$V = \frac{1}{3}4\sqrt{3}(3 + 3 + 3) = 12\sqrt{3} \approx 20.785$	233	$V = \frac{1}{3}4\sqrt{3}(2 + 3 + 3) = \frac{32}{3}\sqrt{3} \approx 18.475$
112	$V = \frac{1}{3}4\sqrt{3}(1 + 1 + 2) = \frac{16}{3}\sqrt{3} \approx 9.238$	123	$V = \frac{1}{3}4\sqrt{3}(1 + 2 + 3) = 8\sqrt{3} \approx 13.856$
113	$V = \frac{1}{3}4\sqrt{3}(1 + 1 + 3) = \frac{20}{3}\sqrt{3} \approx 11.547$	321	$V = \frac{1}{3}4\sqrt{3}(3 + 2 + 1) = 8\sqrt{3} \approx 13.856$
223	$V = \frac{1}{3}4\sqrt{3}(2 + 2 + 3) = \frac{28}{3}\sqrt{3} \approx 16.166$		

#### PRIOR KNOWLEDGE

Volume, Area, Square root

#### RECOMMENDATIONS / COMMENTS

Alternative exercises are [515 - Simple Volumes](#) and [516 - Truncated Volumes](#) to calculate the volume of the blocks in other ways.

Exercise [518 - Proof of the Volume Formula](#) is the proof of the formula used in this exercise.