

Grades 5-8 (AS)

Duration: 15-20 min

Tools: 2-4 blocks / student

Individual / Group work

Keywords: Length,
Pythagorean theorem

403 - Calculate and Measure Edges



MATHS / 2D GEOMETRY



LOGIFACES
METHODOLOGY
Erasmus+

TEACHER
Logifaces

2019-1-HU01-KA201-0612722019-1

DESCRIPTION

LEVEL 1 Individual work: Each student chooses 2, 3 or 4 blocks. They measure the edges of each piece with a ruler, they add up the lengths of the edges of each piece. The students' task is to arrange the pieces in an ascending order based on the calculated lengths.

Group work: Students complete the process outlined above for the entire 9 or 16 pcs Set and arrange all of the pieces in the right order.

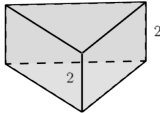
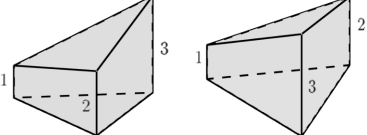
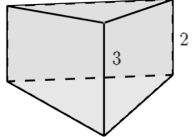
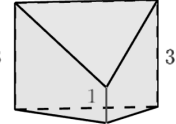
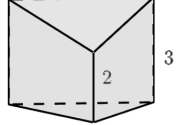
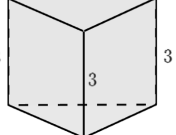
LEVEL 2 Students arrange the pieces without the use of a ruler, basing their work on a comparison of the blocks.

LEVEL 3 (8th grade) Students calculate the lengths of the edges using the standard units, then arrange the pieces in the right order.

SOLUTIONS / EXAMPLES

The ordering of the blocks and the sum of the edge lengths can be found in the table below. For the calculations of the Level 3 question, see exercise [404 - Top Edges](#).

block		sum of edge lengths (standard units)	sum of edge lengths (real length in cm)
111		27	33.75
112		$20 + 2 \times \sqrt{17} \approx 28.25$	35.31
122		$21 + 2 \times \sqrt{17} \approx 29.25$	36.56
113		$21 + 2 \times \sqrt{20} \approx 29.94$	37.43

222		30	37.5
123 132		$18 + 2 \times \sqrt{17} + \sqrt{20} \approx 30.72$	38.4
223		$23 + 2 \times \sqrt{17} \approx 31.25$	39.06
133		$23 + 2 \times \sqrt{20} \approx 31.94$	39.93
233		$24 + 2 \times \sqrt{17} \approx 32.25$	40.31
333		33	41.25

PRIOR KNOWLEDGE

LEVEL 1 Edge of a solid, Measurement, Decimals

LEVEL 3 Pythagorean theorem

RECOMMENDATIONS / COMMENTS

For individual work the teacher can differentiate between students. Students can choose fewer or more pieces to arrange based on the level of their knowledge. The lengths of the edges of blocks 111, 222 or 333 are easier to calculate than the others.

Exercise is [404 - Top Edges](#) recommended before the Level 3 question.