Grades 5-8 (A), 9-12 (A) Duration: 55-90 min Tools: one Logifaces Set Individual / Group work Keywords: Maths research, Proof	210 - Blockology **MATHS / LOGIC**	LOGIFACES METHODOLOGY Erasmus+ TEACHER Logifaces 2019-1-HU01-KA201-0612722019-1

DESCRIPTION

PART 1

1. Optional: Students collect mathematical properties of Logifaces pieces (in small groups or as a whole class). (5-15 mins)

2. Students write mathematical questions in connection with the Logifaces game (individual work). (5-10 mins)

3. In pairs or small groups, they share their questions and write more. (10-15 mins)

4. Groups share their questions with the whole class, the teacher writes them on the board or types them up, indicating the name of the student who asked it. (10 mins)

PART 2 (this can happen on the same day or on a different day)

5. The teacher projects or prints out questions. Explains how mathematicians come up with and work on questions. Some questions are evident, others take hundreds of years to solve. Mathematicians often come up with partial results. (5 mins)

6. In groups, students assess questions as easy, moderate and difficult. (5 mins)

7. Each group chooses a different question to work on, with moderate difficulty. They think about it, and come up with partial results. If they solve it or get stuck, they can choose another question. (15-25 mins)

8. Whole class discussion about the results. (10 mins)

SOLUTIONS / EXAMPLES

Examples of possible questions and (partial) answers:

- How can the volume of a piece be calculated? Answers can be found in exercises 515 - Simple Volumes and 516 - Truncated Volumes. Is there a formula that works in general? Why is that formula true? The answers can be found in exercises 517 - Heights and Volumes and 518 - Proof of the Volume Formula. Can you give a more general formula for other types of polyhedra?

- What floor plans can be built using the Logifaces pieces? How many ways are there to build a given floor plan? Examples can be found in exercises 608 - 4 Block Triangles and 609 - Hexagon Count. Can you find a general formula that shows the number of different buildings for any given floor plan? Can you show if a given floor plan is impossible? Exercise 208 - Impossible Line shows an example of an impossible floor plan and the proof of the impossibility. Can you find a general rule which can show easily whether a given floor plan is impossible or not?

PRIOR KNOWLEDGE None

RECOMMENDATIONS / COMMENTS

Most students are not used to posing mathematical questions, so they might struggle with it first.