POLY-UNIVERSE IN SCHOOL EDUCATION	**School**: **Name of Student:** **Sets:** triangle **Further tools:** paper, pencil **Date:**	**STUDENT** **PUSE Task Number** **C** **223**

Description of the task:

How many ways are there to put down more than two (then all 24) basic element triangles with total side connection to get a different layout in each case if the next triangle can be connected to any free sides of the shape, assuming that we draw triangles one after the other from the box?

What is the problem with this reasoning?

If the next triangle can be connected to any of the free sides of the shape, then the second triangle can be connected to any side of the first triangle in 6 ways, this gives 3×6 possibilities. The third triangle can be connected to any of the 4 free sides of this shape of two triangles. The number of the free sides of the shape grows with one in each step, so we can put down the third triangle in 4×6 ways. Following this train of thought, the n-th triangle can be connected to $n+1$ free sides in 6 ways for each side, so the answer is:
$3 \times 6 \times 4 \times 6 \times \ldots \times (n+1) \times 6 \;=\; ½ \times \;(n \;+\; 1)! \times 6^{n-1}$

Sequential number of triangle	1.	2.	3.	…	$n.$
Number of possible layouts	1	3×6	4×6	…	$(n+1)$×6

Solution(s) of the task:

Remarks / Self-evaluation: