



<p>Grade: 3-4 (A)</p> <p>Topic: Combinatorics</p> <p>Duration: 20 min</p> <p>Tools: one Logifaces Set / 3-4 students</p> <p>Individual work</p> <p>Keywords: Pairing</p>	<p>601 - Matchmaking</p>  <p>MATHS / COMBINATORICS</p>	 <p>LOGIFACES METHODOLOGY Erasmus+</p> <p>TEACHER Logifaces</p> <p>2019-1-HU01-KA201-0612722019-1</p>
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DESCRIPTION

Every 3-4 students should get a Logifaces Set which they can use together, but the exercise is for individual work.

The exercise contains 3 different tasks:

- a) Students find the pairs of different standard codings that mark the same Logifaces piece from the following list: 112, 113, 222, 212, 133, 323, 122, 211, 311, 232, 333, 313, 111, 223, 233. Note that not every piece has a pair.
- b) Students consider whether 123, 321, 213, 231, 312, 132 all mark the same Logifaces piece and provide reasoning for their answer.
- c) Students find the number of different standard codings possible to mark a Logifaces piece and write down all of the possible standard codings for each Logifaces piece.

SOLUTIONS / EXAMPLES

TASK a)

Piece 111, piece 222 and piece 333 do not have a pair.

Pairs to find: 112-211, 122-212, 223-232, 233-323, 113-311, 133-313.

TASK b)

The six standard codings stand for two different Logifaces pieces. The standard codings can be grouped in two: 123-231-312 and 132-321-213. The explanation for this is that the orientation is different in piece 123 and piece 132 and they can't be rotated into each other. The two pieces are reflections of each other. For students it can be explained through an example: this is the same phenomenon as putting on different shoes for your left and right foot.

If students are confused whether 123 and 132 are different, the teacher can also play the following game: the teacher presents the two blocks and students memorise them. Then the teacher hides both, puts one forward and asks: can you tell which one is this?

TASK c)

Pieces with only one possible standard coding: 111, 222, 333

Pieces with three possible standard codings:

112	121	211
122	221	212
223	232	322
233	332	323
113	131	311
133	331	313
123	231	312
132	321	213

PRIOR KNOWLEDGE

Standard coding of the Logifaces pieces.

RECOMMENDATIONS / COMMENTS

It is recommended to follow the order of the tasks, but if a student gets stuck in task a) of the exercise, he or she can be asked to prepare a few lines from task c).