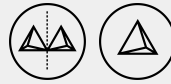


LOGIFACES
METHODOLOGY

Erasmus+

STUDENT
Logifaces

2019-1-HU01-KA201-0612722019-1

**533 - Relocating Blocks in
GeoGebra****MATHS / TRANSFORMATIONS**

Name:

Date:

Tools: one Logifaces Set / group

DESCRIPTION

Students' task is to start with a Logifaces block drawn in GeoGebra and move it by transformations to another given target location. See exercises [526 - Calculate the Coordinates](#) and [529 - Coordinates of a Rotated Block](#) for the particular coordinates and [527 - Coordinates in GeoGebra](#) for the drawings in GeoGebra.

LEVEL 1 See the pairs in the table below.

block	Start	Target location I.	Target location II.
111	$(0, 0, 0), (4, 0, 0), (2, 2\sqrt{3}, 0),$ $(0, 0, 1), (4, 0, 1), (2, 2\sqrt{3}, 1)$	$(0, 0, 0), (4, 0, 0), (4, 1, 0),$ $(0, 1, 0), (2, 0, 2\sqrt{3}), (2, 1, 2\sqrt{3})$	$(0, 0, 0), (1, 0, 0), (1, 4, 0),$ $(0, 4, 0), (0, 2, 2\sqrt{3}), (1, 2, 2\sqrt{3})$
222	$(0, 0, 0), (4, 0, 0), (2, 2\sqrt{3}, 0),$ $(0, 0, 2), (4, 0, 2), (2, 2\sqrt{3}, 2)$	$(0, 0, 0), (4, 0, 0), (4, 2, 0),$ $(0, 2, 0), (2, 0, 2\sqrt{3}), (2, 2, 2\sqrt{3})$	$(0, 0, 0), (2, 0, 0), (2, 4, 0),$ $(0, 4, 0), (0, 2, 2\sqrt{3}), (2, 2, 2\sqrt{3})$
333	$(0, 0, 0), (4, 0, 0), (2, 2\sqrt{3}, 0),$ $(0, 0, 3), (4, 0, 3), (2, 2\sqrt{3}, 3)$	$(0, 0, 0), (4, 0, 0), (4, 3, 0),$ $(0, 3, 0), (2, 0, 2\sqrt{3}), (2, 3, 2\sqrt{3})$	$(0, 0, 0), (3, 0, 0), (3, 4, 0),$ $(0, 4, 0), (0, 2, 2\sqrt{3}), (3, 2, 2\sqrt{3})$

LEVEL 2 See the pairs in the table below. In the last two lines, the start and the target II. blocks are not the same, they are the reflected images of each other.

Block	Start	Target location I.	Target location II.
112	$(0, 0, 0), (4, 0, 0), (2, 2\sqrt{3}, 0),$ $(0, 0, 1), (4, 0, 1), (2, 2\sqrt{3}, 2)$	$(0, 0, 0), (4, 0, 0), (2, 0, 2\sqrt{3}),$ $(0, 1, 0), (4, 1, 0), (2, 2, 2\sqrt{3})$	$(0, 0, 0), (0, 4, 0), (0, 2, 2\sqrt{3}),$ $(1, 0, 0), (1, 4, 0), (2, 2, 2\sqrt{3})$
122	$(0, 0, 0), (4, 0, 0), (2, 2\sqrt{3}, 0),$ $(0, 0, 1), (4, 0, 2), (2, 2\sqrt{3}, 2)$	$(0, 0, 0), (4, 0, 0), (2, 0, 2\sqrt{3}),$ $(0, 1, 0), (4, 2, 0), (2, 2, 2\sqrt{3})$	$(0, 0, 0), (0, 4, 0), (0, 2, 2\sqrt{3}),$ $(1, 0, 0), (2, 4, 0), (2, 2, 2\sqrt{3})$
223	$(0, 0, 0), (4, 0, 0), (2, 2\sqrt{3}, 0),$ $(0, 0, 2), (4, 0, 2), (2, 2\sqrt{3}, 3)$	$(0, 0, 0), (4, 0, 0), (2, 0, 2\sqrt{3}),$ $(0, 2, 0), (4, 2, 0), (2, 3, 2\sqrt{3})$	$(0, 0, 0), (0, 4, 0), (0, 2, 2\sqrt{3}),$ $(2, 0, 0), (2, 4, 0), (3, 2, 2\sqrt{3})$
233	$(0, 0, 0), (4, 0, 0), (2, 2\sqrt{3}, 0),$ $(0, 0, 2), (4, 0, 3), (2, 2\sqrt{3}, 3)$	$(0, 0, 0), (4, 0, 0), (2, 0, 2\sqrt{3}),$ $(0, 2, 0), (4, 3, 0), (2, 3, 2\sqrt{3})$	$(0, 0, 0), (0, 4, 0), (0, 2, 2\sqrt{3}),$ $(2, 0, 0), (3, 4, 0), (3, 2, 2\sqrt{3})$
113	$(0, 0, 0), (4, 0, 0), (2, 2\sqrt{3}, 0),$ $(0, 0, 1), (4, 0, 1), (2, 2\sqrt{3}, 3)$	$(0, 0, 0), (4, 0, 0), (2, 0, 2\sqrt{3}),$ $(0, 1, 0), (4, 1, 0), (2, 3, 2\sqrt{3})$	$(0, 0, 0), (0, 4, 0), (0, 2, 2\sqrt{3}),$ $(1, 0, 0), (1, 4, 0), (3, 2, 2\sqrt{3})$

133	$(0, 0, 0), (4, 0, 0), (2, 2\sqrt{3}, 0),$ $(0, 0, 1), (4, 0, 3), (2, 2\sqrt{3}, 3)$	$(0, 0, 0), (4, 0, 0), (2, 0, 2\sqrt{3}),$ $(0, 1, 0), (4, 3, 0), (2, 3, 2\sqrt{3})$	$(0, 0, 0), (0, 4, 0), (0, 2, 2\sqrt{3}),$ $(1, 0, 0), (3, 4, 0), (3, 2, 2\sqrt{3})$
123	$(0, 0, 0), (4, 0, 0), (2, 2\sqrt{3}, 0),$ $(0, 0, 1), (4, 0, 2), (2, 2\sqrt{3}, 3)$	$(0, 0, 0), (4, 0, 0), (2, 0, 2\sqrt{3}),$ $(0, 1, 0), (4, 2, 0), (2, 3, 2\sqrt{3})$	$(0, 0, 0), (0, 4, 0), (0, 2, 2\sqrt{3}),$ $(1, 0, 0), (2, 4, 0), (3, 2, 2\sqrt{3})$
132	$(0, 0, 0), (4, 0, 0), (2, 2\sqrt{3}, 0),$ $(0, 0, 1), (4, 0, 3), (2, 2\sqrt{3}, 2)$	$(0, 0, 0), (4, 0, 0), (2, 0, 2\sqrt{3}),$ $(0, 1, 0), (4, 3, 0), (2, 2, 2\sqrt{3})$	$(0, 0, 0), (0, 4, 0), (0, 2, 2\sqrt{3}),$ $(1, 0, 0), (3, 4, 0), (2, 2, 2\sqrt{3})$

LEVEL 3 This table shows the coordinates of the top vertices of the starting locations and the coordinates of all vertices of the target location. The base vertices of the starting location have the coordinates $(0, 0, 0), (4, 0, 0), (2, 2\sqrt{3}, 0)$ in each case.

Block	Starting top coordinates	Starting top coordinates	Target location I.	Target location II.
112	$(0, 0, 1), (4, 0, 2), (2, 2\sqrt{3}, 1)$	$(0, 0, 2), (4, 0, 1), (2, 2\sqrt{3}, 1)$	$(0, 0, 0), (4, 0, 0), (2, 0, 2\sqrt{3}),$ $(0, 1, 0), (4, 1, 0), (2, 2, 2\sqrt{3})$	$(0, 0, 0), (0, 4, 0), (0, 2, 2\sqrt{3}),$ $(1, 0, 0), (1, 4, 0), (2, 2, 2\sqrt{3})$
122	$(0, 0, 2), (4, 0, 2), (2, 2\sqrt{3}, 1)$	$(0, 0, 2), (4, 0, 1), (2, 2\sqrt{3}, 2)$	$(0, 0, 0), (4, 0, 0), (2, 0, 2\sqrt{3}),$ $(0, 1, 0), (4, 2, 0), (2, 2, 2\sqrt{3})$	$(0, 0, 0), (0, 4, 0), (0, 2, 2\sqrt{3}),$ $(1, 0, 0), (2, 4, 0), (2, 2, 2\sqrt{3})$
223	$(0, 0, 2), (4, 0, 3), (2, 2\sqrt{3}, 2)$	$(0, 0, 3), (4, 0, 2), (2, 2\sqrt{3}, 2)$	$(0, 0, 0), (4, 0, 0), (2, 0, 2\sqrt{3}),$ $(0, 2, 0), (4, 2, 0), (2, 3, 2\sqrt{3})$	$(0, 0, 0), (0, 4, 0), (0, 2, 2\sqrt{3}),$ $(2, 0, 0), (2, 4, 0), (3, 2, 2\sqrt{3})$
233	$(0, 0, 3), (4, 0, 3), (2, 2\sqrt{3}, 2)$	$(0, 0, 3), (4, 0, 2), (2, 2\sqrt{3}, 3)$	$(0, 0, 0), (4, 0, 0), (2, 0, 2\sqrt{3}),$ $(0, 2, 0), (4, 3, 0), (2, 3, 2\sqrt{3})$	$(0, 0, 0), (0, 4, 0), (0, 2, 2\sqrt{3}),$ $(2, 0, 0), (3, 4, 0), (3, 2, 2\sqrt{3})$
113	$(0, 0, 1), (4, 0, 3), (2, 2\sqrt{3}, 1)$	$(0, 0, 3), (4, 0, 1), (2, 2\sqrt{3}, 1)$	$(0, 0, 0), (4, 0, 0), (2, 0, 2\sqrt{3}),$ $(0, 1, 0), (4, 1, 0), (2, 3, 2\sqrt{3})$	$(0, 0, 0), (0, 4, 0), (0, 2, 2\sqrt{3}),$ $(1, 0, 0), (1, 4, 0), (3, 2, 2\sqrt{3})$
133	$(0, 0, 3), (4, 0, 3), (2, 2\sqrt{3}, 1)$	$(0, 0, 3), (4, 0, 1), (2, 2\sqrt{3}, 3)$	$(0, 0, 0), (4, 0, 0), (2, 0, 2\sqrt{3}),$ $(0, 1, 0), (4, 3, 0), (2, 3, 2\sqrt{3})$	$(0, 0, 0), (0, 4, 0), (0, 2, 2\sqrt{3}),$ $(1, 0, 0), (3, 4, 0), (3, 2, 2\sqrt{3})$
123	$(0, 0, 2), (4, 0, 3), (2, 2\sqrt{3}, 1)$	$(0, 0, 3), (4, 0, 1), (2, 2\sqrt{3}, 2)$	$(0, 0, 0), (4, 0, 0), (2, 0, 2\sqrt{3}),$ $(0, 1, 0), (4, 2, 0), (2, 3, 2\sqrt{3})$	$(0, 0, 0), (0, 4, 0), (0, 2, 2\sqrt{3}),$ $(1, 0, 0), (2, 4, 0), (3, 2, 2\sqrt{3})$
132	$(0, 0, 3), (4, 0, 2), (2, 2\sqrt{3}, 1)$	$(0, 0, 2), (4, 0, 1), (2, 2\sqrt{3}, 3)$	$(0, 0, 0), (4, 0, 0), (2, 0, 2\sqrt{3}),$ $(0, 1, 0), (4, 3, 0), (2, 2, 2\sqrt{3})$	$(0, 0, 0), (0, 4, 0), (0, 2, 2\sqrt{3}),$ $(1, 0, 0), (3, 4, 0), (2, 2, 2\sqrt{3})$

SOLUTION(S)