WEEK 38: Symmetry

Hands-On Exploration: LEGO® builds

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Symmetry

The Egyptian or Mayan pyramids are classic examples of **symmetry**. If you place a vertical plane (flat surface) through the center of a pyramid plan, parallel to one of its sides and compare the two halves, you will see that they are identical and could be mirrored over the center axis.

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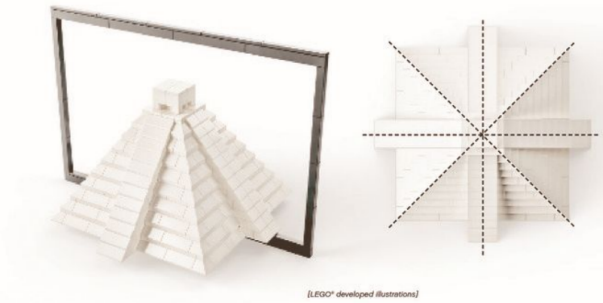
If you look at the floor plan of the Kukulkan's Pyramid in Chichen Itza, you will discover that a line drawn through the center of the square floor plan, parallel to one of its sides, will divide it into two symmetric halves. A line, drawn diagonally from a corner through the center to the opposite corner will divide the floor plan into two symmetric triangles.



[LEGO® developed illustrations]

A symmetrical design embodies a sense of balance, or equilibrium. Symmetry is often used in classical architecture to impress: it conveys order and has a monumental appearance.

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The exercise for you to explore Symmetry:

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In order to understand symmetry, it is good to start with the opposite: a simple nonsymmetrical LEGO® composition. Make a simple LEGO sketch-model that is nonsymmetric (like the example on the left).

[LEGO® developed illustrations]

By mirroring the image of the sketch-model you have chosen, it will form a symmetrical structure, which is symmetric from two sides (from its front and its back side). This is called bilateral symmetry. Do you know any buildings in your city that have this structure?

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[LEGO® developed illustrations]

If we mirror this sketch-model again, we get an object that has two orthogonal planes of symmetry. It will become symmetrical from four directions: its front, its back, and its sides.

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Or you can take the first sketch-model and join four of the same structures together, rotating them by 90 degrees: the new structure will have rotational symmetry. Rotational symmetry makes an object look the same after a certain amount of rotation—in this case, 90 degrees.

What architectural structure could that represent? Try to add context to your LEGO sketch-models to understand the influence of symmetry.

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