METHODS FOR INTRODUCING THE CONCEPT OF SYMMETRY TO ELEMENTARY SCHOOL STUDENTS

Sultanova U.M.
Senior lecturer of TSPU named after Nizami
Gavhar Khusanova
Student of TSPU named after Nizami

ABSTRACT

This article provides an overview of symmetry. And the characteristics of their types are explained. The theme of symmetry, taught in mathematics lessons in elementary grades, is also analyzed.

Key words: *symmetry, mirror symmetry, axis of symmetry, central symmetry, rotational symmetry, similar symmetry, copying symmetry, height of symmetry, center of symmetry and plane of symmetry.*

АННОТАЦИЯ

В этой статье представлен обзор симметрии. И объясняются характеристики их типов. Также анализируется тема симметрии, преподаваемая на уроках математики в начальных классах.

Ключевые слова: *симметрия, зеркальная симметрия, ось симметрии, центральная симметрия, вращательная симметрия, подобная симметрия, копирующая симметрия, высота симметрии, центр симметрии и плоскость симметрии.*

INTRODUCTION

We often encounter symmetry in the world we live in, whether it be symmetry in nature or artificial technology, symmetry in physics, symmetry in art, symmetry in architecture, geometric symmetry in mathematics.

"... to be beautiful means to be symmetrical and proportionate," said the famous philosopher Plato. The topic we want to discuss today is related to this topic.

Symmetry -greek. "symmetría", "harmony" - an equal measure, located in a certain order, the correspondence of the two sides of something, balance.

Thus, symmetry is an example of balance, beauty and strength.

The following types of geometric symmetry can be noted:

Mirror symmetry

Mirror symmetry or reflection is the movement of Euclidean space, a set of fixed points, which is a

hyperplane.

The term mirror symmetry is also used to describe the corresponding type of symmetry of an object, that is, the change in the reflection of an object.

Here we say that a geometric figure is symmetrical with respect to the S plane, but symmetrical figures, bodies and objects are not equal to each other. (For example, the left glove or boot does not fit the right hand or foot, and vice versa).

Axis of symmetry

If the line f passes through the center of the section connecting the given points and is perpendicular to this section, then these points are called symmetrical with respect to the line. Here the line is the axis of symmetry of the figures.

Central Simmertia
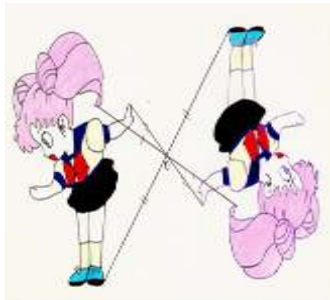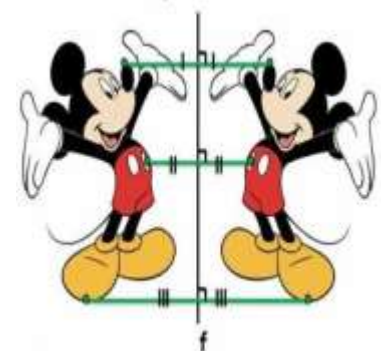
If the points that are symmetrical about the point O lie on the figure itself or it is the center of the segment connecting these points, then the point O is called the center of symmetry of the figure.

Rotational symmetry

Rotational symmetry is a term that refers to the symmetry of an object with respect to all or some of its rotations in m-dimensional Euclidean space. Translational symmetry can be considered a special case of rotational symmetry - rotation around a point at infinity.
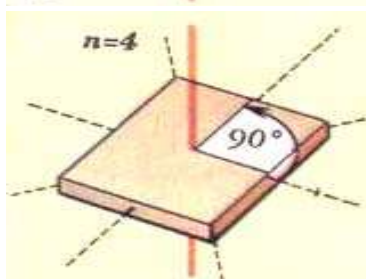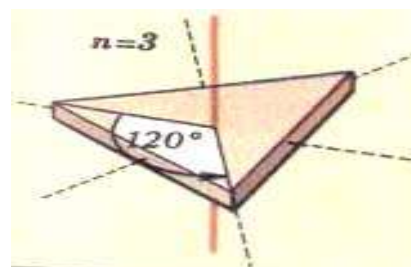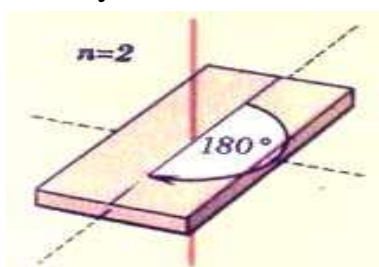
Similar symmetry

This is an analogue of the previous symmetry, with the only difference that similar parts of the figures and the distance between them decrease or increase simultaneously. A simple example of such symmetry is the doll called matryoshka.

Portable (translational symmetry)

Such symmetry is spoken when a figure is moved along a straight line for some distance, or a distance that is a multiple of this value, it is combined with itself. The line along which the translation is made is called the axis of translation.
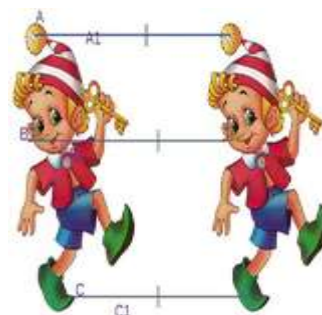
Basic concepts of symmetry: height of symmetry, center of symmetry and plane of symmetry.

Now consider the types of simple geometric symmetry, which are considered in the lower grades. These include: axial symmetry and central symmetry.
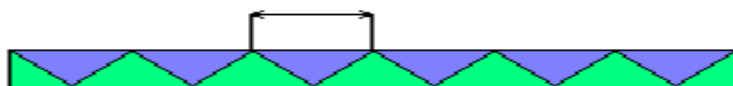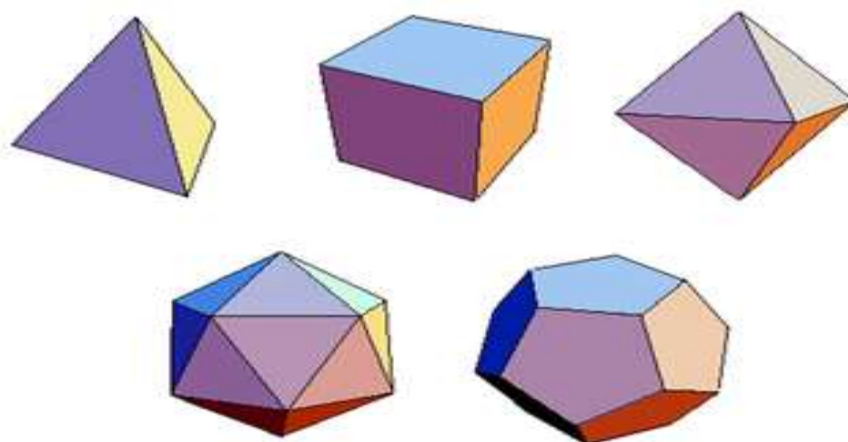
Examples of symmetry of geometric figures

Different types of symmetry can be possessed by both flat and three-dimensional figures. For example, a square, rectangle, rhombus have a center of symmetry and axes of symmetry.
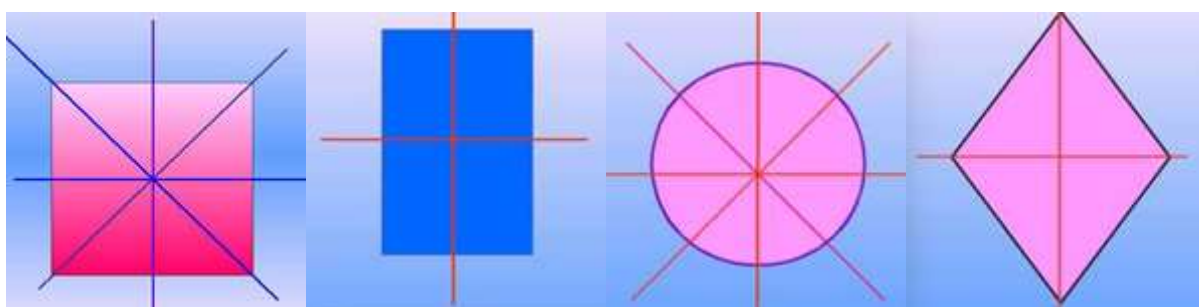
Circumference and circle have a center of symmetry and infinitely many axes of symmetry.

Volumetric figures can have a center of symmetry, axes of symmetry and have mirror symmetry.

**Oriental Renaissance: Innovative,
educational, natural and social sciences**

SJIF 2023 = 6.131 / ASI Factor = 1.7

(E)ISSN:2181-1784

www.oriens.uz

3(1), Jan., 2023

Regular polyhedrons have attracted the attention of scientists, architects, and artists by their symmetry since ancient times. They are rightly called the most symmetrical of all polygons.

The ancient Greek scientist Plato described the properties of regular polygons in detail. That's why they call them Plato's bodies. Thirteen's book of Euclid called "Inception" is devoted to correct multi-polyhedra.

A very symmetrical figure is, for example, a cube. The center of symmetry of a cube is the point of intersection of its diagonals. 9 axes of symmetry pass through the center of symmetry. The cube also has 9 planes of symmetry and they pass either through opposite edges (6) or through the midpoints of opposite edges (3).

9 axes of symmetry pass through the center of symmetry. The cube also has 9 planes of symmetry and they pass either through opposite edges (6) or through the midpoints of opposite edges (3).
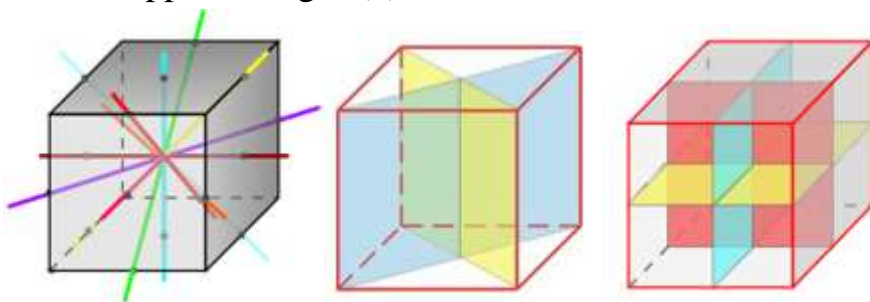
With axial symmetry, each point is at the same distance from the axis.

If the points symmetric with respect to the point O belong to the figure itself or are the midpoints of the segments connecting these points, then the point O is called the center of symmetry of the figure.

CONCLUSION

A lot can be said about symmetry. It was talked about centuries ago. The great thinker Aristotle said: "Mathematics ... is an indicator of purity, true symmetry, and it is a kind of beauty."

REFERENCES

1. Jumaev M.E. Mathematics teaching methodology. (Textbook for OO'Y.) Tashkent. - Turan-Iqbal - 2016. - B. 426.

2. Kostyleva Elena Vladimirovna. article Application of symmetry in mathematics, literature, art, technology.

3. U.M. Sultanova. article Theoretical aspects in the formation of pedagogical sciences International scientific-online conference