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The Fundamental Theorem of Axonometry and Axonometric Projections

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Annotation: *can be axonometric projections. But not all axonometric projections are evident. Illustrating the object vividly becomes a link to the projection direction and the situation of the plane of projections. Axonometric projection is briefly referred to as axonometry.*

Keywords: *aksonometric, projection, isometric, dimetric, trimetric, right angle axonometry, planes.*

It is known that drawing drawings in orthogonal projections is for some time convenient, and the metric character of the objects is also preserved, since orthogonal projections are placed relatively conveniently on the plane of the projections. In Orthogonal projection drawings, it is possible to sufficiently determine the internal and external manifestations of an item using ridges and cross sections. But it is difficult to imagine their spatial forms according to their drawings in an orthogonal projection. In such cases, the need arises to supplement the drawing of an item with its obvious image.

Axonometry (yun. axon-axis and metria –measurement) is a method of describing objects using parallel projections in a drawing. To construct axonometric projections of spatial shapes, three mutually perpendicular axes-Ox, Moon, Oz, and scale lengths on those axes-are chosen. This form and these axes are then projected onto the plane of projections along with the scale. The projection direction is divided into right-angled and oblique-angled xyles by the angle between the axonometric projection plane. Most common are those where the three coordinate cuts change the same way (isometry) and only the two coordinate cuts change the same way (dimetry). In addition to being obvious, it allows you to find the dimensions of what is described in it, restore the full shape and location of the axonometric image of the object in relation to its coordinate system.

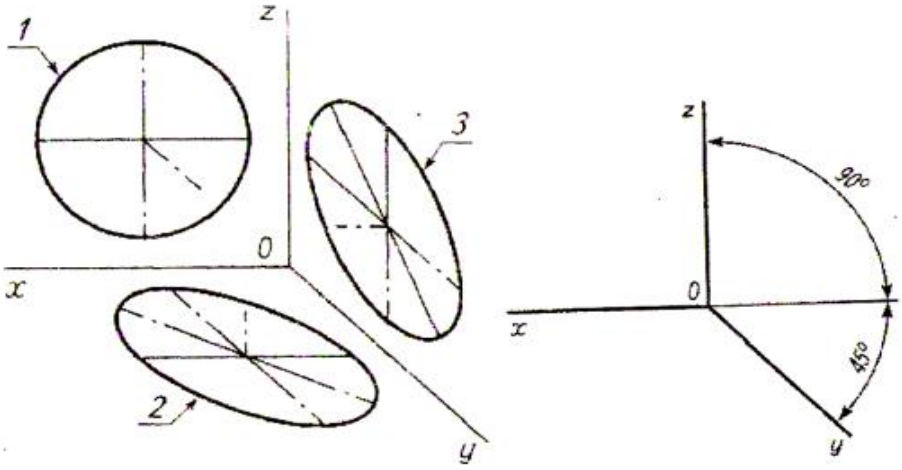
For the most part, the reason that the image of the object in an axonometric projection is depicted in many variations with respect to its actual appearance is that not all axonometric projections are in demand.

Many types of axonometric projections, the physical action, uses types that describe the shape of the object with the least distortion, are simple and convenient to make, form the most complete picture of it.

1. Right-angle axonometric projections are generated by projecting in a direction perpendicular to the plane of the cartines
2. Oblique angle axonometric projections are generated by projecting onto the plane of the cartines in a direction at an acute angle.

Each of the above groups is in turn divided into several more types by the ratio of axonometric scales and the magnitude of the coefficient of variation. By these same symbols, axonomertic projections can be divided into the following groups.

1. Isometric-axonomecric projections of this type will have the same scale and coefficient of variation on all three axes.
2. In the dimetric-quasidur two axes, the scale and shift coefficients are the same, and the scale and shift coefficients in the third axis are different from the previous two.
3. Trimetric-for each axonometry axis of such axonometric projections, the scales or displacement coefficients will be different; trimetry is the general case of axonometry.



Oblique frontal isometric projection. Oblique frontal isometric projections form a 90-degree angle to the angle between the X-and z-axonometry axes, while that axis forms a 45-degree angle with a straight line perpendicular to the Z-axis.

In all three axes, the coefficient of variation is 1. Flat shapes located in the Frontal plane are depicted unchanged. Flat shapes located in the Frontal plane are depicted unchanged.

For example, to represent a triangle, the abscissa of the lower left end – OA1-is measured from the drawing and moved to the X axonometry axis. An axonometric projection of Tip A is generated. The axonometric projections of the remaining V and S points are constructed in this order. If a point does not belong to, for example, Dj x or z, its axonometric projection uses XJ and ZJ coordinates to construct D. A flat form with curves in the structure, the ocherkming axonometric projection, is constructed by transferring its points defined in the awal drawing to an axonometric projection using sequential coordinates. In such a projection, it is convenient to construct an ellipse at its eight points using a square drawn into a circle.

To construct an axonometric projection of a circle using the symmetry axes of the square, the orthogonal axes X sh u lying in the plane of the hoy coordinates are defined. X Waj axonometry axes and an axonometric projection of the Square in the form of an abscess Rhombus are constructed. The vertices a,V,S,E of the Rhombus will be the edge points of the major and minor axes of the Ellipse. Starting from Point O, the radius of the Circle X and u given towards the two sides of the axonometry axes is measured, and four more points of the Ellipse are found. All eight points found are adjacent to a smooth curve using a lekalo. The other two coordinate planes - isometric projections of circles lying on the vertices-are constructed in this order. In drawing practice, instead of an axonometric projection of a circle, a boigan oval is often constructed consisting of four arcs of a circle. Because making an ellipse and walking it over with lekalo takes a lot of time and work.

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