Tomsk Polytechnic University

DESCRIPTIVE GEOMETRY
ENGINEERING GRAPHICS

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Lecture 5

REPRESENTATIONS -
Views , Sectional View , Section

Plan

1. Views
2. Sectional View
3. Section
4. Extension Elements
5. Conventions and Simplifications

Views

All drawing representations are classified into ***views, sections*** **and** ***sectional views***.

View (elevation) - is a representation of a visible, facing the viewer, part of an object surface.

Views

- Principal
- Auxiliary
- Detail views

Representations of objects in technical drawing are completed by the method of **rectangular (orthogonal) projections**.

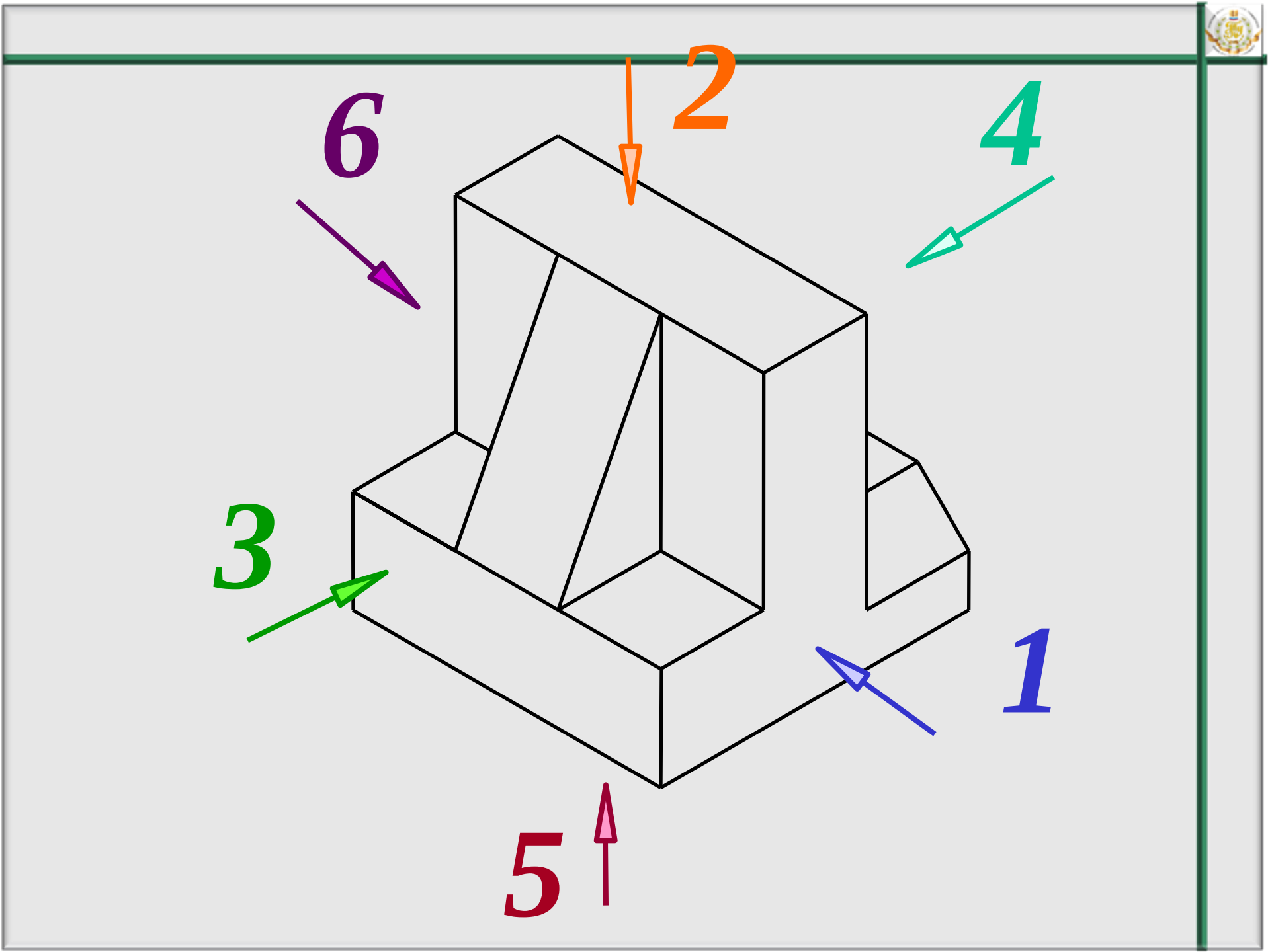
Six faces of a cube are taken as the basic projection planes.

The orthogonal projections are completed either in first angle projection (the E-method, “European”, applied in Russia and in most of the continental countries) or in third angle projection (the A-method, “American”, applied in the USA, England, Holland).

Projecting in First Angle Projection (E-Method)

When this method is used, imagine an object to be **placed inside a cube and projected on the interior surfaces of its faces.**

The projecting beams are directed from the viewer to the cube faces. Six faces of the cube are taken as the basic projection planes, they coincide with a drawing plane.


6
2
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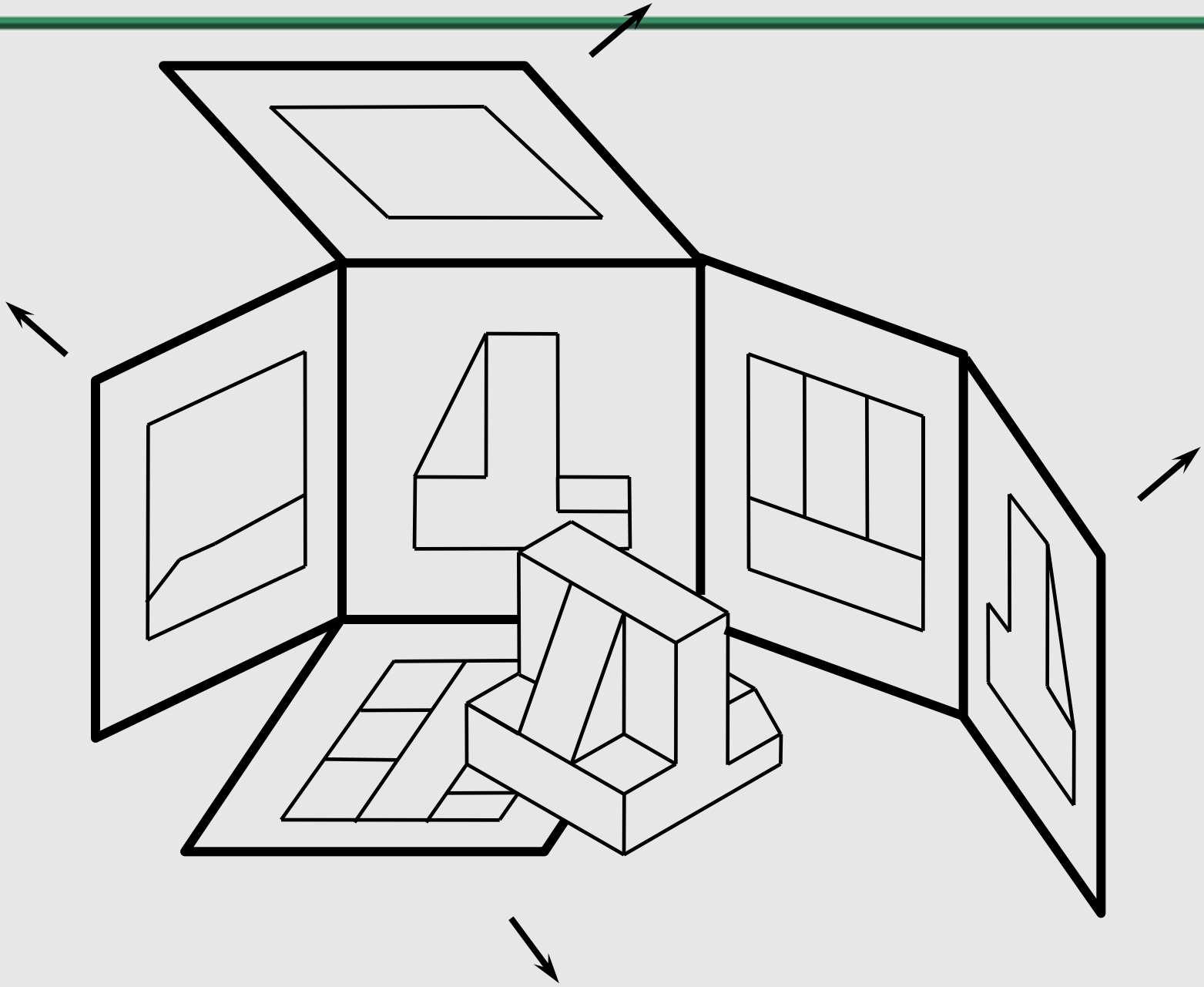
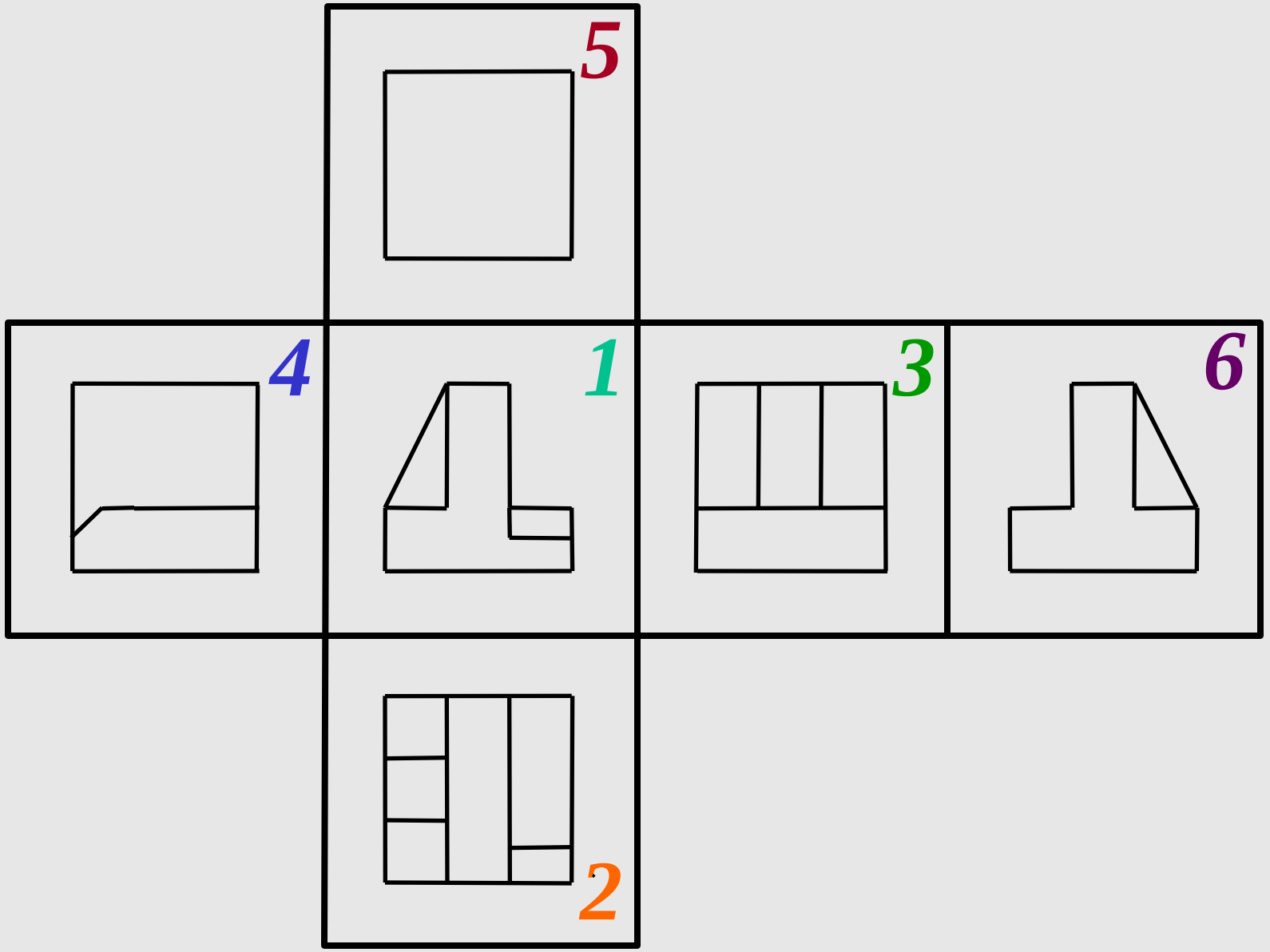
The image on the frontal projection plane is assumed to be the principal one.

An object is located relative to the frontal projection plane so that the image on it represents the form and dimensions of the object with sufficient clarity.

The principal views are the views obtained by projecting an object on the six principal projection planes.

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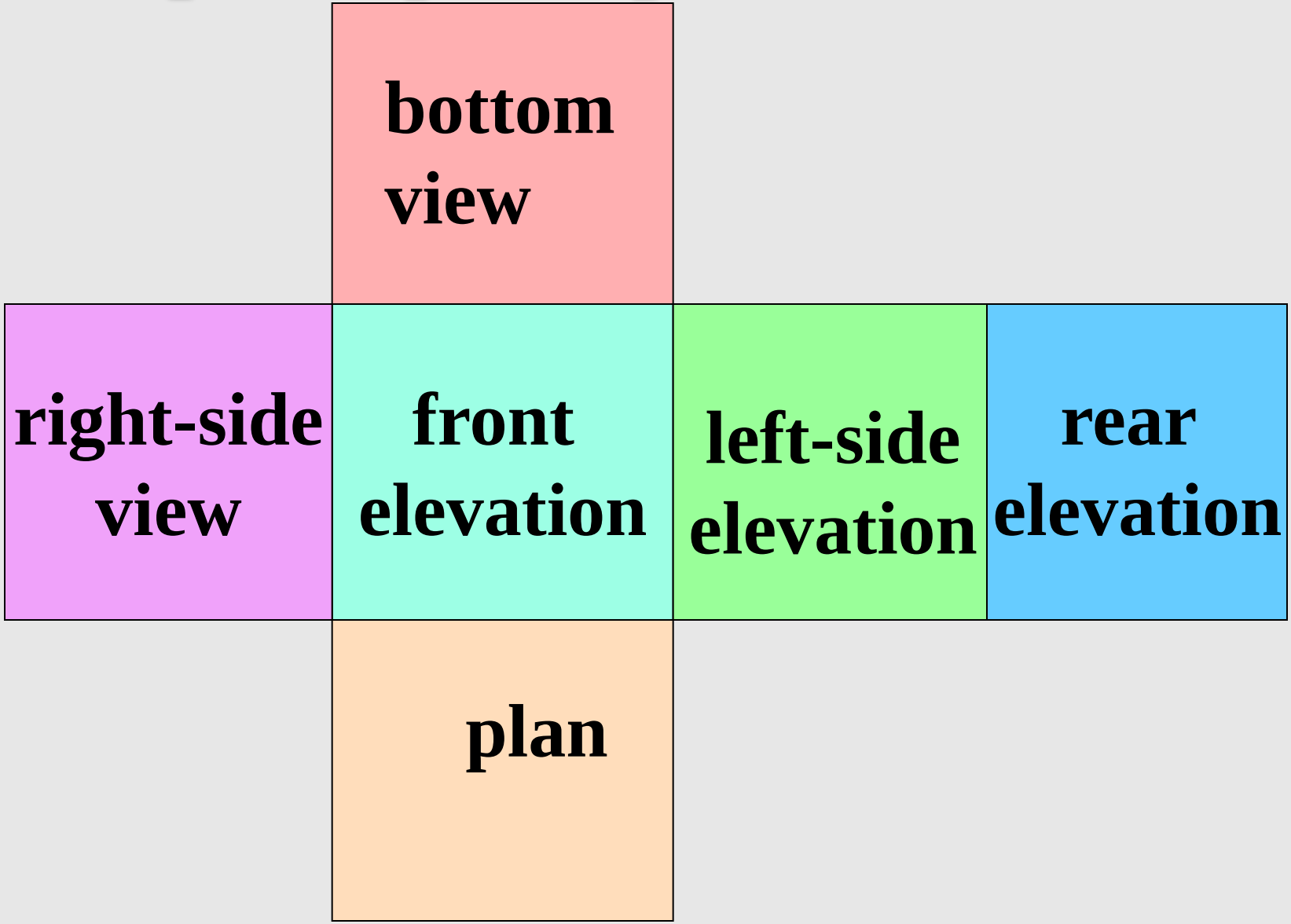
The principal representation view



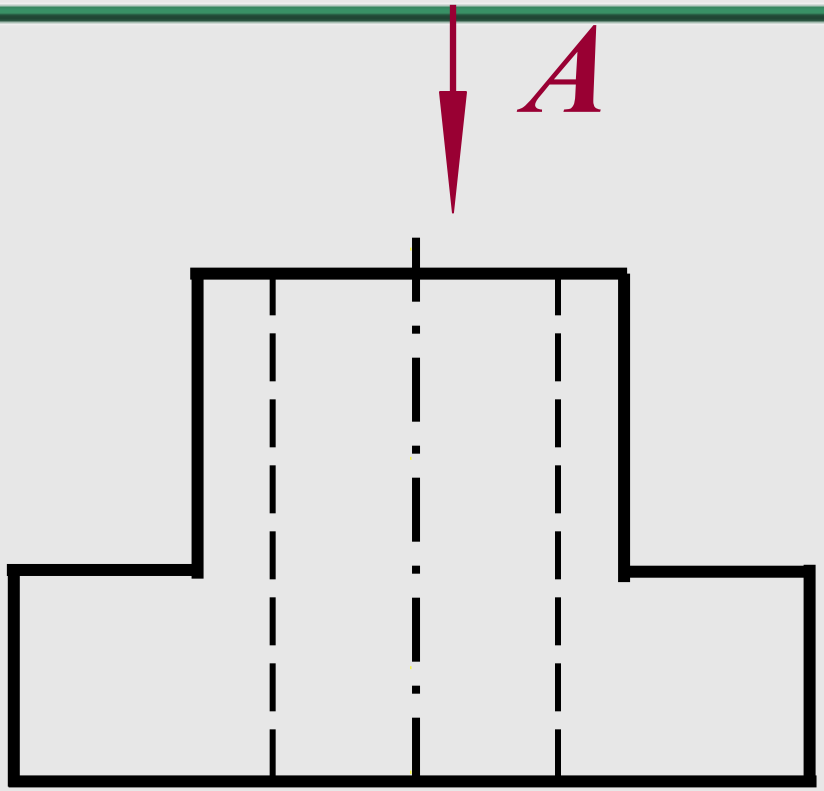
The image of a subject on a **front plane** is accepted for the **main kind** of a product

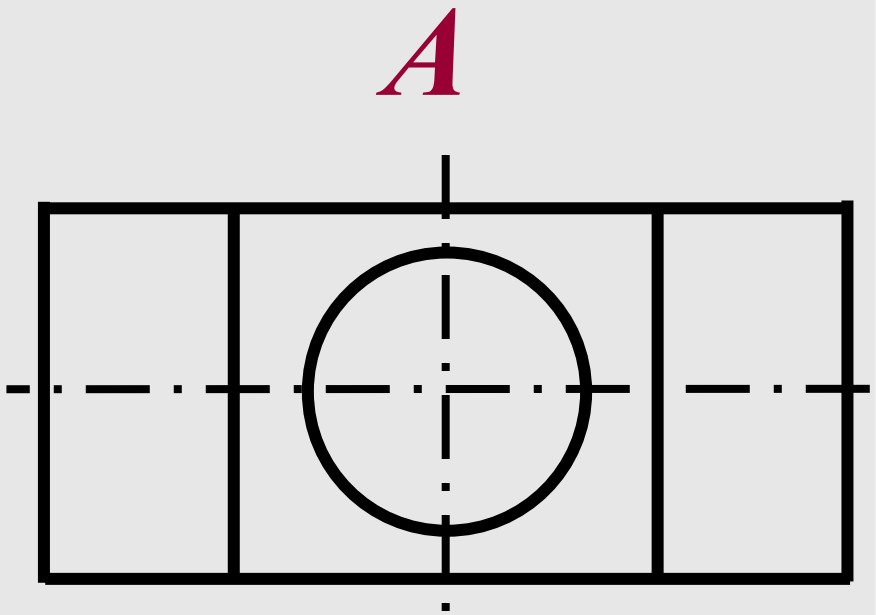
The main kind should give the most full representation about a structure of a detail

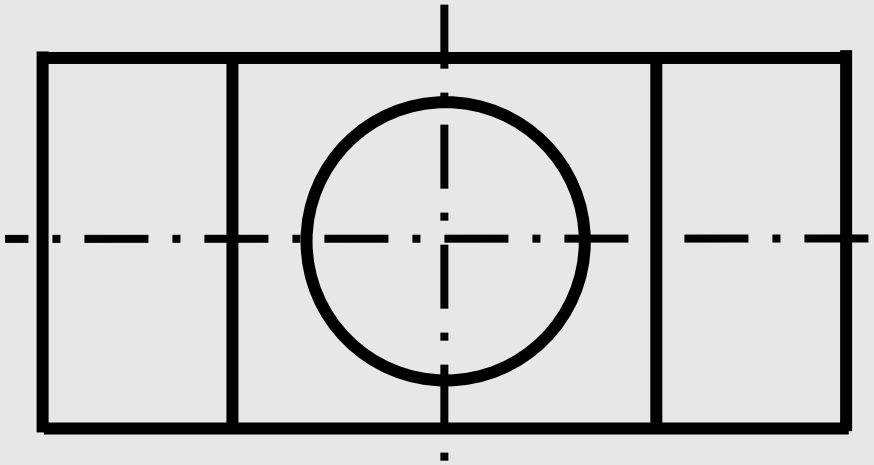
If the views have no direct projection link with the principal representation, an arrow should be drawn to point in the direction that the view is projected.

One and the same capital letter should be written above the arrow and above the view.

Similar presentation of a drawing is used when the views mentioned above are separated from the principal view by the other views or located on the other sheets.







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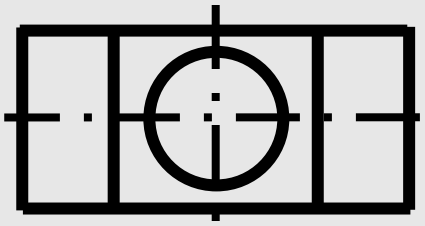
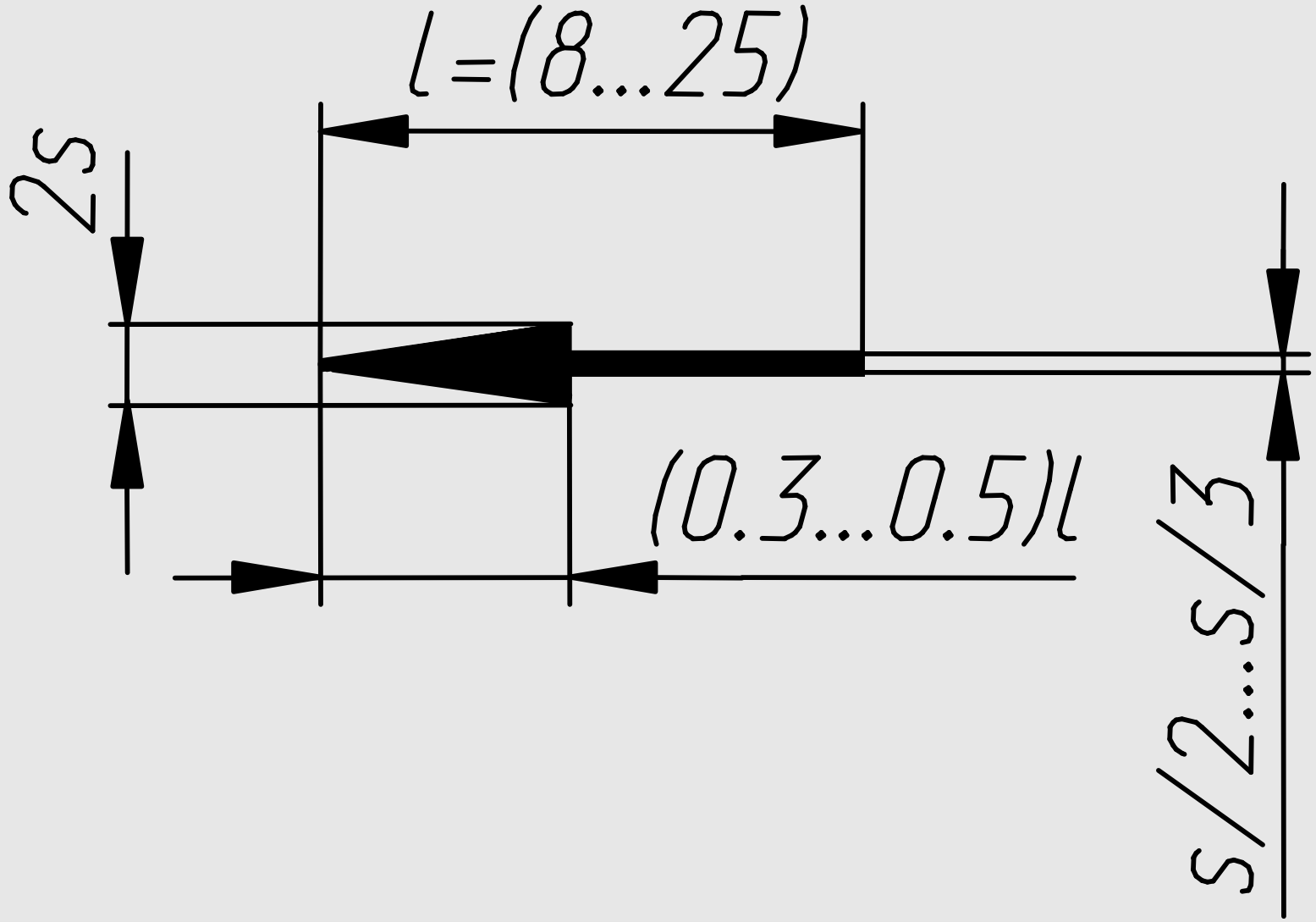
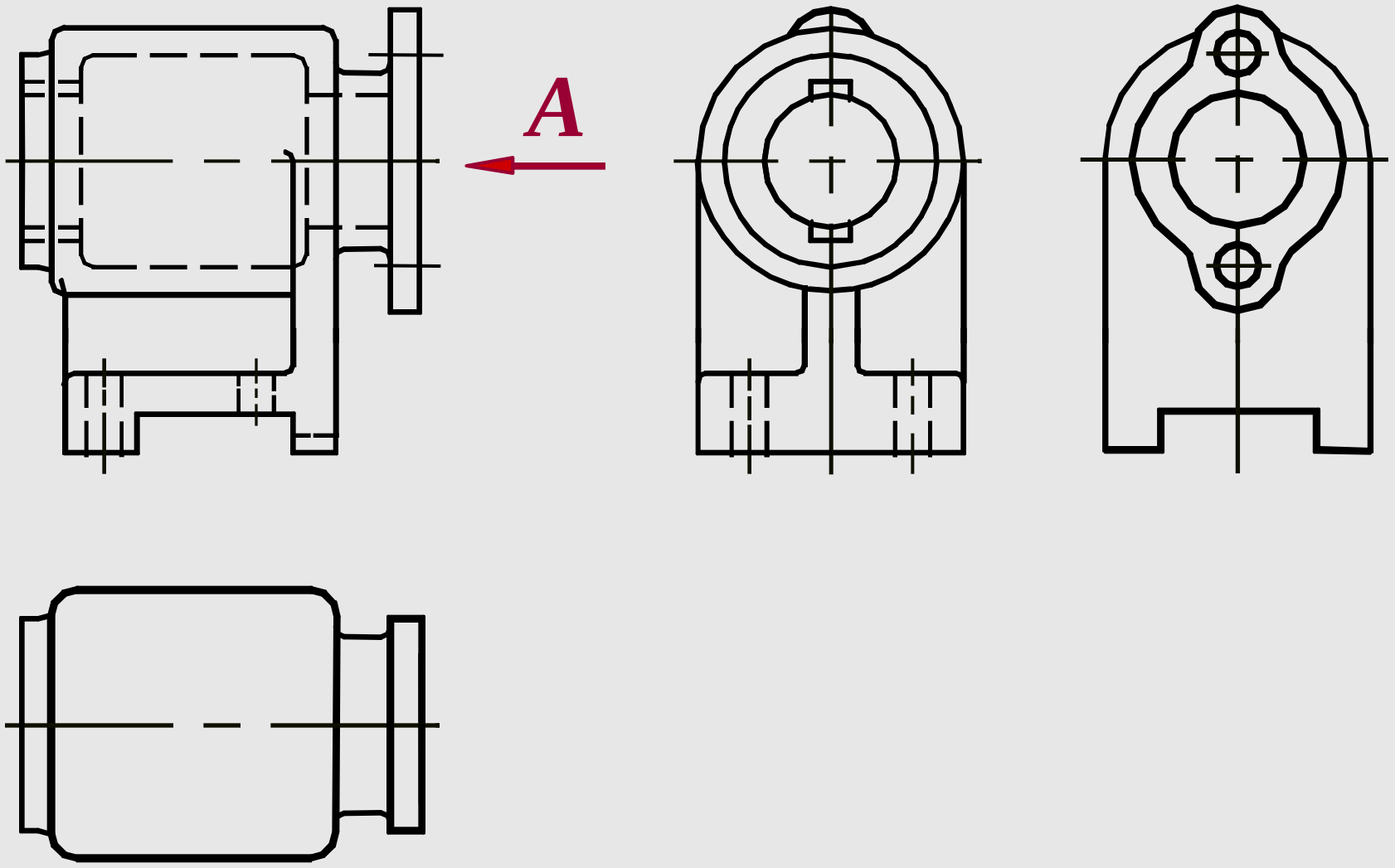


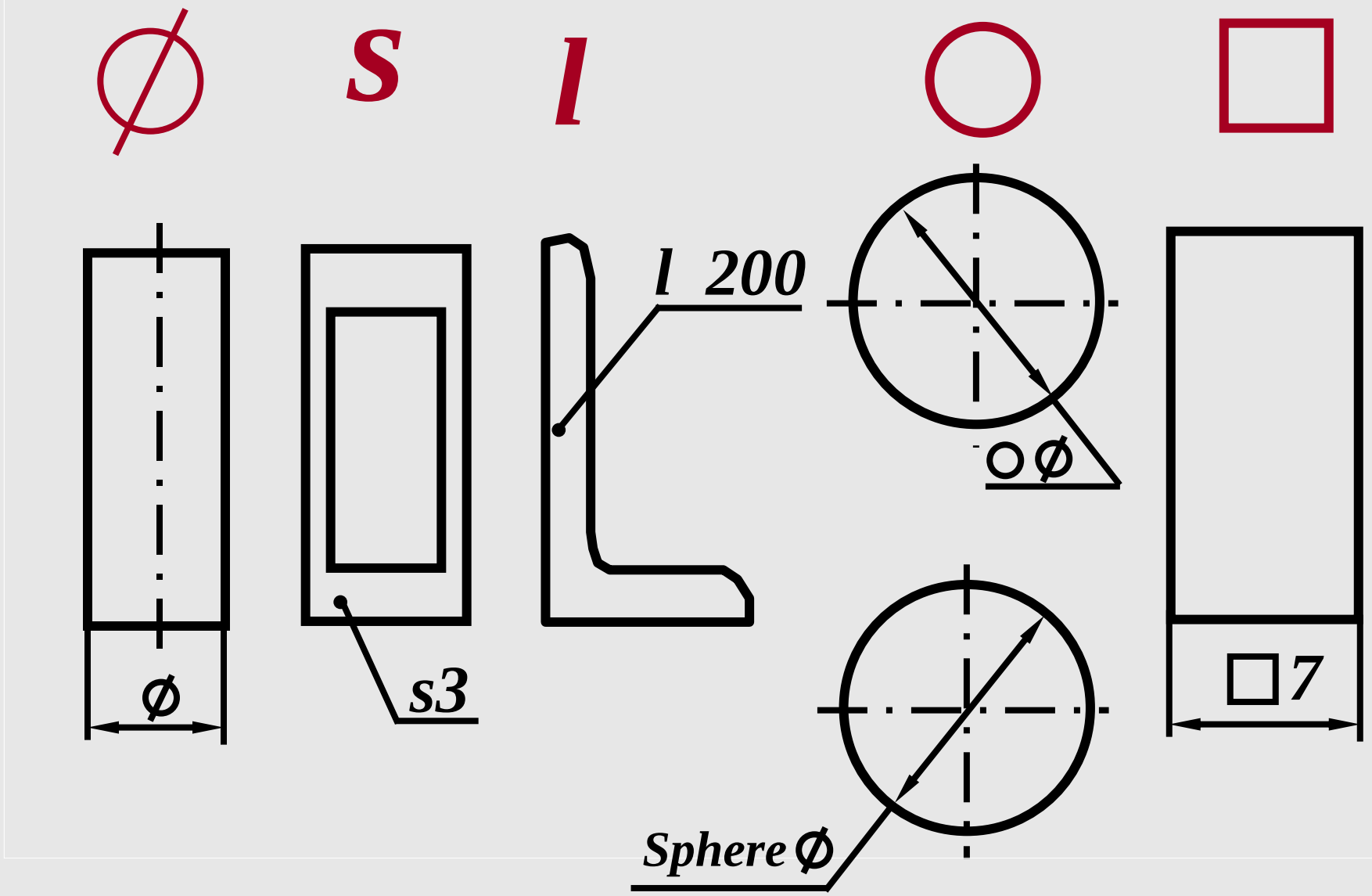
The dimensions of the arrow, showing the direction of view



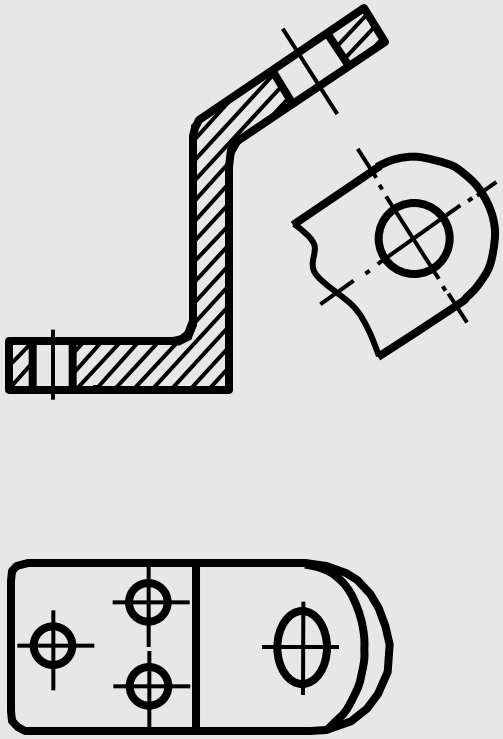

A
A

The number of representations (elevations, sections, sectional views) **should be minimal, still providing a clear pictorial view of an object.**

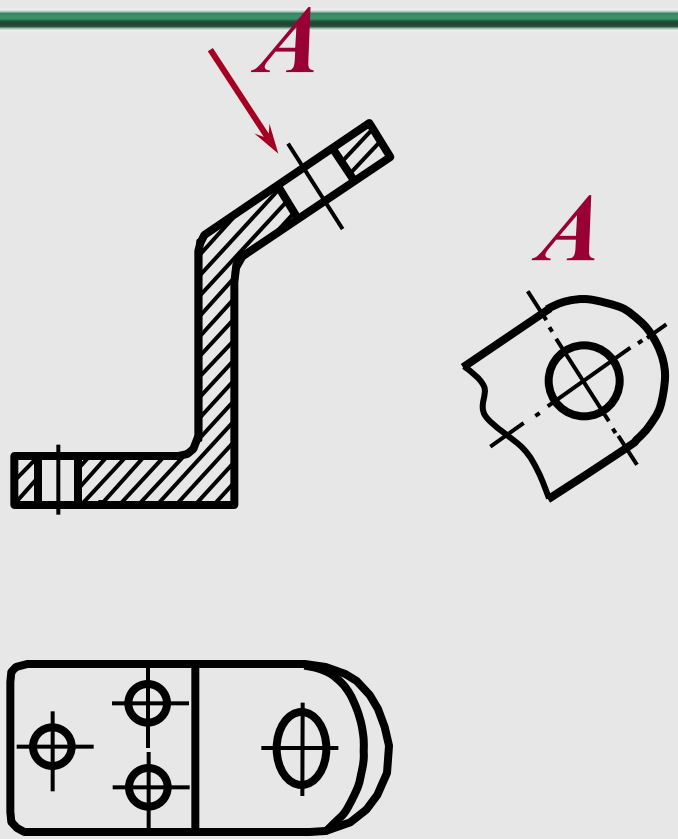
Application of different designations allows us to lessen the number of representations on a drawing



Additional view the image of a detail or its part, received at displaying on an inclined plane



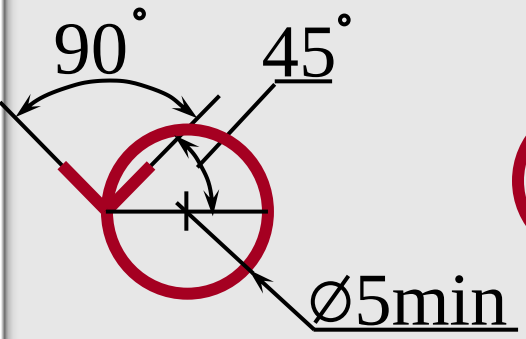
When there is a direct projection link between the auxiliary view and the corresponding representation, the arrow and the designation are not drawn

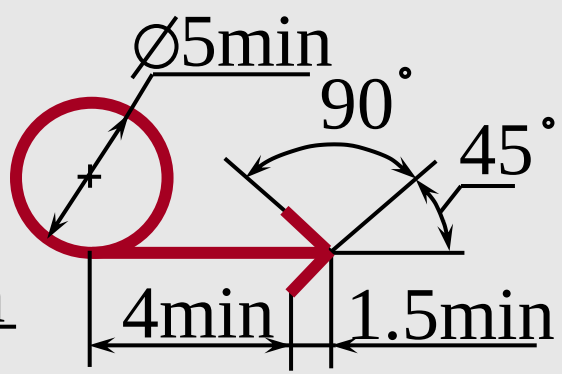


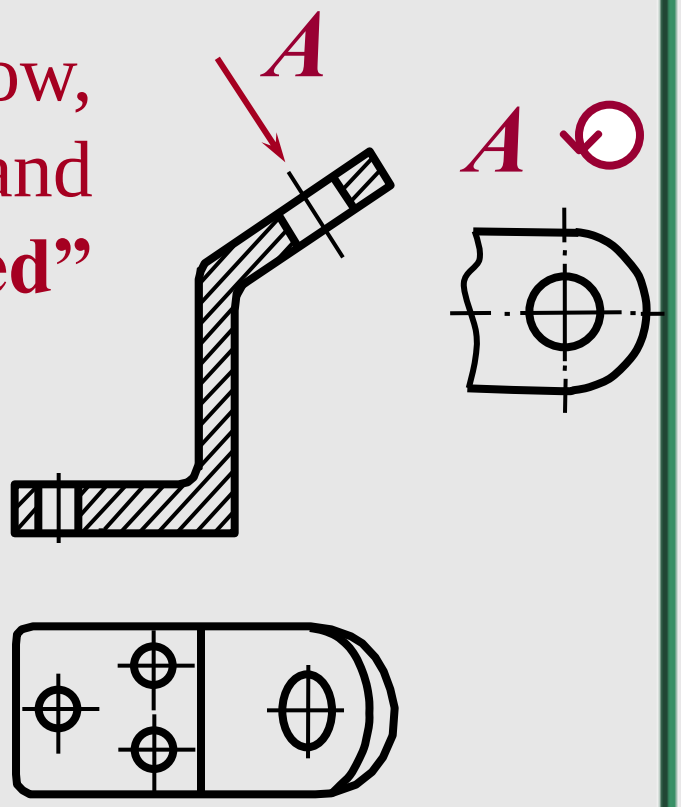
If there is no projection link between the principal and the auxiliary views, the later should be marked with a capital letter, and the linked (with the auxiliary view) representation with an arrow pointing in the direction of the view, plus the corresponding lettering

An auxiliary view may be rotated (but the position of the object, as a rule, corresponds to the principal view), then the view is marked with a special symbol of rotation –

The dimensions of the arrow, showing the direction of view, and the symbols of the words **“rotated”** **and “unfolded”.**

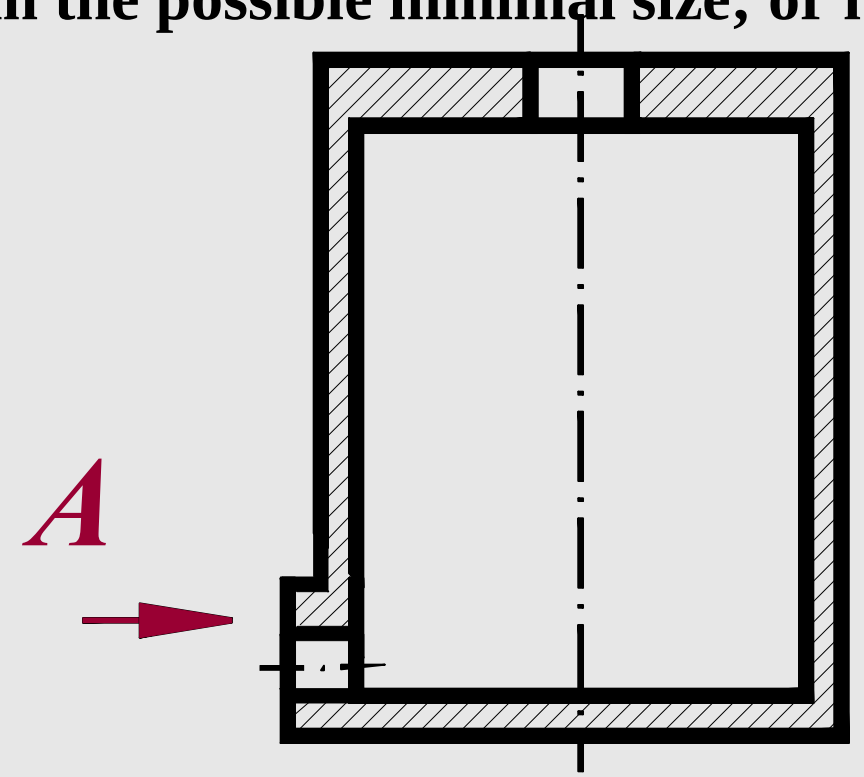


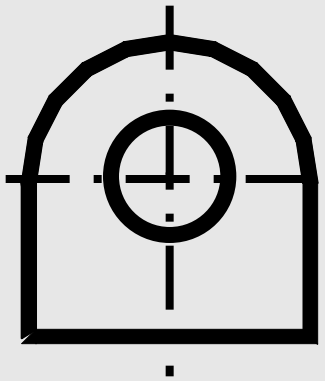


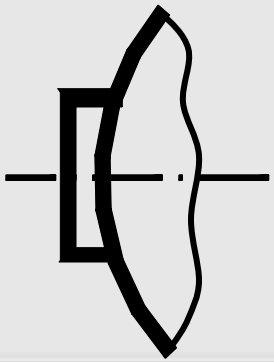


Representation of a certain limited part of an object surface is referred to as a ***detail (partial) view***

A detail view **may be terminated with a continuous irregular line in the possible minimal size; or it may not be terminated.**

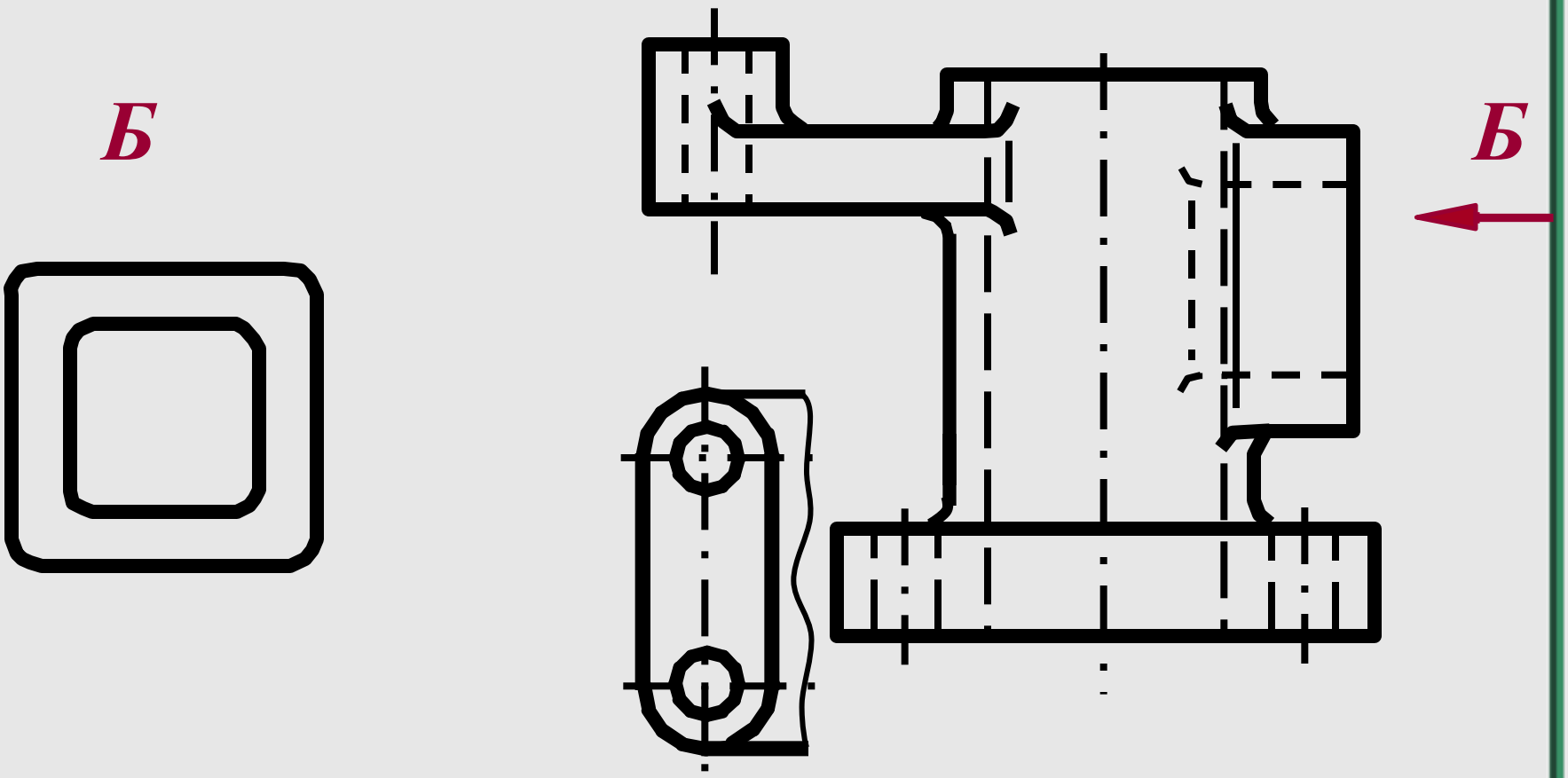






If a detail view is to a scale which differs from the scale of the other representations in a drawing, its scale is shown in brackets next to the lettering of the view.

A detail view



A detail view must be marked on a drawing in a similar fashion as an auxiliary view.