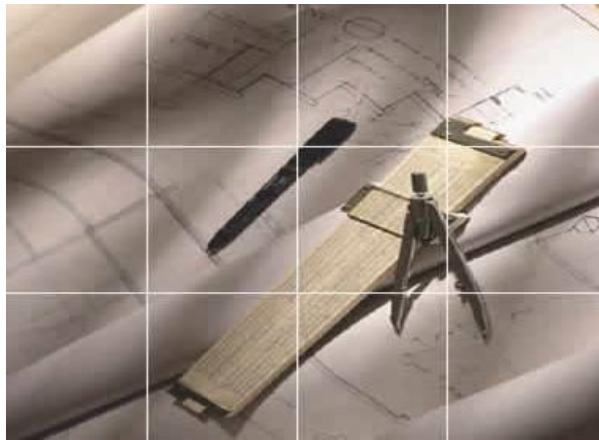


Chapter 4

Orthographic Writing



Contents

- Orthographic writing
 - Overall steps
 - Suggestions on a view selection
- Additional examples on a view selection
- Alignment of views
(Projection systems)
- Basic dimensioning
- Primary auxiliary view

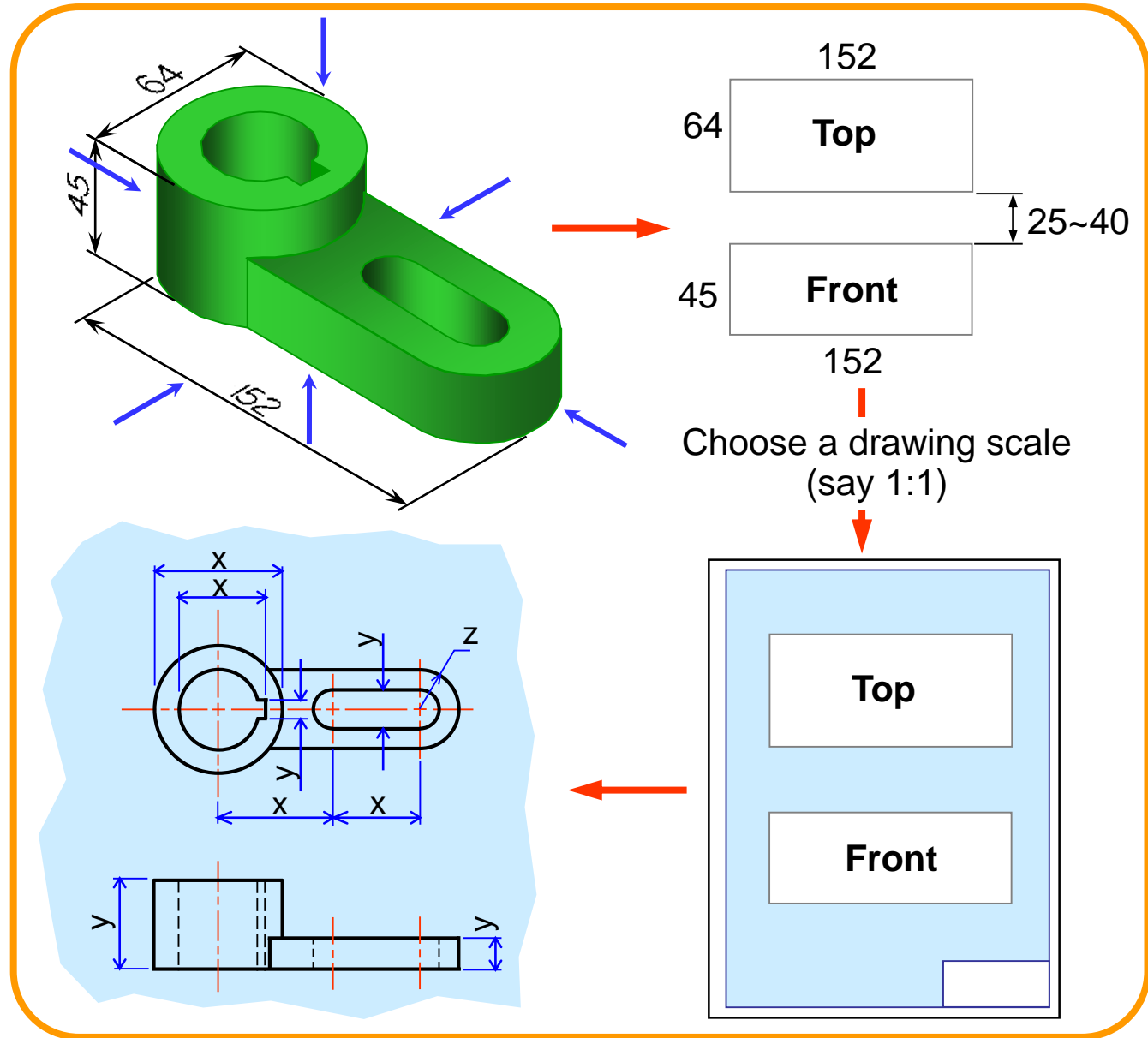


Orthographic writing

Contents

Overall steps

1. Select the necessary views
2. Layout the selected views on a drawing sheet.
3. Complete each selected views.
4. Complete the dimensions and notes.



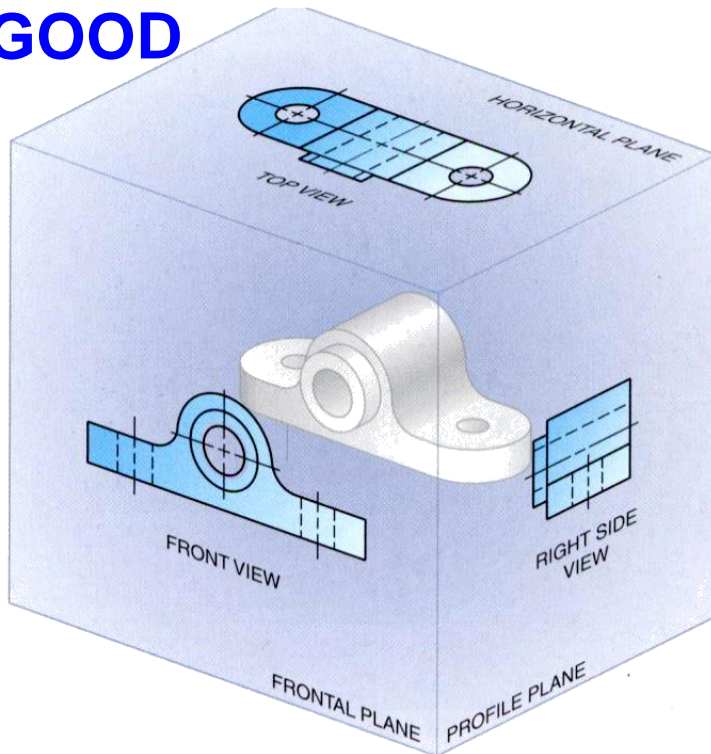
View selection procedures

1. Orient the object to the **best** position **relative** to a glass box.
2. Select the **front view**.
3. Select **adjacent views**.

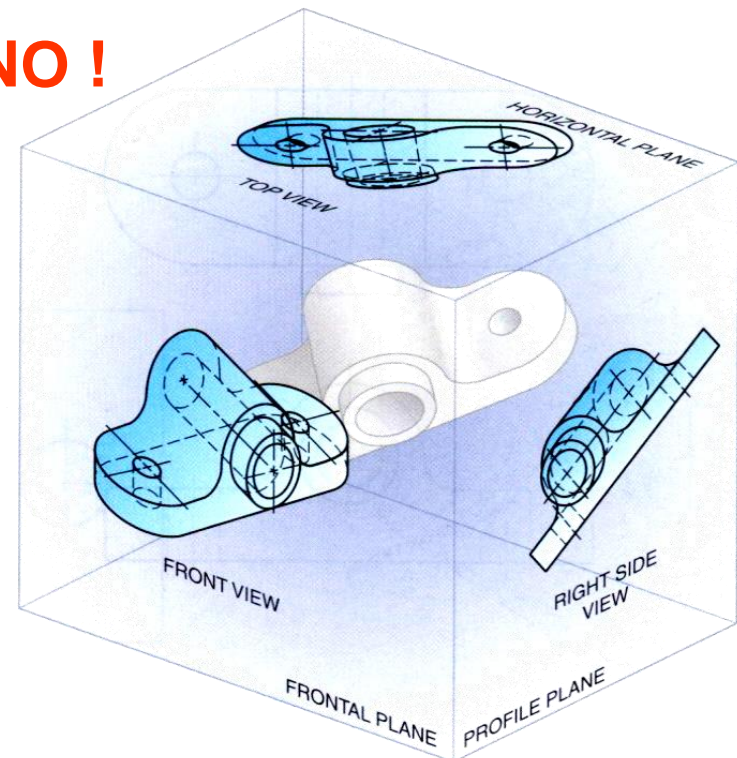
Suggestions : Orient the object

1. The object should be placed in its **natural position**.
 2. The orthographic views should represent the **true size** and **true shape** of an object (as much as possible).
-

GOOD



NO !



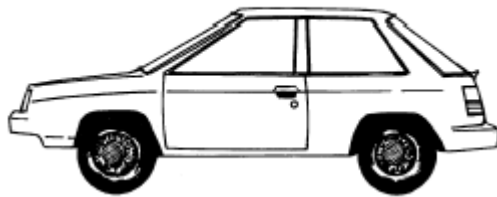
Suggestions : Select the front view

1. The **longest** dimension of an object should be presented as a **width** (in a front view).

First choice

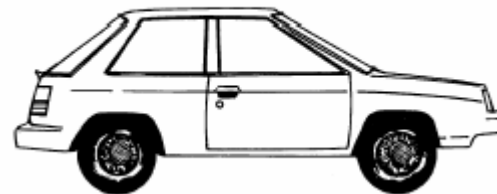
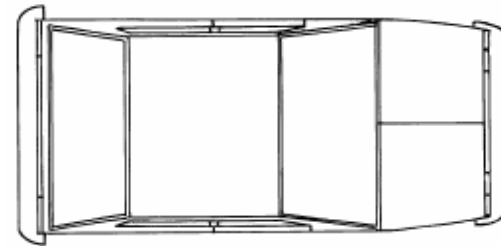
Inappropriate

Use more space



Second choice

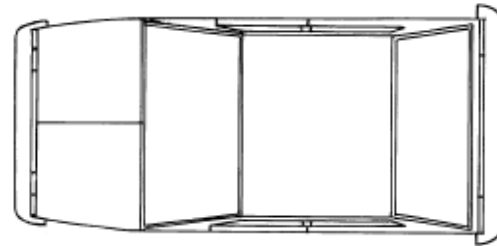
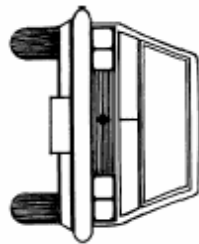
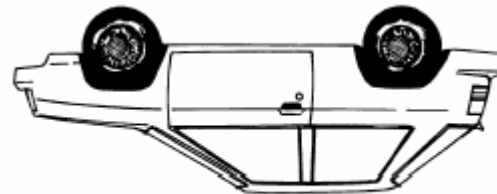
Good



Suggestions : Select the front view

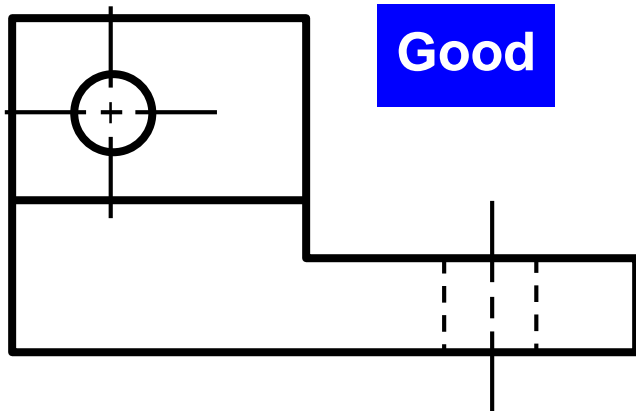
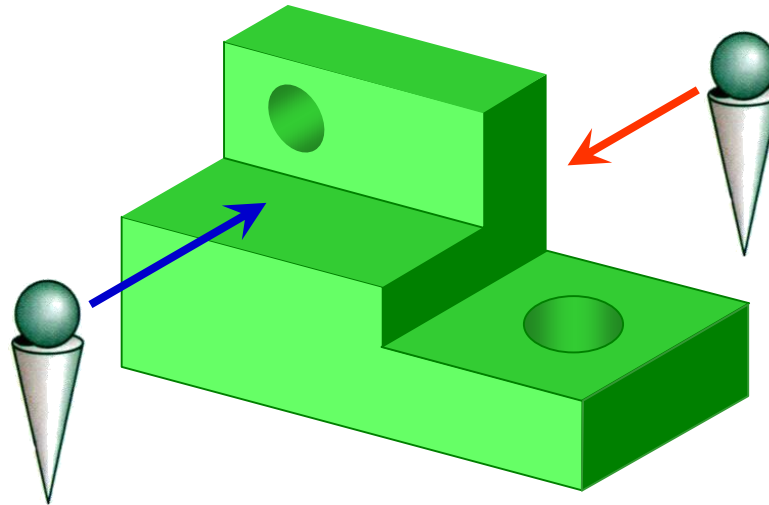
2. The adjacent views project from the selected front view should be appeared in a **natural position**.
-

Inappropriate

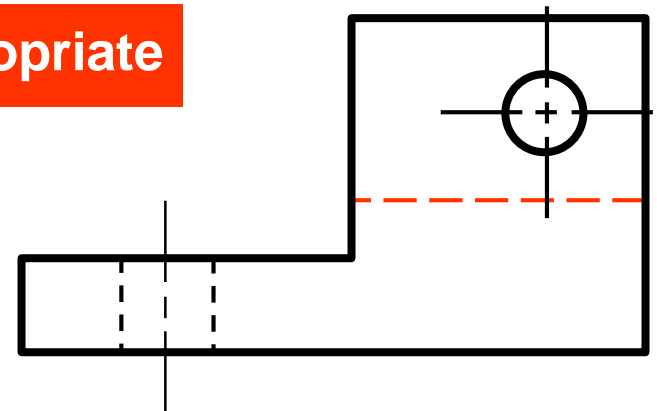


Suggestions : Select the front view

3. It has the **fewest** number of hidden lines.

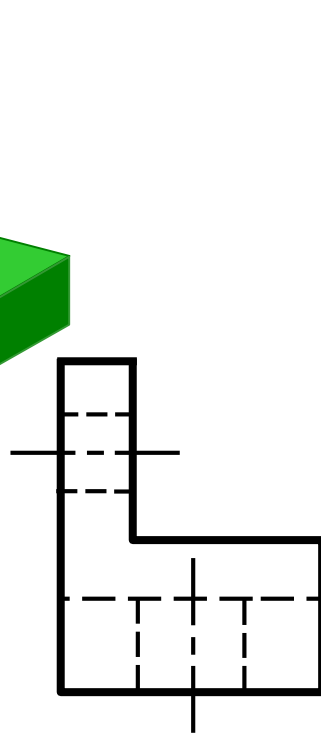
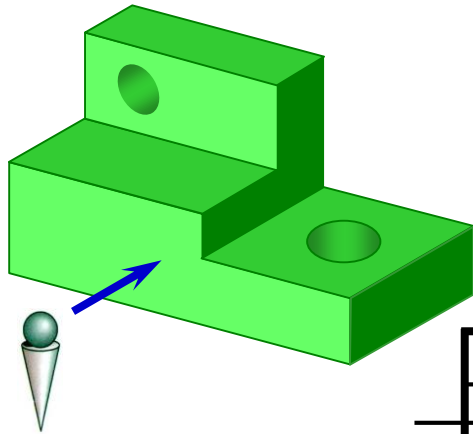


Inappropriate



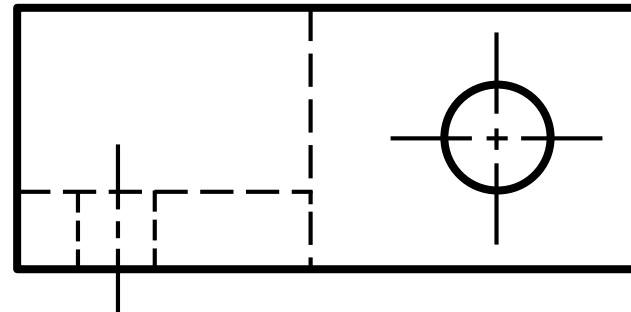
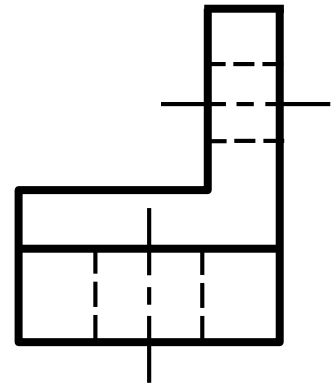
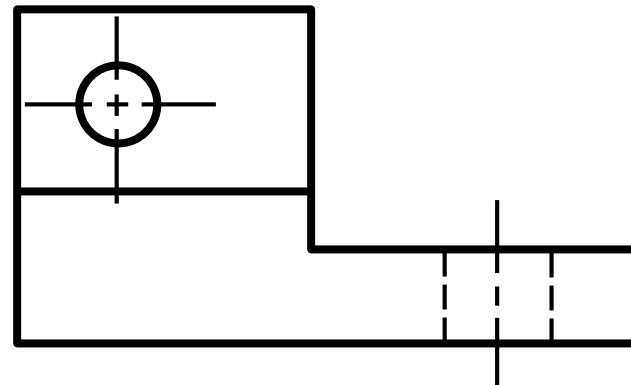
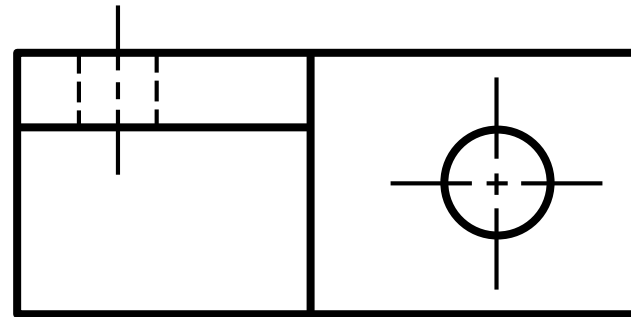
Suggestions : Select an adjacent view

1. Choose the view that has the fewest number of hidden lines.



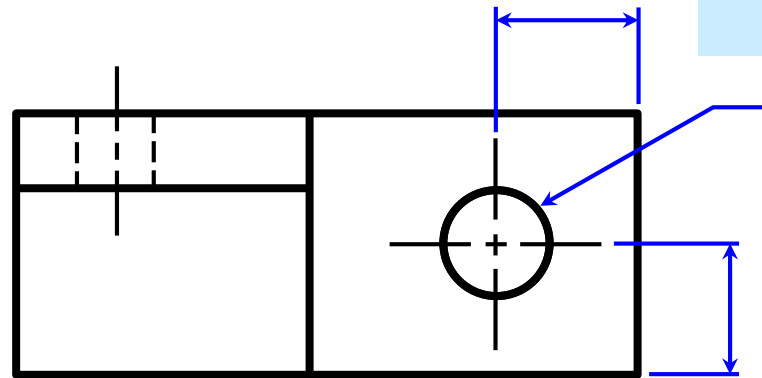
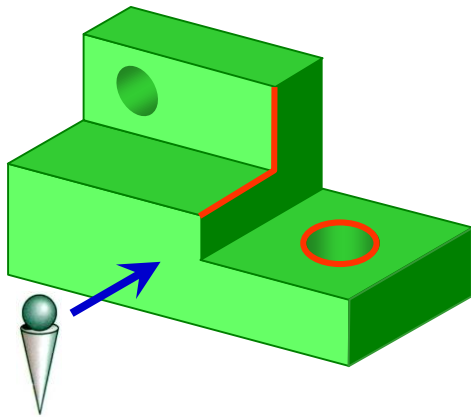
Inappropriate

Inappropriate



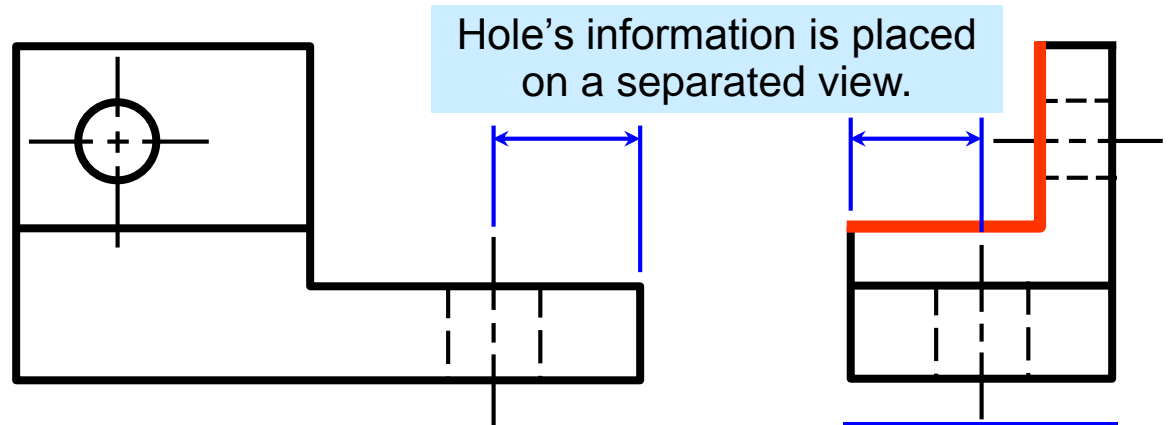
Suggestions : Select an adjacent view

2. Choose the **minimum** number of views that can represent the major features of the object.



All information is placed on a single view.

Necessary

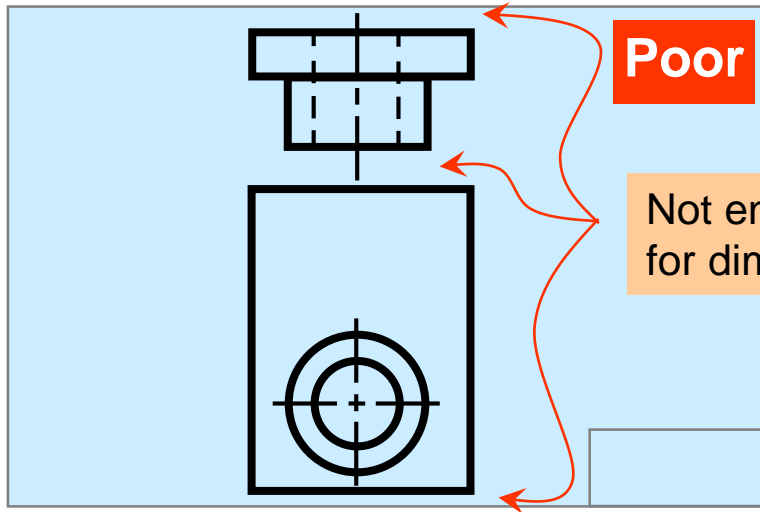
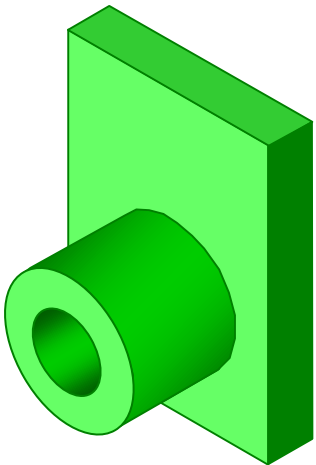


Hole's information is placed on a separated view.

Necessary

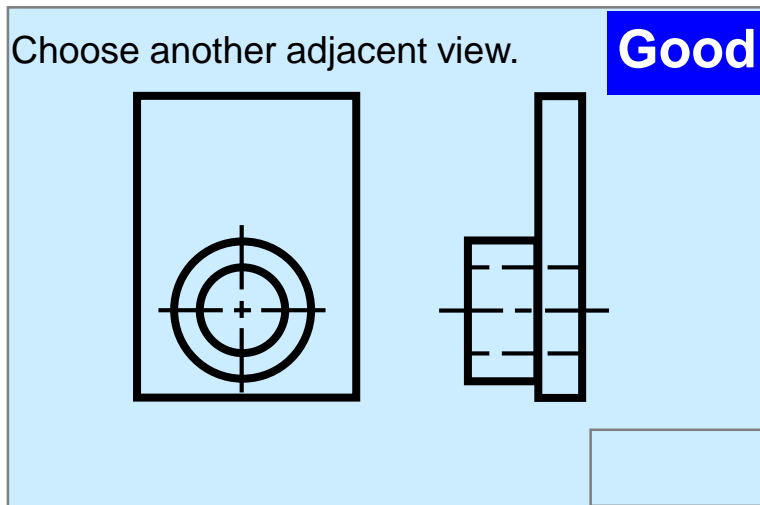
Suggestions : Select an adjacent view

3. Choose the views that are suitable to a drawing sheet.

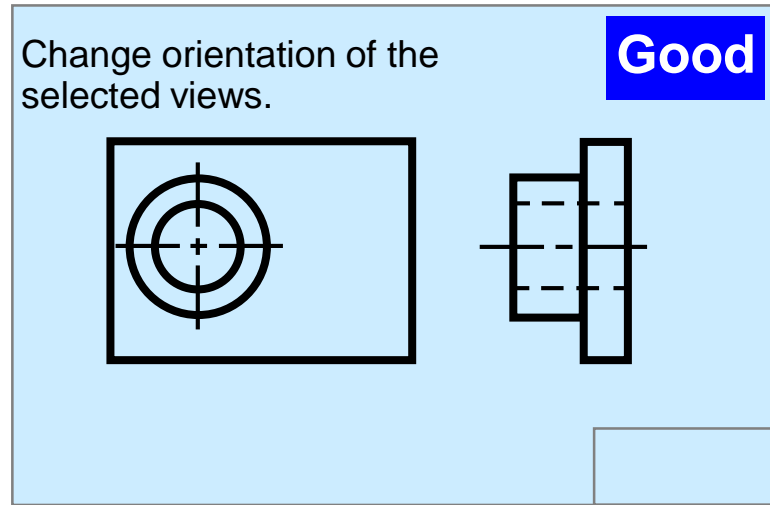


Poor

Not enough space for dimensioning.



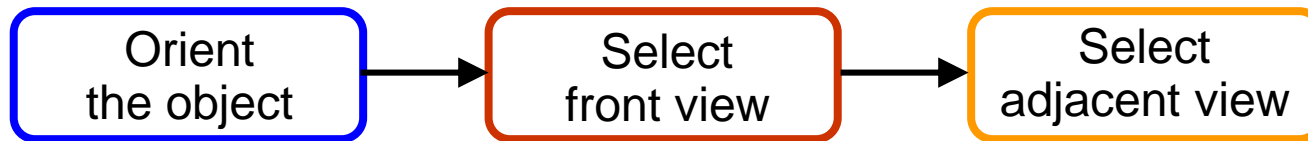
Good



Good

Summary

- View selection has 3 steps



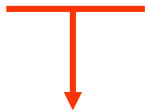
- In practice, drafter should consider all recommendations simultaneously before start to draw.



Additional examples on a view selection

Notes

- Generally, **three views** orthographic drawing is selected to describes an object's information.
- In some specific case, a necessary view may be **less** or **more** than three views.

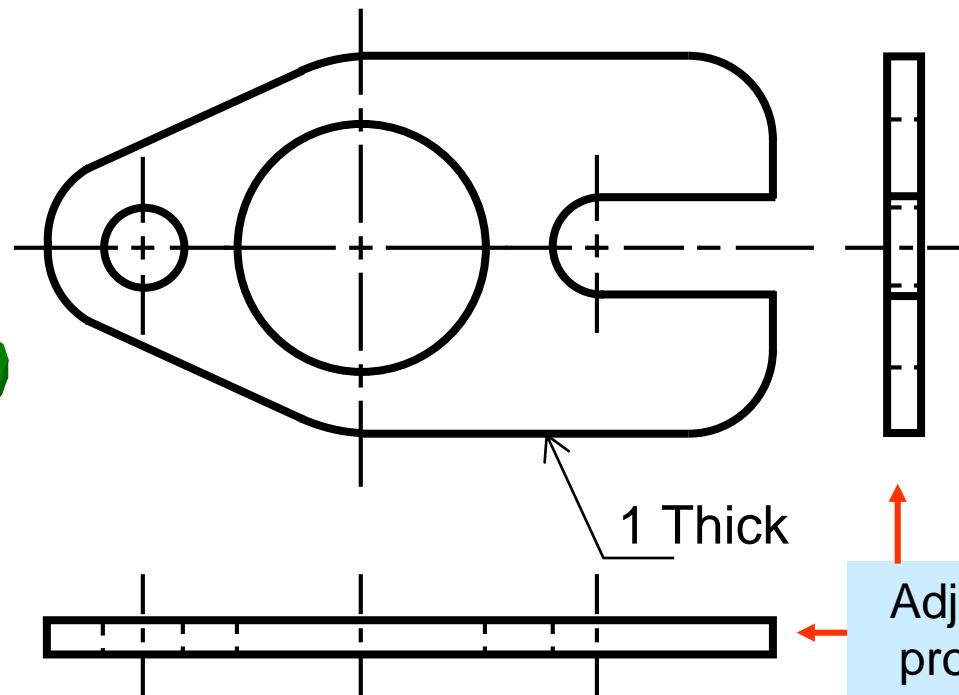
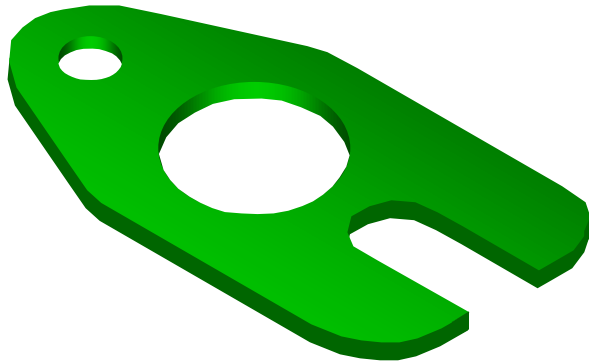


Later chapter

Object that requires only **one-view**

- **Flat (thin) part** having a uniform thickness such as a gasket, sheet metal etc.
- **Cylindrical-shaped** part.

Example

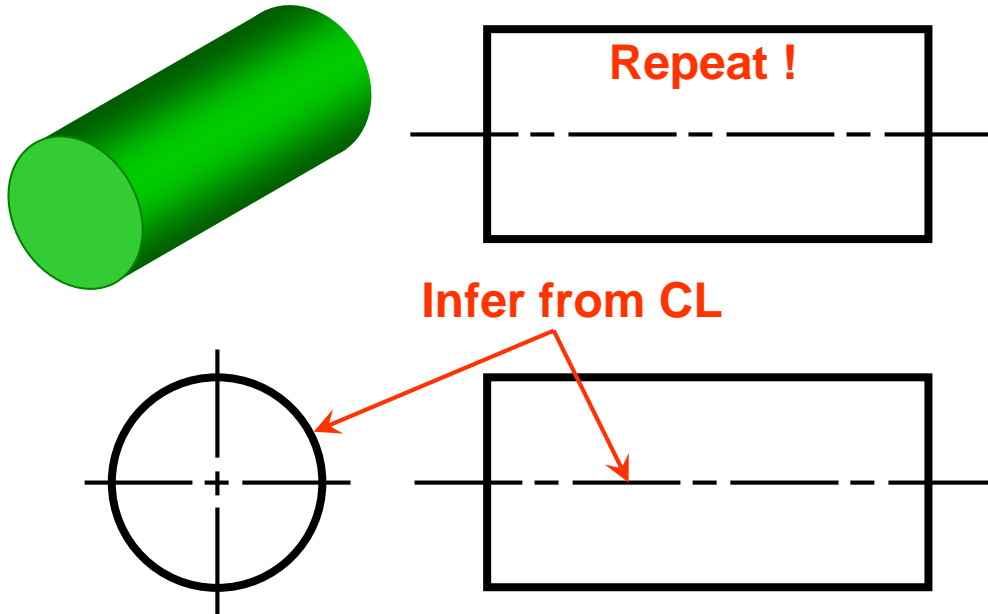


Adjacent views provide only a part's thickness !

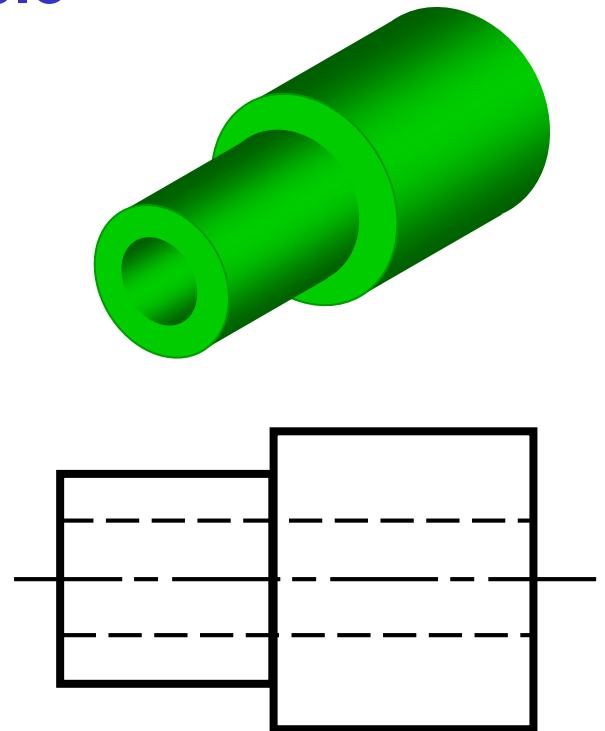
Object that requires only **one-view**

- Flat (thin) part having a uniform thickness such as a gasket, sheet metal etc.
- **Cylindrical-shaped** part.

Example



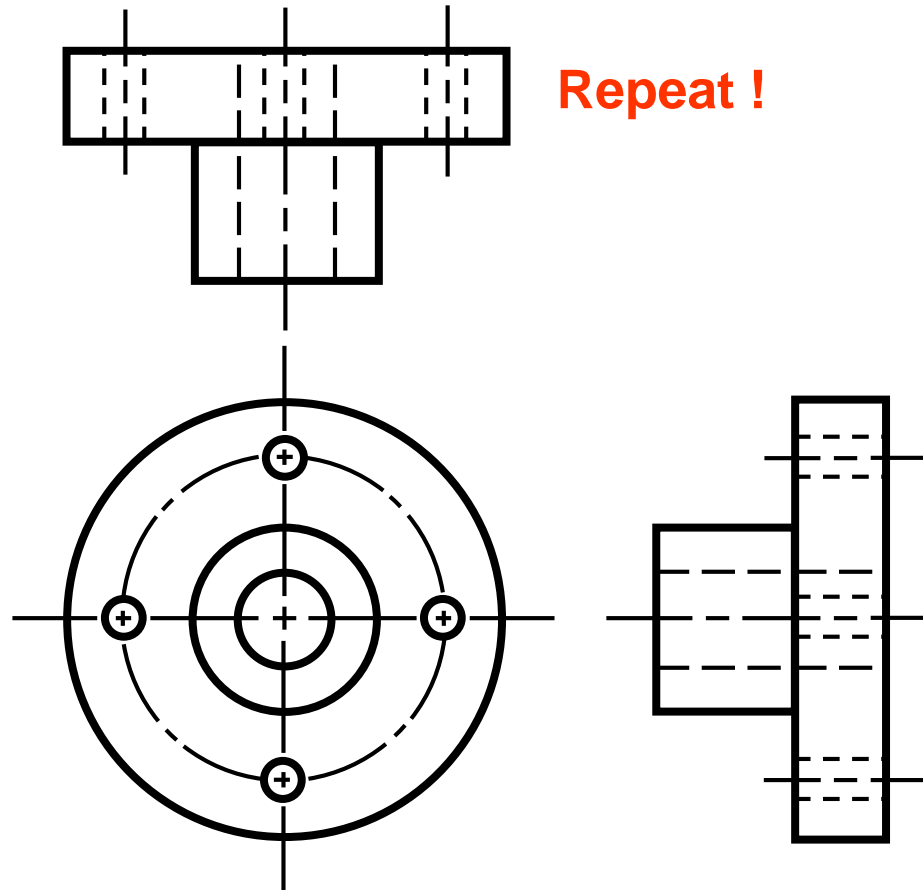
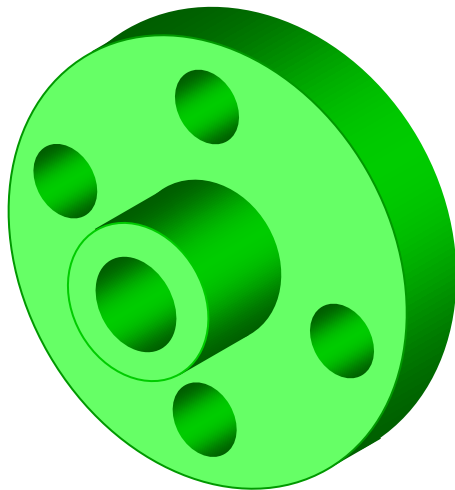
Example



Object that requires only **two-view**

- Identical adjacent view exists.
 - The 3rd view has no significant contours of the object.
(provides no additional information)
-

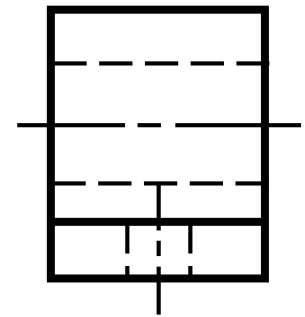
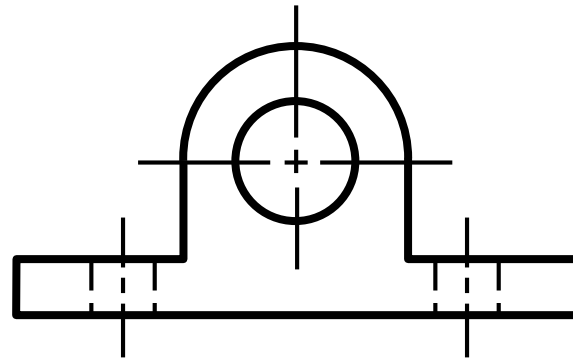
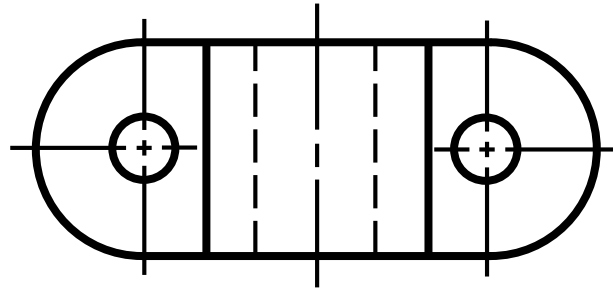
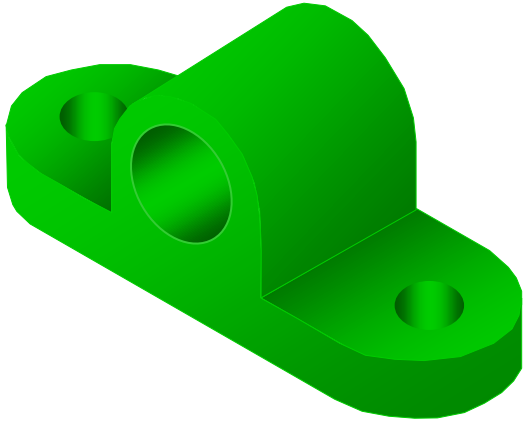
Example



Object that requires only **two-view**

- Identical view exists.
 - The 3rd view has **no** significant contours of the object.
(provides no additional information)
-

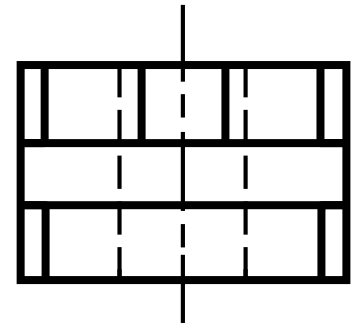
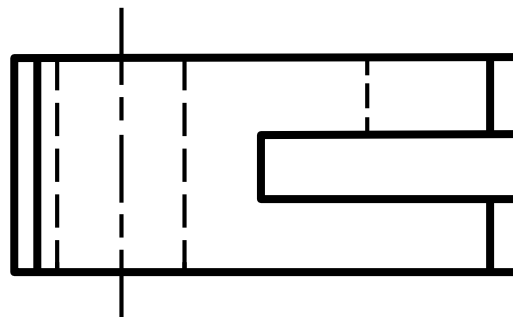
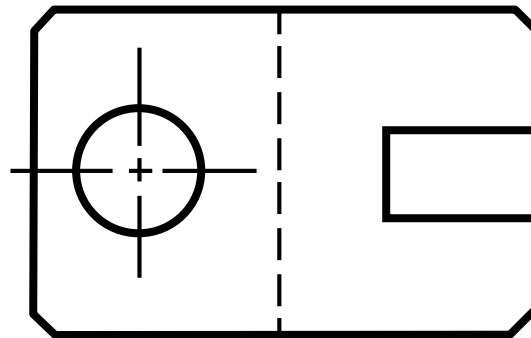
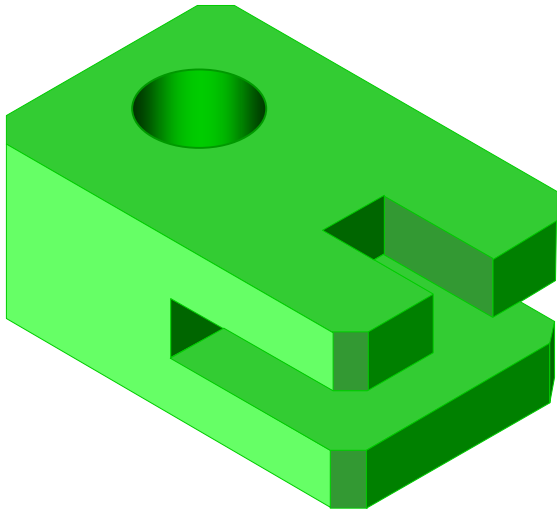
Example 1



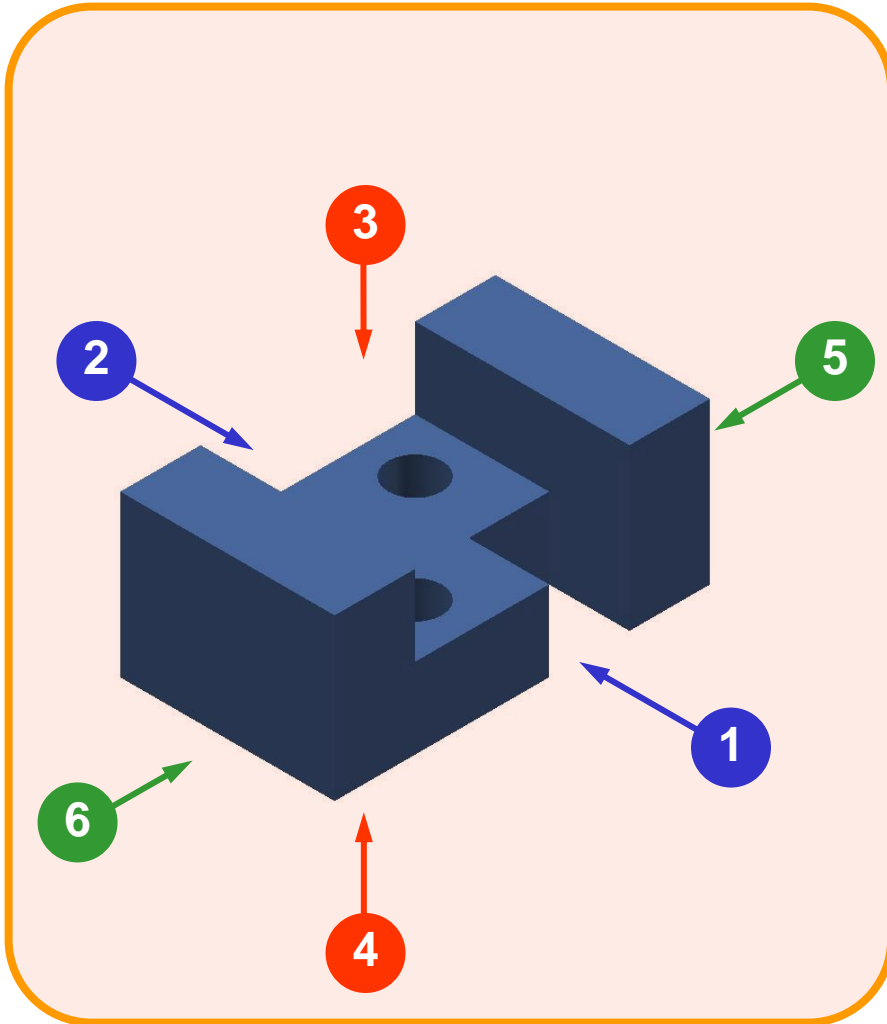
Object that requires only **two-view**

- Identical view exists.
 - The 3rd view has no significant contours of the object.
(provides no additional information)
-

Example 2



Class activity : View selection



Select a **necessary view** ?

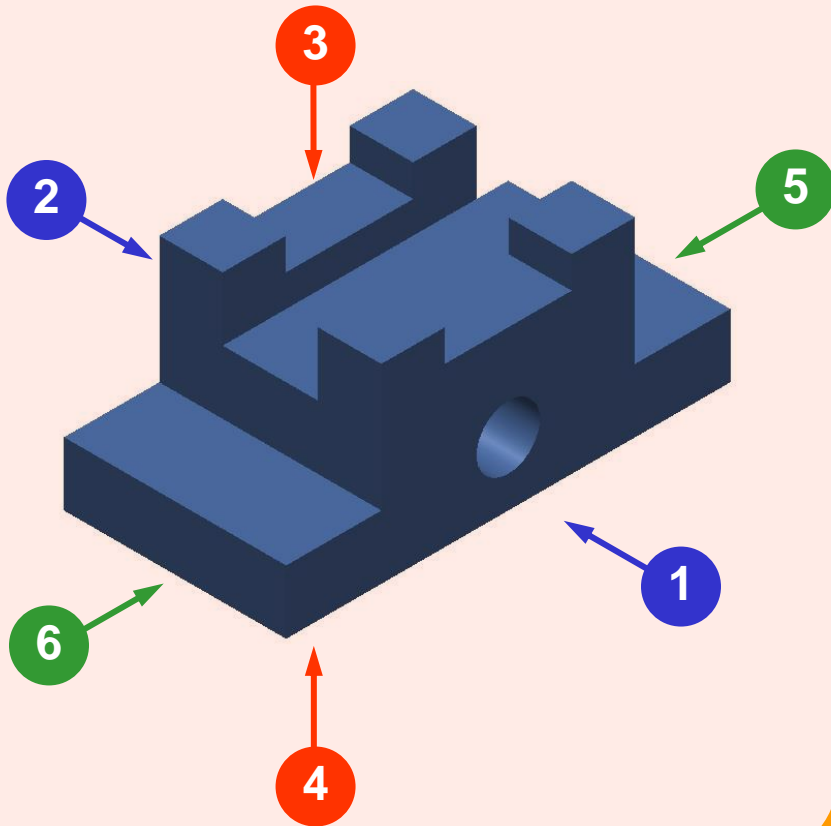
- View 1
- View 2
- View 3
- View 4
- View 5
- View 6

Reset

Check

Correct 1

Class activity : View selection



Select a **necessary view** ?

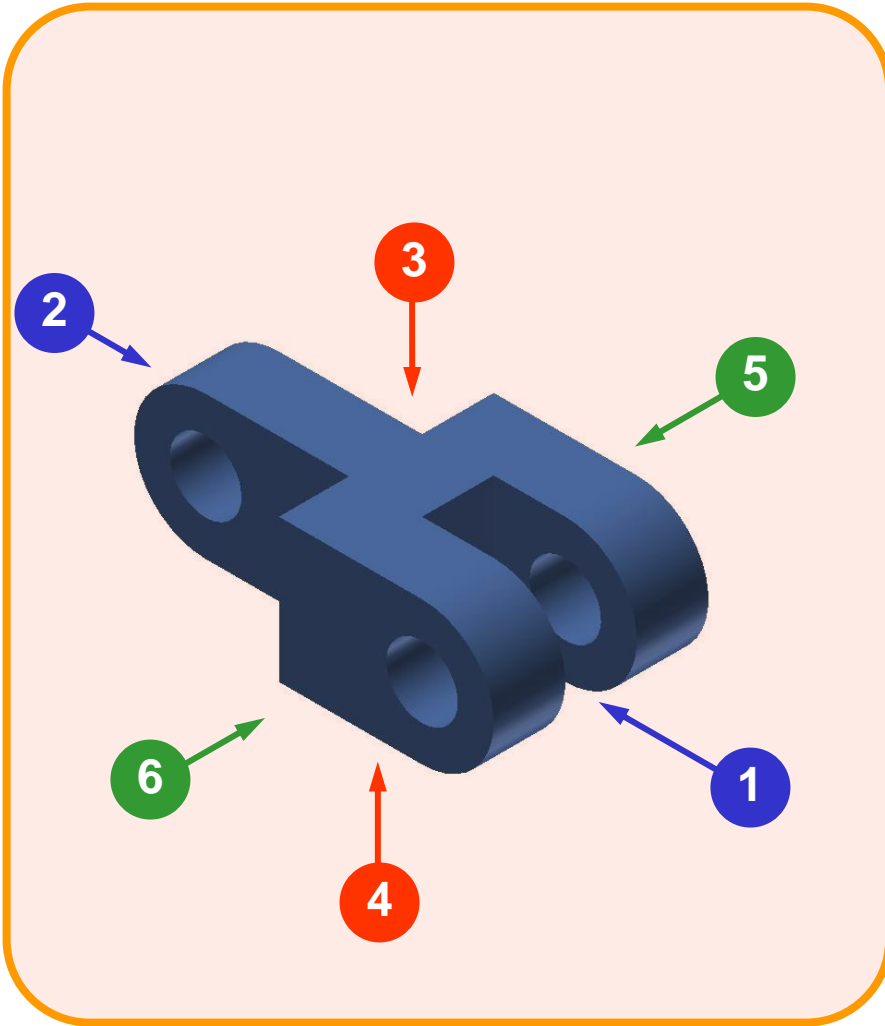
- View 1
- View 2
- View 3
- View 4
- View 5
- View 6

Reset

Check

Correct 1

Class activity : View selection



Select a **necessary view** ?

- View 1
- View 2
- View 3
- View 4
- View 5
- View 6

Reset

Check



Alignment of views

Contents

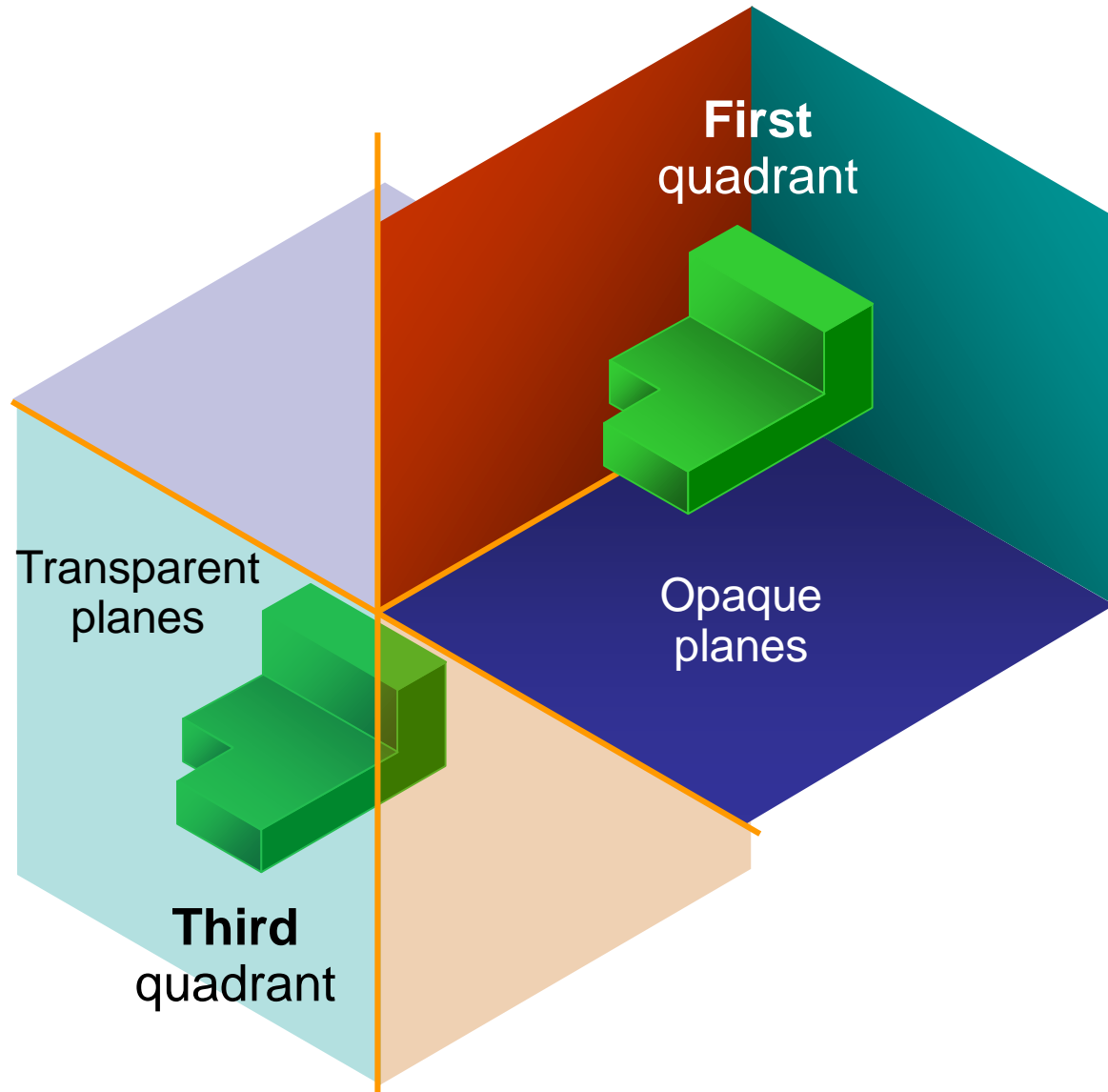
Projection systems

1. **First** angle system

- European countries
- ISO standard

2. **Third** angle system

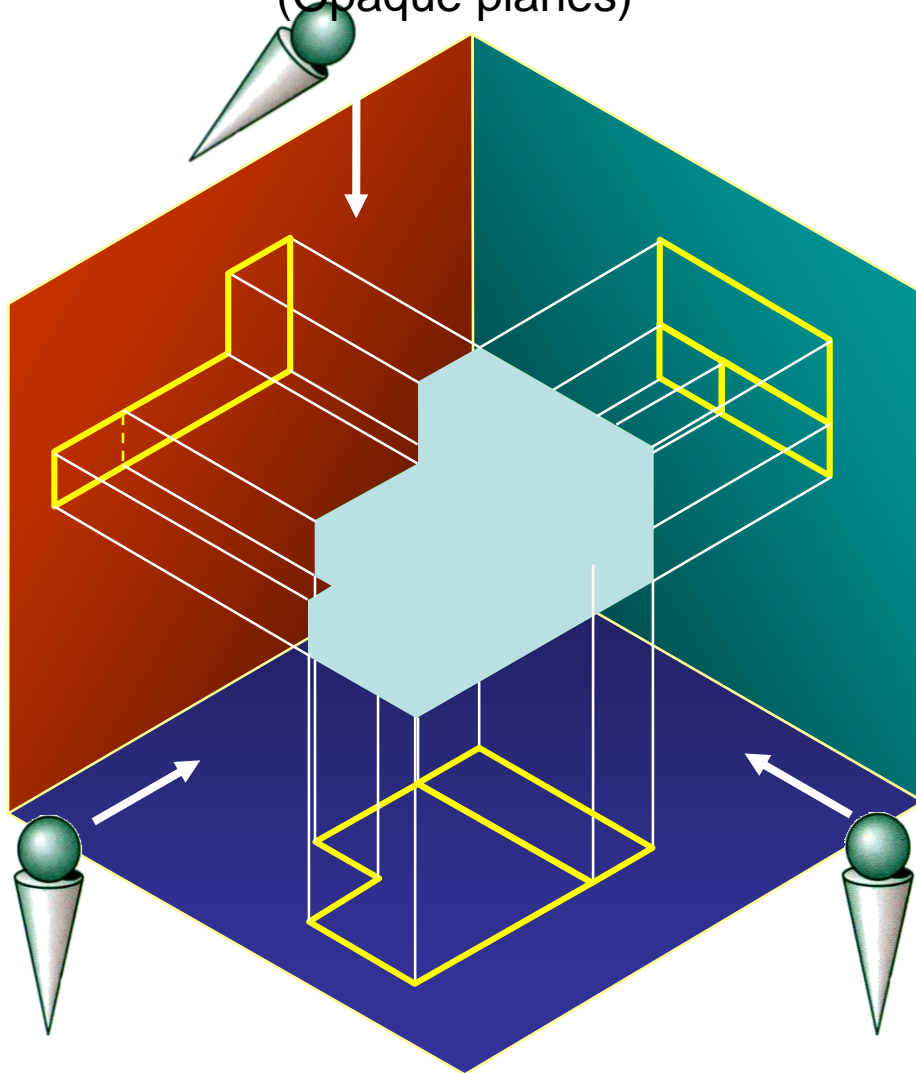
- Canada, USA,
Japan, Thailand



Orthographic views

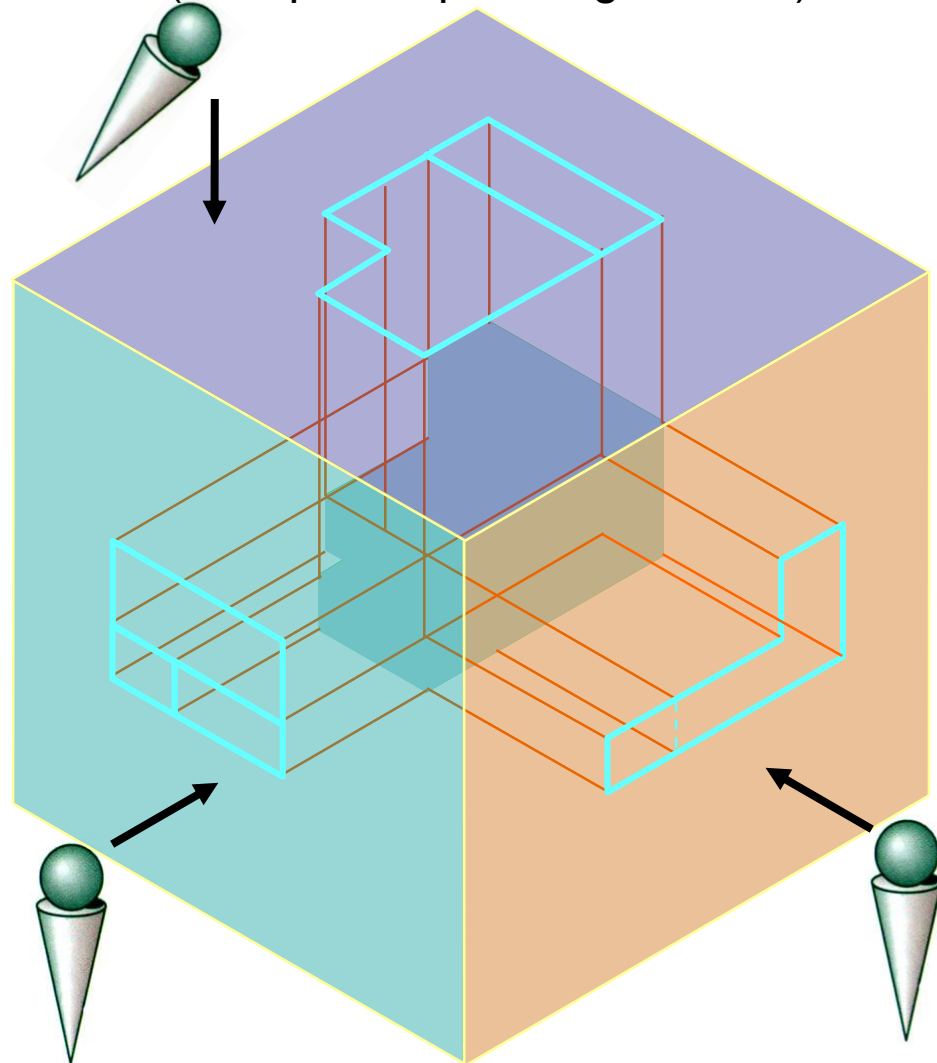
1st angle system

(Opaque planes)



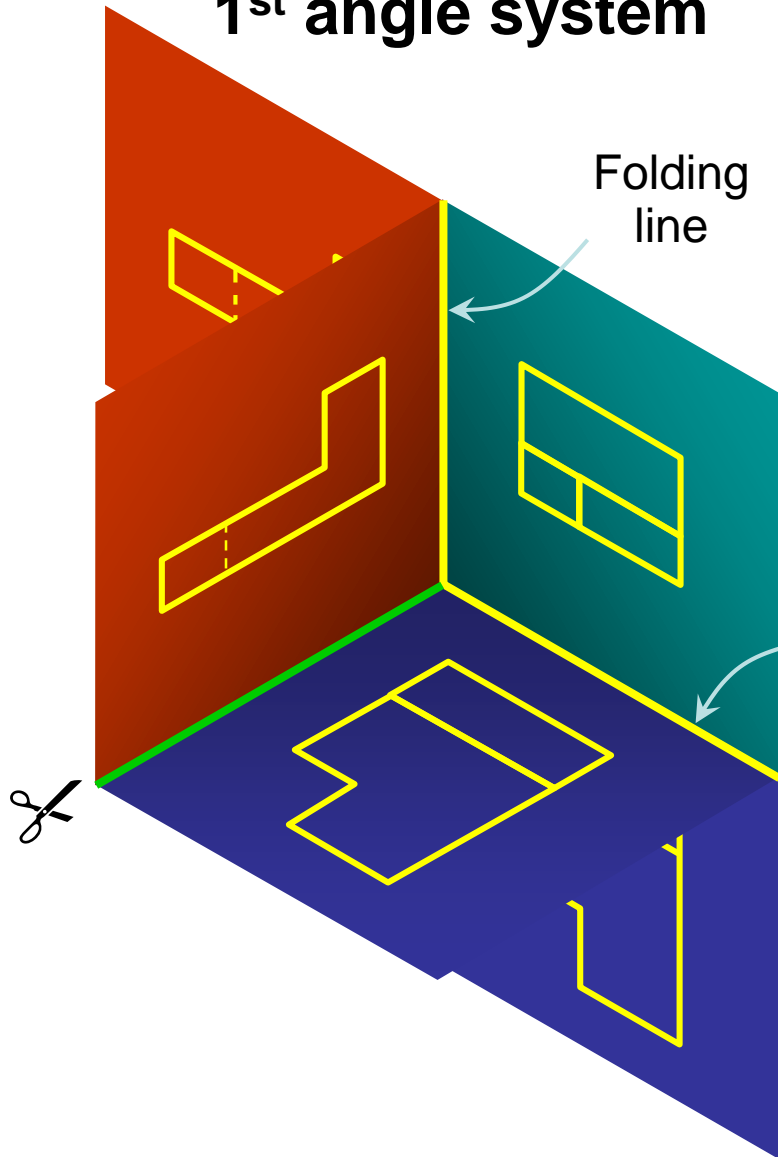
3rd angle system

(transparent planes/glass box)

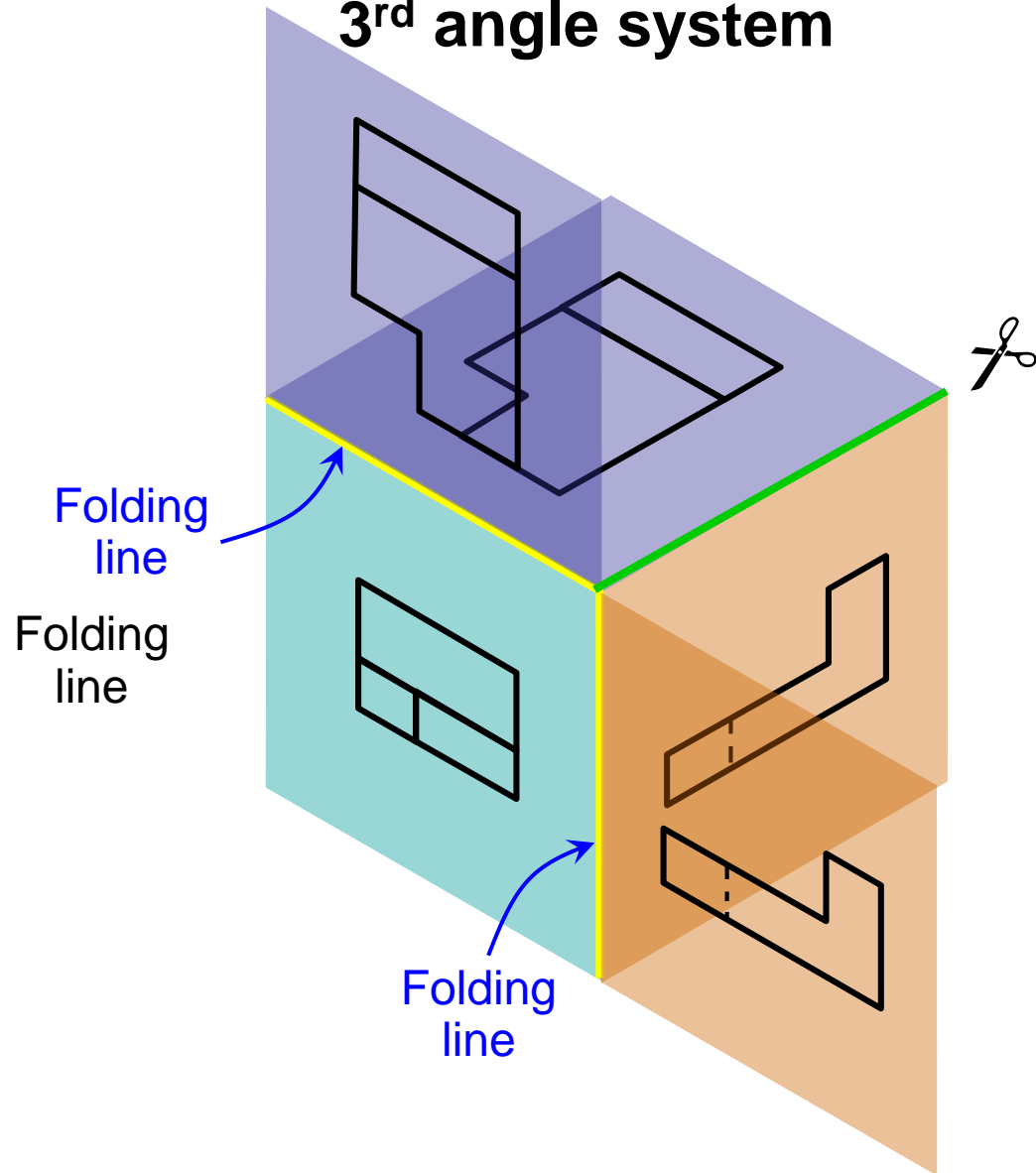


Orthographic views

1st angle system

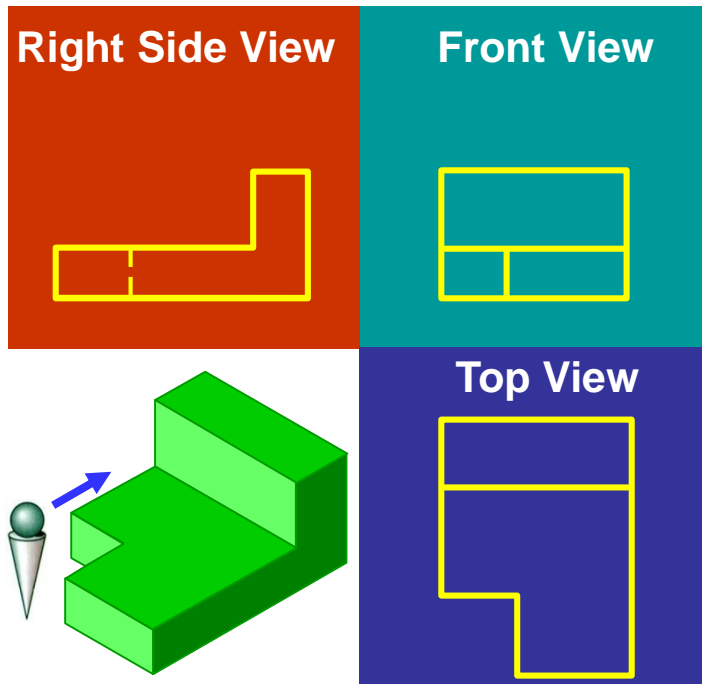


3rd angle system

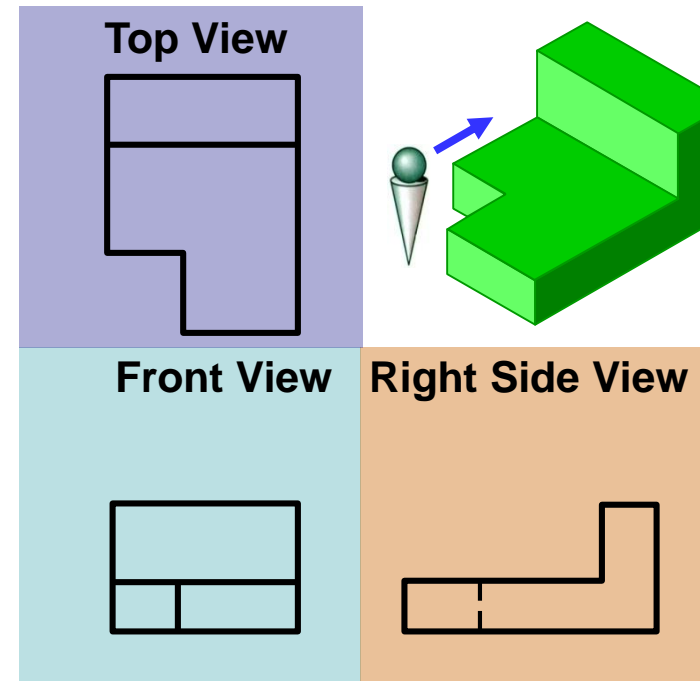


Views arrangement

1st angle system

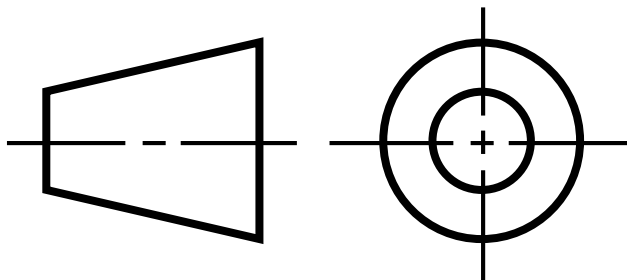
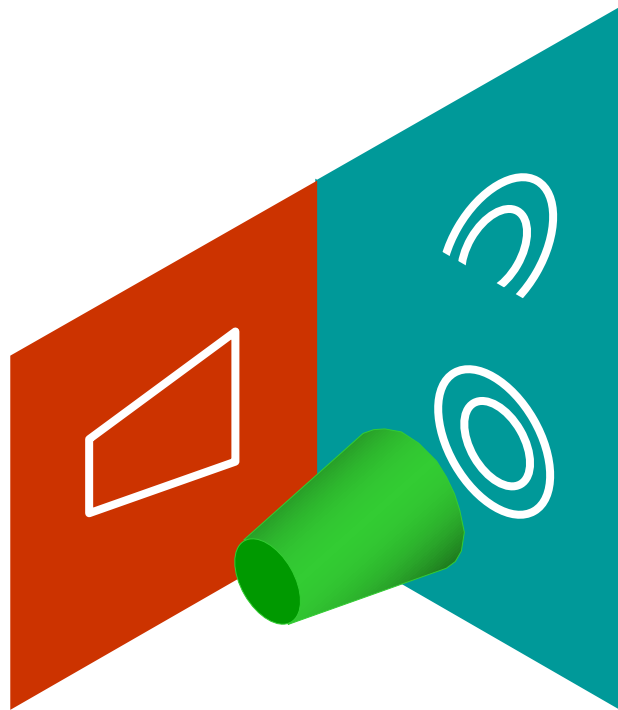


3rd angle system

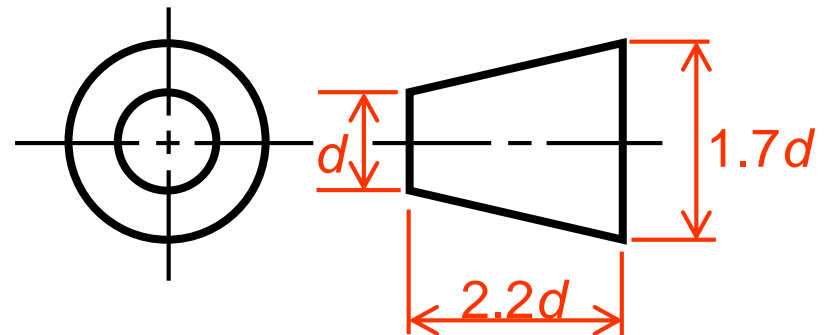
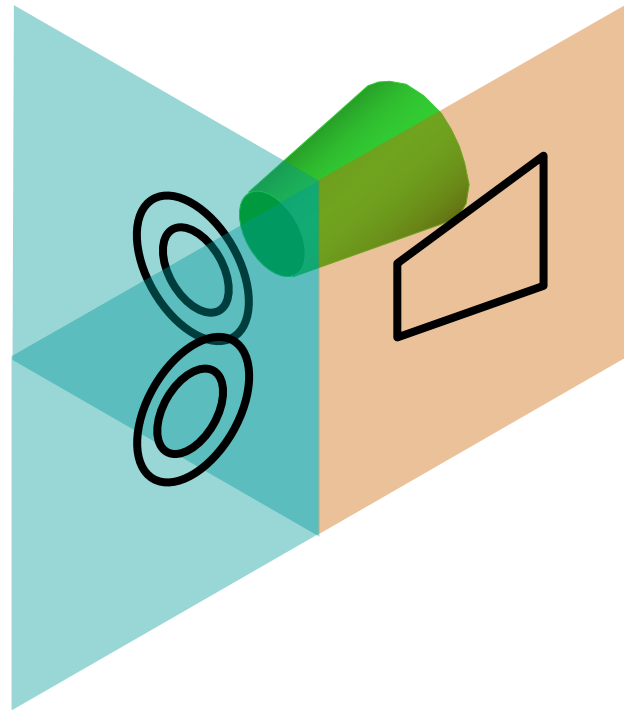


Projection symbols

1st angle system



3rd angle system



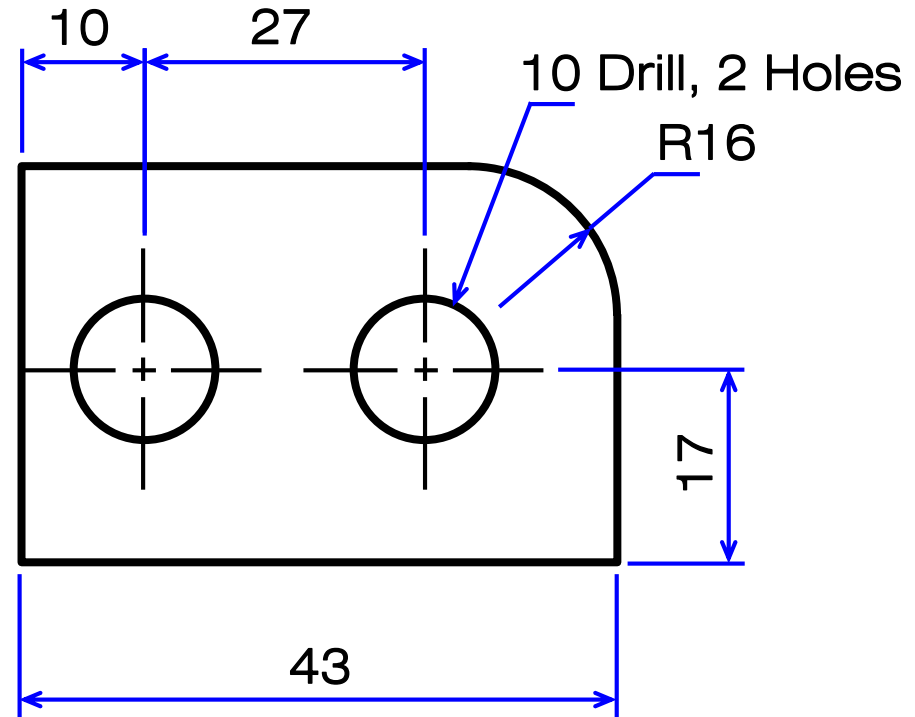


Basic dimensioning

[Contents](#)

Dimensioning components

1. Extension lines
2. Dimension lines
3. Leader lines
4. Dimension numbers
5. Local notes

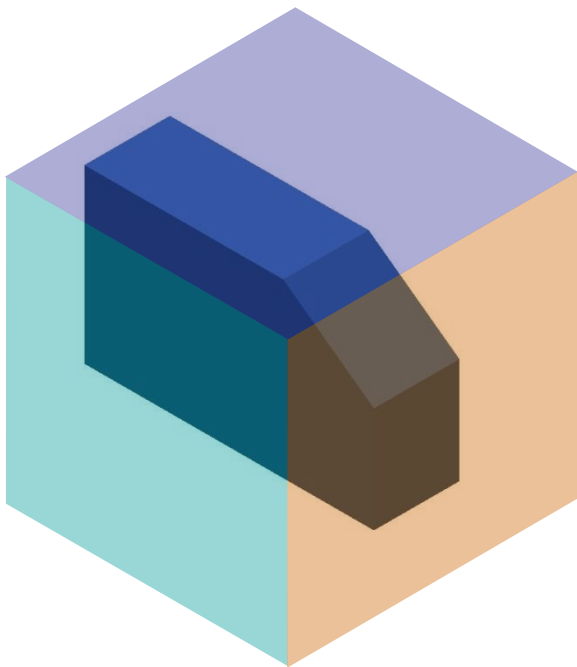




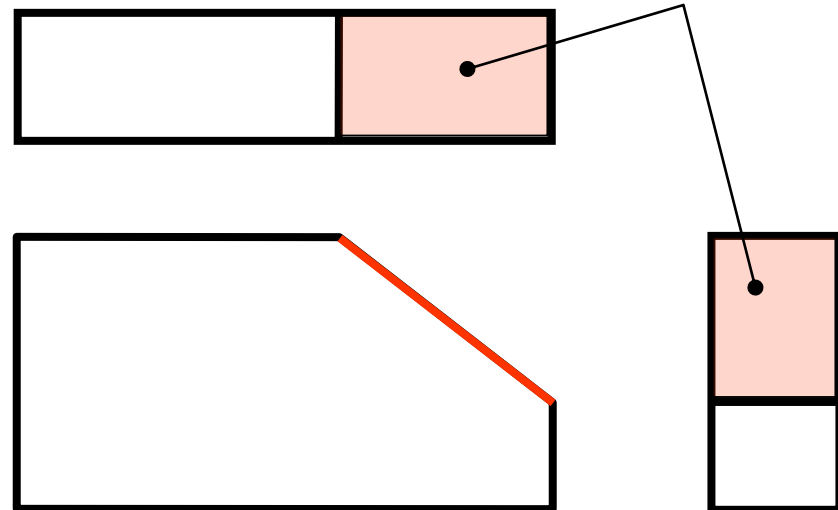
Primary auxiliary view

Necessity

- **Auxiliary view** is needed when it is desirable to show the true size and shape of a surface that is not parallel to anyone of the principal planes of projection.
-



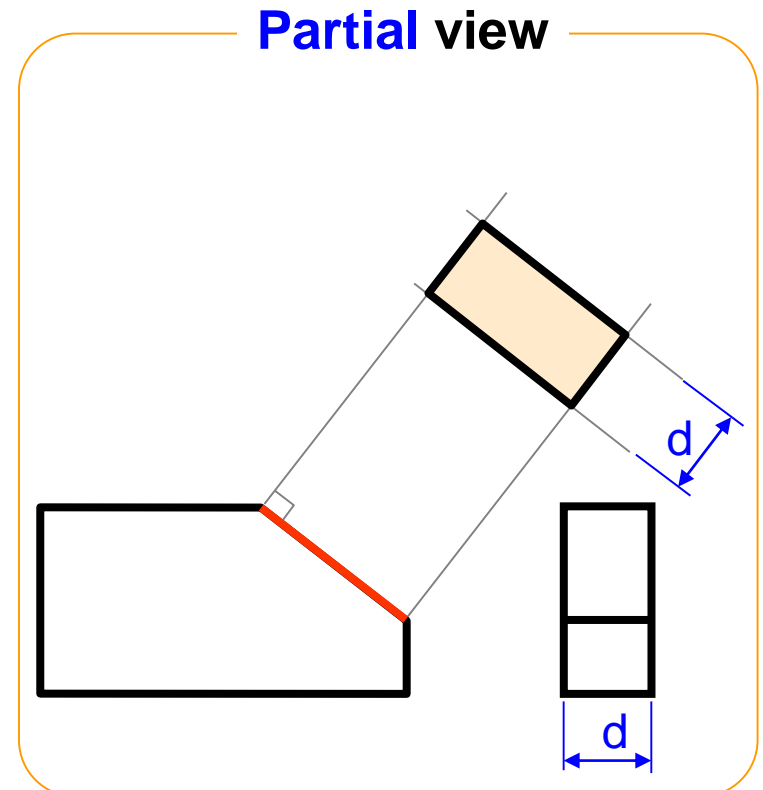
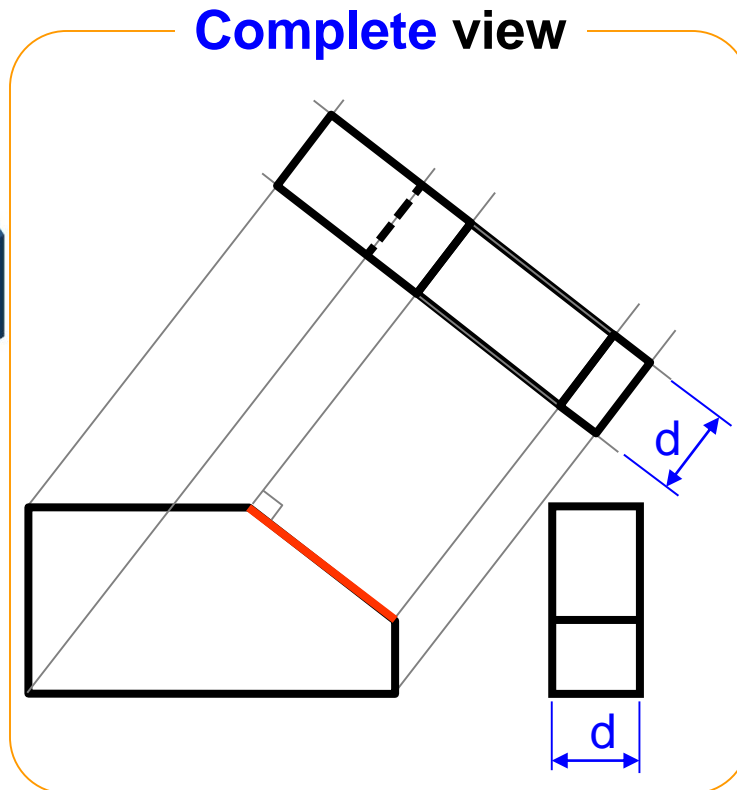
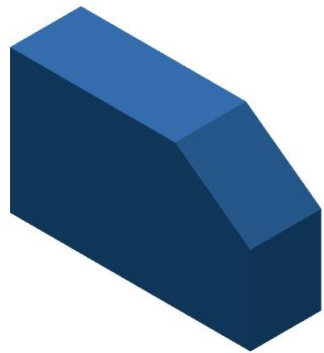
True size can not be observed from these principal views.



Use of auxiliary view

- In practice, an auxiliary view is usually a **partial view** showing only the desired information.

Example

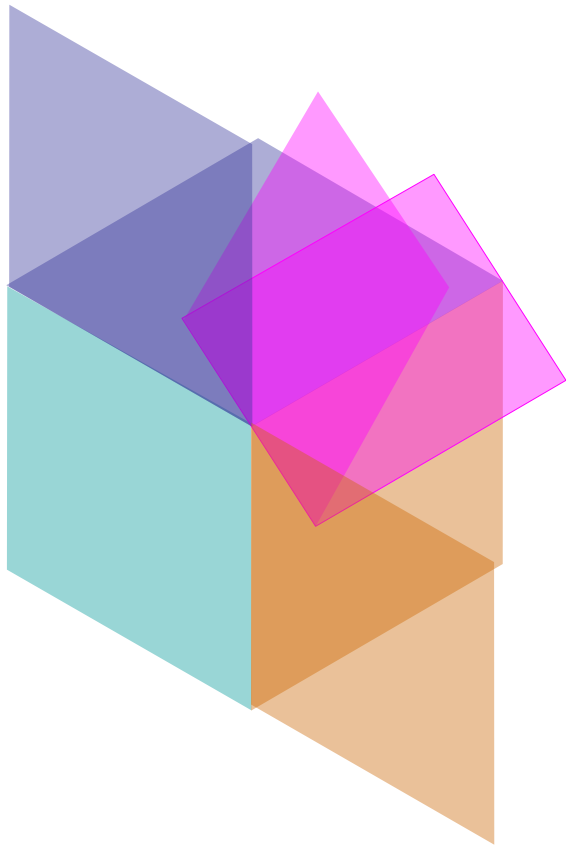


Types of an auxiliary view

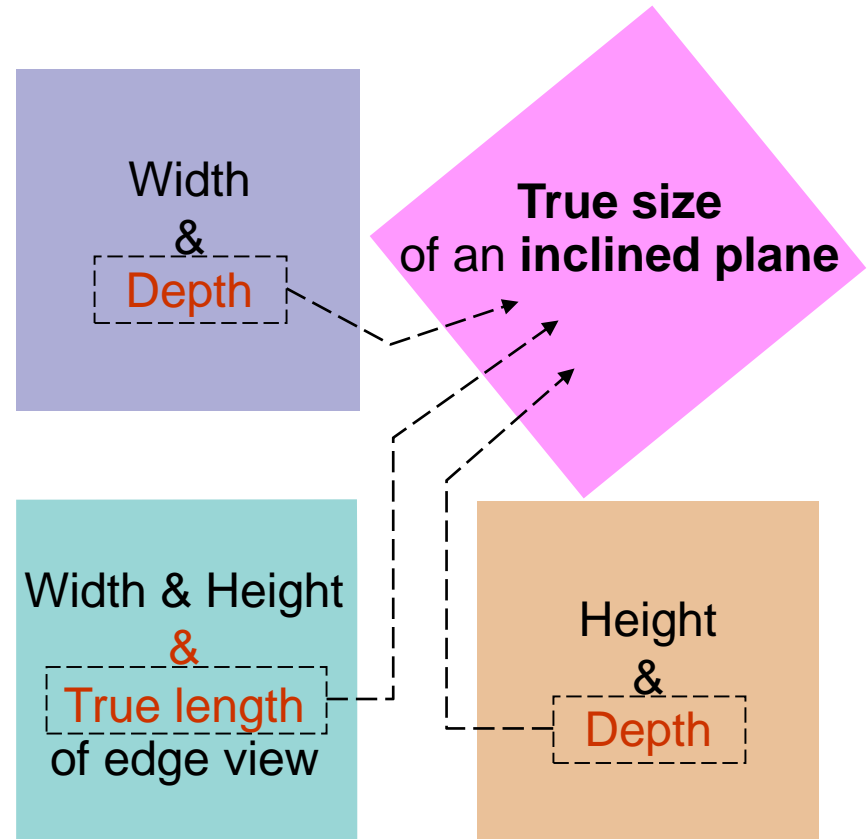
- Primary auxiliary views may be classified into 3 types by their relative to the principal views.
 1. Adjacent to **front** view
 2. Adjacent to **top** view
 3. Adjacent to **side** view

Auxiliary view adjacent to front view

Glass box and revolution

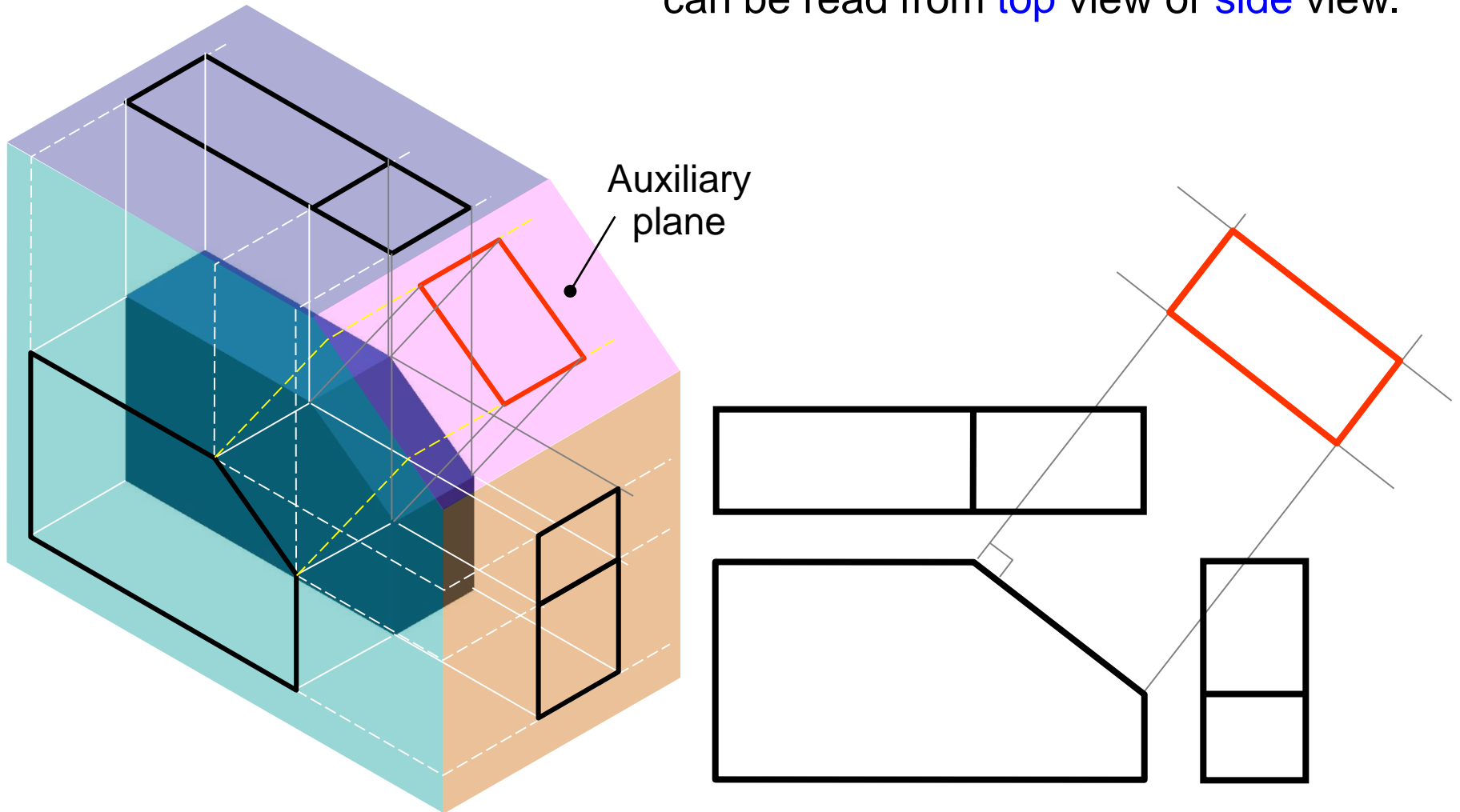


View arrangement

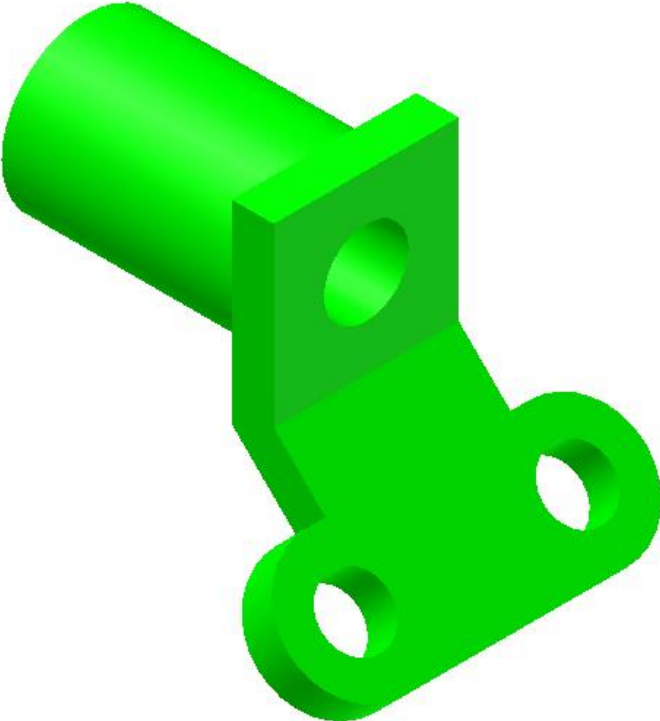


Example 1

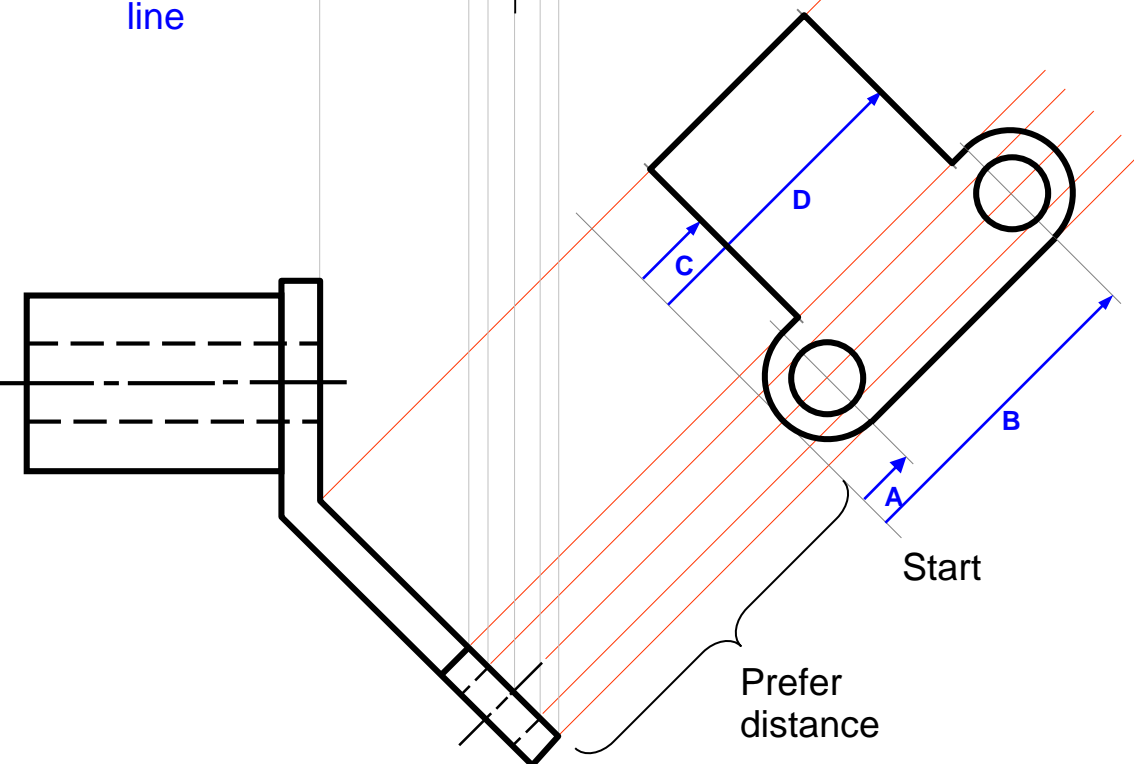
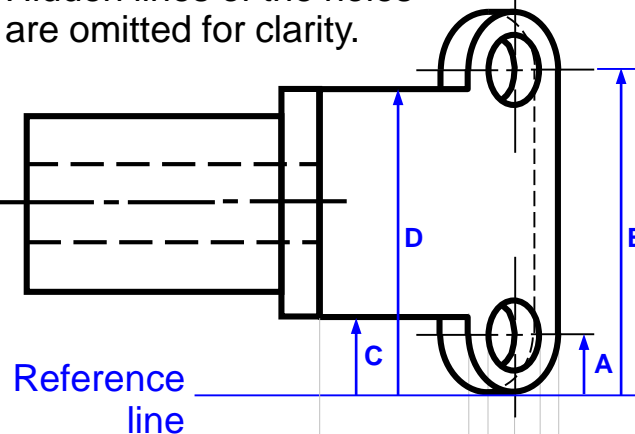
- Do you remember?
Depth dimension of the auxiliary view can be read from **top** view or **side** view.



Example 2

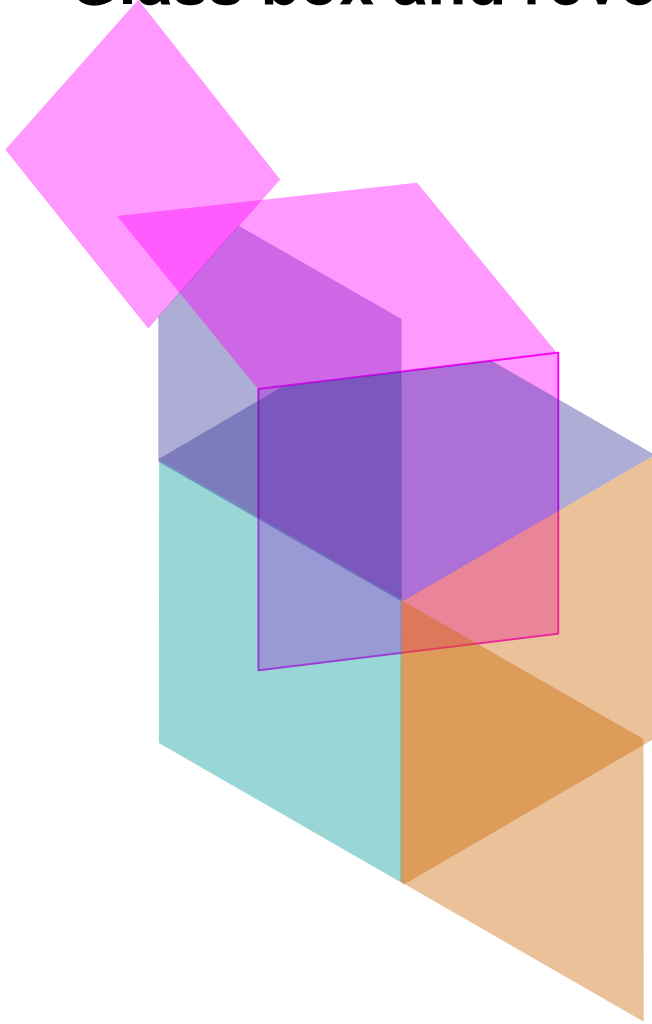


Hidden lines of the holes are omitted for clarity.

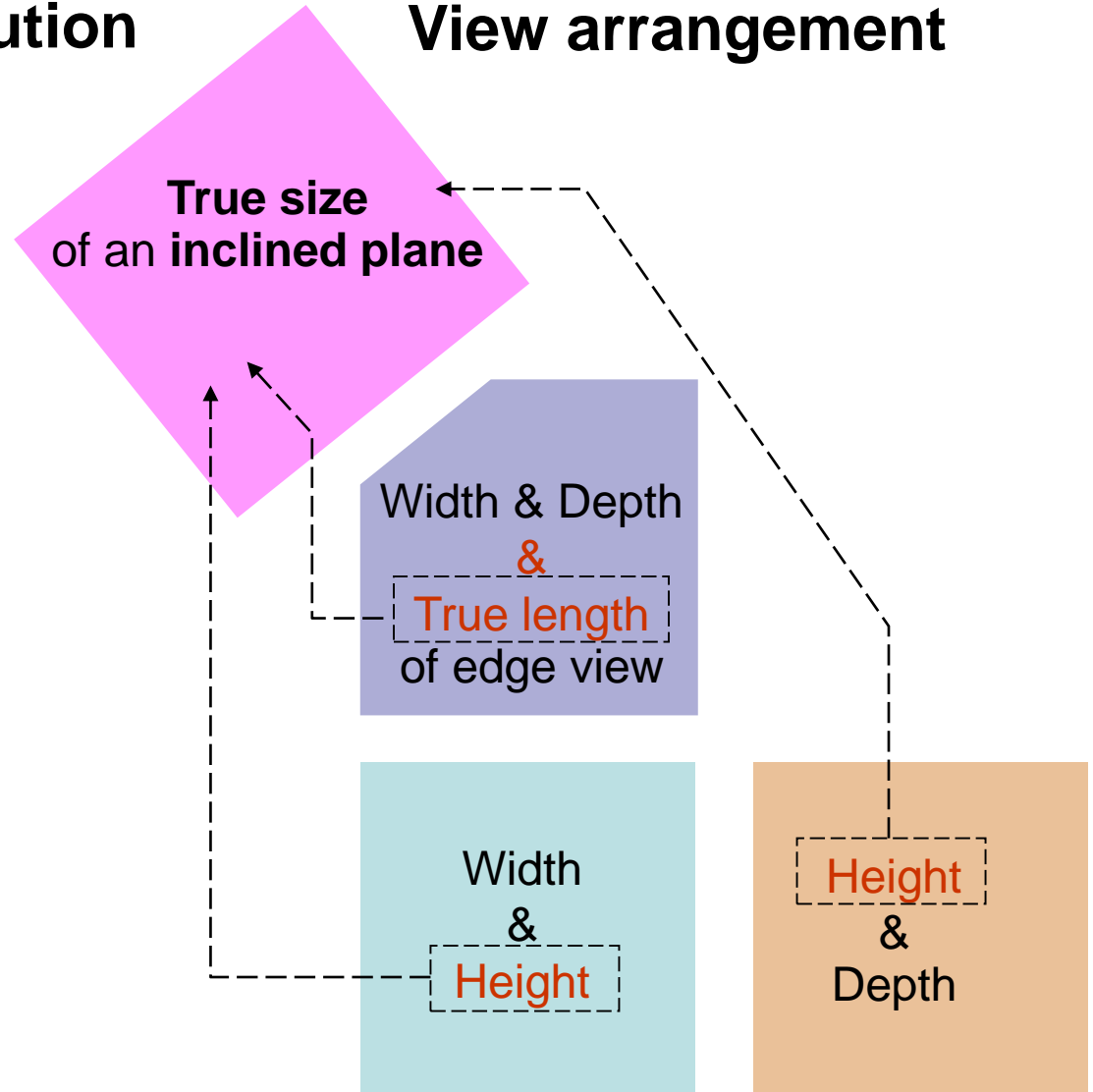


Auxiliary view adjacent to **top** view

Glass box and revolution

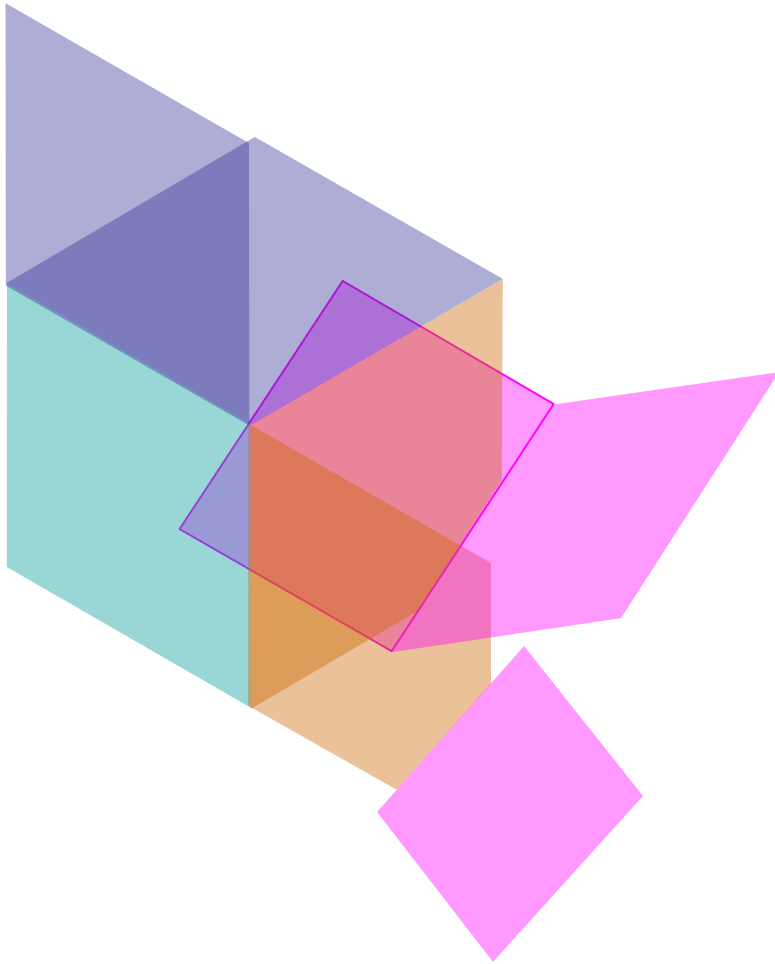


View arrangement

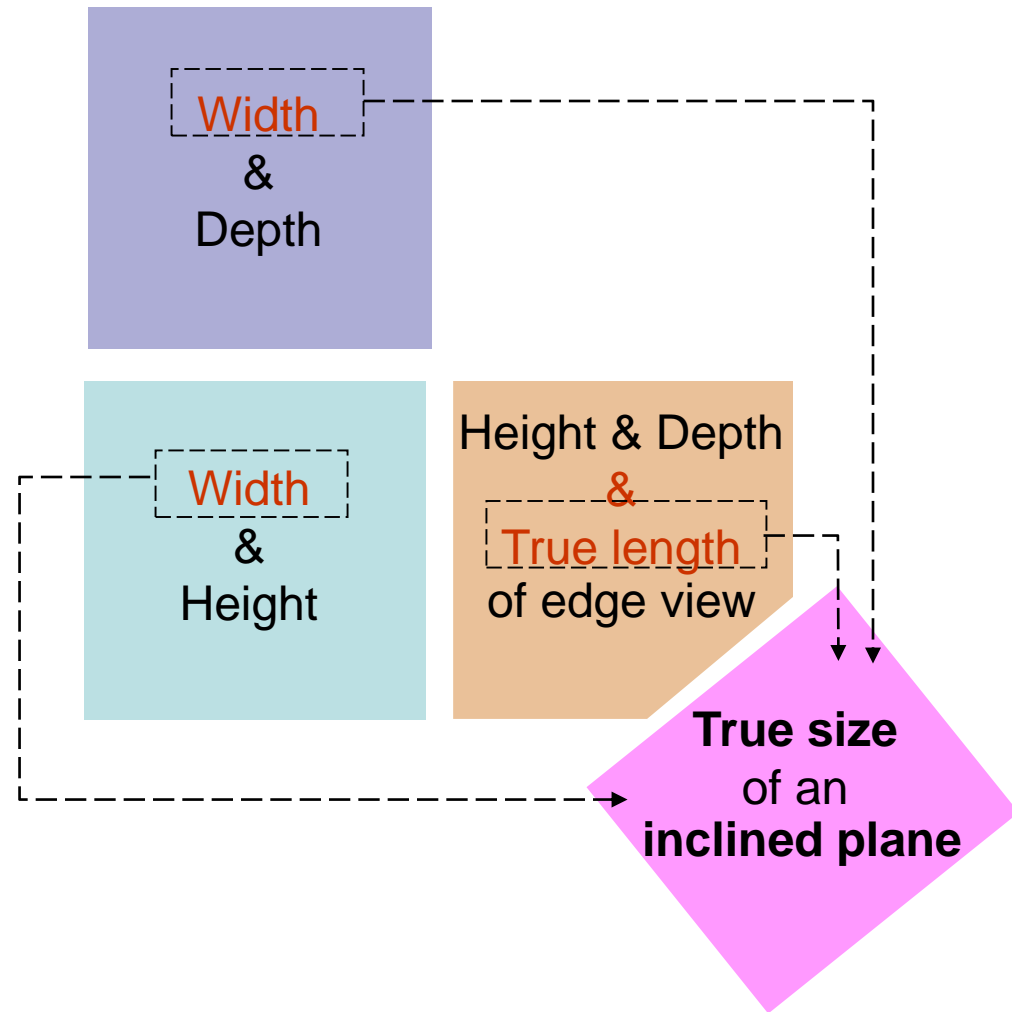


Auxiliary view adjacent to **side view**

Glass box and revolution



View arrangement



Example

