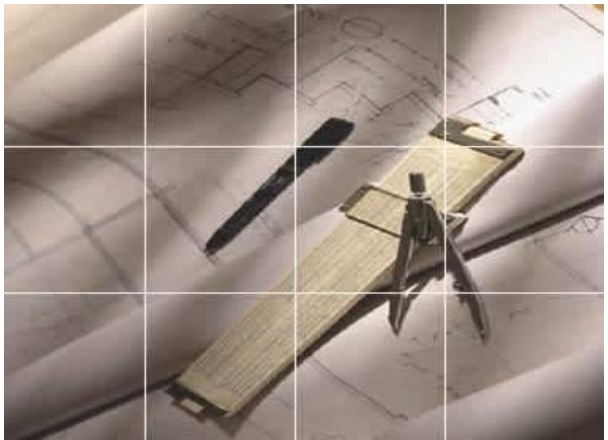
Chapter 4

Orthographic Writing



TOPICS

- Views selection
- Alignment of views
- Orthographic writing steps
- Basic dimensioning
- Tangency and intersections

View Selection

VIEW SELECTION STEPS

1. Orient the object to the best position relative to a glass box.

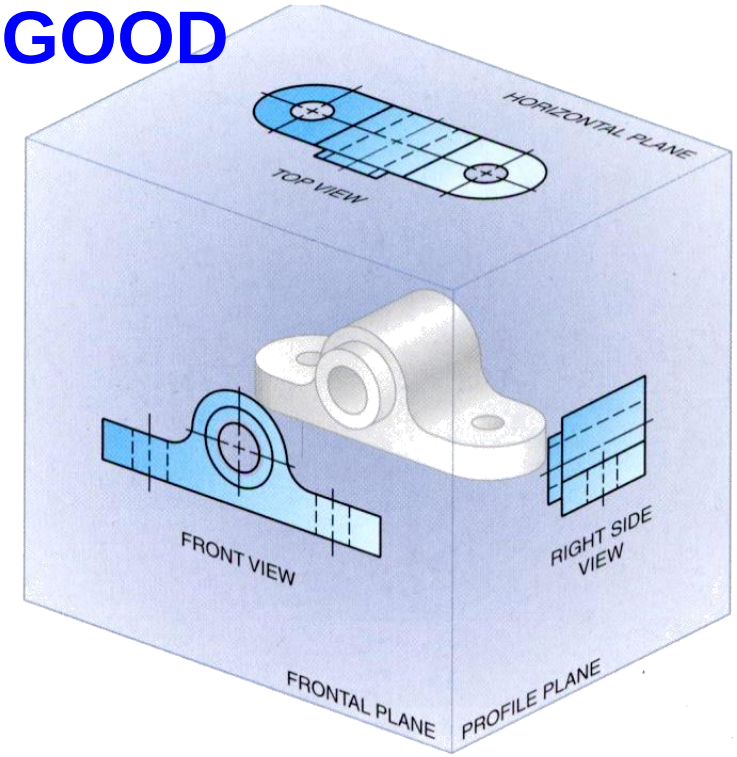
2. Select the front view.

3. Select adjacent views.

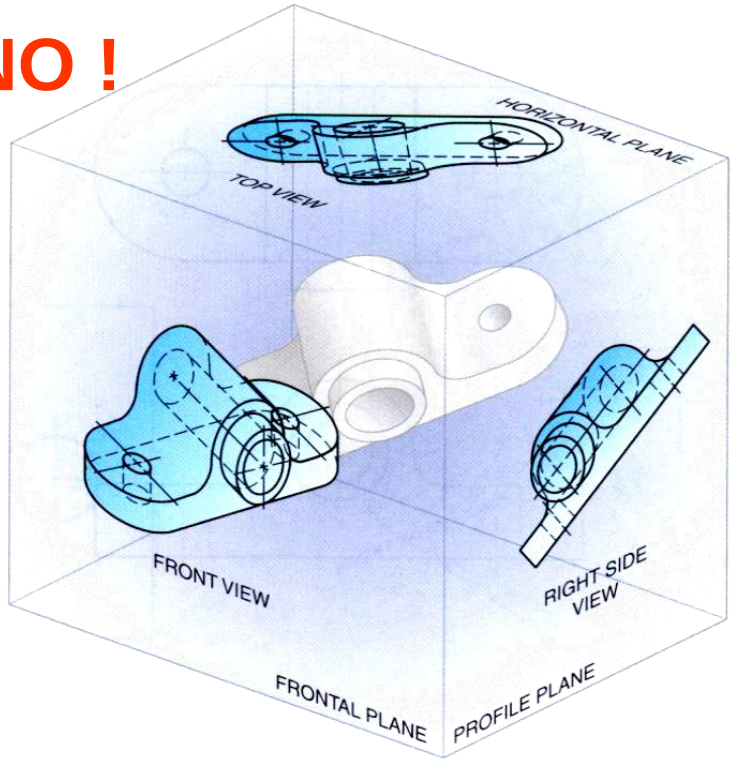
STEP 1 : Orient the Object

- The object should be placed in its **natural position**.
- The object should presents its features in **actual size** and **shape** in orthographic views.

GOOD



NO !



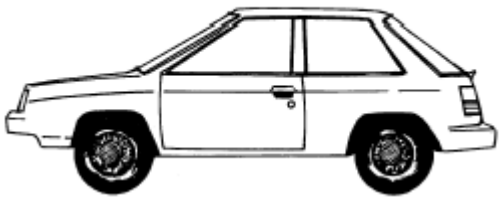
STEP 2 : Select a Front View

- The object's **longest dimension** should be presented as a **width**.

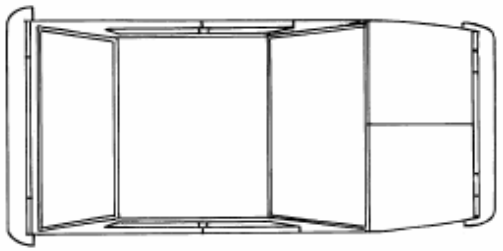
First choice

Waste more space

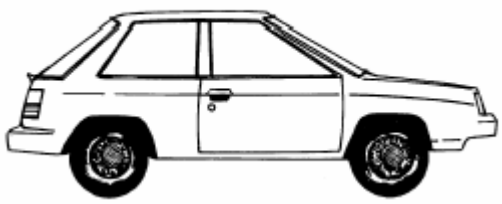
Inappropriate



Second choice



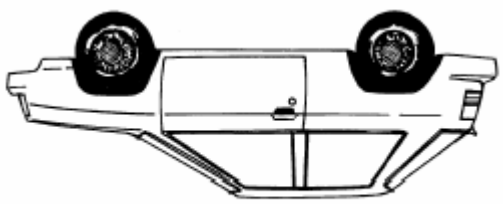
GOOD

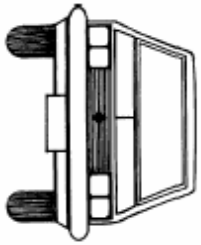


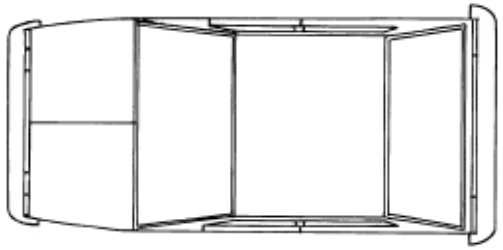
STEP 2 : Select a Front View

- The adjacent views that are projected from the selected front view should appear in its natural position.

Inappropriate

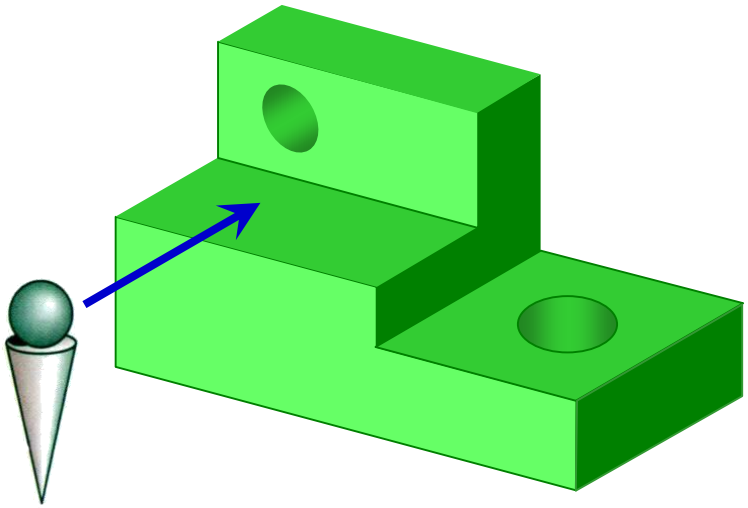


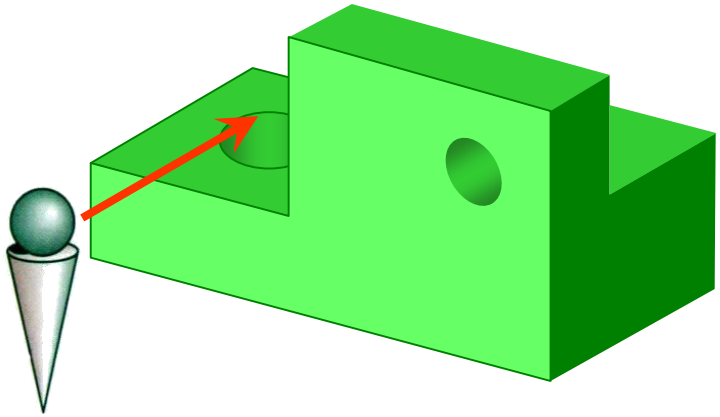


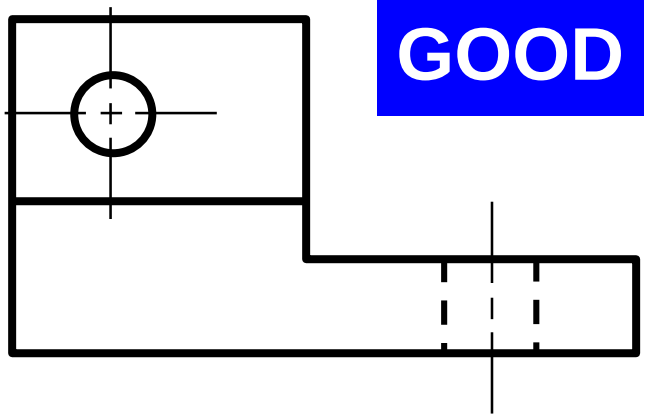


STEP 2 : Select a Front View

- Choose the view that have the fewest number of hidden lines.

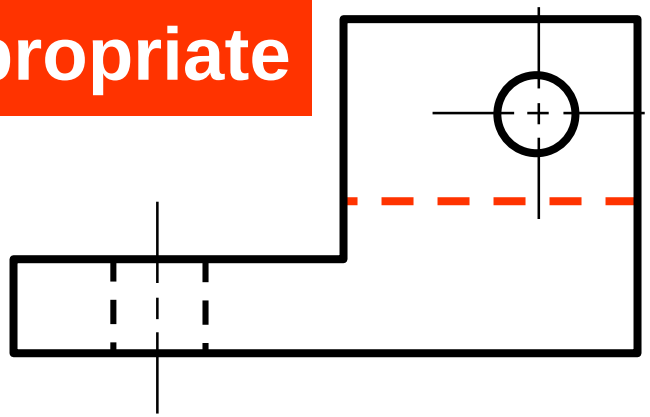






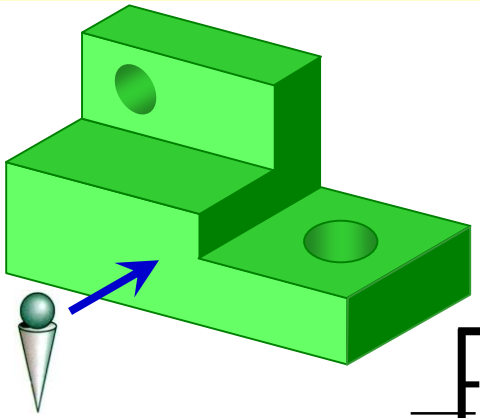
GOOD

Inappropriate

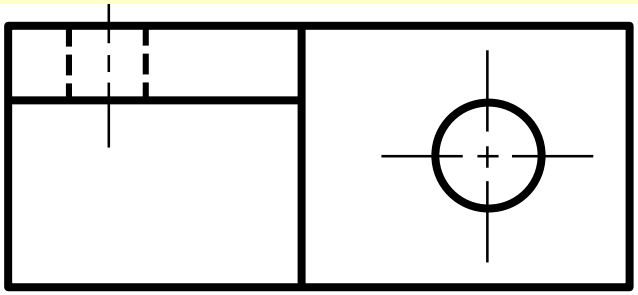


STEP 3 : Select an Adjacent View

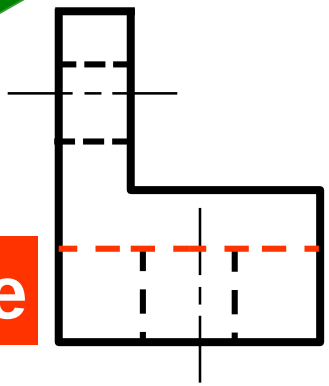
- Choose the view that have the fewest number of hidden lines.

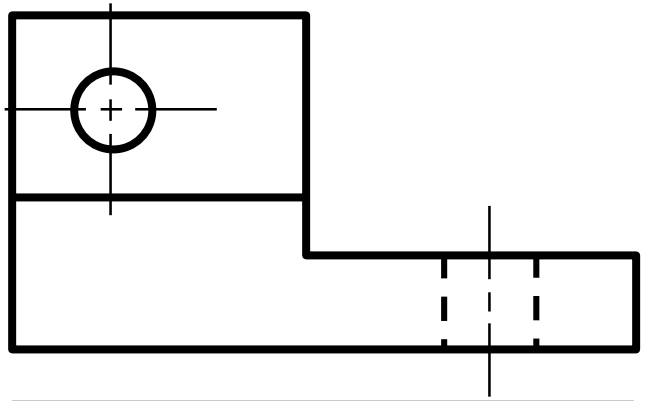


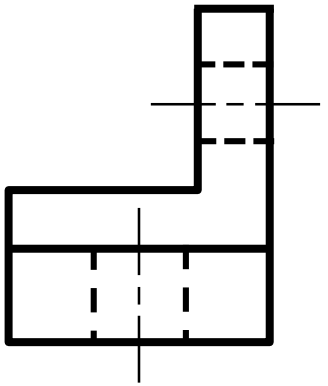
GOOD



Inappropriate

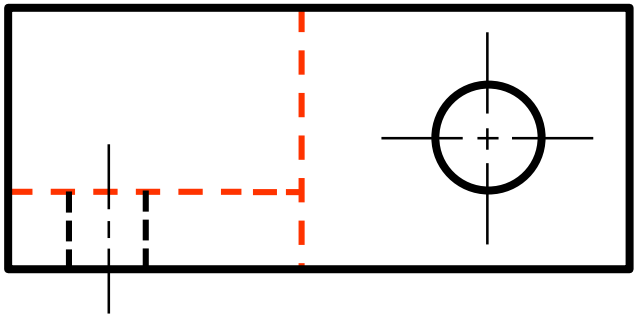






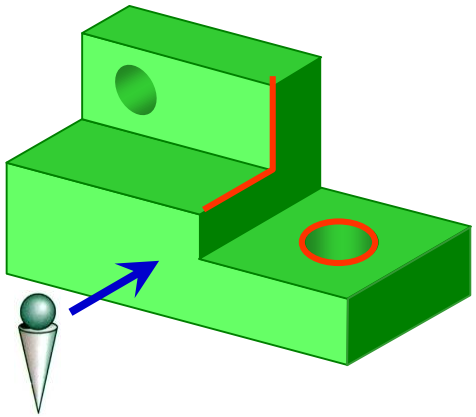
GOOD

Inappropriate

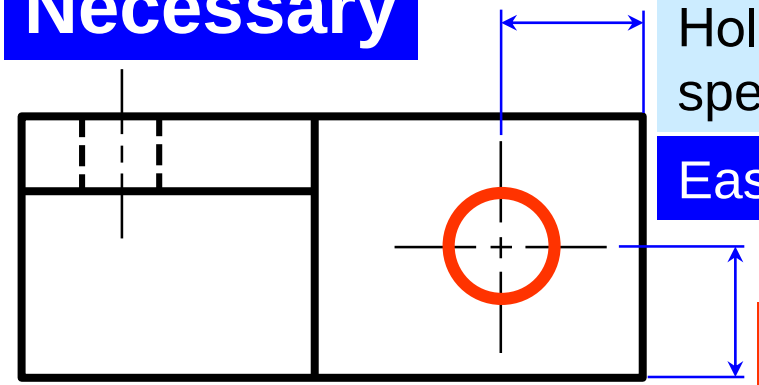


STEP 3 : Select an Adjacent View

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



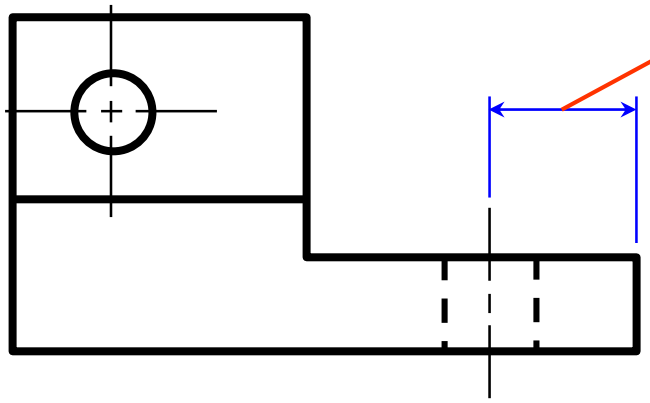
Necessary

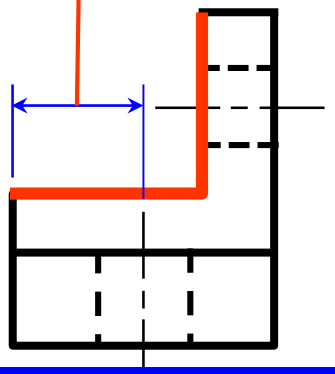


Hole's location can be specified on the same view.

Easy to understand

Difficult to interprete.

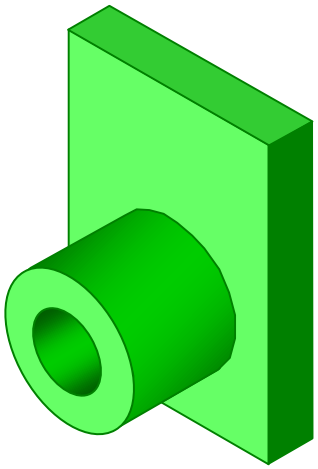




Necessary

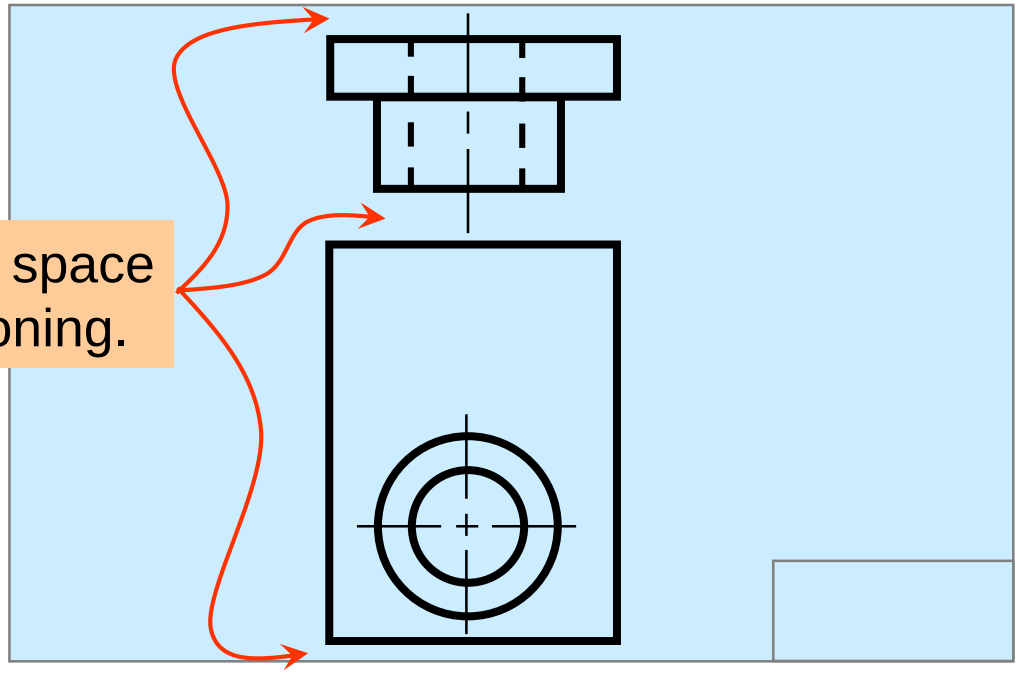
STEP 3 : Select an Adjacent View

- Choose the views that are suitable to a drawing space.



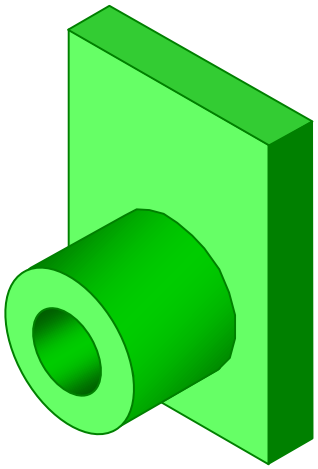
POOR

Not enough space for dimensioning.

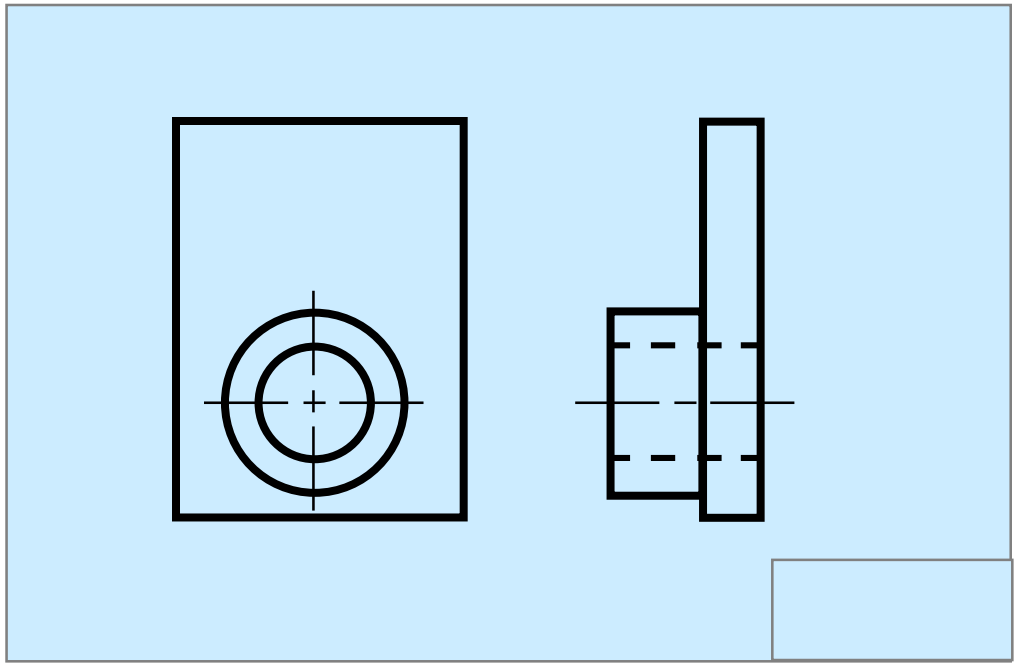


STEP 3 : Select an Adjacent View

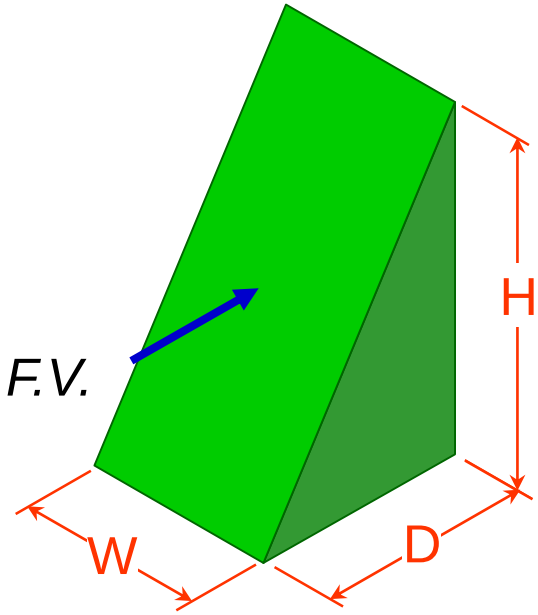
- Choose the views that are suitable to a drawing space.

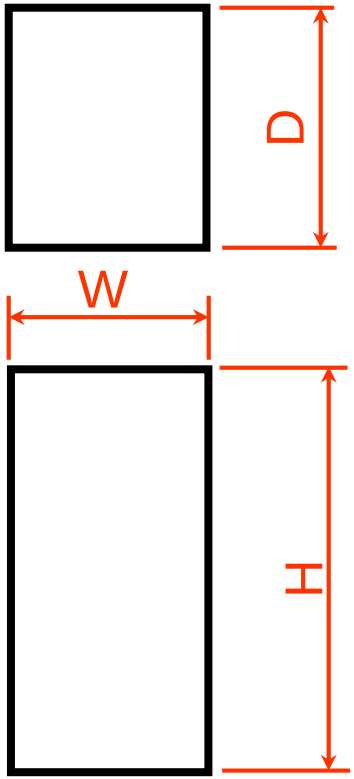


GOOD

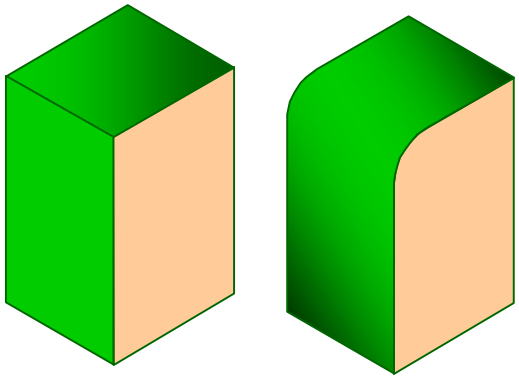


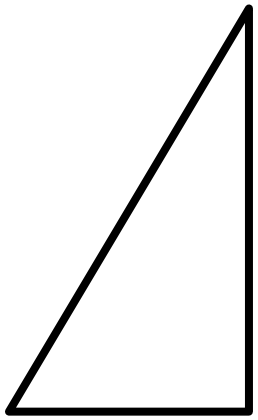
Example : View selection





mislead to…

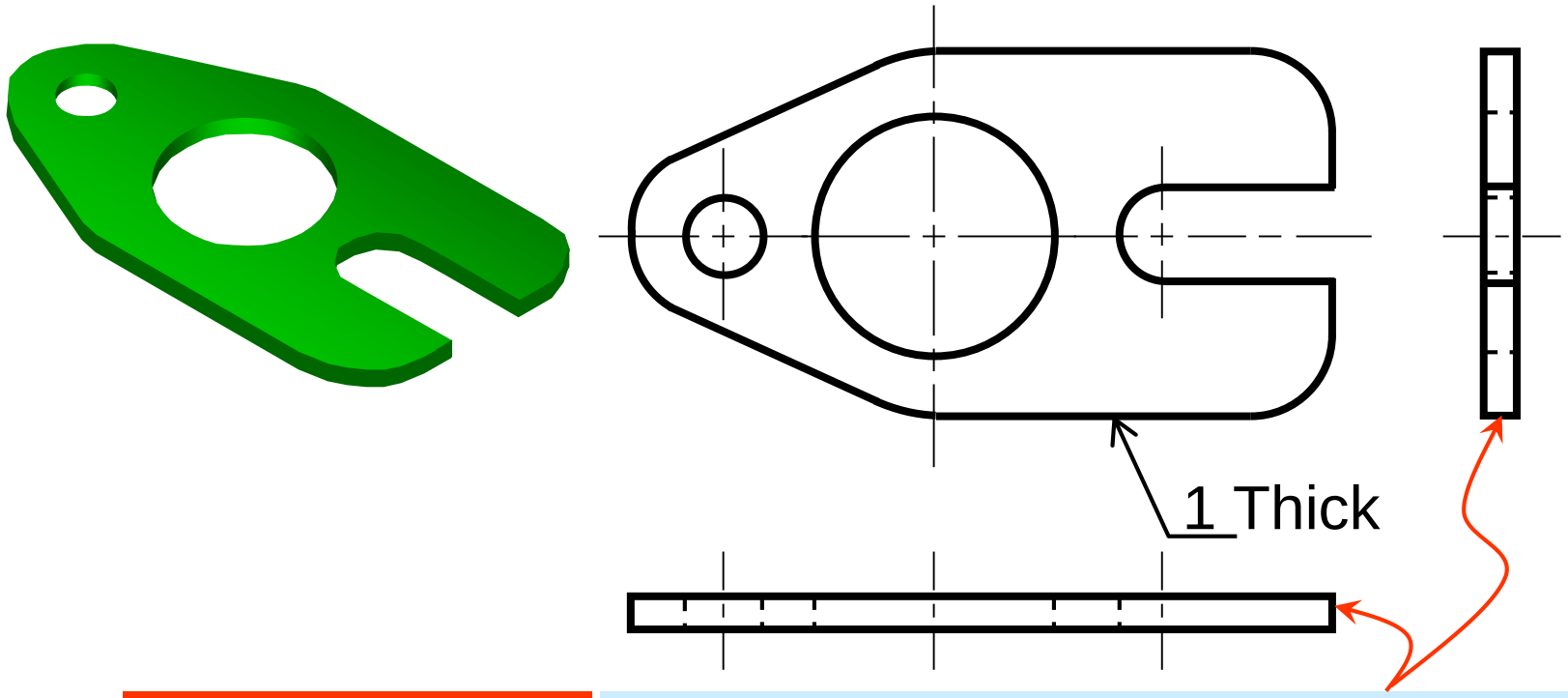




	F.V. & T.V.	Three views	F.V. & R.S.V.
Size description	✓	✓	✓
Shape description	✗	✓	✓

ONE-VIEW DRAWING

- ***Flat part*** having a uniform thickness.

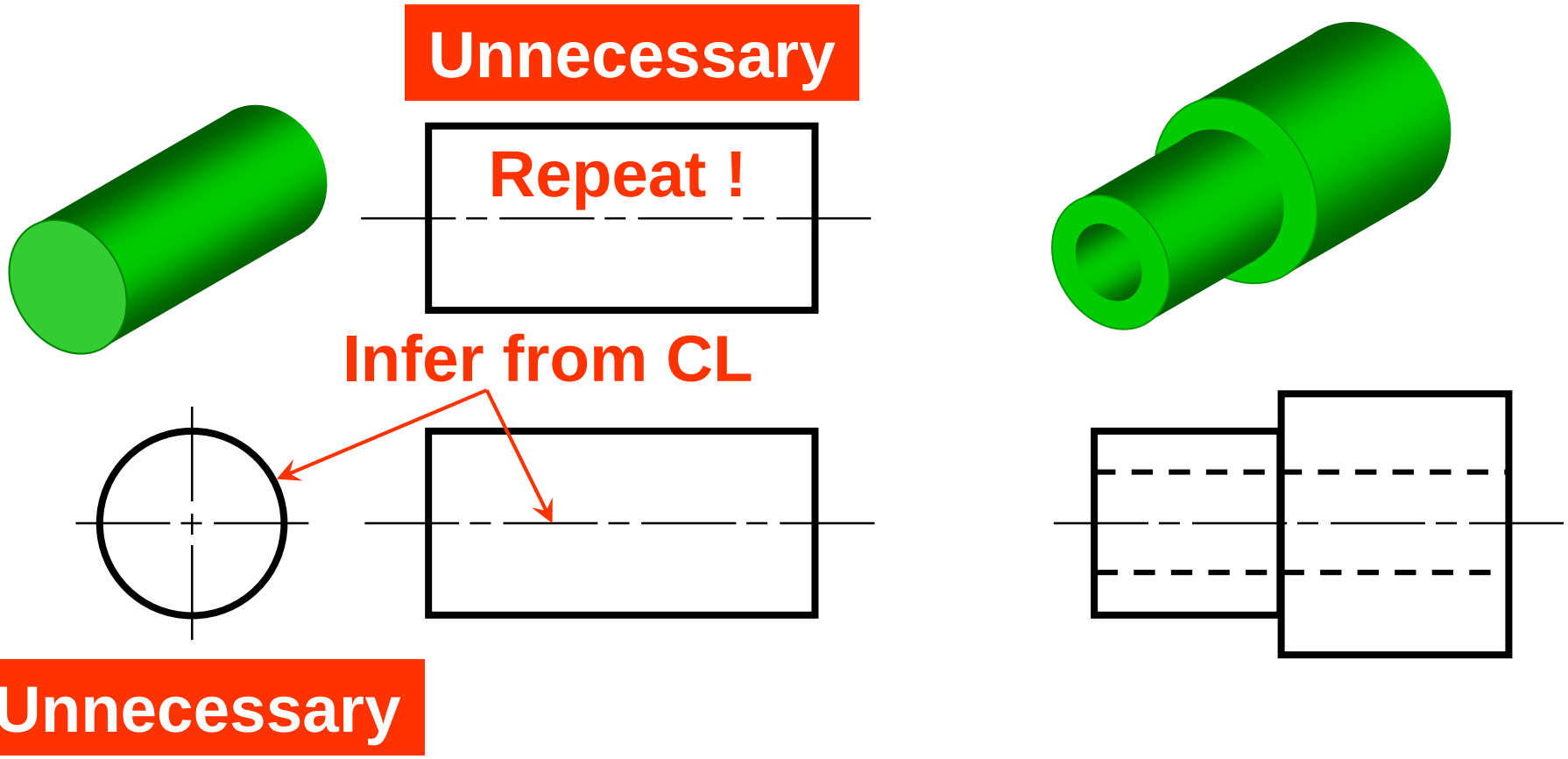


Unnecessary

These 2 views provide only information about the part thickness !

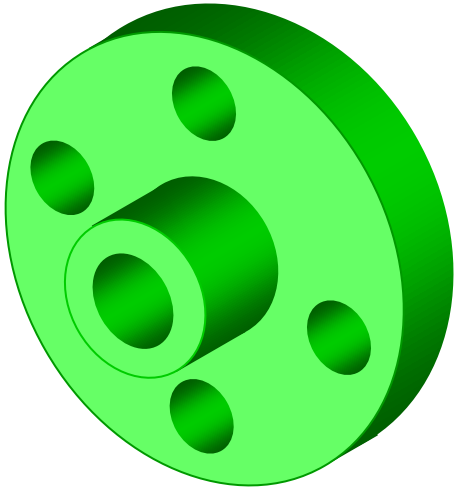
ONE-VIEW DRAWING

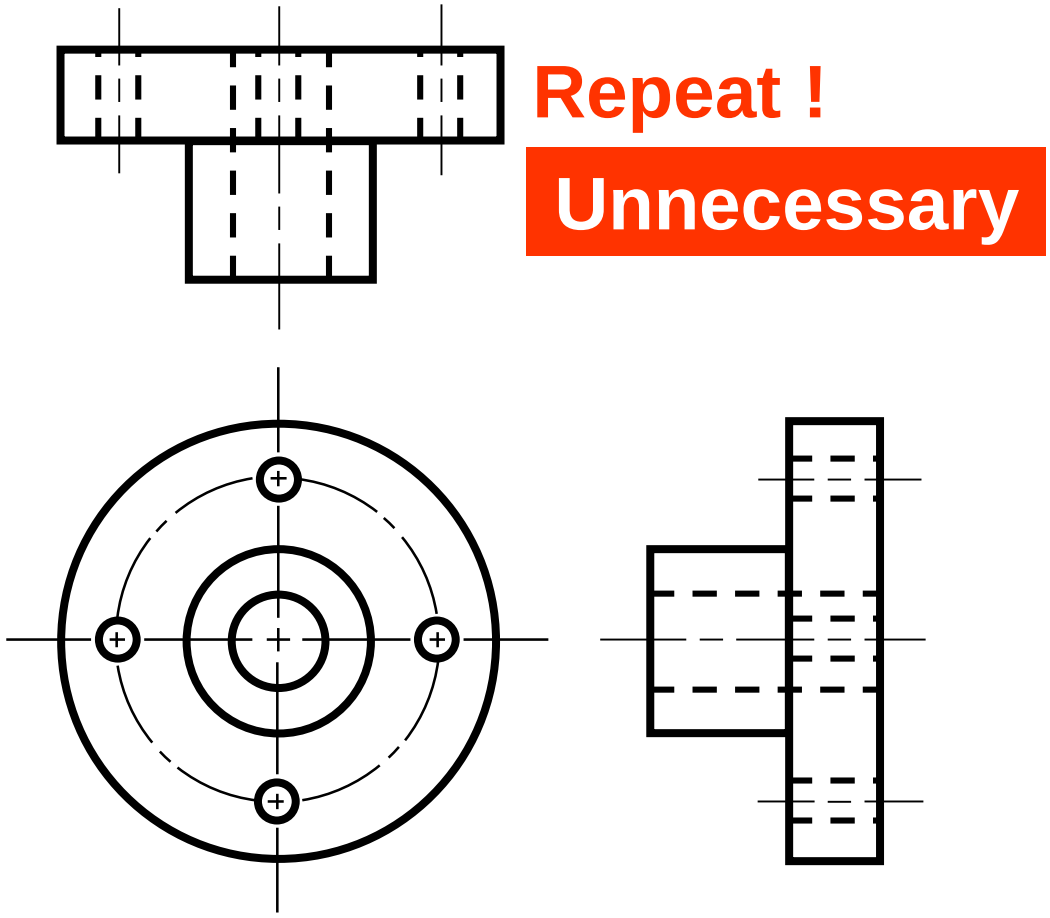
- ***Cylindrical-shaped*** part.



TWO-VIEW DRAWING

- There exists an identical view.



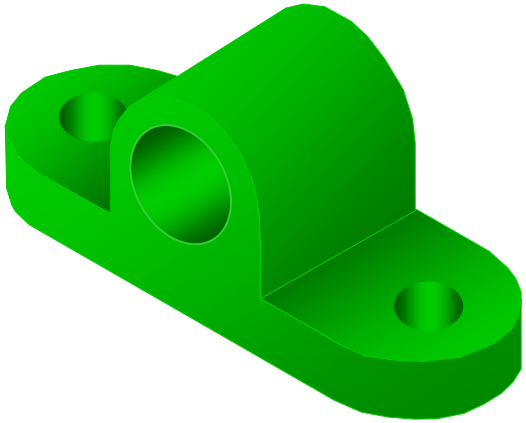


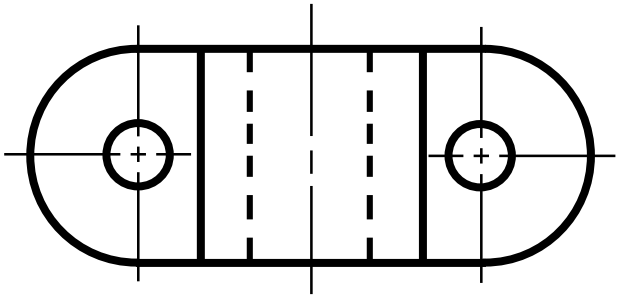
Repeat !

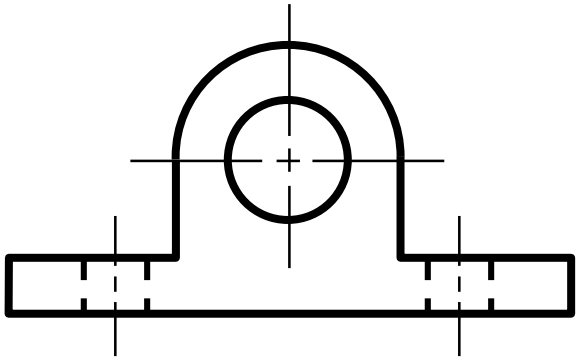
Unnecessary

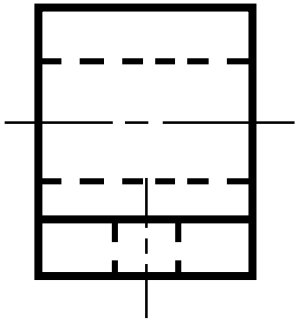
TWO-VIEW DRAWING

- The 3rd view has no significant contours of the object.





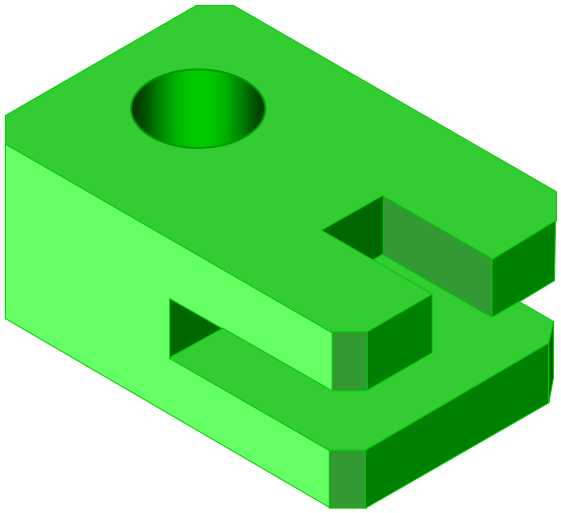


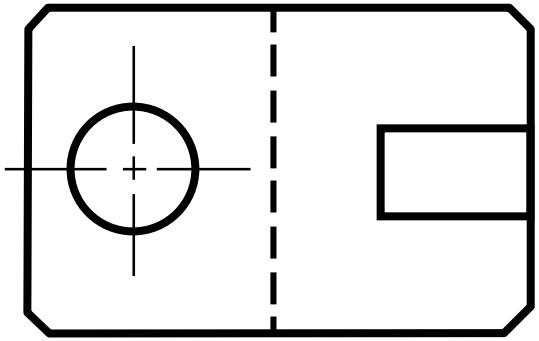


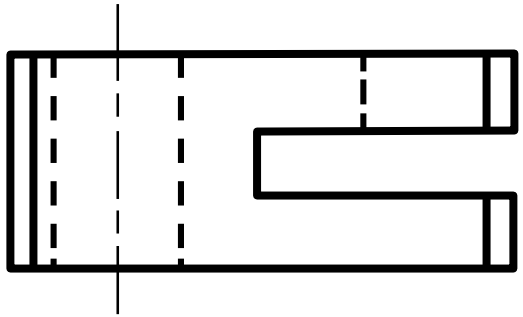
Unnecessary

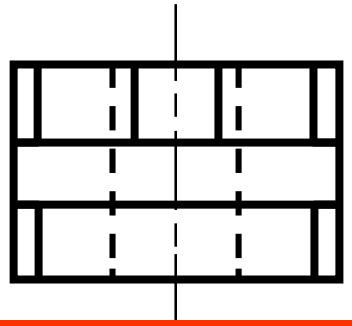
TWO-VIEW DRAWING

- The 3rd view has no significant contours of the object.









Unnecessary

Alignment of Views

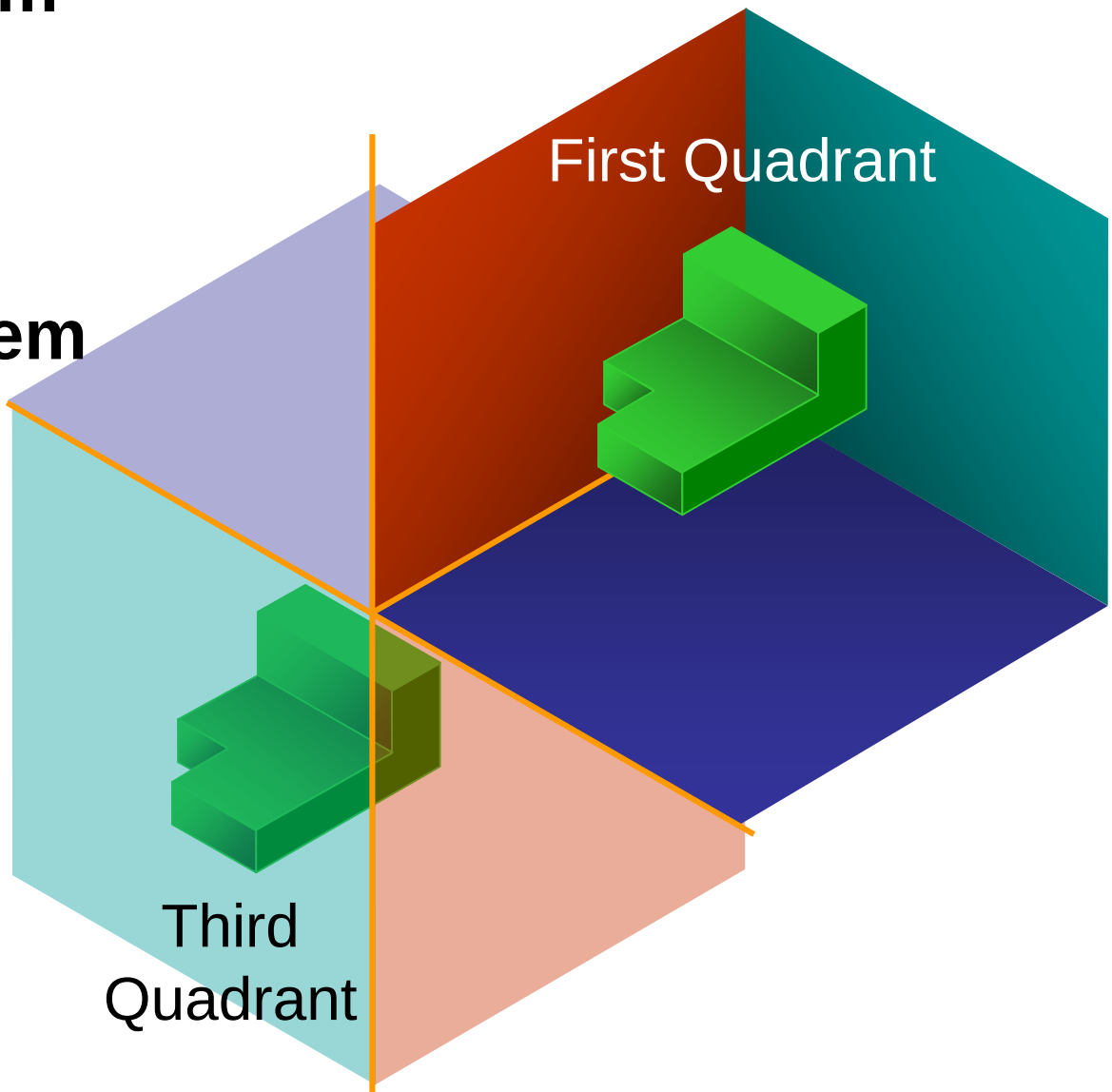
PROJECTION SYSTEMS

1. First angle system

- European country
- ISO standard

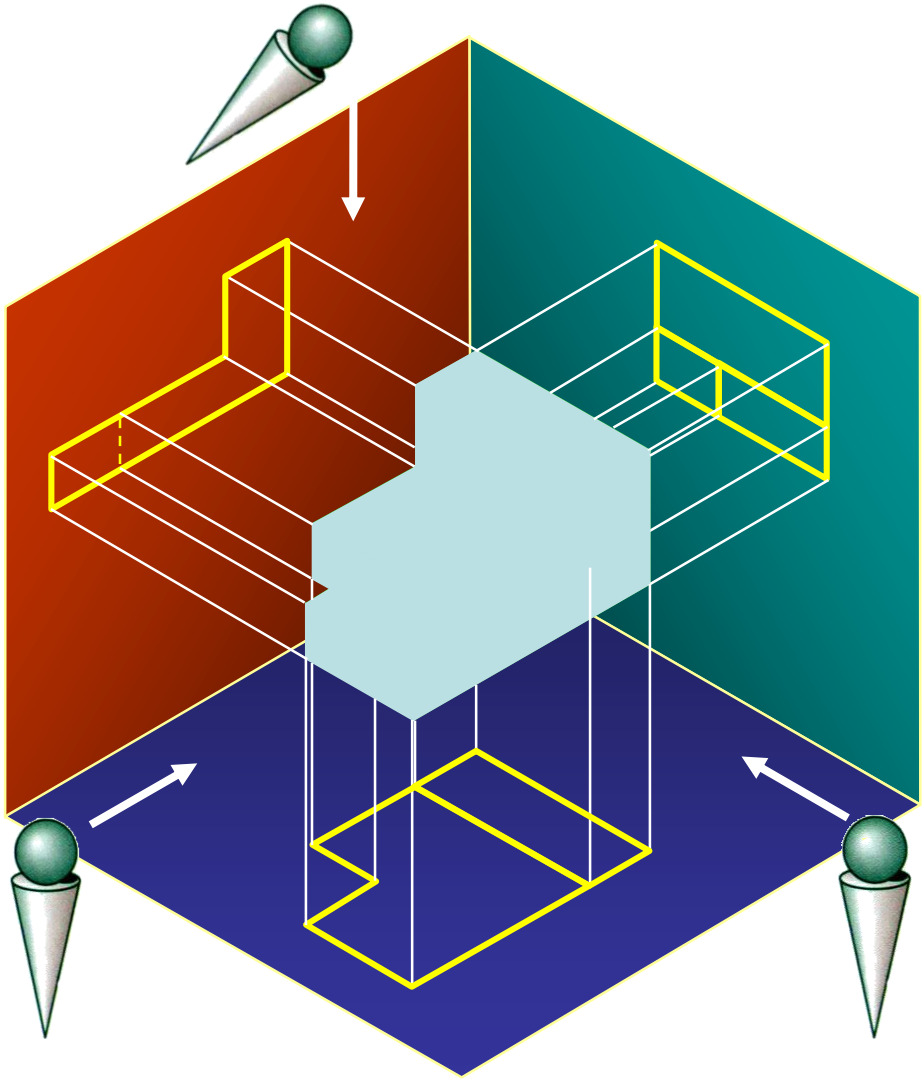
2. Third angle system

- Canada, USA,
  Japan, Thailand

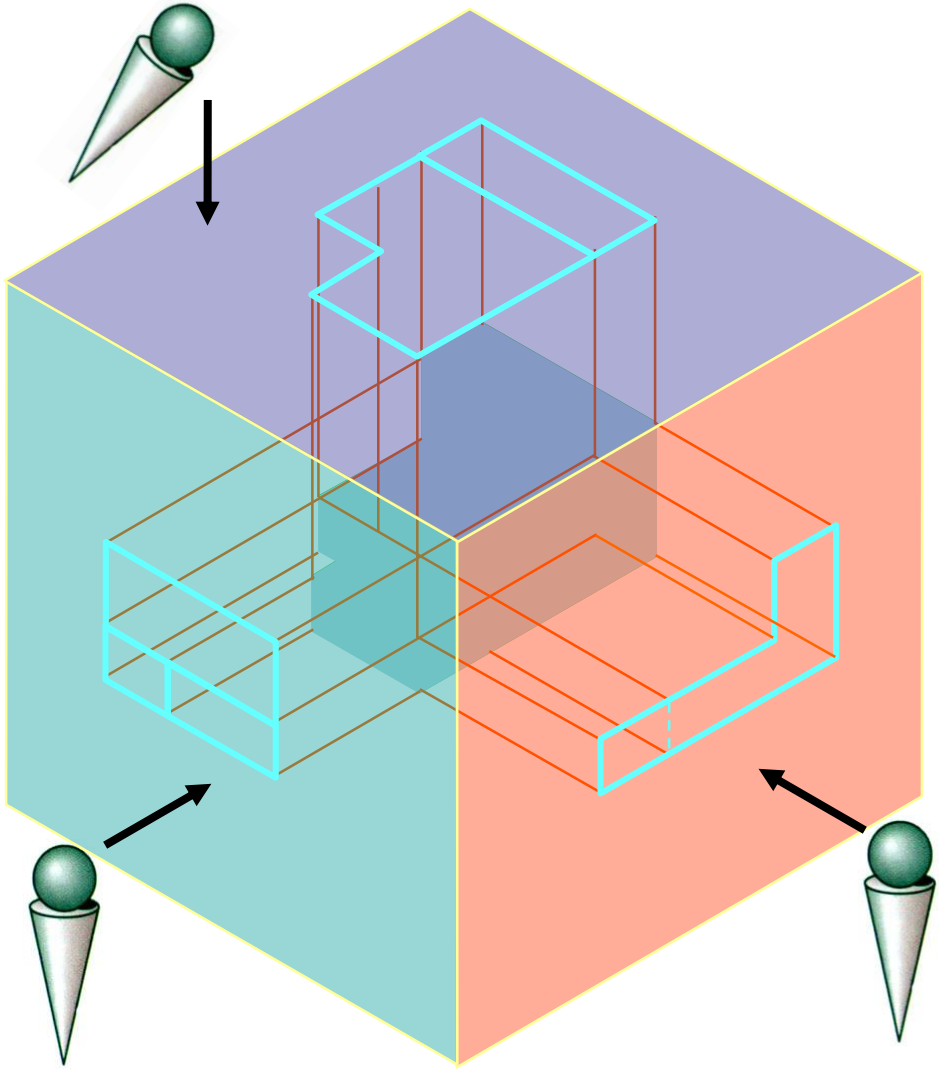


ORTHOGRAPHIC PROJECTION

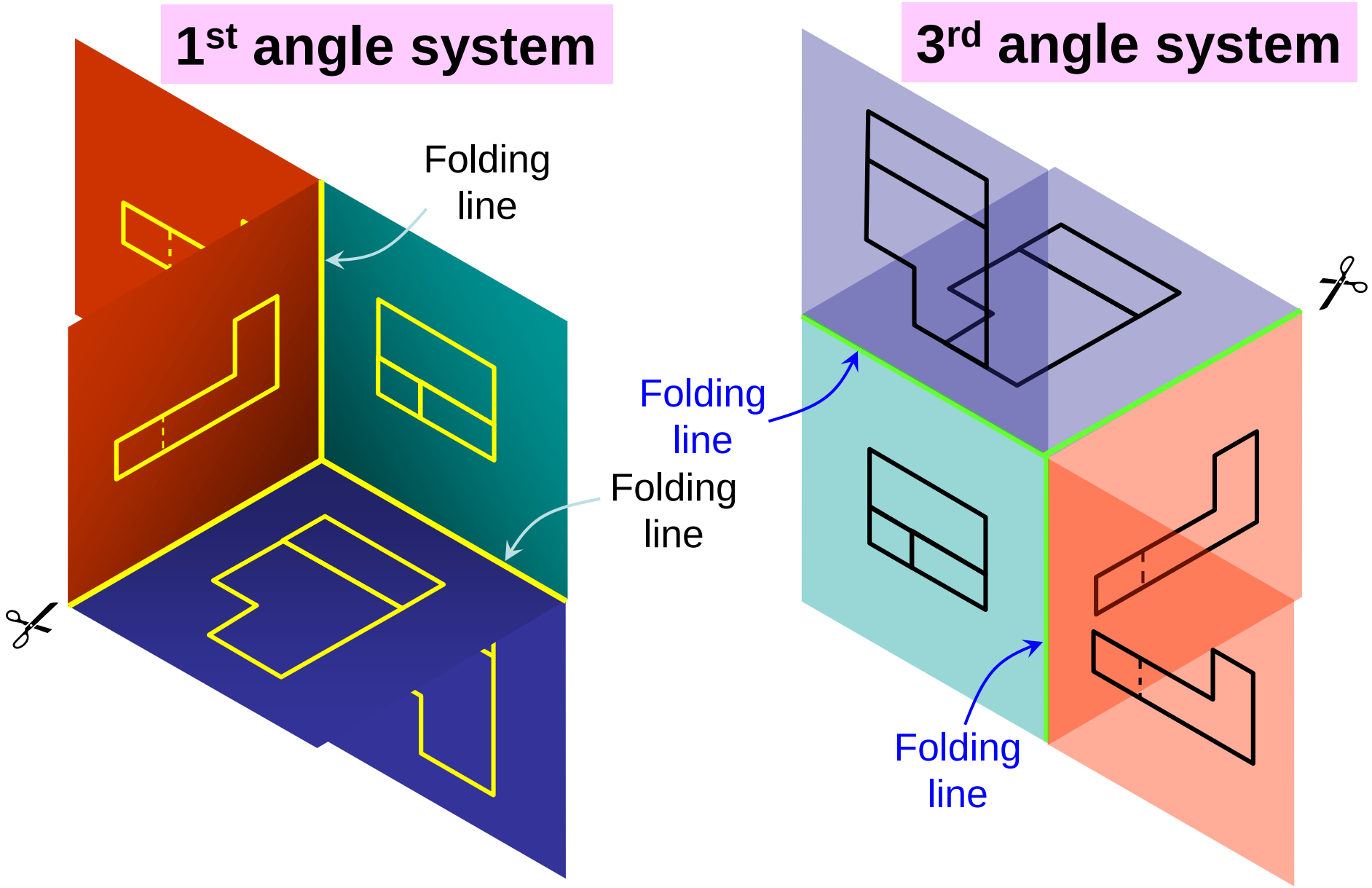
1st angle system



3rd angle system

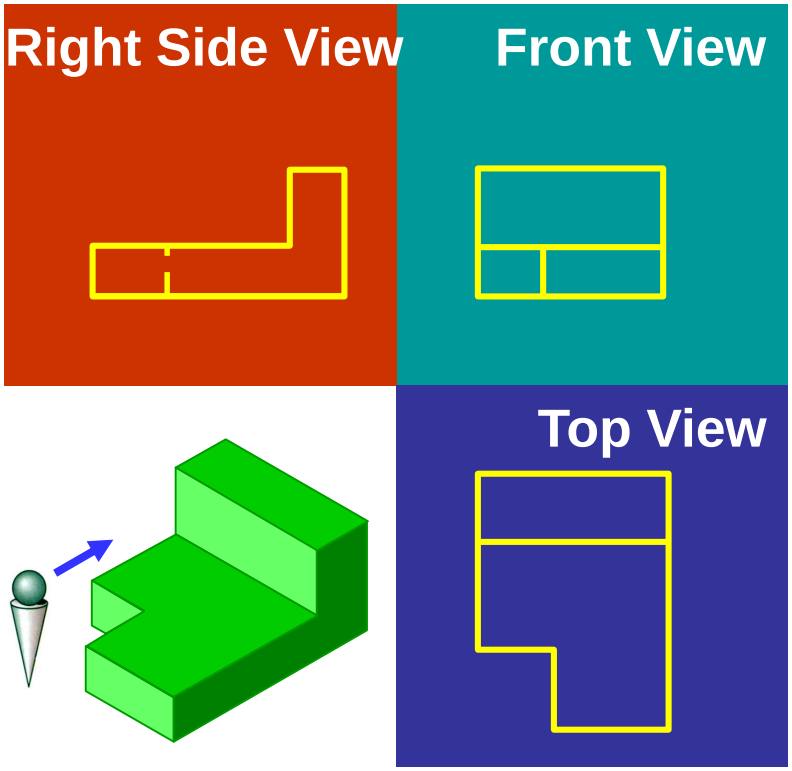


ORTHOGRAPHIC VIEWS

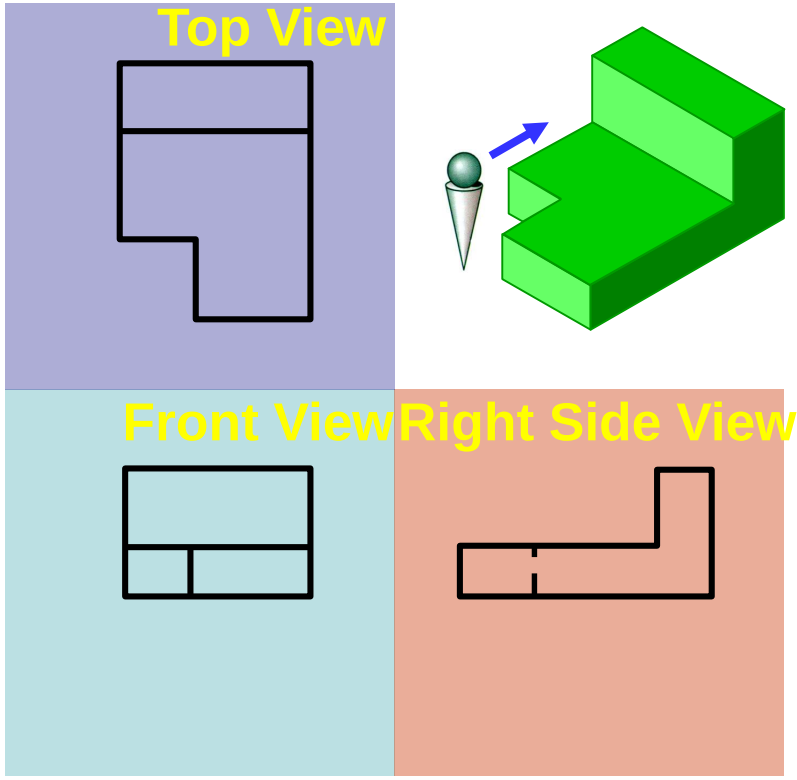


ORTHOGRAPHIC VIEWS

1st angle system

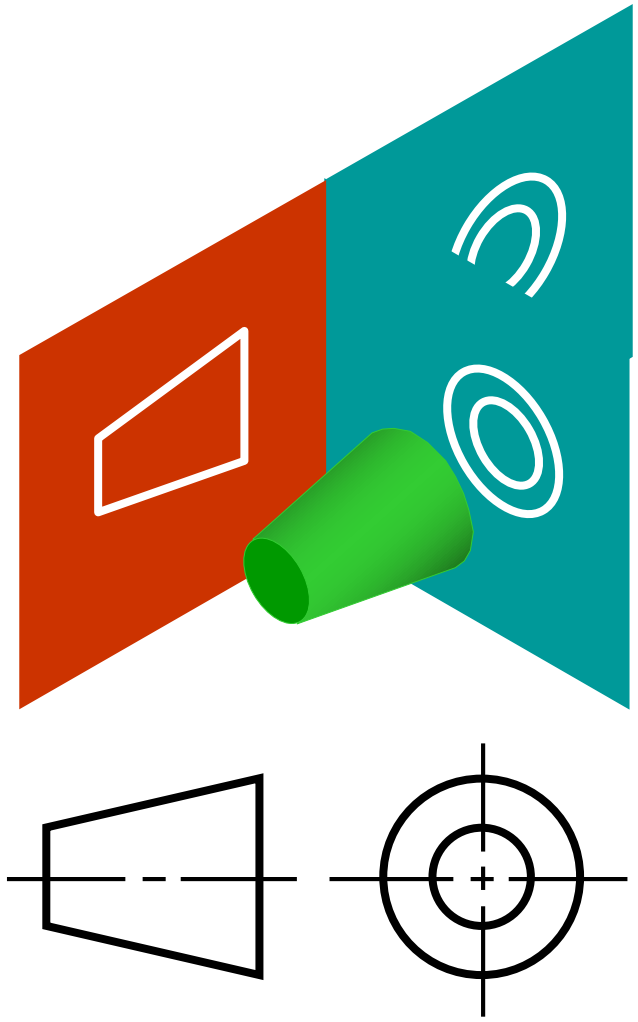


3rd angle system

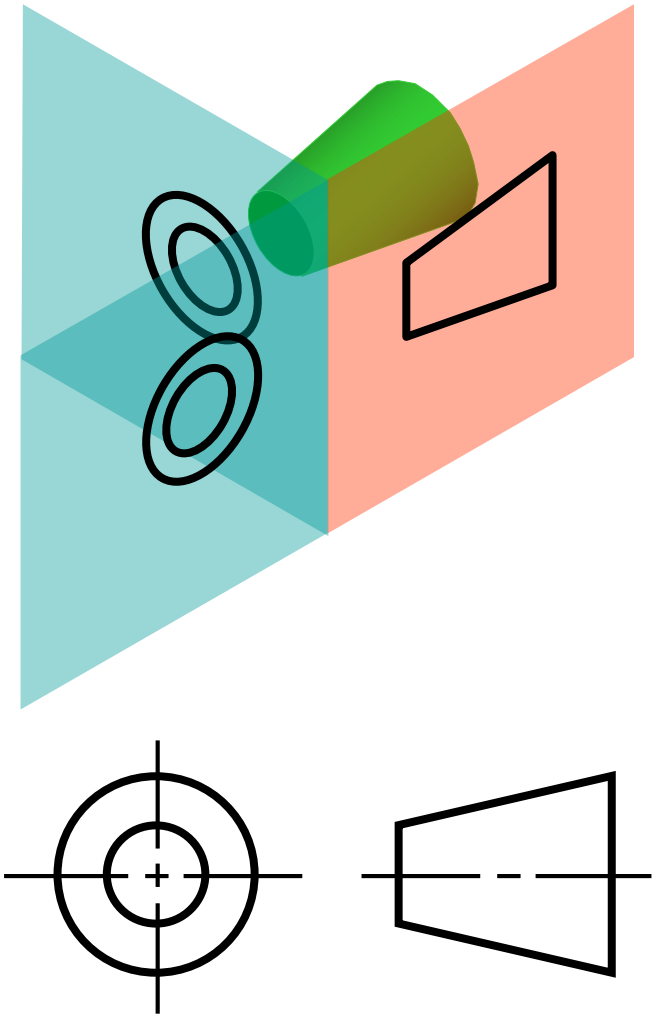


PROJECTION SYMBOLS

First angle system

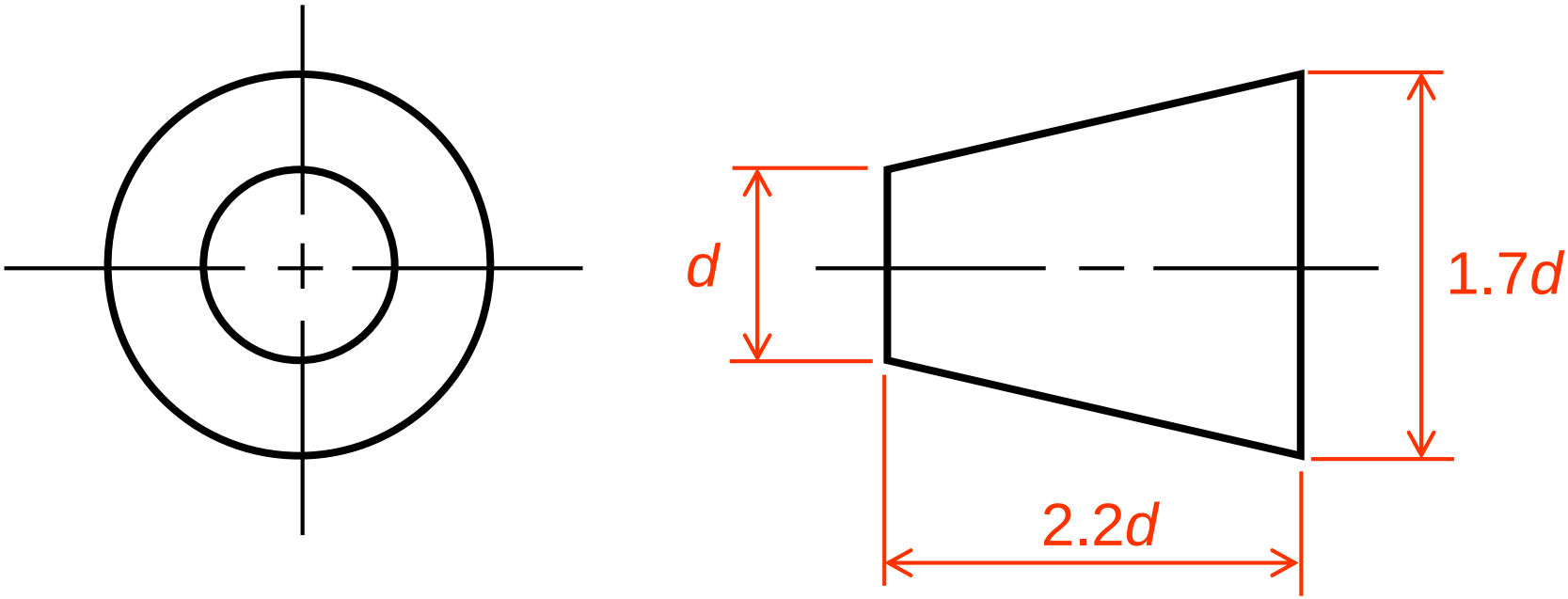


Third angle system



PROJECTION SYMBOLS

Suggested proportion

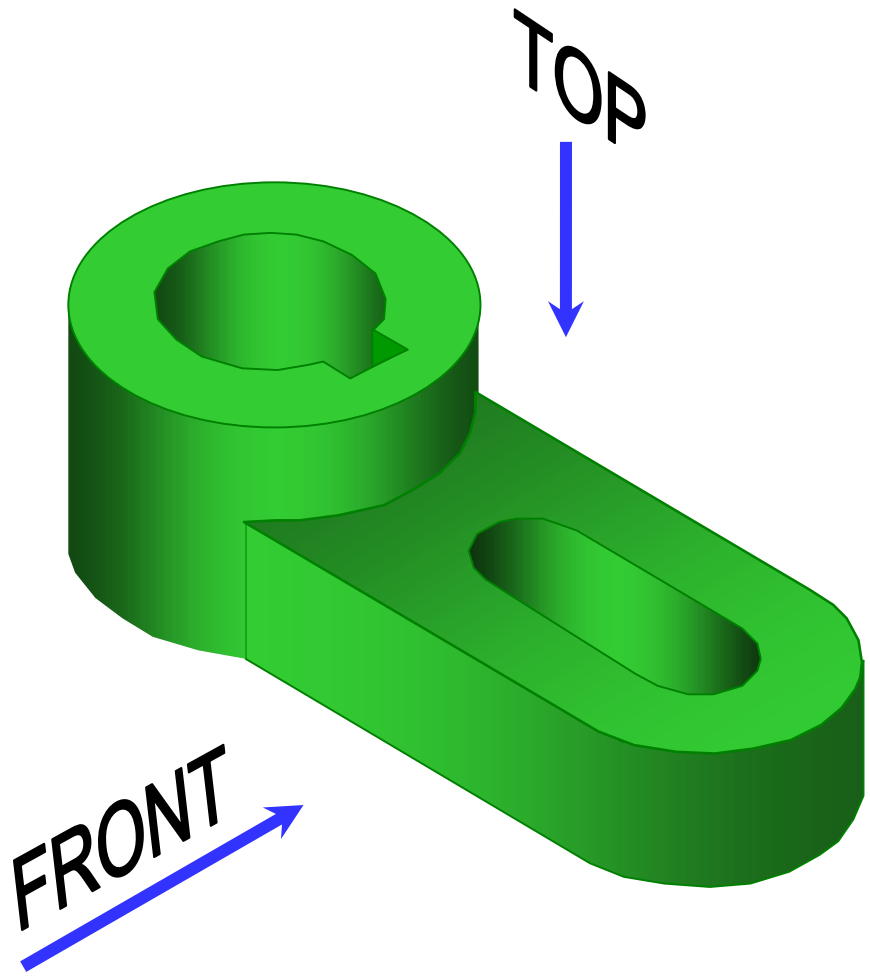


Orthographic Writing Steps

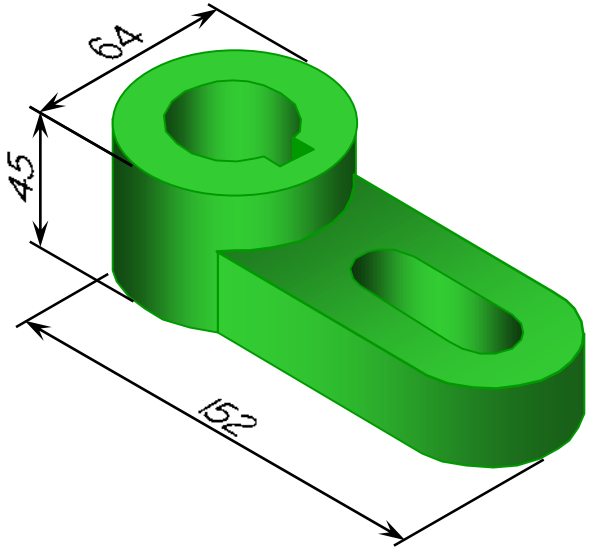
WRITING STEPS

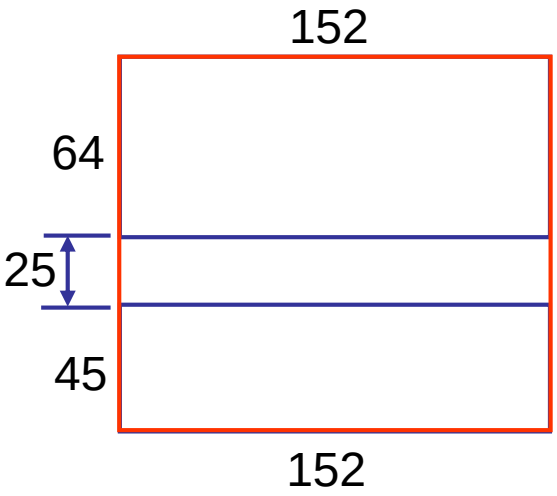
1. Select the necessary views
2. Layout the views.
3. Project the views.
4. Dimension the views.

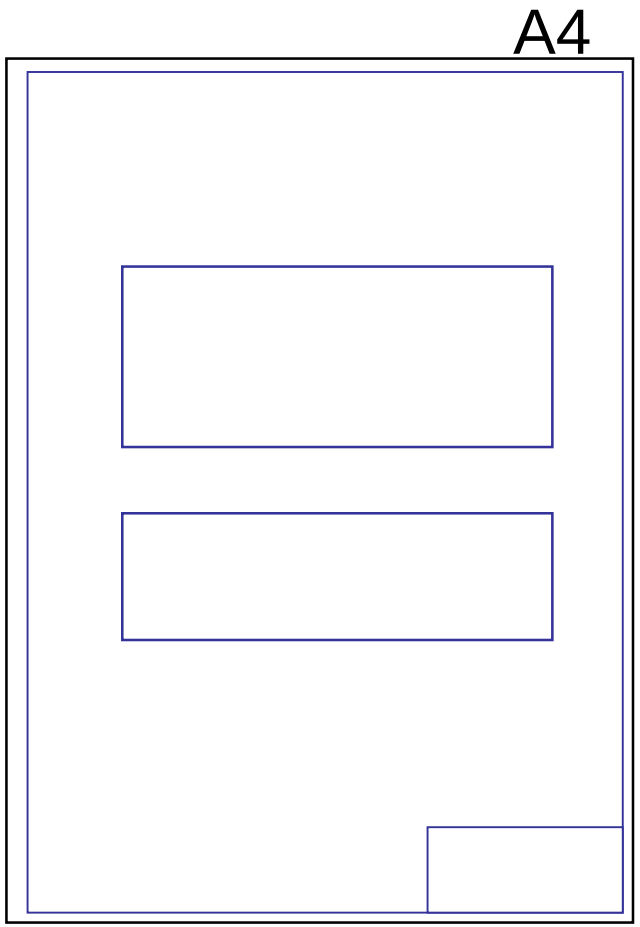
1. SELECT THE NECESSARY VIEWS



2. LAYOUT THE VIEWS



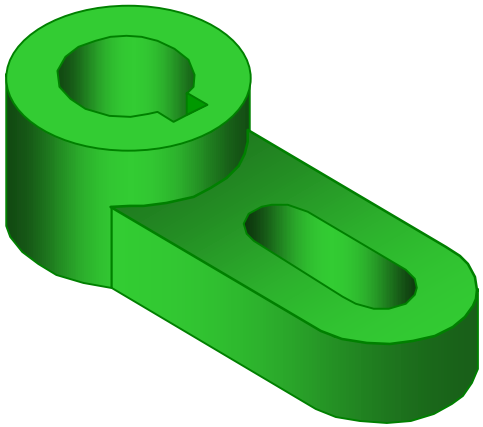


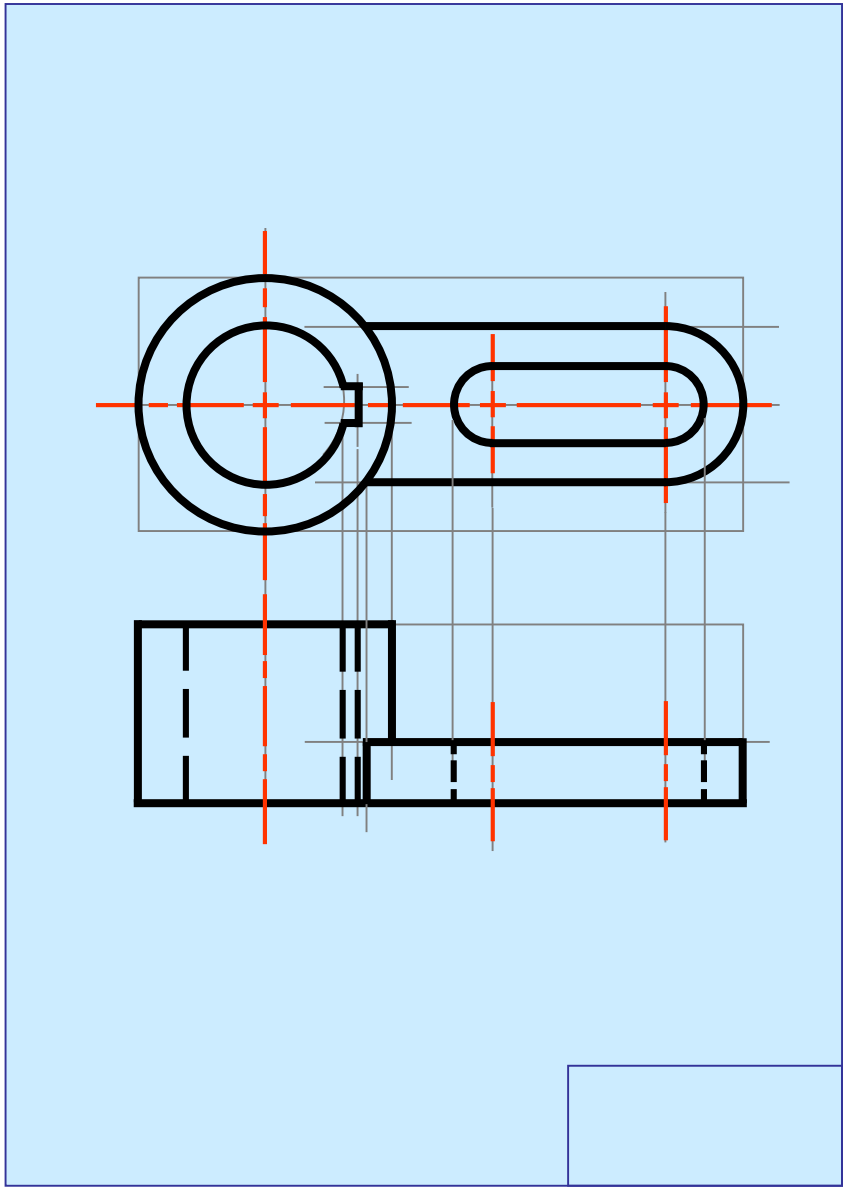


Choose an appropriate scale

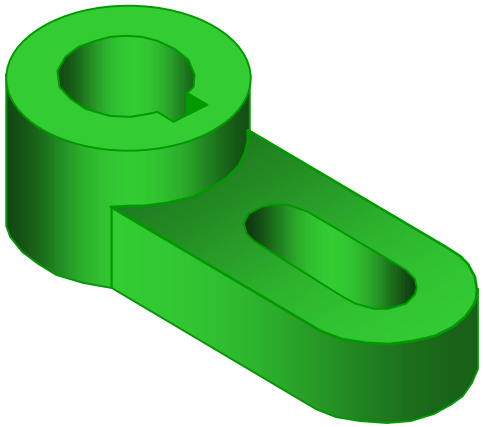
1:1

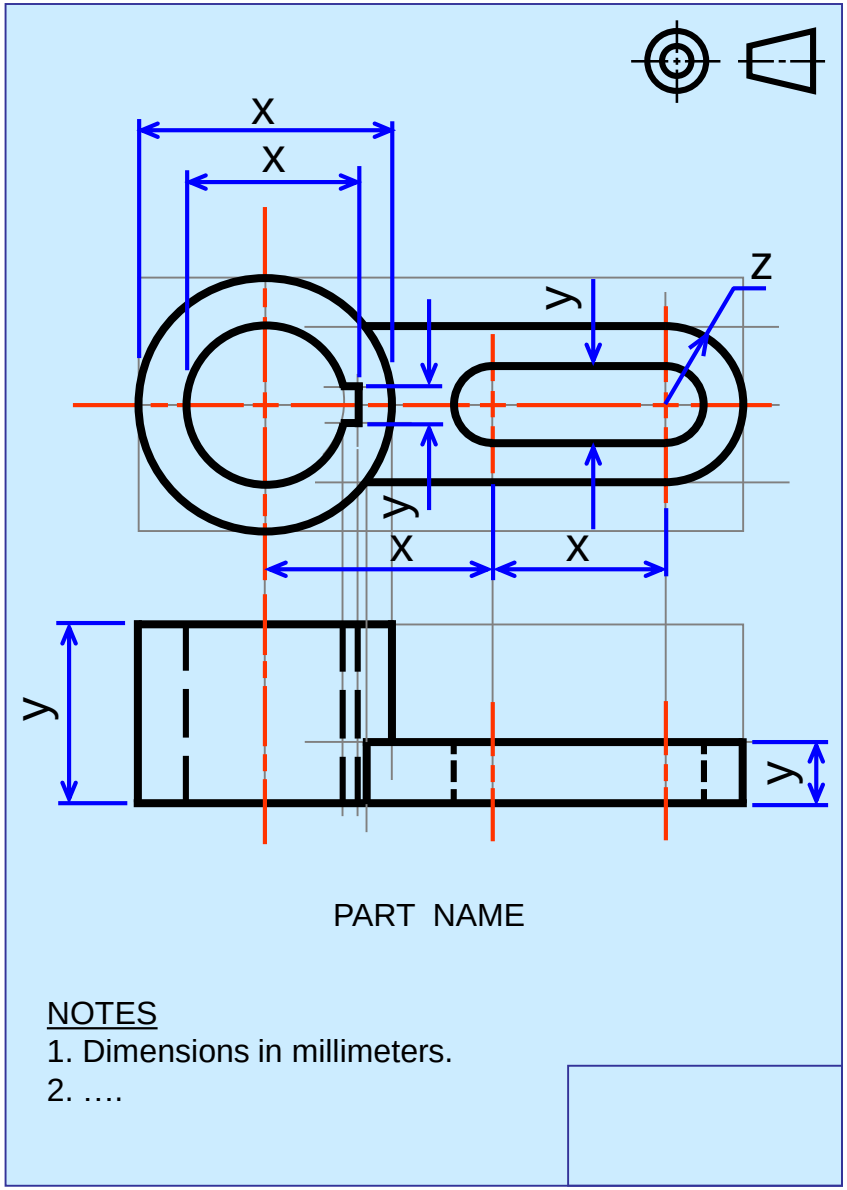
PROJECT THE VIEWS





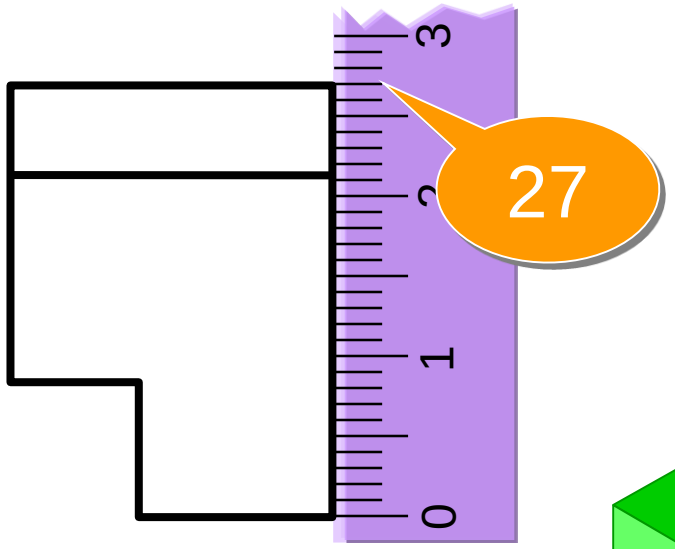
DIMENSION THE VIEWS

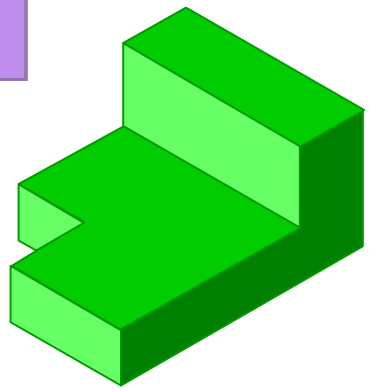


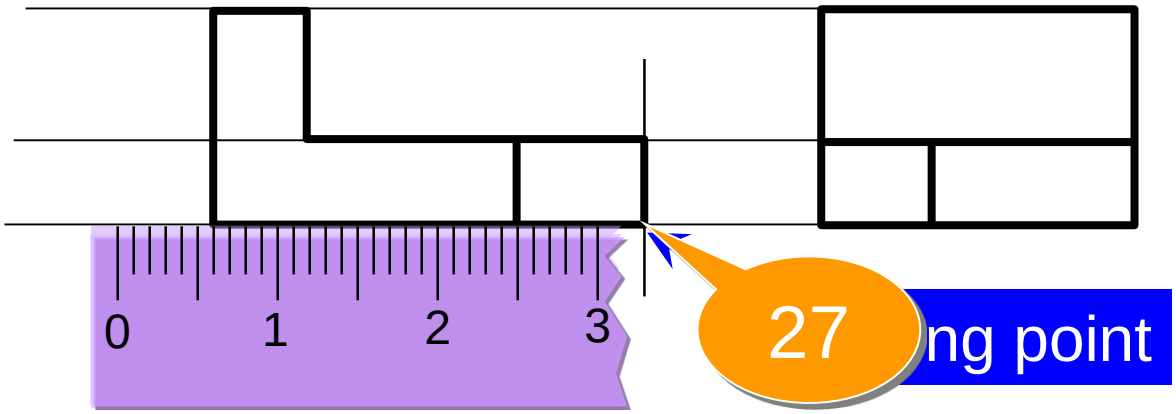


TRANSFERING THE DEPTH DIMENSION

1. Direct measurement

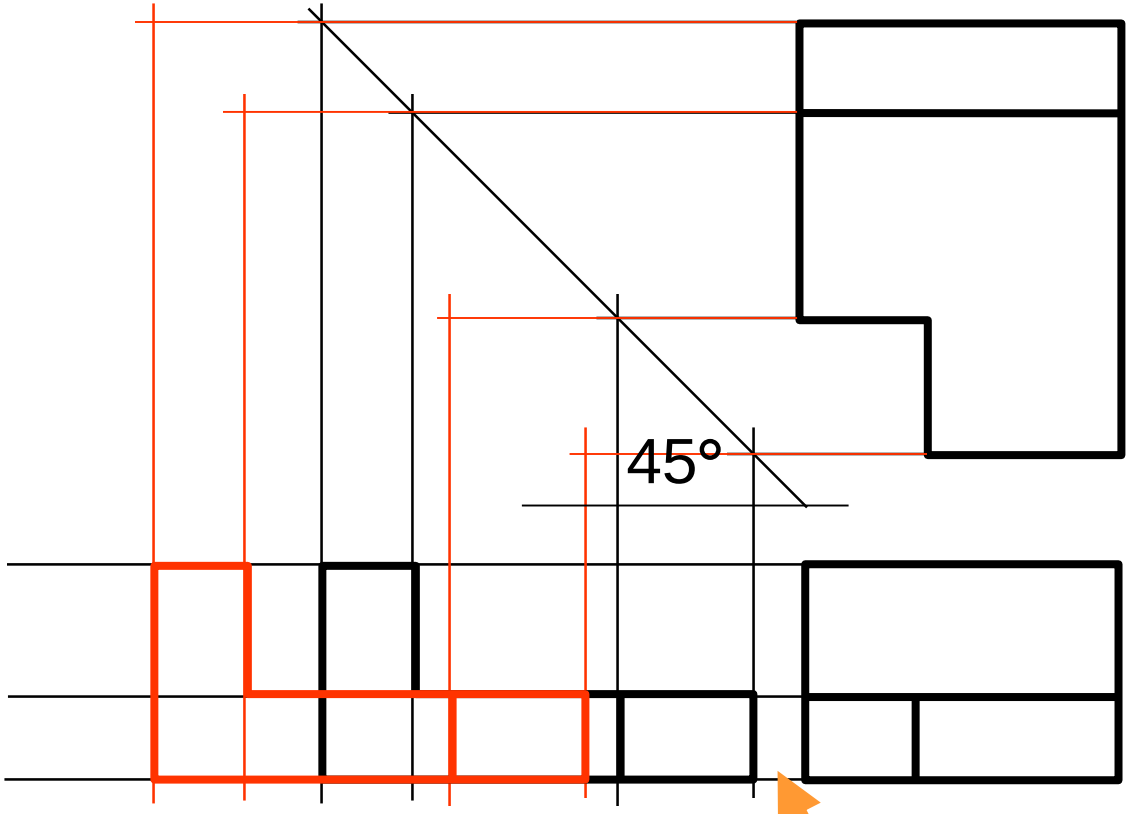


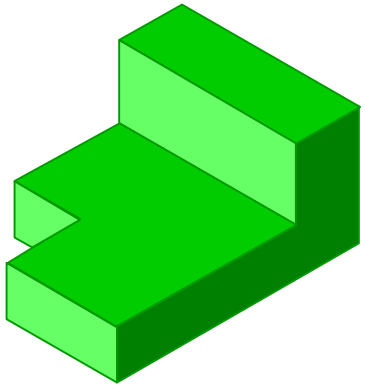




TRANSFERING THE DEPTH DIMENSION

2. Use miter line



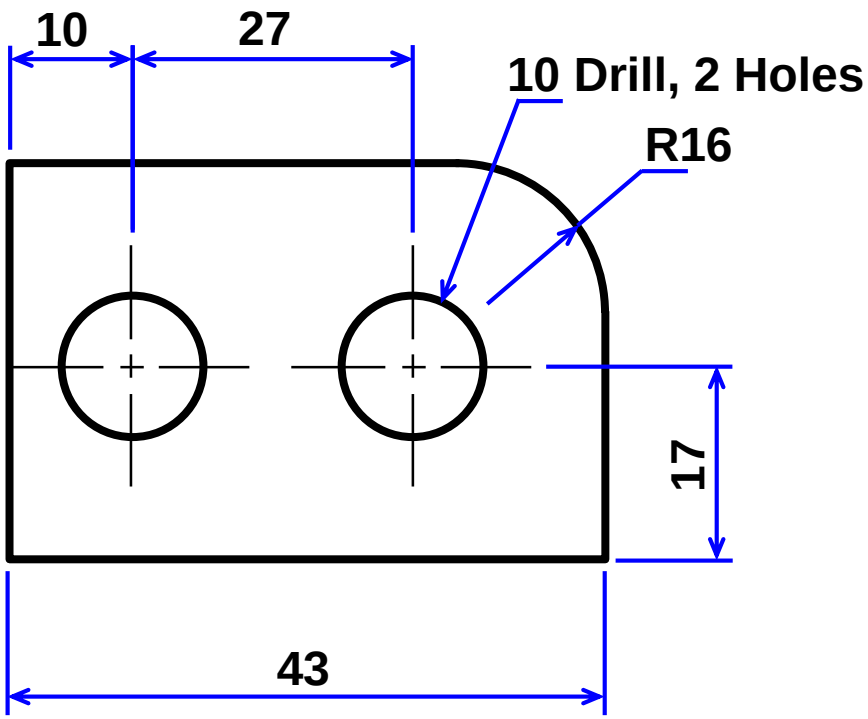


Views too close


Basic Dimensioning

COMPONENTS

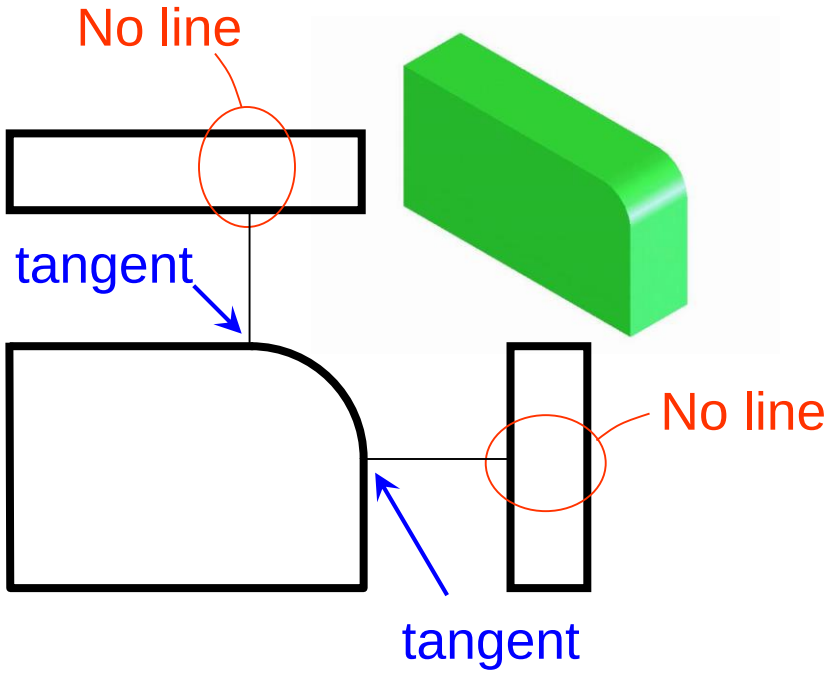
1. Extension lines
2. Dimension lines
3. Leader lines
4. Dimension numbers
5. Local notes

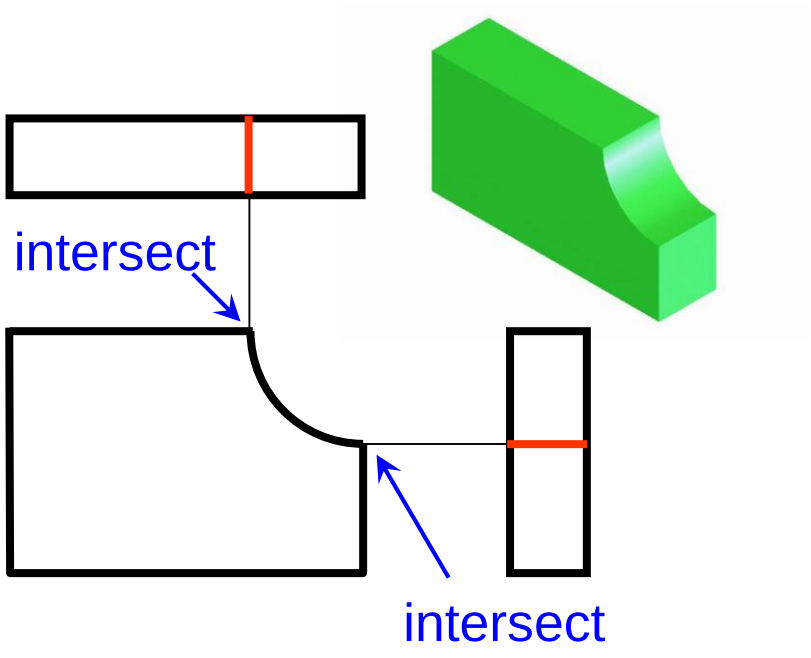



Tangencies and Intersections

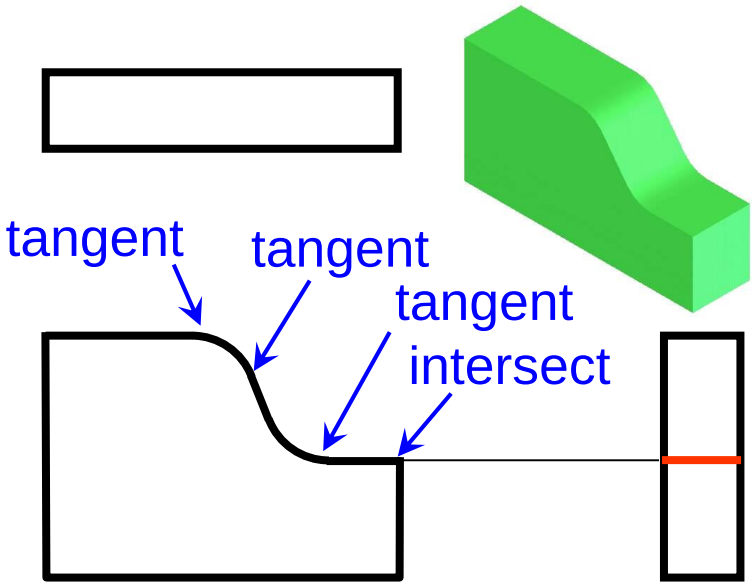
TANGENT & INTERSECTION

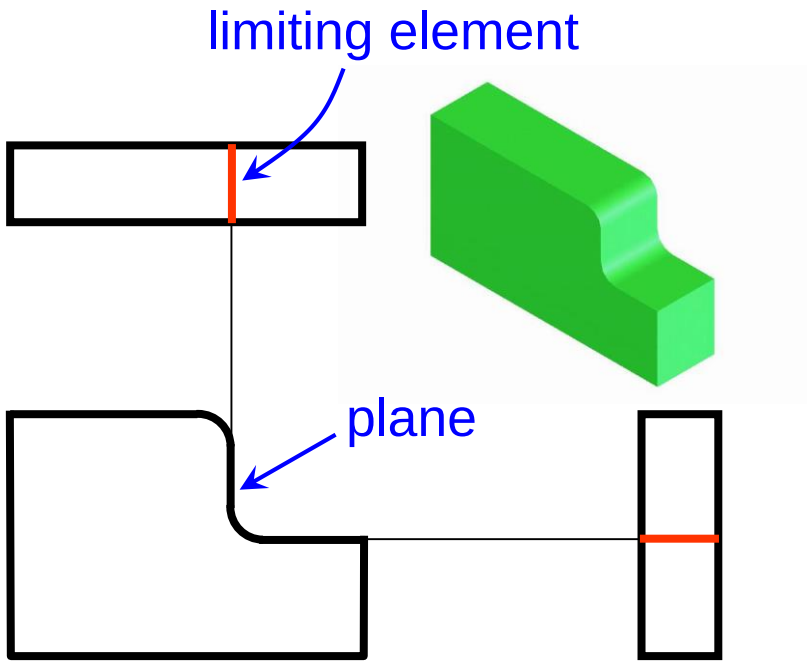
- No line is formed when curved surface ***tangent*** to a plane surface.
- Line is formed when curved surface ***intersects*** a plane surface.



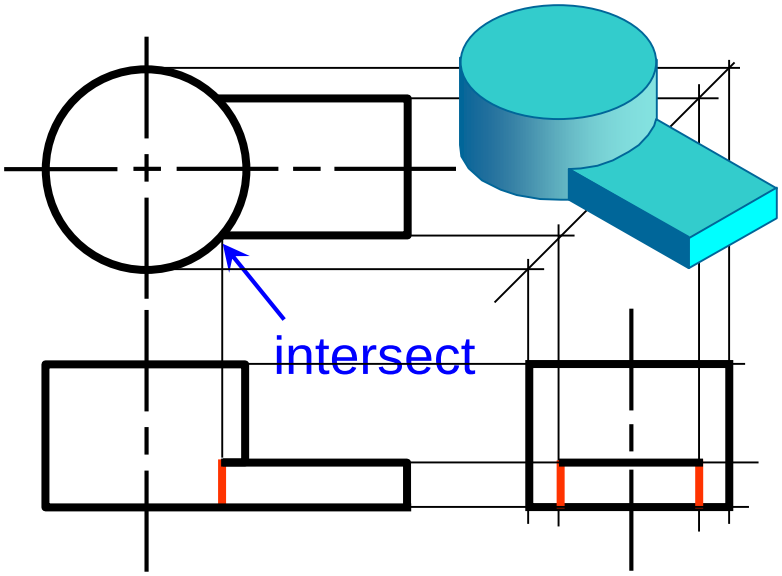


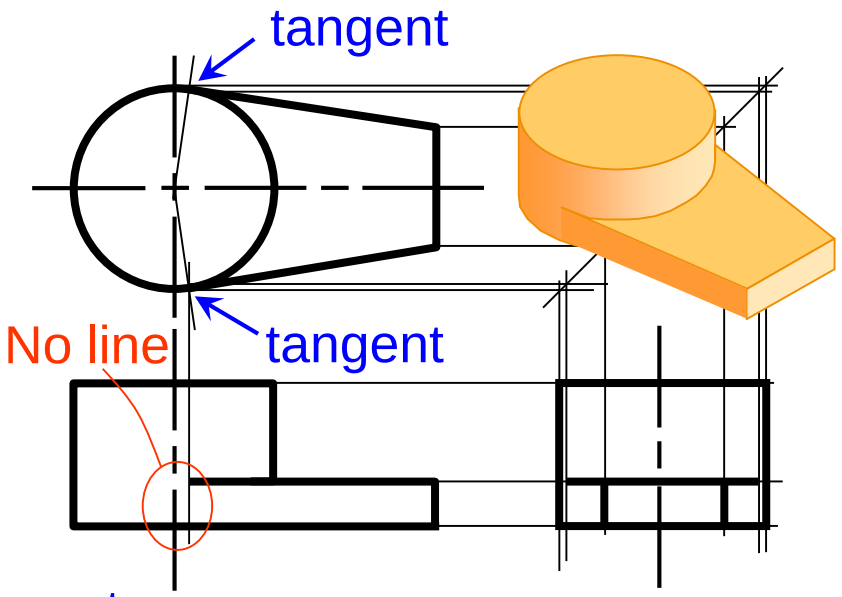
TANGENT & INTERSECTION

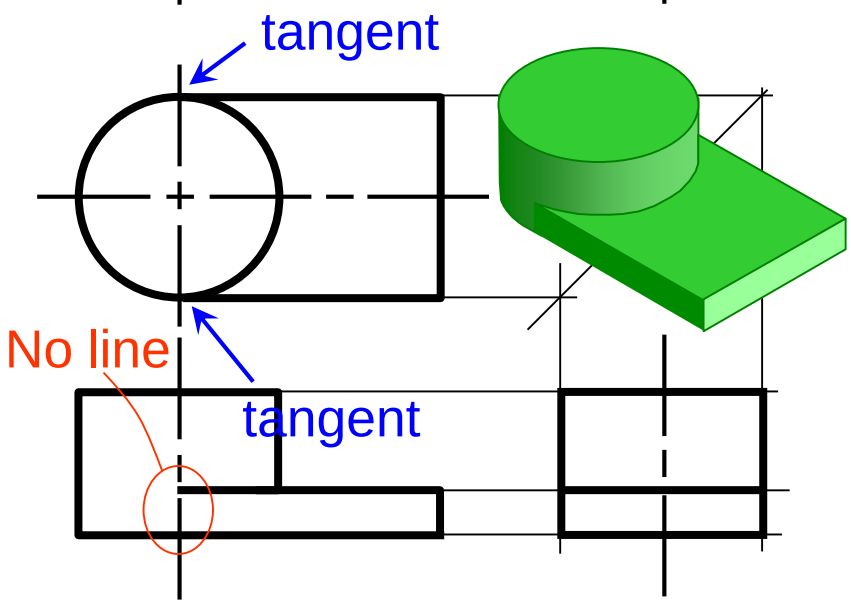


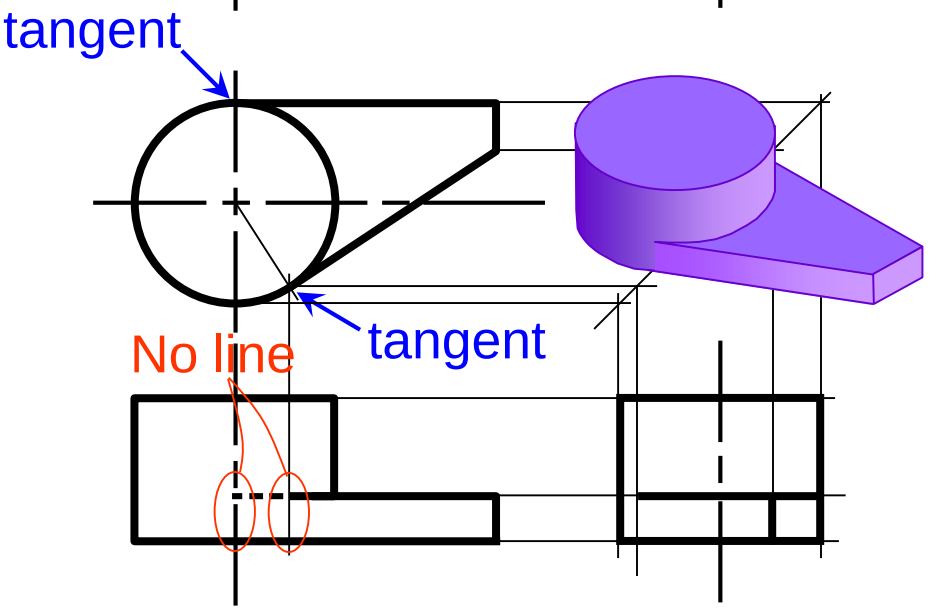


TANGENT & INTERSECTION





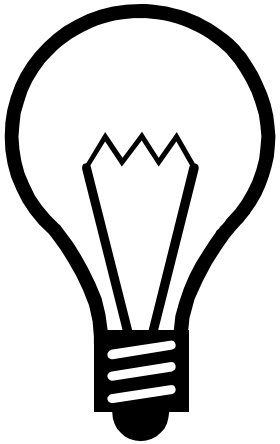




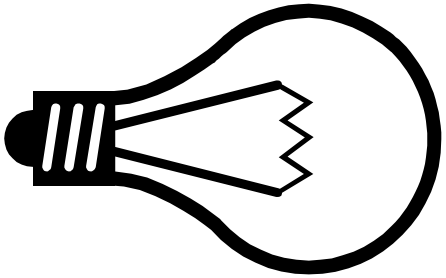
QUIZ

1. Which should be the **natural position** of the light bulb ? **(20 sec)**

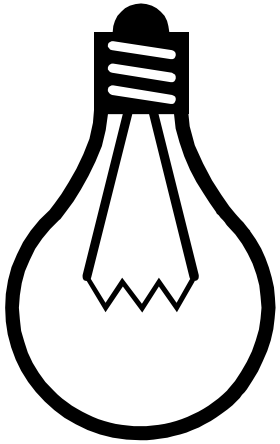
a



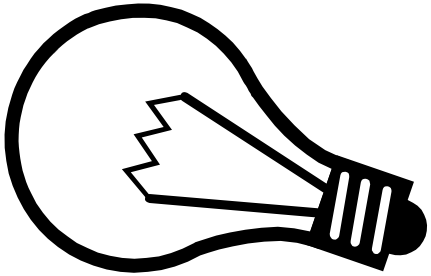
b)



c)



d)



0 5 10 15 20

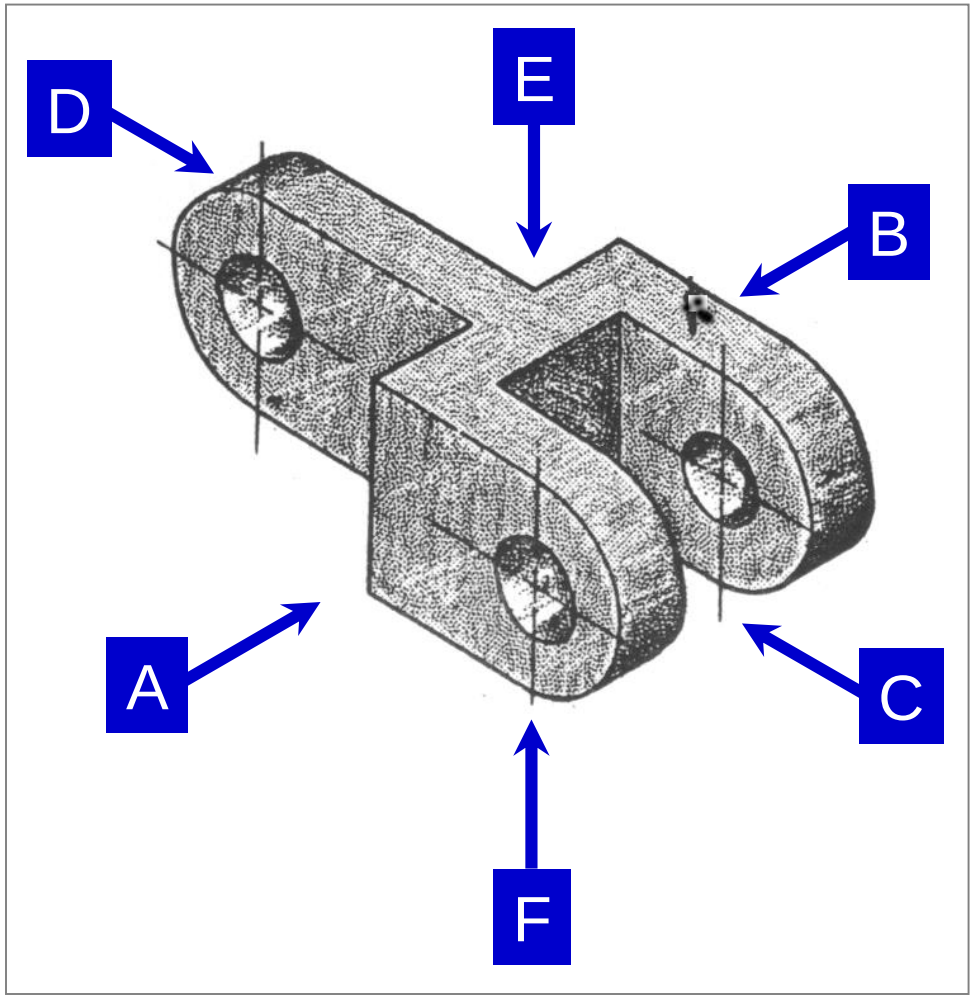
2. Which are the **necessary views** ? **(60 sec)**

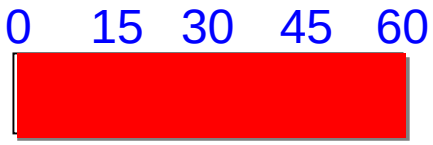
a) A-C-E

b) E-B-D

c) E-A

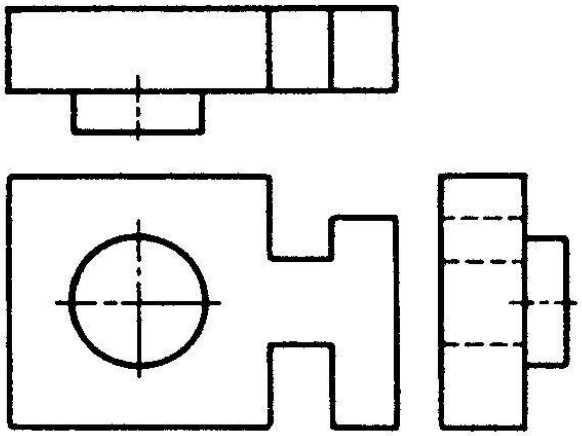
d) E-C



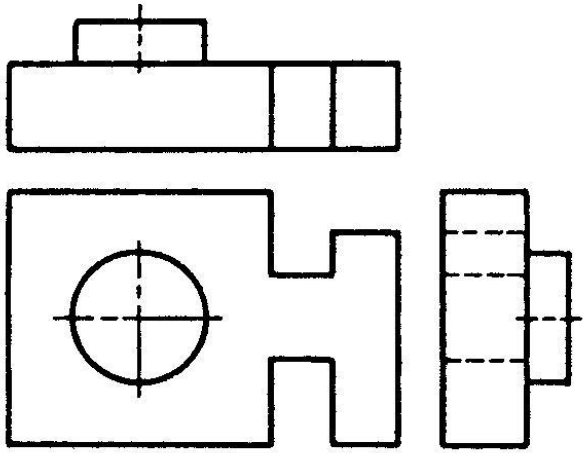


3. Which is in correct **first** angle projection ? **(180 sec)**

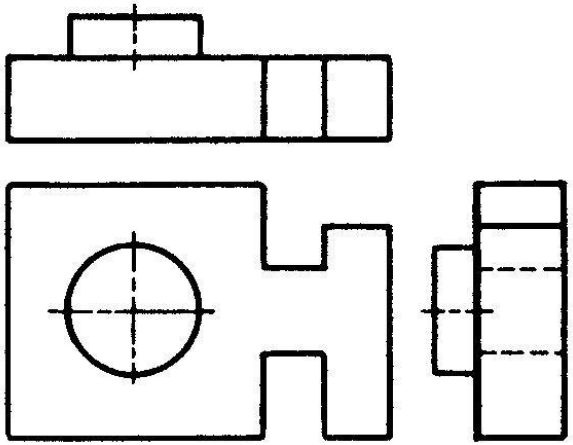
a)



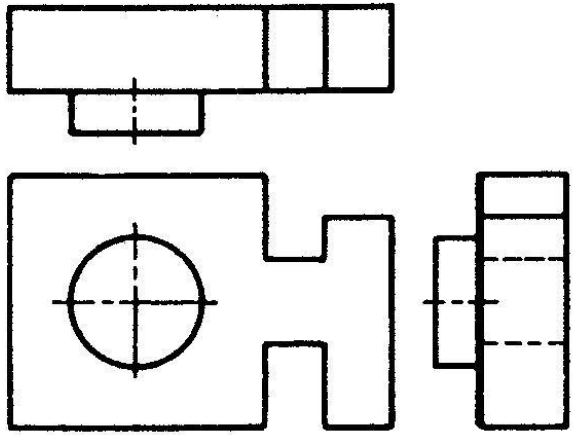
b)



c)



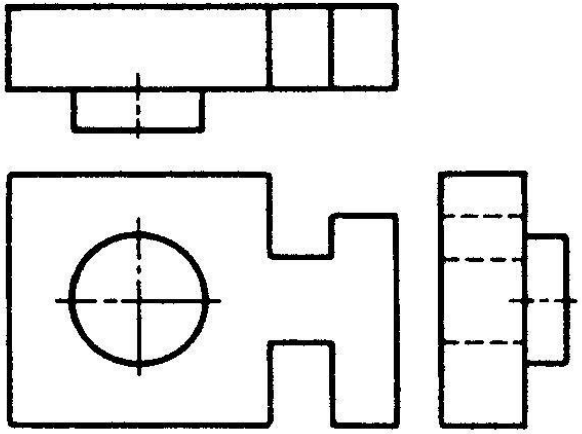
d)



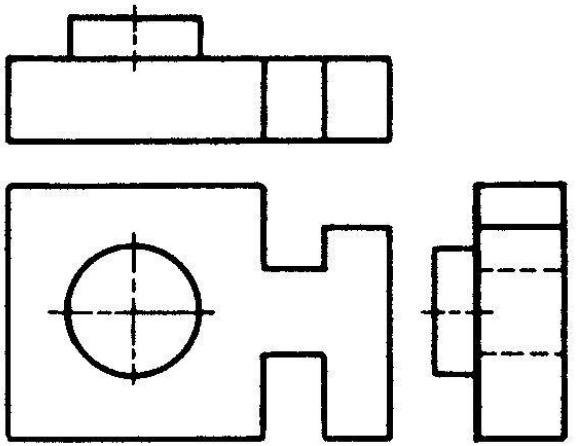
0 45 90 135 180

4. Which is in correct **third** angle projection ? **(180 sec)**

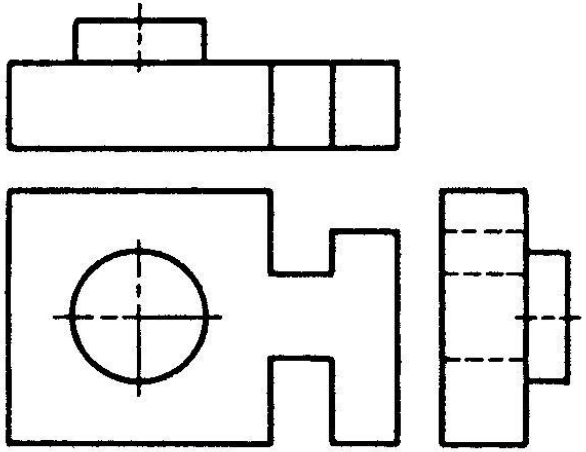
a)



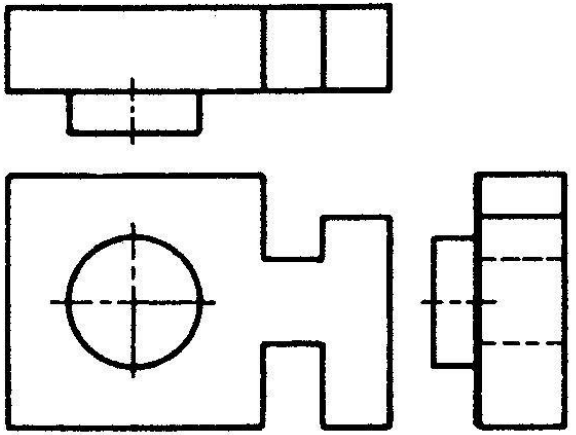
b)



c)



d)

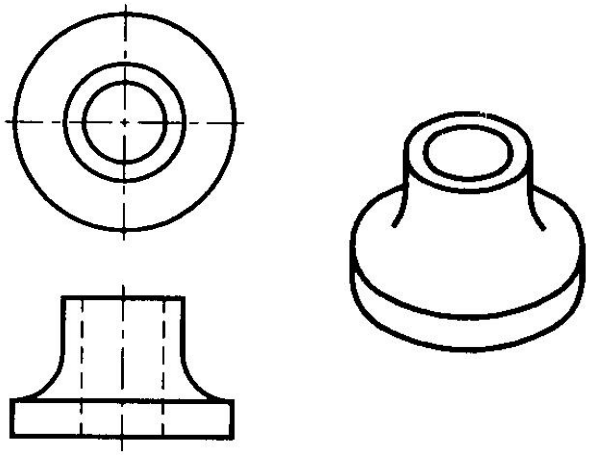


0 45 90 135 180

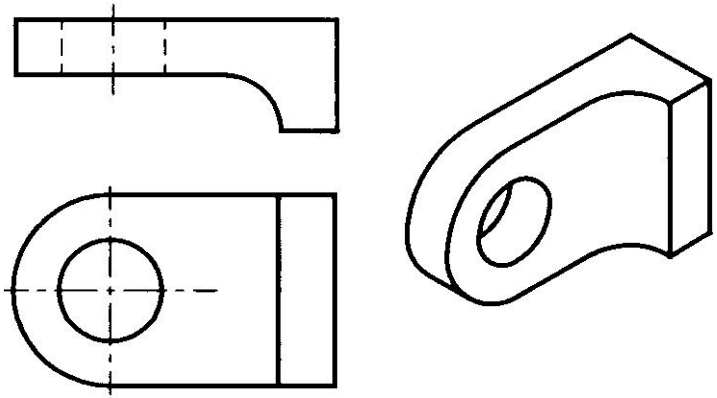
5. Which is a **wrong** 3rd angle orthographic views ?

(180 sec)

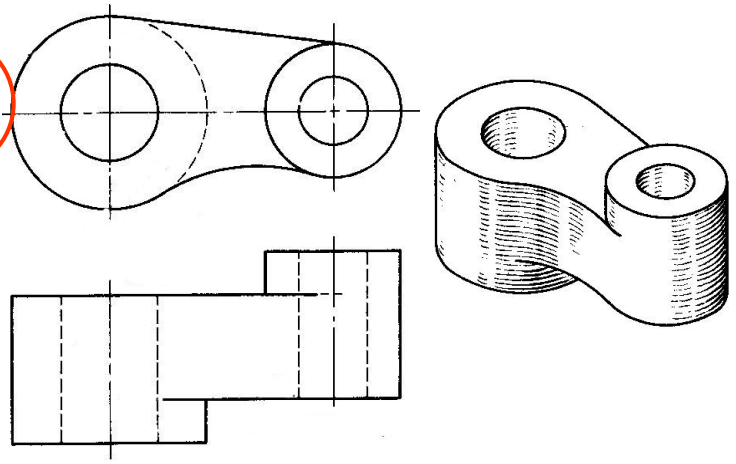
a)



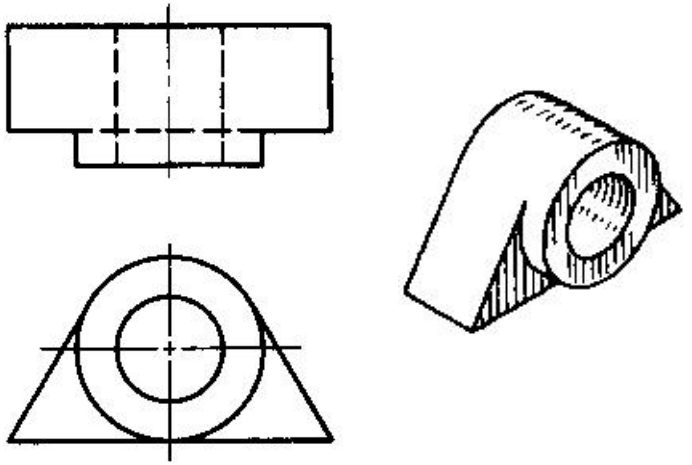
b)



c)



d)



0 45 90 135 180