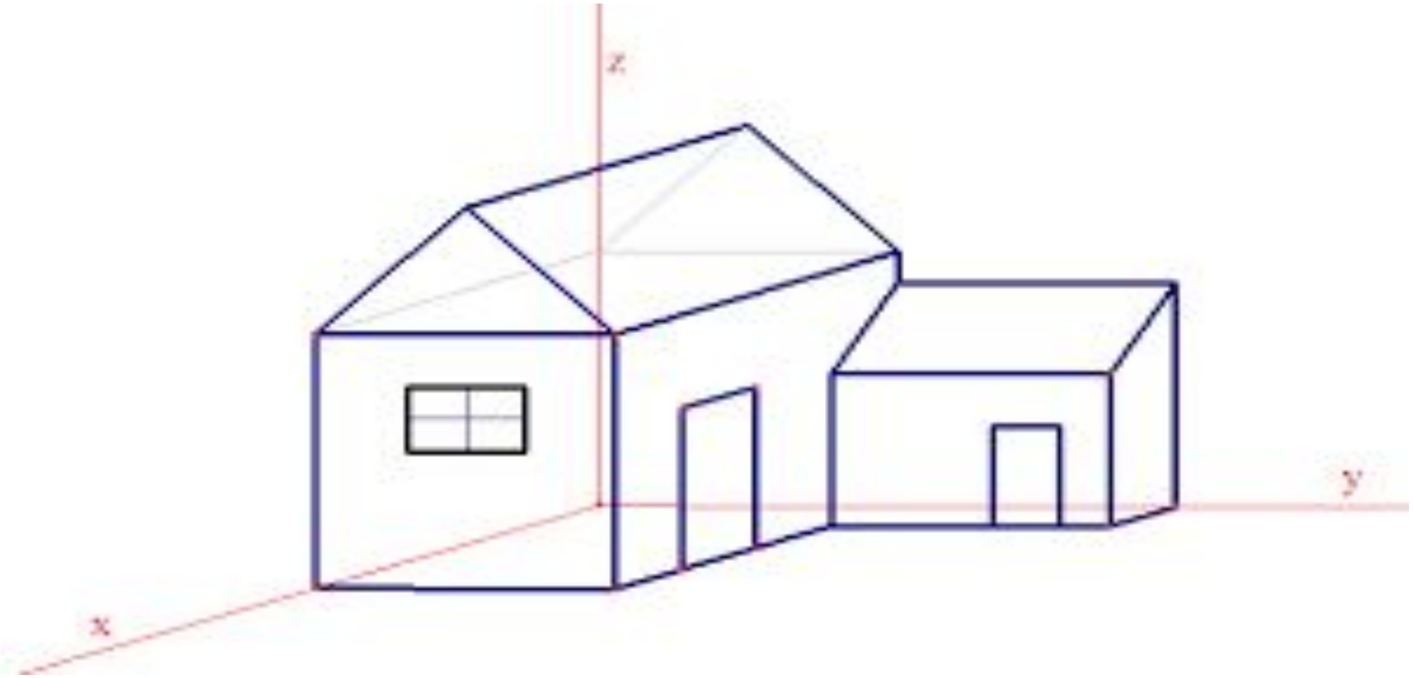
## Chapter IV

# The Perspectives

- Perspective provides a clearer representation than orthographic projection views. However, it is rare to fully define a structure with a single perspective because the dimensioning is unclear. The perspective that best corresponds to the desired effect should always be chosen, and hidden edges should be minimized as much as possible.

# Cavalier perspective

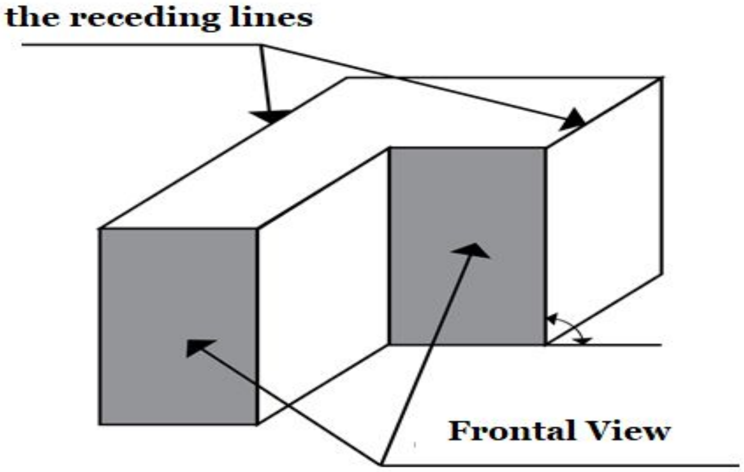
- It is the simplest perspective to execute; it is very well suited for quick sketches, but it significantly distorts the represented object.



# Principle

All frontal faces are drawn in their true dimensions. All non-frontal edges are drawn along receding lines inclined at the same angle α and are reduced by a uniform ratio called the "foreshortening scale."

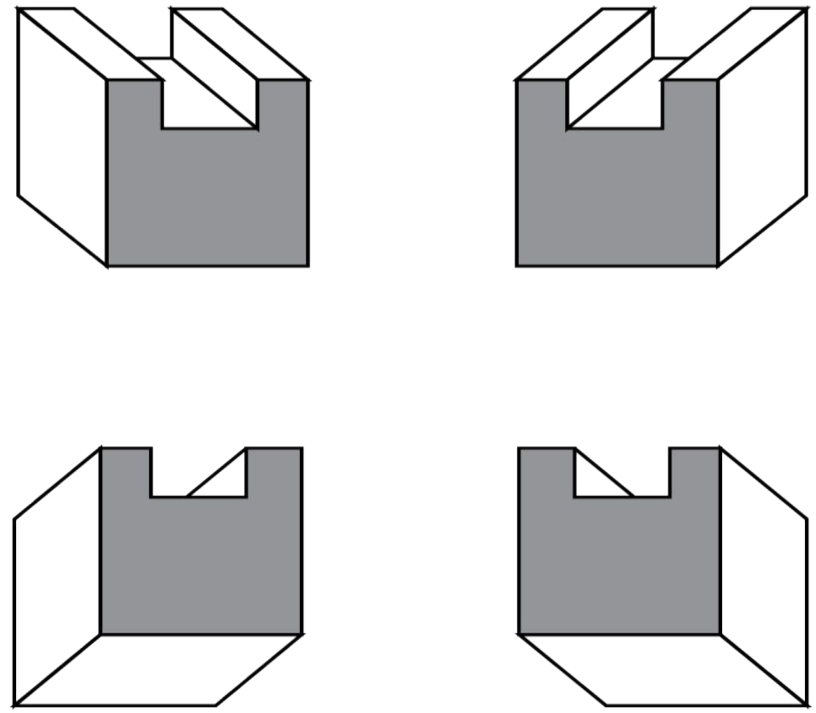
| |
|---|
| **Angle of the receding lines: a = 45°.**<br>**Foreshortening scale: R = 0.5.** |

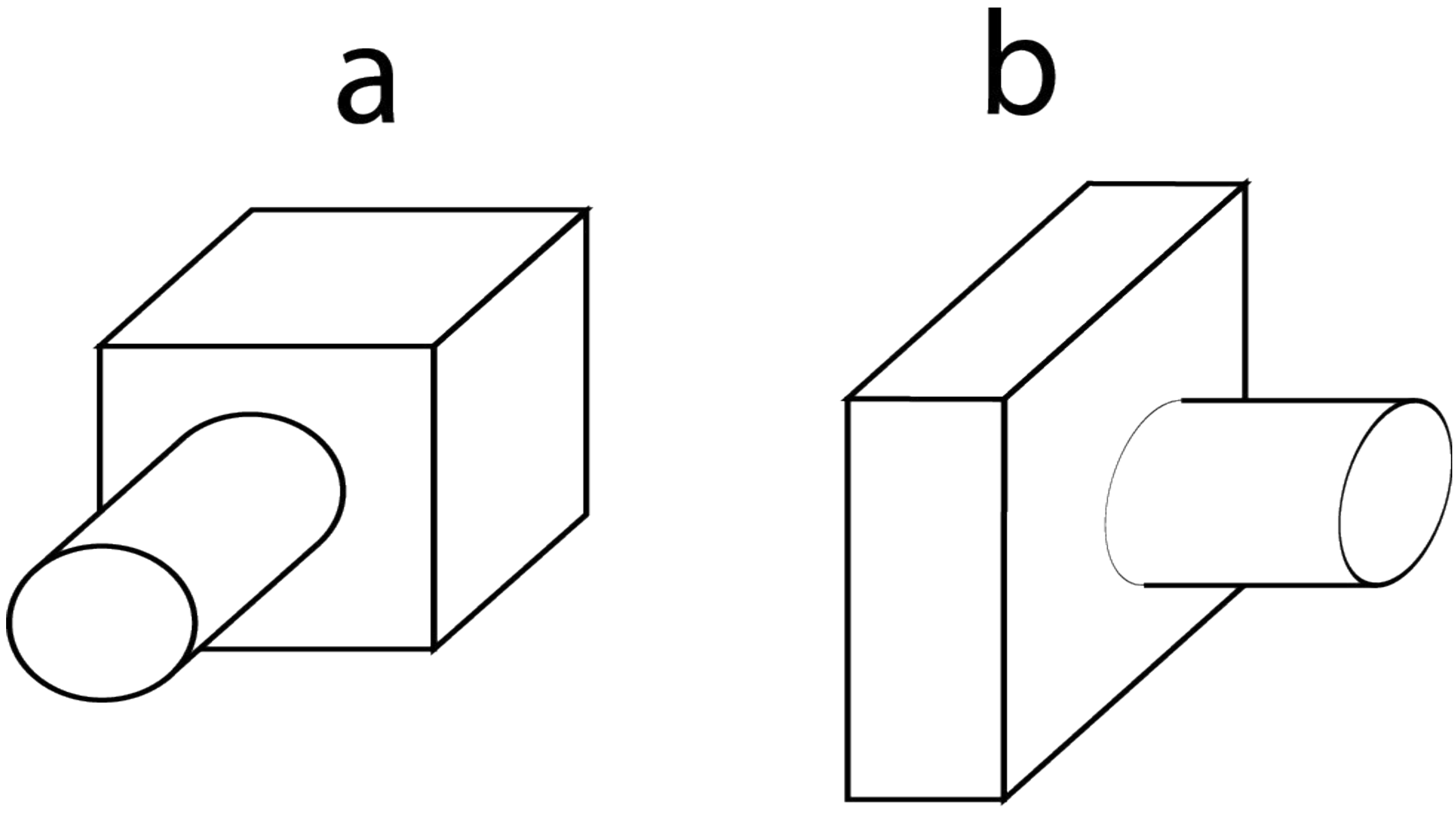


# Practical Tips

Choose as the frontal face the side of the object that is of the most interest.

Carefully choose the orientation of the receding lines, because with the same frontal face, you can obtain four different images of the object (see fig.).






- **Try not to place cylindrical shapes on the side faces to avoid drawing ellipses. In the figure, solution A is preferable to solution B.**

# Perspective of a Circle

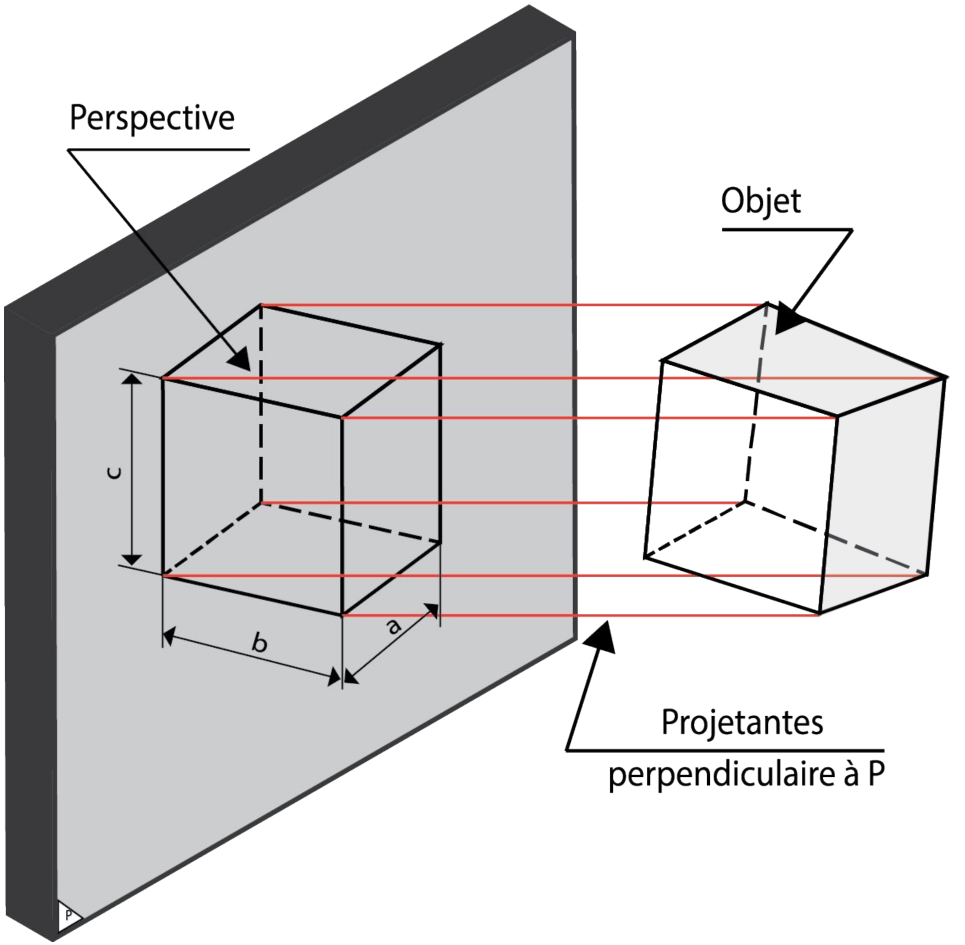
Any circle drawn on a non-frontal face is distorted and projects as an ellipse. An ellipse can be drawn from its circumscribed parallelogram (see fig.).

- Divide OA into equal parts.
- Divide AC into the same number of equal parts.
- Join the divisions on OA to point B, and the divisions on AC to point B'.
- The intersections of the segments from B and B' are points on the ellipse.

# Axonometric Perspectives

## Definition

Axonometric perspective is an orthographic projection of the object onto a plane that is oblique to its principal faces; as a result, none of the object's faces are shown in their true dimensions.

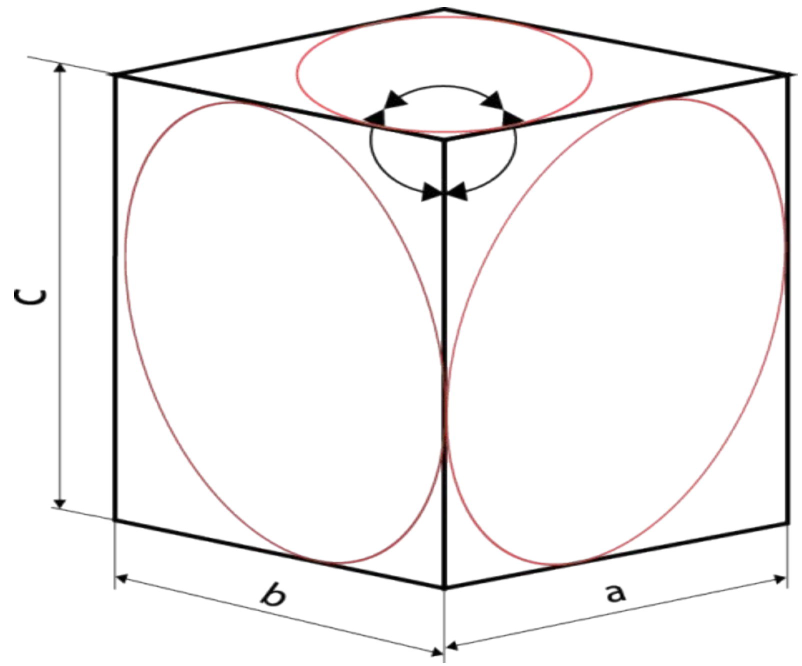


- **There are three types of axonometric perspectives:**
- **Isometric perspective if $\alpha = \beta = \gamma$**
- **Dimetric perspective if $\alpha = \beta \neq \gamma$**
- **Trimetric perspective if $\alpha \neq \beta \neq \gamma$**

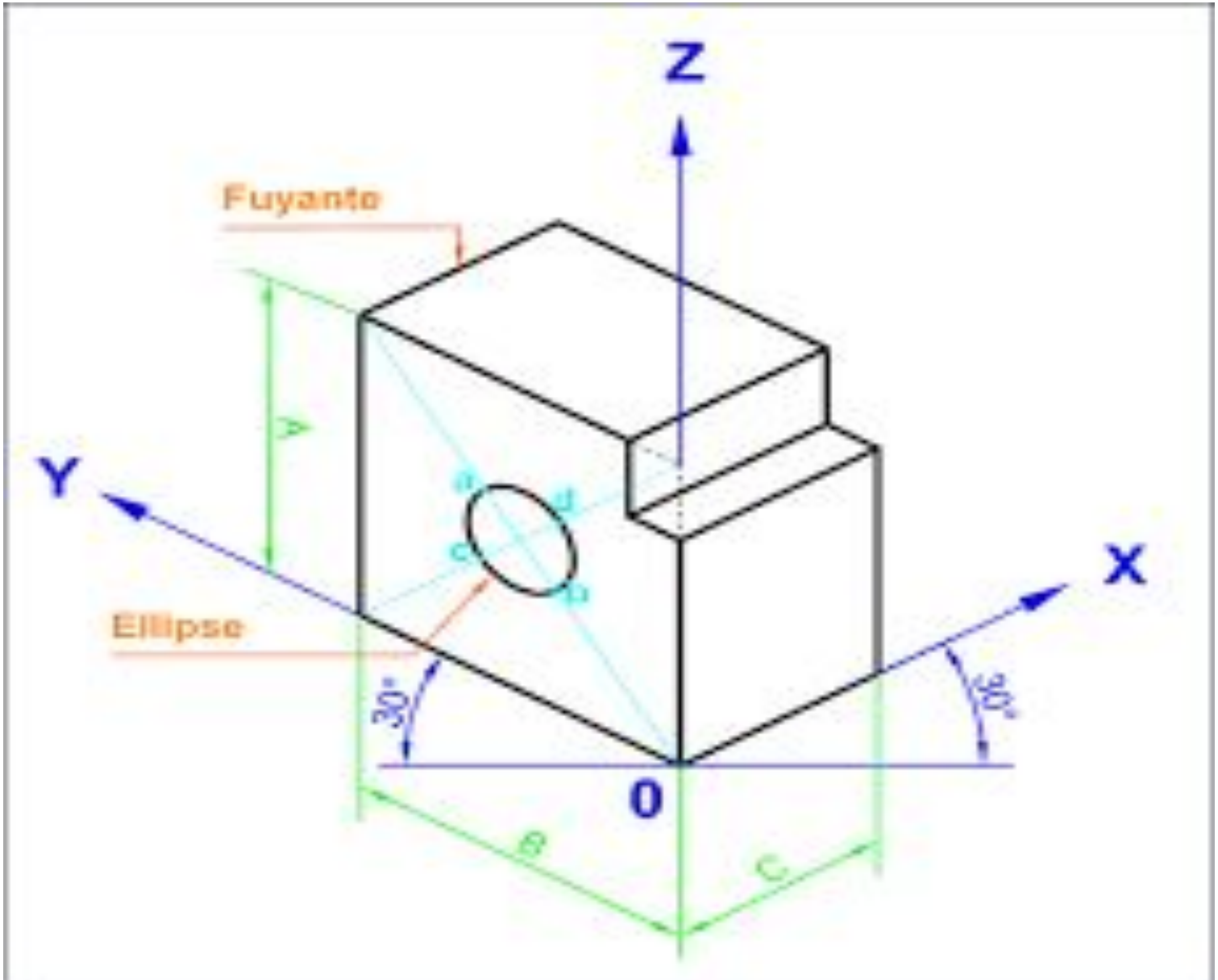
# Isometric Perspective

This is the most convenient axonometric perspective to execute (all the receding lines are inclined at 30° to the horizontal).

It is commonly used for piping diagrams.




Reduction coefficient on a, b and c:
R= 0.82

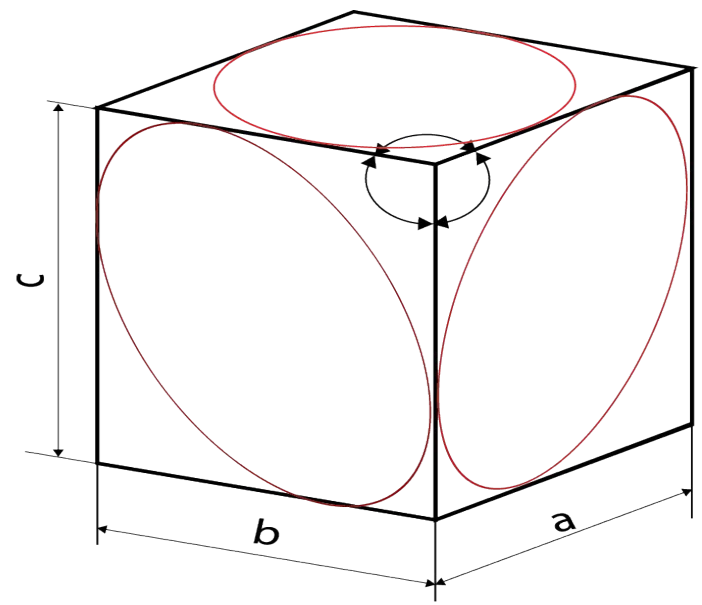


Z
Fuyanto
A
Y
a
d
c
b
X
Ellipse
30°
30°
0
B
C

# Rectified Dimetric Perspective

- This type of perspective is suitable for representing long parts, as it produces a very "compact" image.

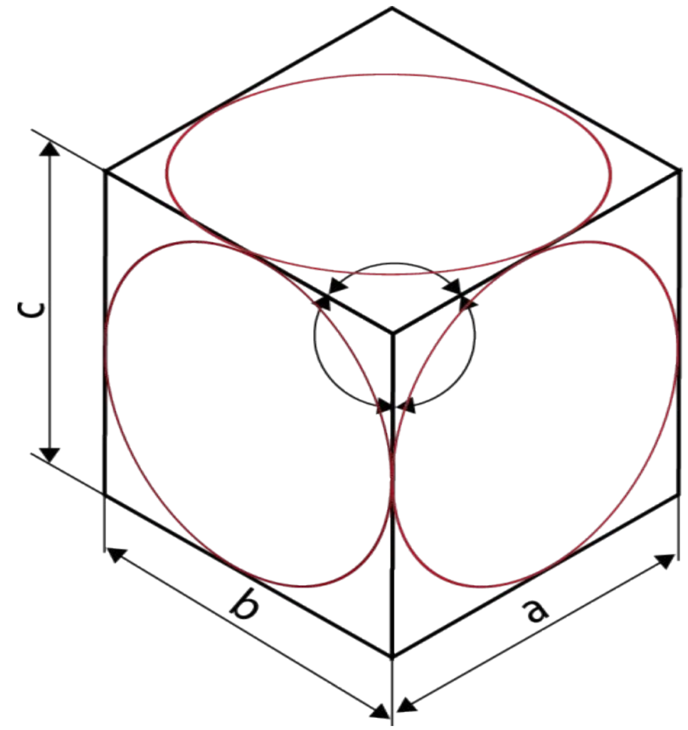
EXECUTION PARAMETRES:




***Rduction Coefficient***
***On a and b*** **:. R = 0,73.**
***Rduction Coefficient on***
***c*** **: R = 0,96.**
**$\alpha$ = $\beta$ = 105°. j = 150°**.

# Usual Dimetric Perspective

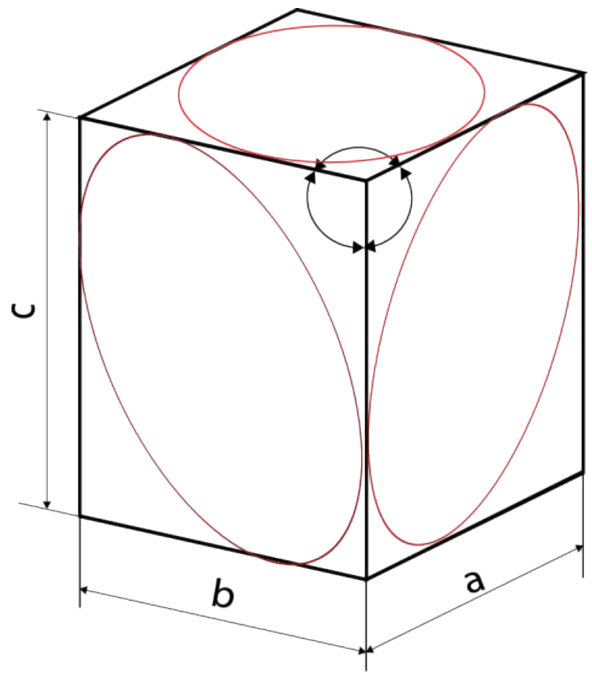
- This perspective is used when you want to highlight one face of an object over the others. However, as its execution is less straightforward, isometric perspective is often preferred.



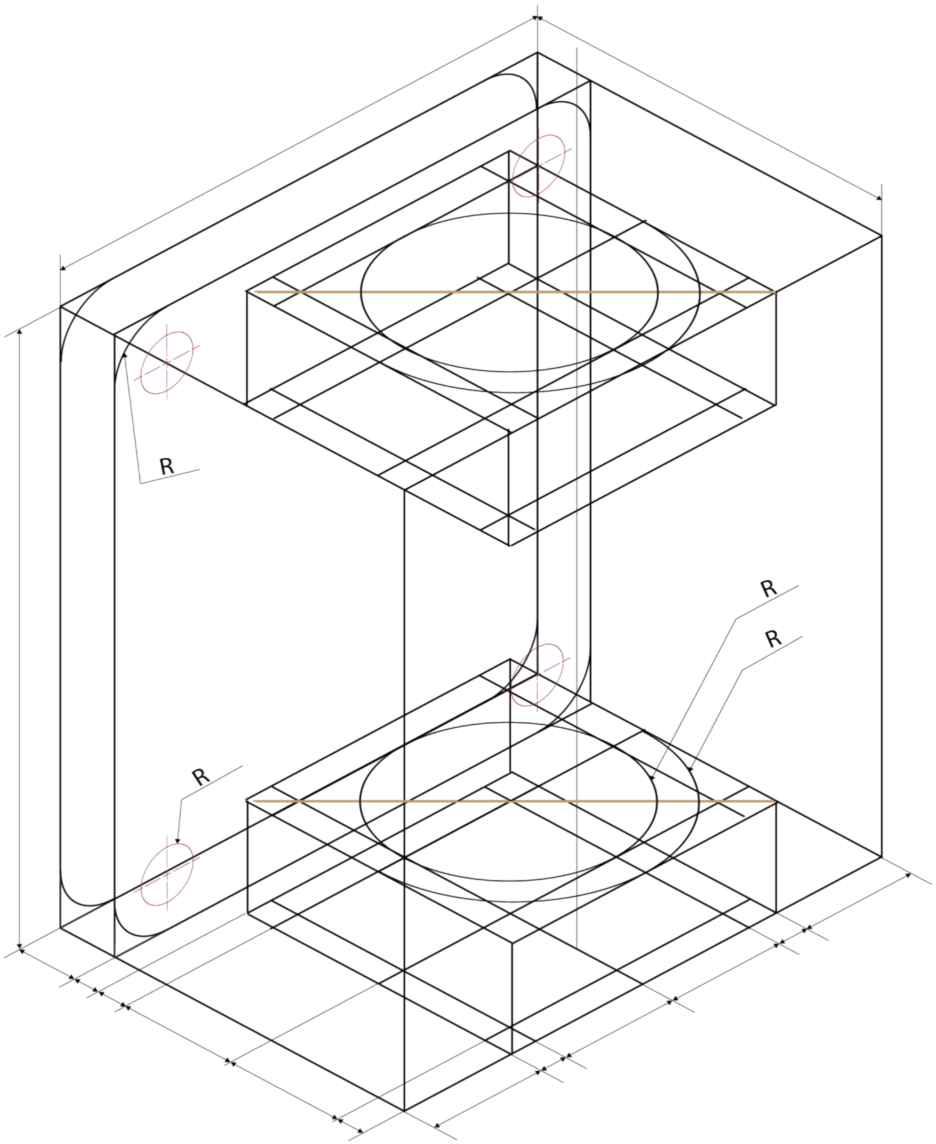

***Reduction Coefficient on a et b* : R =0,94.**
***Reduction Coefficient on c* : R = 0,47.**

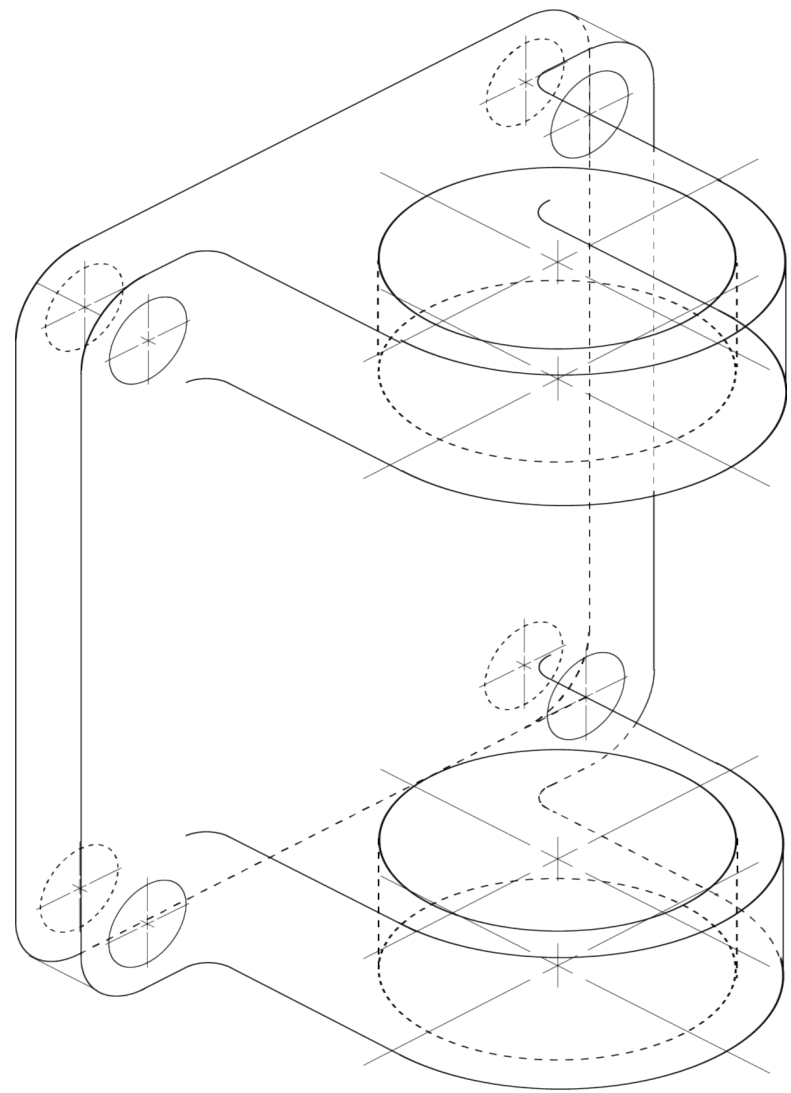
# Trimetric Perspective

This perspective is time-consuming to execute, but its appearance is very good because the vertical edges are significantly offset from one another.



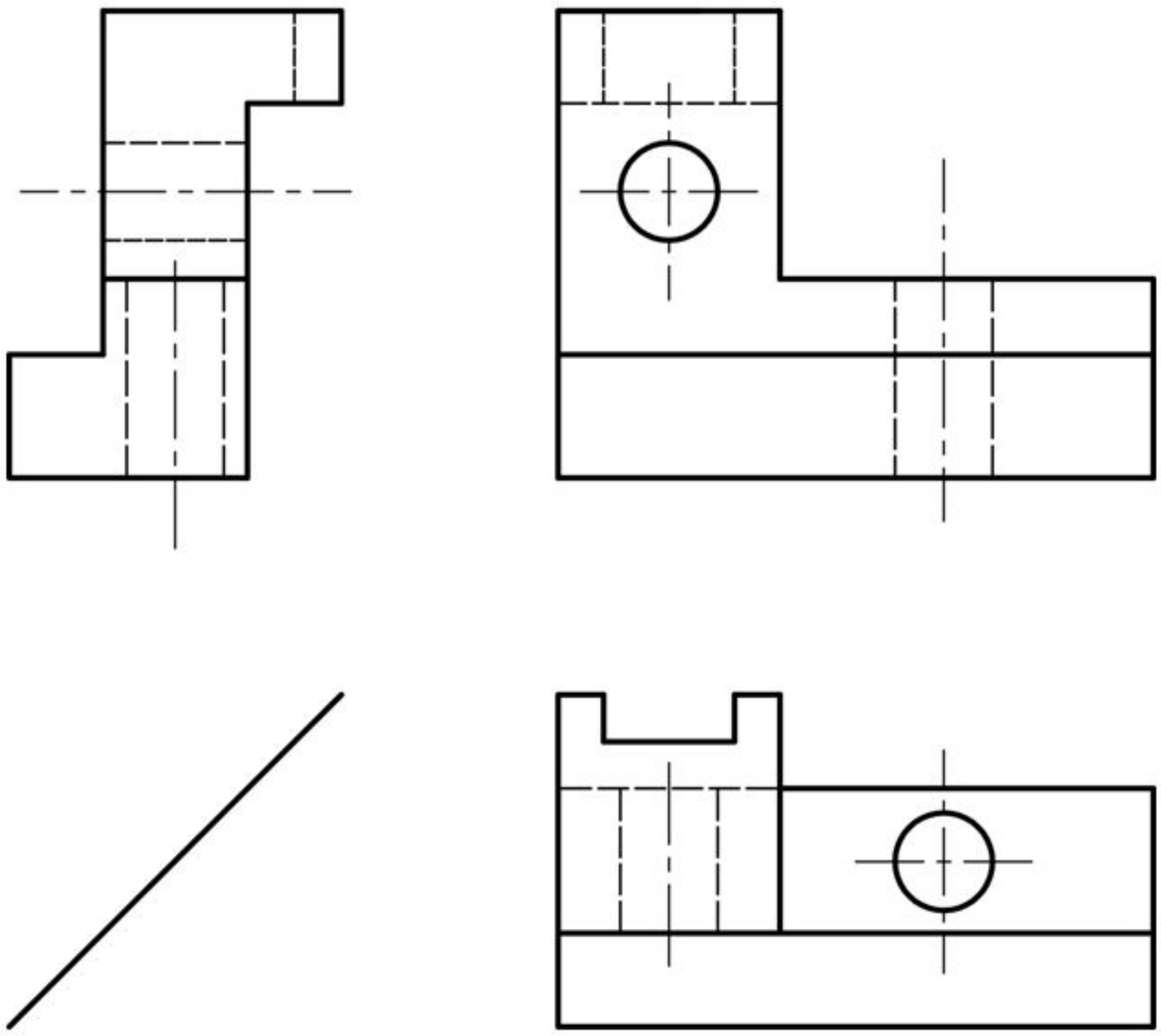

***Reduction on a :*** **R = 0.65. α = 105°.**
***Reduction on b*** **:. R = 0,86. β = 120°.**


R
R
R
R



## Exercise:

From the views shown below, draw the two perspectives, cavalier and isometric (k=0.82)



- **Thank you**