Larbi Ben M' hidi University – Oum El Bouaghi-
Department of Urban Technics Management
Module: WORKSHOP I
1st year license

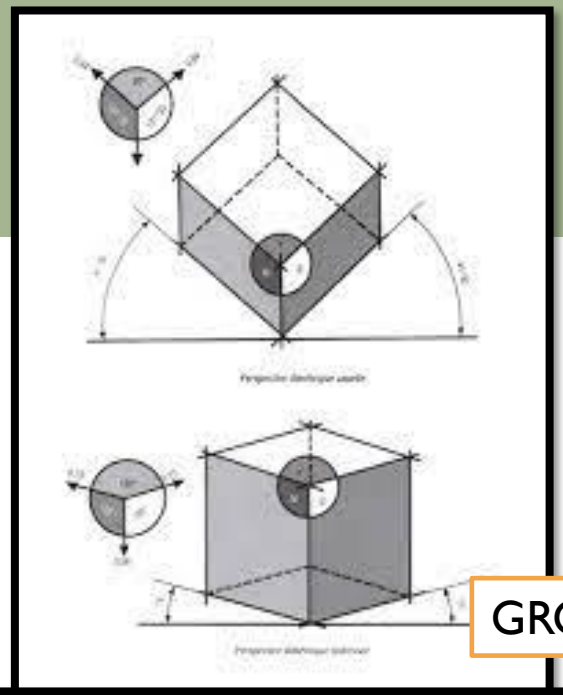
AXONOMETRY

ACADEMIC YEAR: 2023/2024

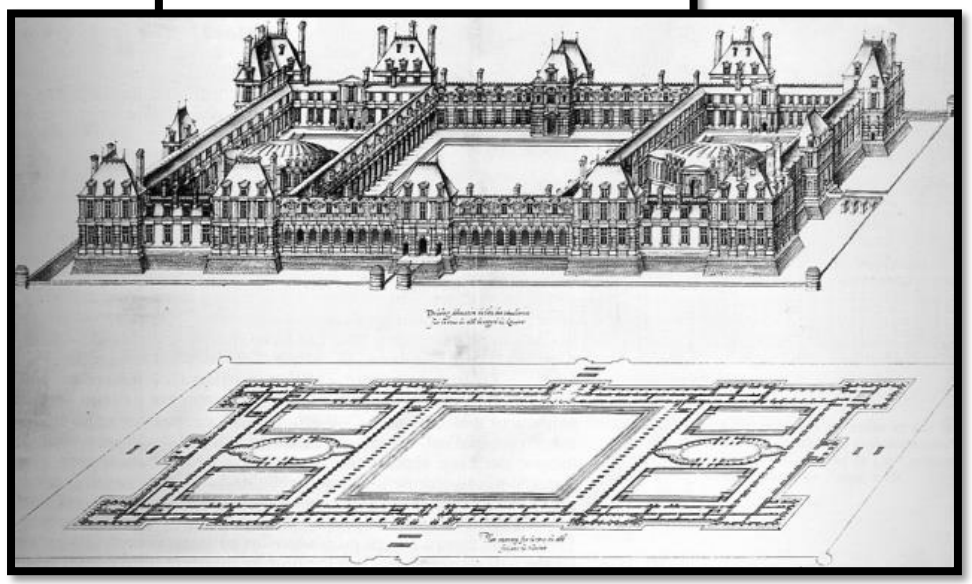
Perspective is a **drawing technique which aims to represent an object in 3D volume on a flat surface by giving an impression of relief.** In a single view, **it shows a large number of faces, and as much information as possible**. Perspective gives a three-dimensional effect to the drawing.

There are different techniques for representing perspective in drawing:

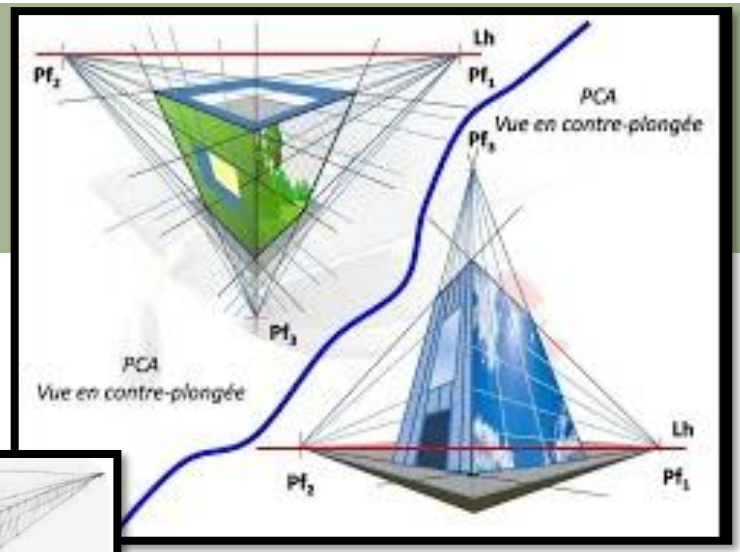
- Axonometric projection (isometric, dimetric, trimetric, cavalier, military perspective).
- Conical projection (perspective with vanishing point(s)…)

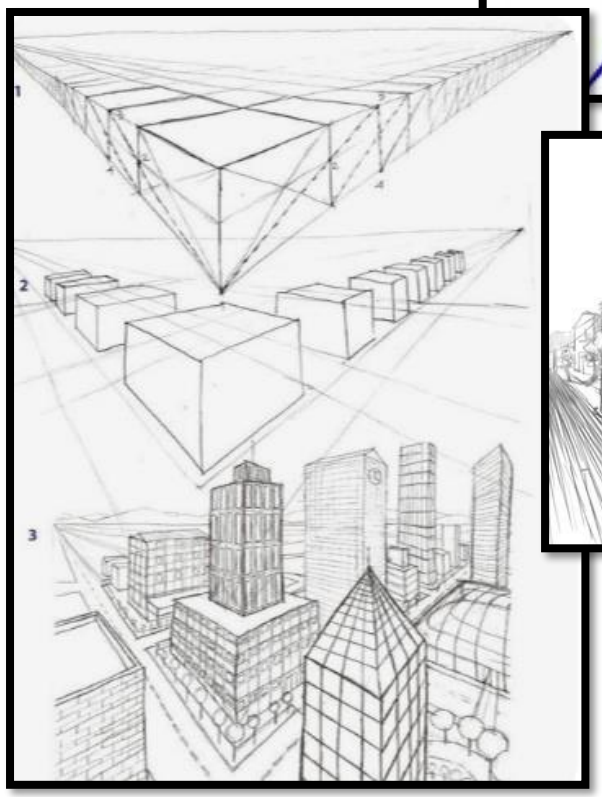


GROUPE A

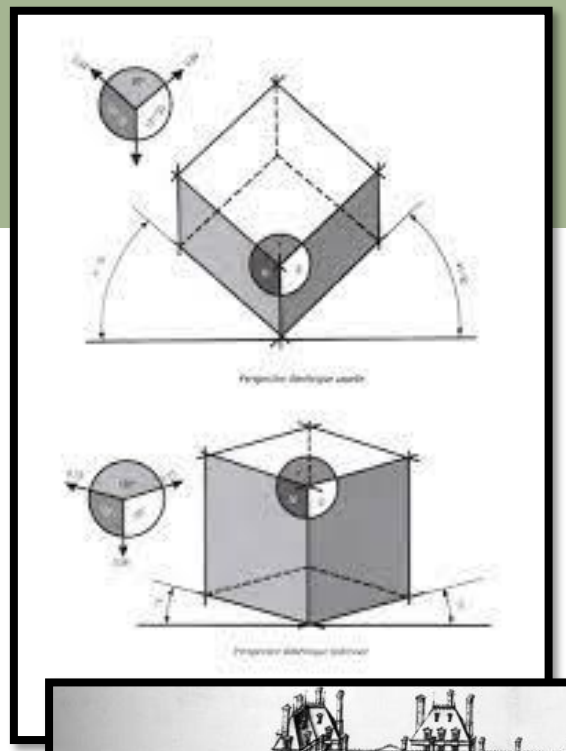


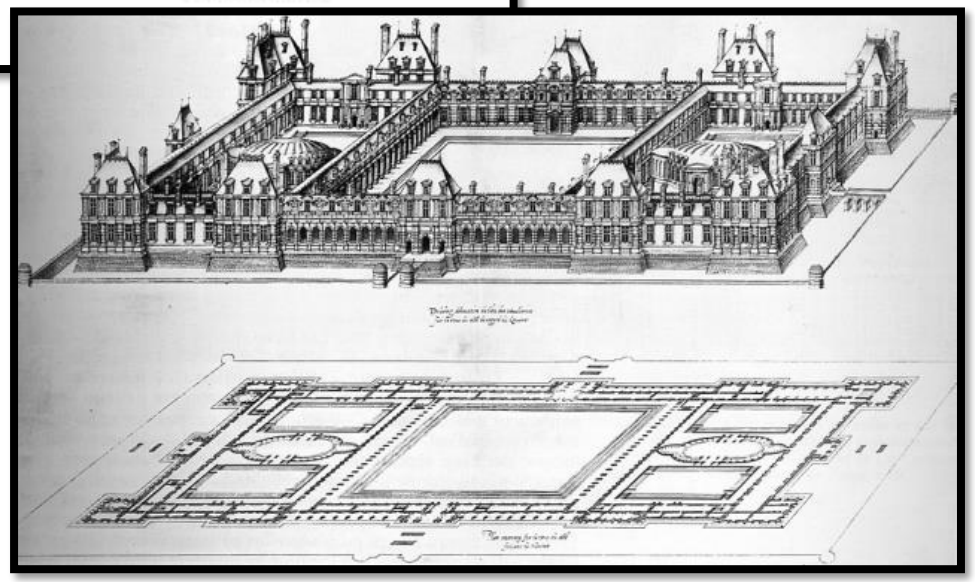
GROUPE B

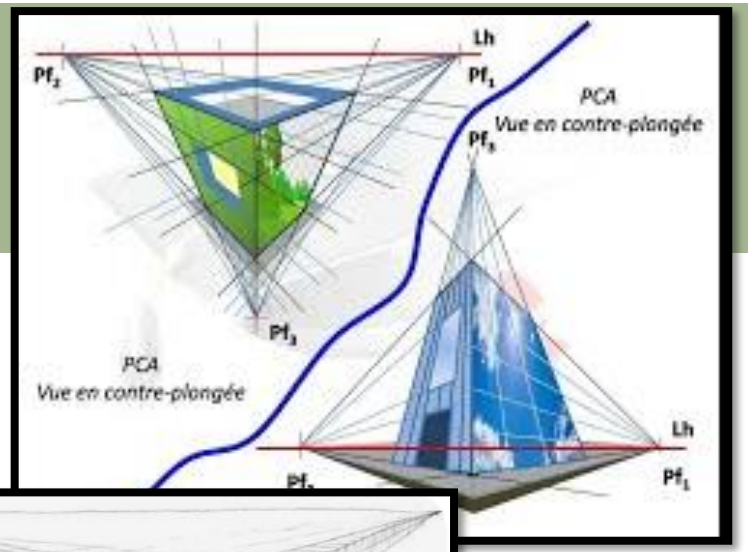


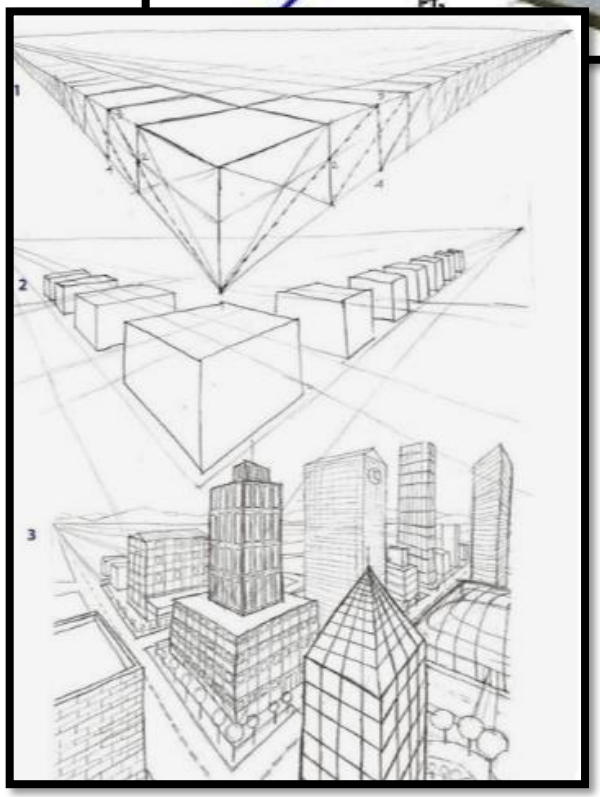


AXONOMETRIC PERSPECTIVE « AXONOMETRY » VS CONICAL PERSPECTIVE



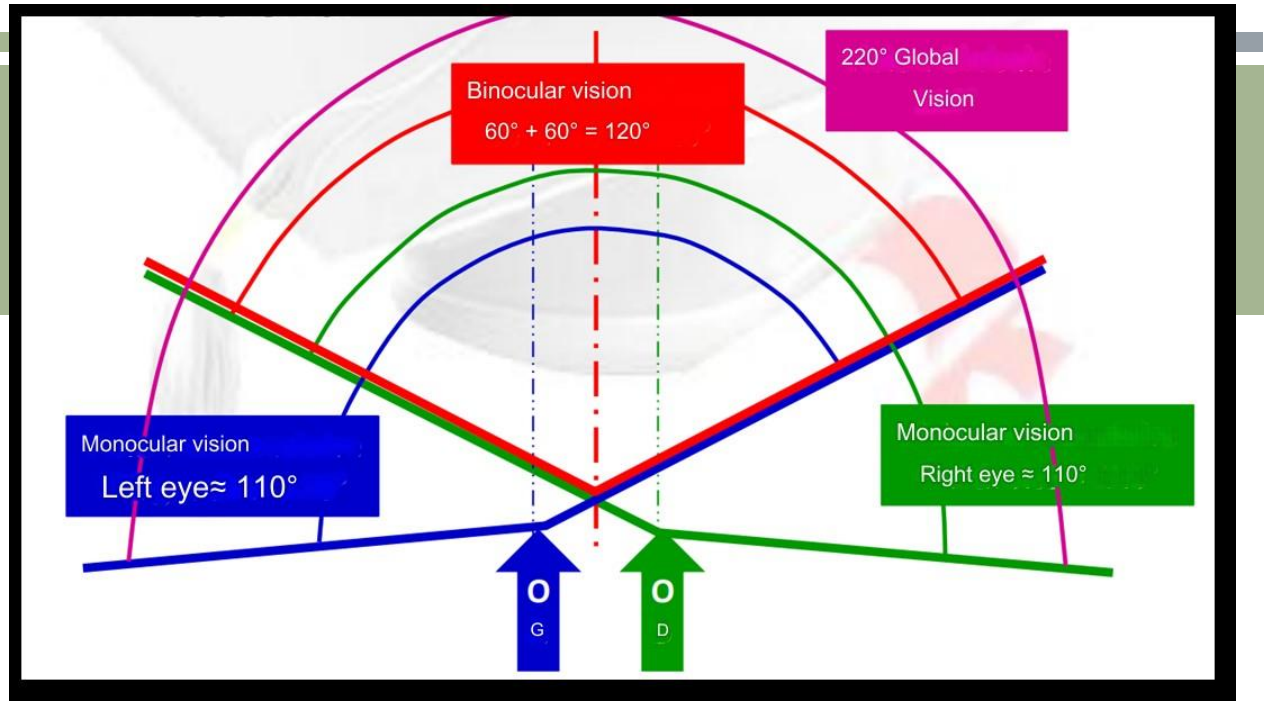


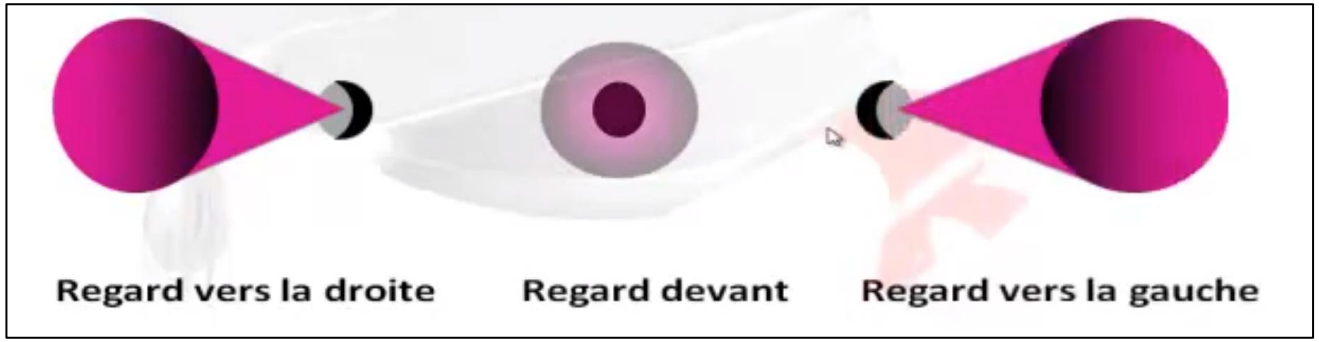




- How do people perceive objects?

By nature, human beings see the world in 3 Dimensions. So our perception of things is subject to perspective, however it should be noted that the visual field of humans is limited to ≈ 220°, while it is 360° for animals and certain insects.





THE AXONOMETRIC PERSPECTIVE: LA PERSPECTIVE AXONOMÉTRIQUE: المنظور المحوري

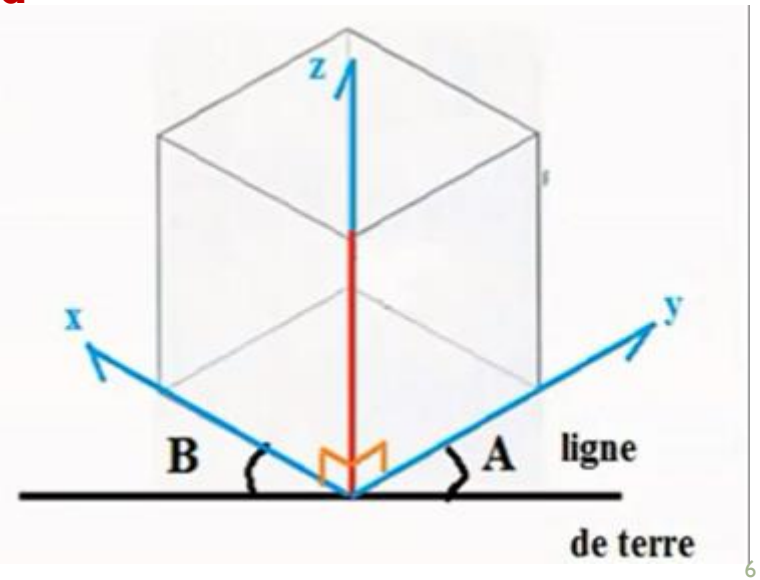
Today we are going to talk about the first type which THE AXONOMETRIC PERSPECTIVE commonly called AXONOMETRY.

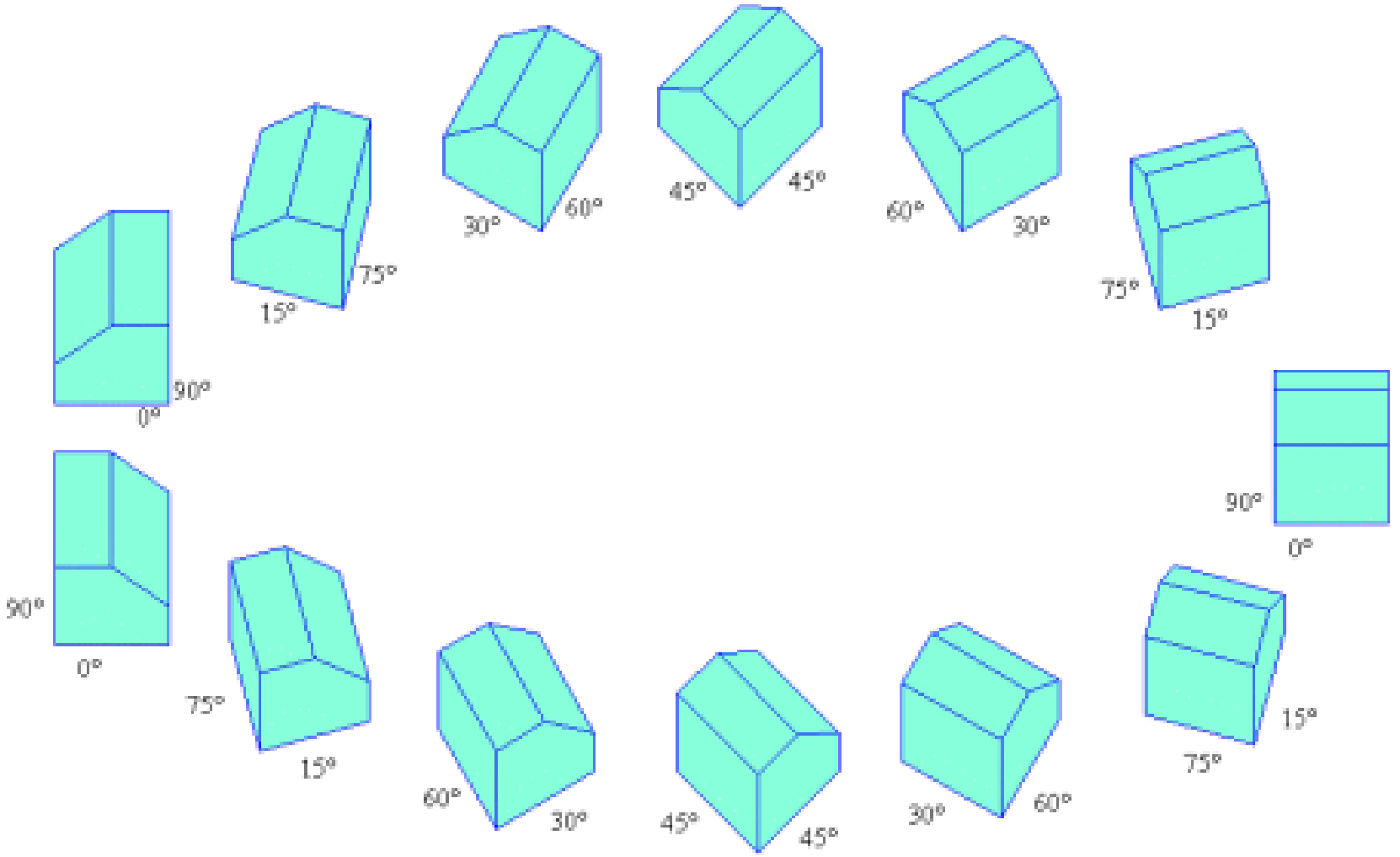
The axonometric perspective is also called; orthogonal-parallel perspective or even 'at 0 (zero) vanishing point'

It is characterized by the fact that the parallels will be represented by parallels and the dimensions will not be reduced by the distance.

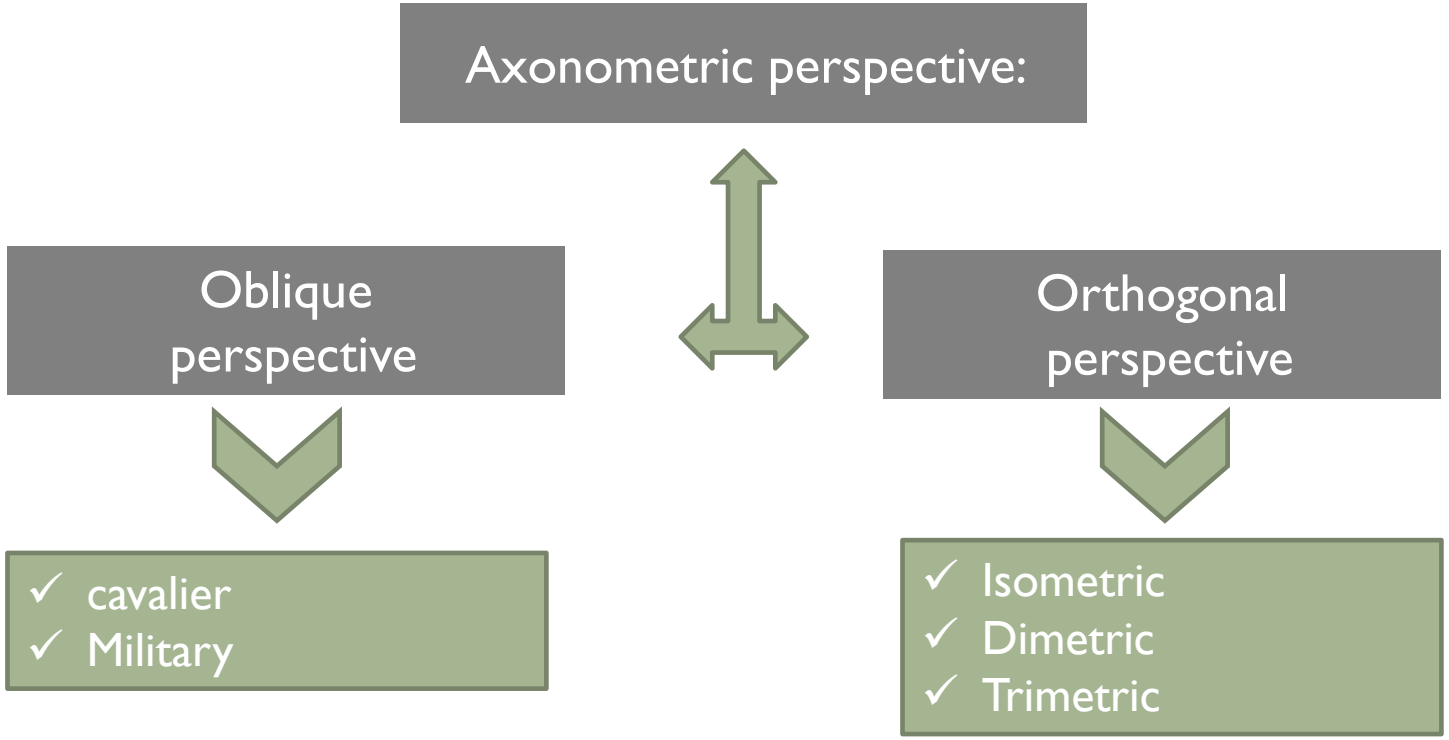
"The eye of the observer is thrown far, very far from the object observed"

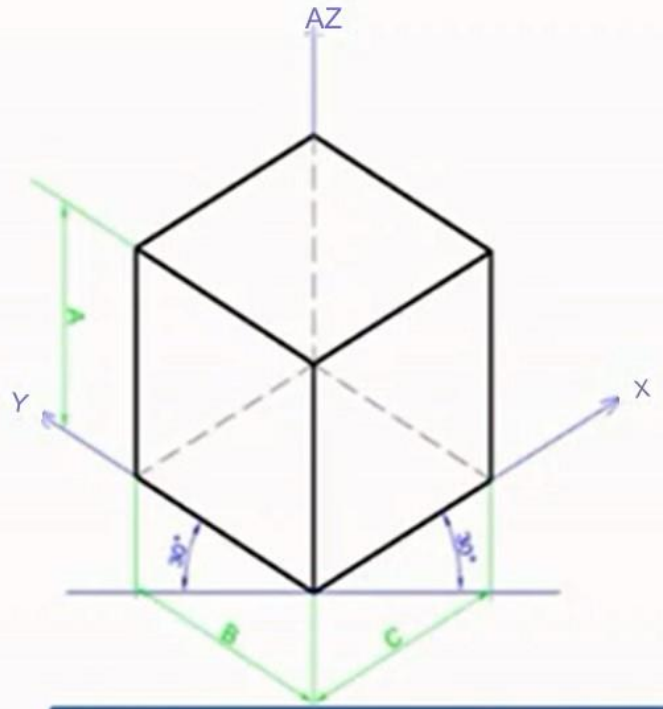
++ The term axonometry or axonometric perspective comes from 'axon' محورfor axis and 'metrics' for measurement.القياس




90°
0°
75°
15°
30°
60°
45°
45°
60°
30°
75°
15°
90°
0°
90°
0°
75°
15°
60°
30°
45°
45°
30°
60°
75°
15°

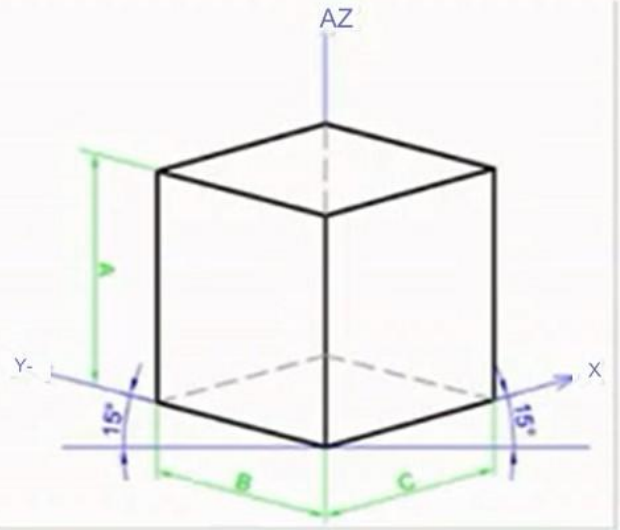
THE AXONOMETRIC PERSPECTIVE: LA PERSPECTIVE AXONOMÉTRIQUE: المنظور المحوري





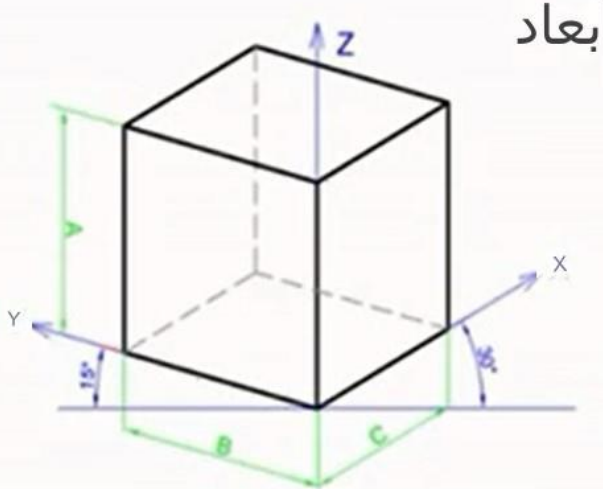
1) Isometric perspective

منظور متساوي القياس



2) Dimetric perspective

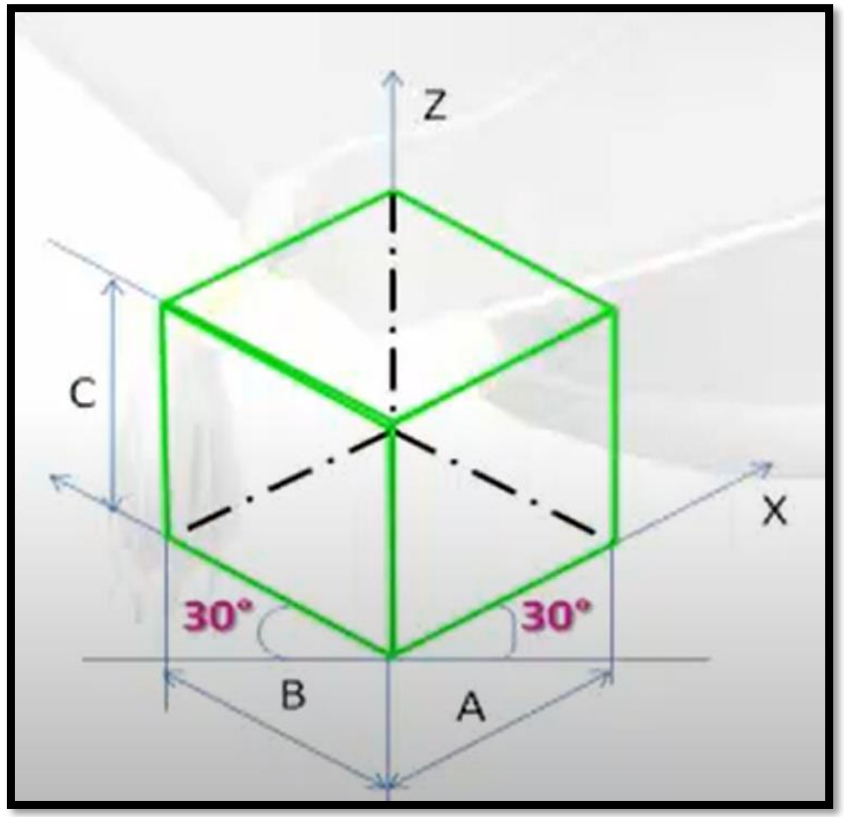
منظور ثنائي الأبعاد



3(Trimetric perspective

منظور ثلاثي الأبعاد

THE AXONOMETRIC PERSPECTIVE



The dimension ratio is in practice equal to K=0.82

I- isometric axonometry:
منظور متساوي القياس

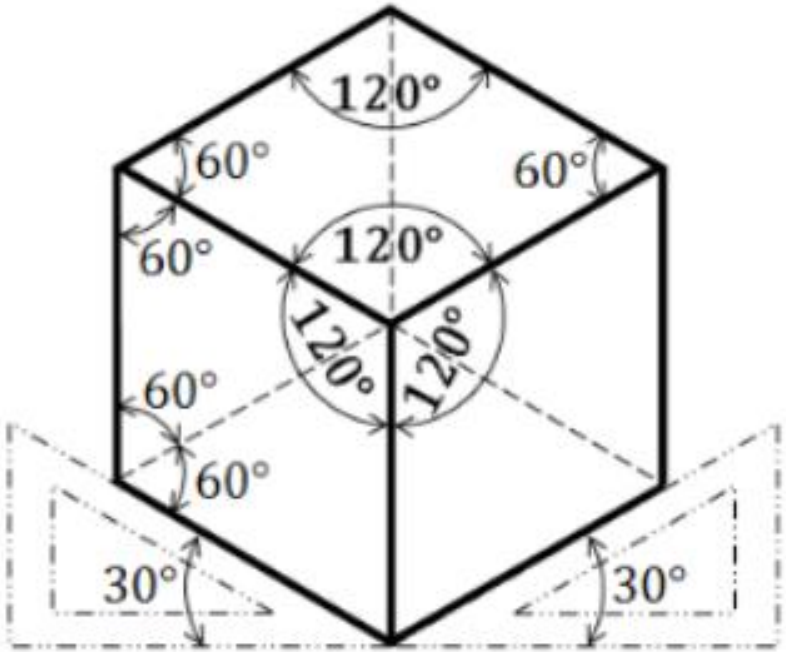
In this perspective the three directions (X, Y and Z) of space have the same importance, hence the term “isometric” which means “of equal measures”.

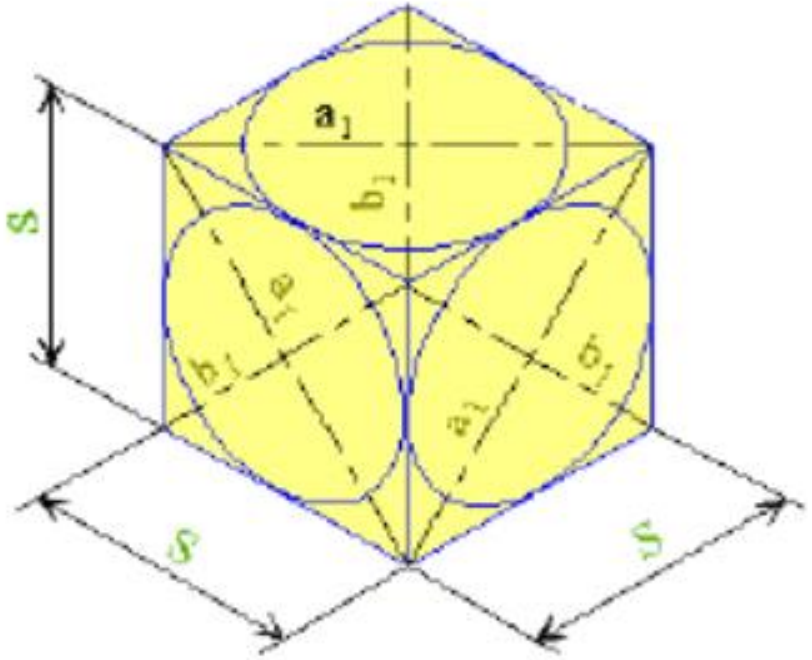
All elements are distorted except the vertical edges which remain vertical.

All vanishing lines are inclined by 30° relative to the horizontal.

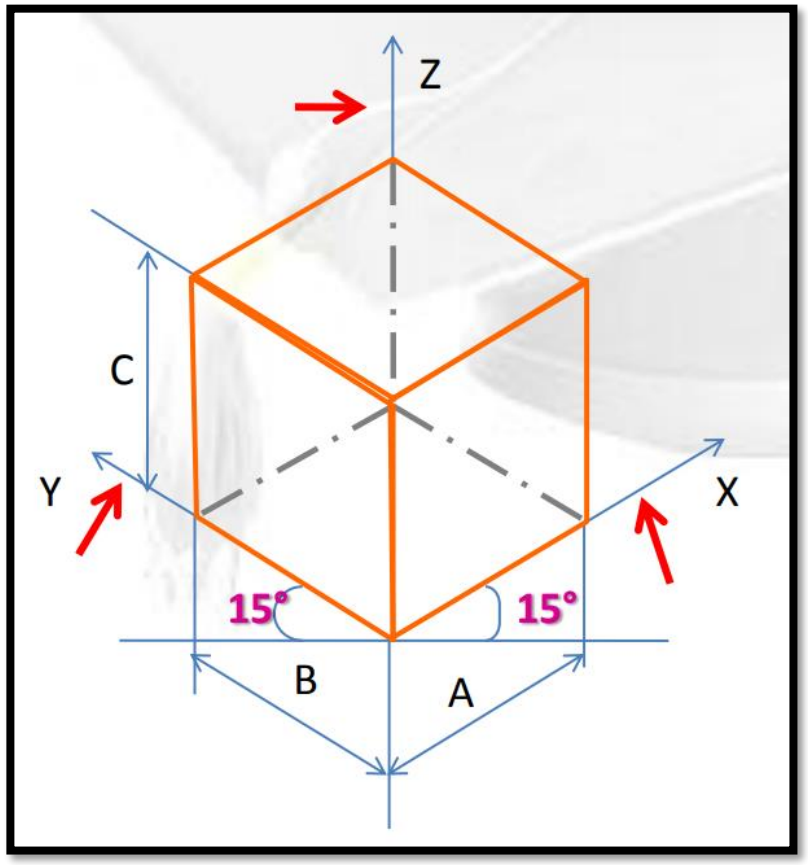
All three axes (typically, the x, y, and z axes) are foreshortened equally, which means that lines parallel to these axes remain parallel in the drawing.

The angles between the axes are usually 120 degrees, creating an equilateral triangle. This contributes to the name "isometric," which means "equal measure."


120°
60°
60°
60°
120°
120°
120°
60°
60°
30°
30°


a1
b1
S
a1
b1
b1
a1
S
S

THE AXONOMETRIC PERSPECTIVE



11- Dimetric axonometry:

منظور ثنائي القياس

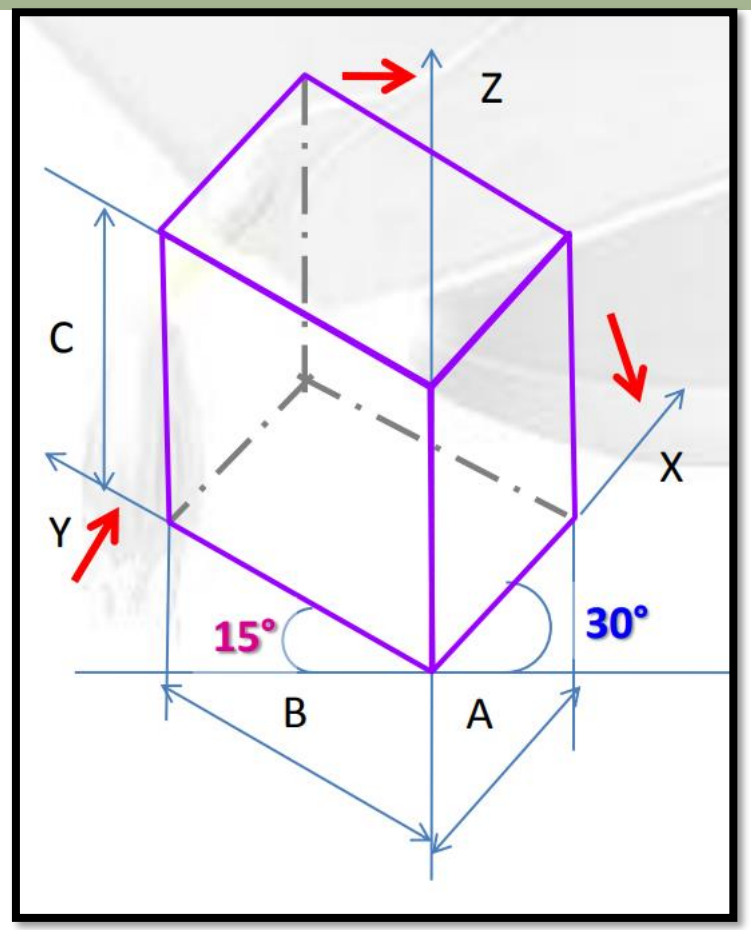
It is a perspective in which two of the three directions of space have the same importance, hence the name dimetric. It is differentiated by its Angle of inclination. Reduction coefficient.

* All vanishing lines are inclined by 15° relative to the horizontal.

*The reduction ratio is:

the same for the X and Y axes and more important for the Z axis hence K=0.73 for the X & Y axis. K=0.96 for the Z axis.

THE AXONOMETRIC PERSPECTIVE



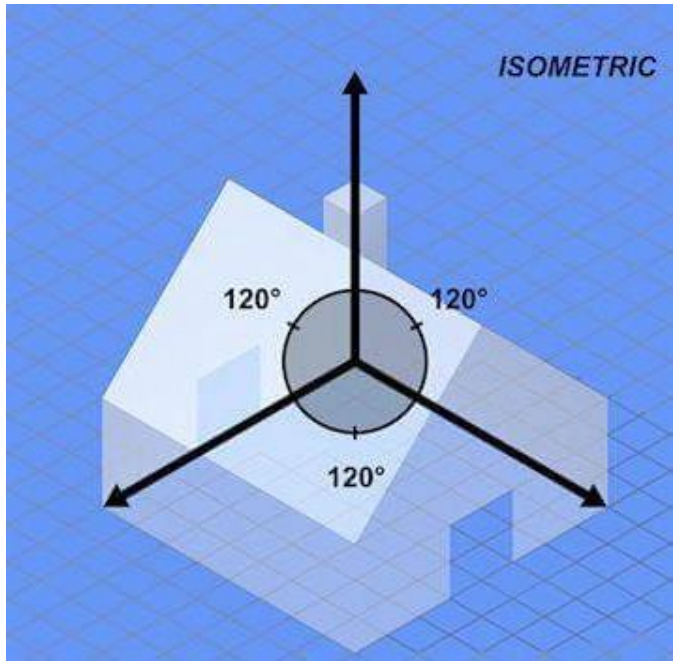
III- Trimetric axonometry:

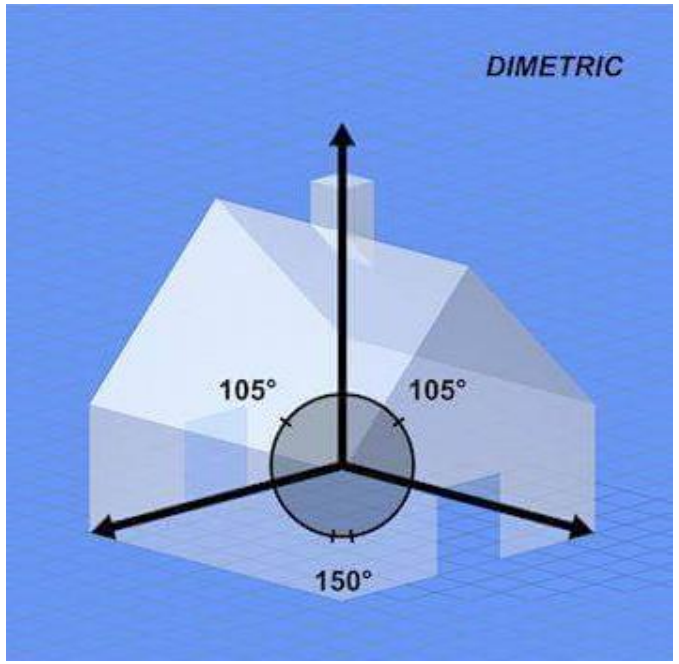
منظور ثلاثي القياس

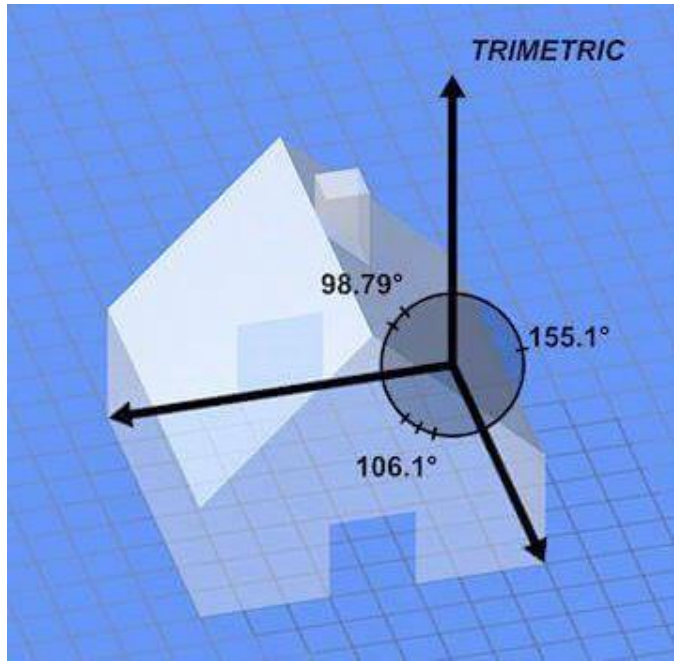
For this perspective, **all angles are different and each axis has its own reduction coefficient**, hence the name trimetric.

In fact, for the angles of the receding lines we have: 30° for those along the X axis. 15° for those along the Y axis.

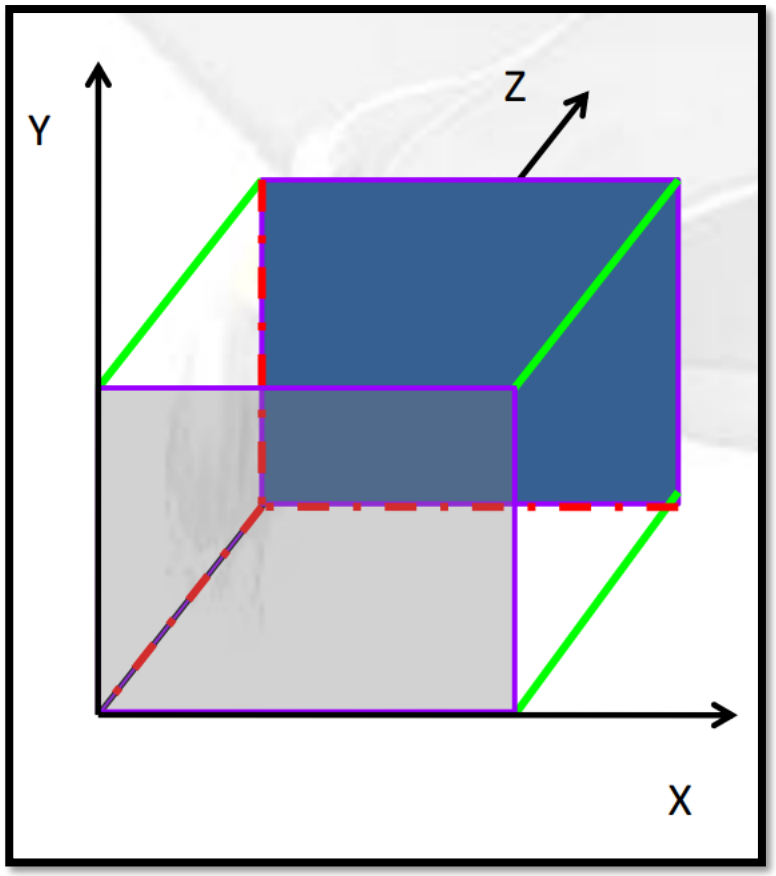
* In terms of reduction ratios we have… **K=0.65 for the X axis. K=0.86 for the Y axis. K=0.96 for the Z axis.**


ISOMETRIC
120°
120°
120°

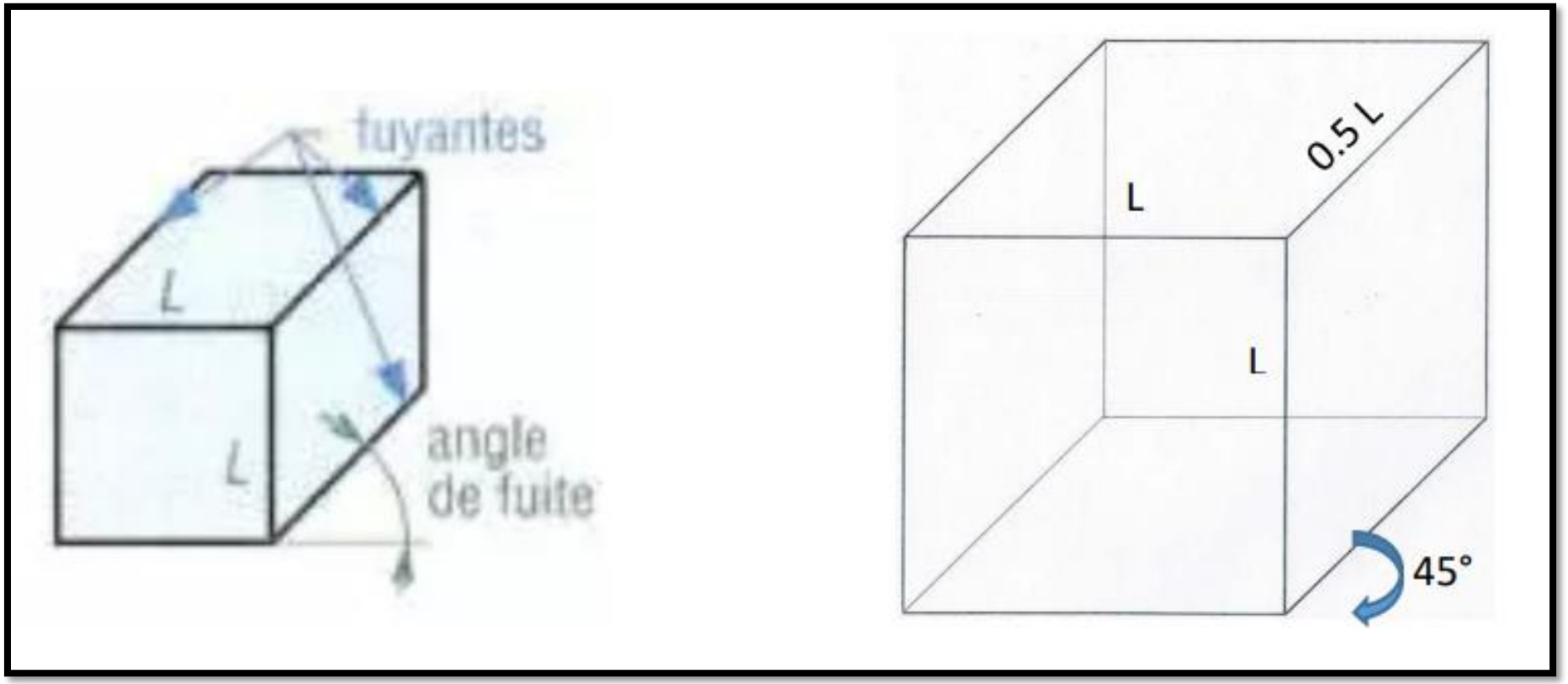

DIMETRIC
105°
105°
150°


TRIMETRIC
98.79°
155.1°
106.1°

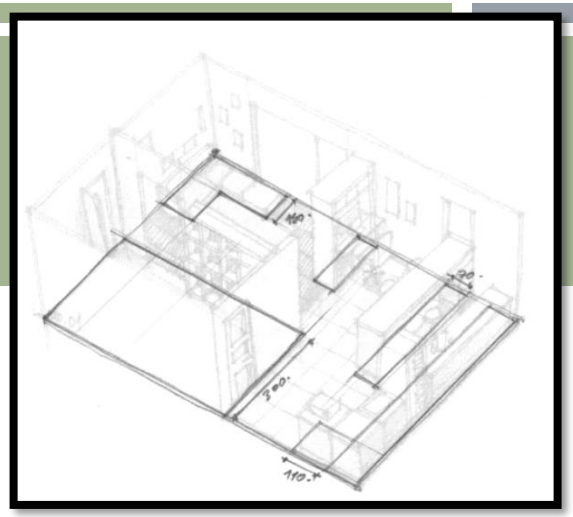
Cavalier axonometry



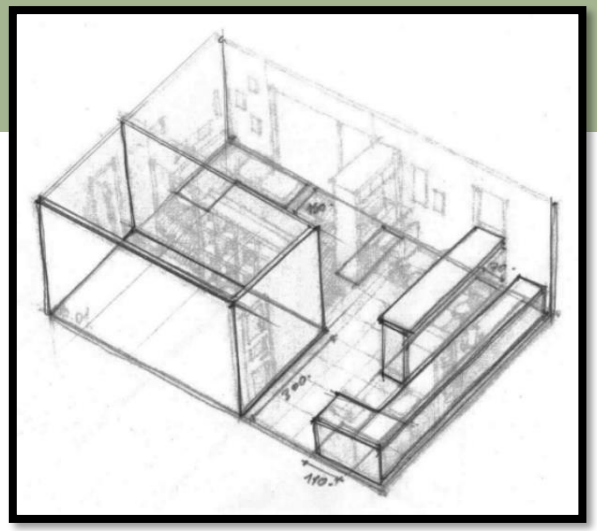
- The vertical plane (xOz) is in full size, and the depth (Oy) is at 45°. Dating from medieval times, it is the oldest of all the perspectives.
- Principle: **the main face of the object, parallel to the projection plane, is projected in full size**.
- The other faces are distorted.
- The faces perpendicular to the projection plane are deformed and are drawn along receding lines, they are reduced according to a reduction ratio k which depends on the receding angle ∝. For the leakage angle is 45°, and vanishing lines are drawn in half sizes (0.5L).


tuyantes
L
L
angle
de fuite
L
0.5 L
L
45°

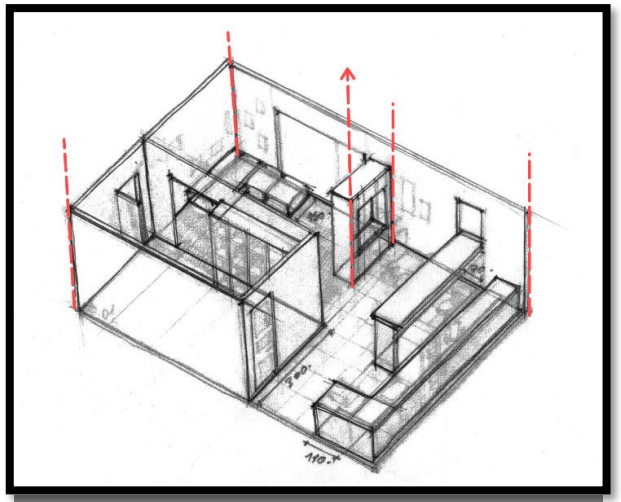
Dessiner une axonométrie intérieure:



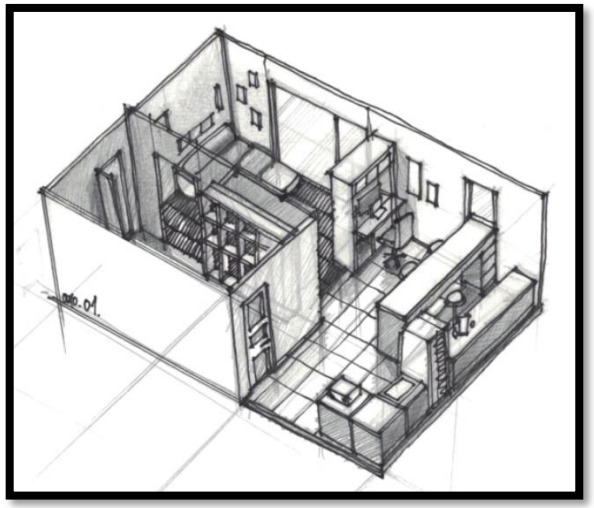
I/ Poser son plan



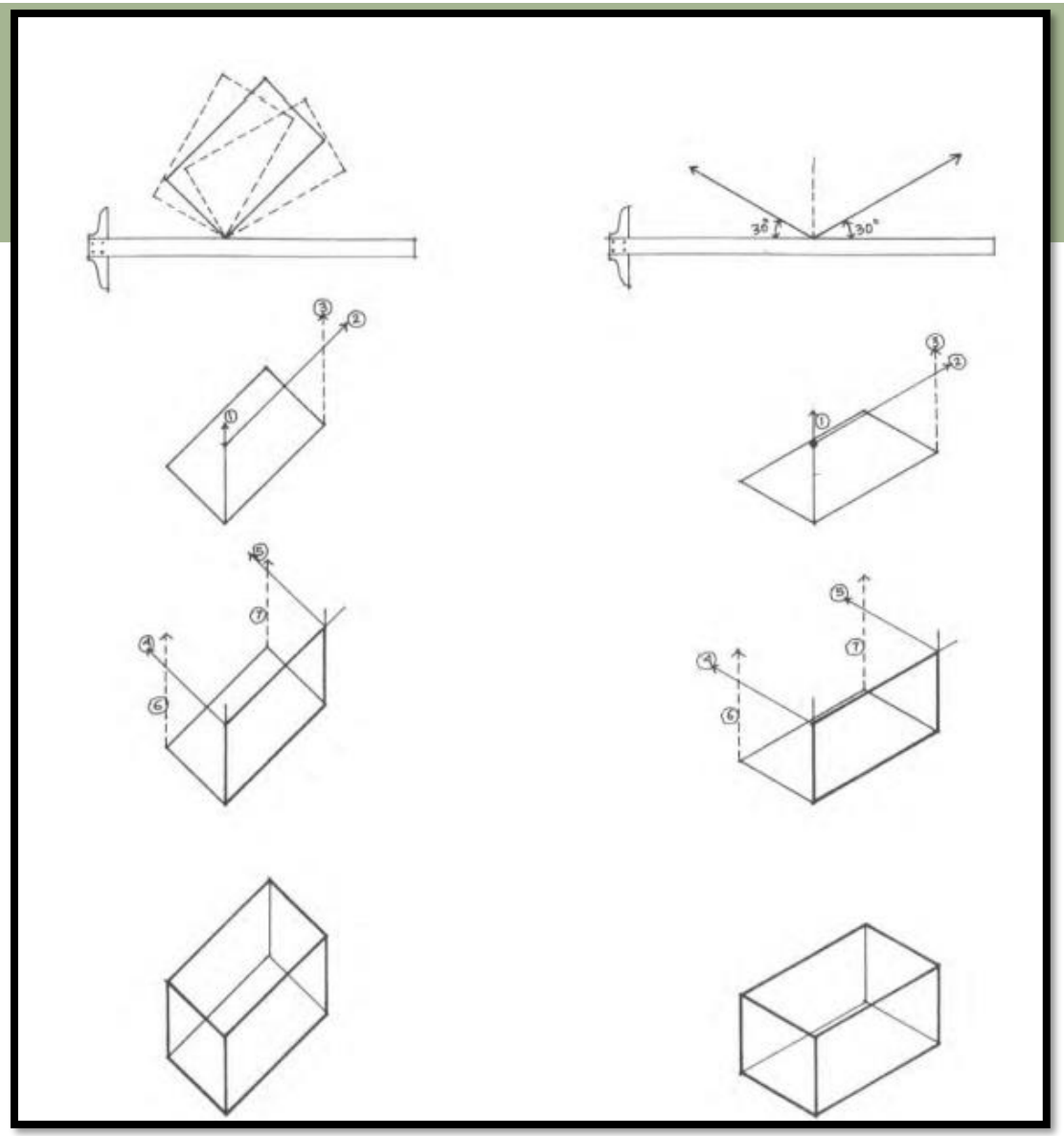
II/ Elever les traits

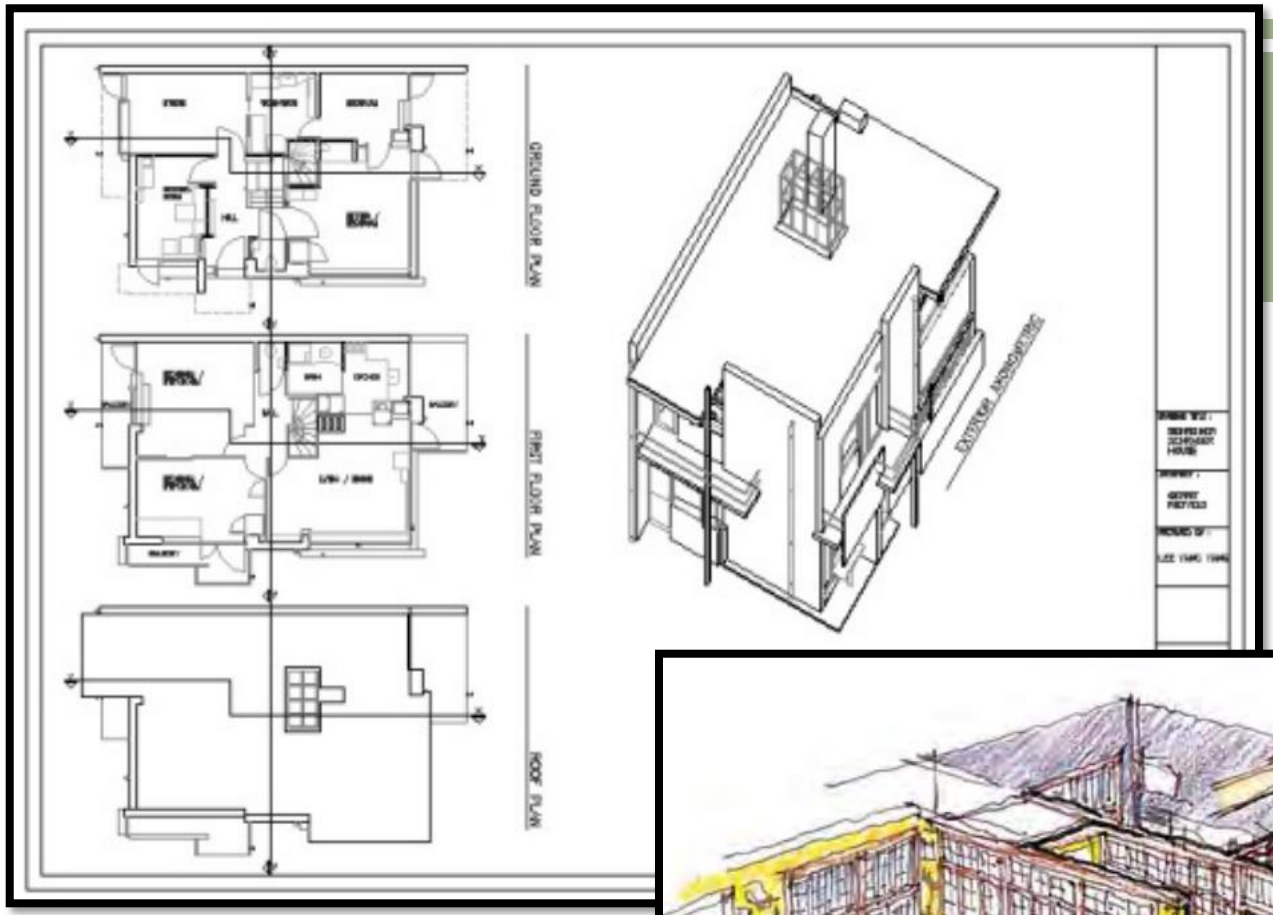


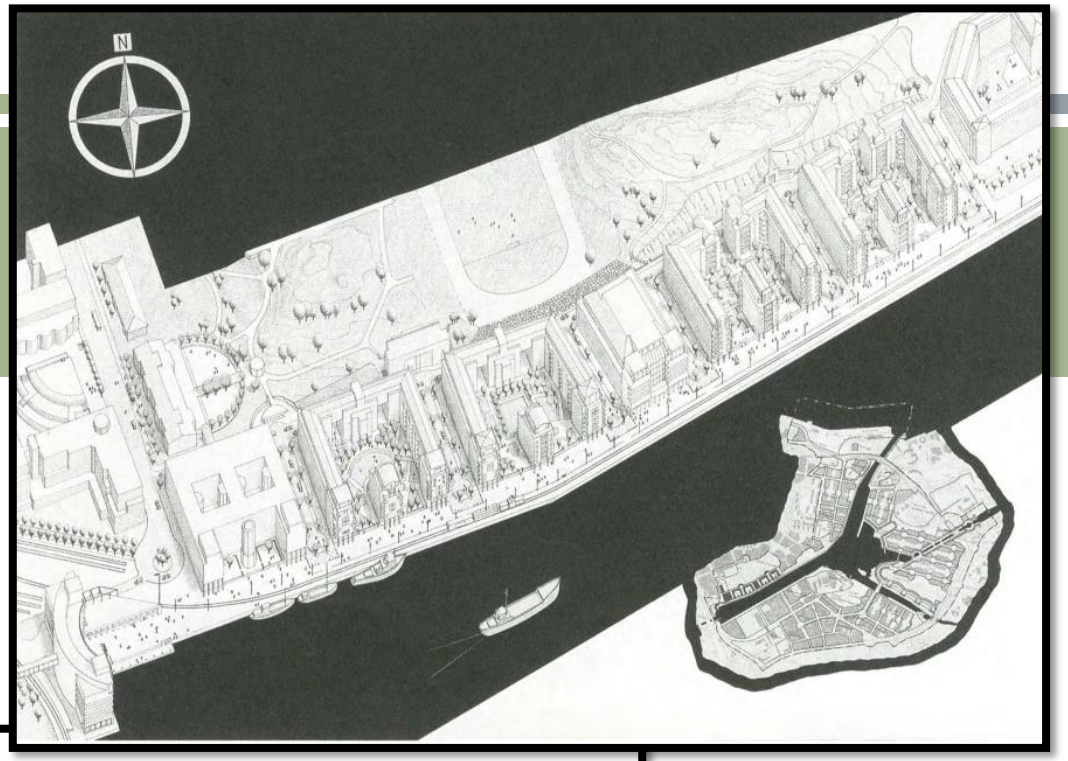
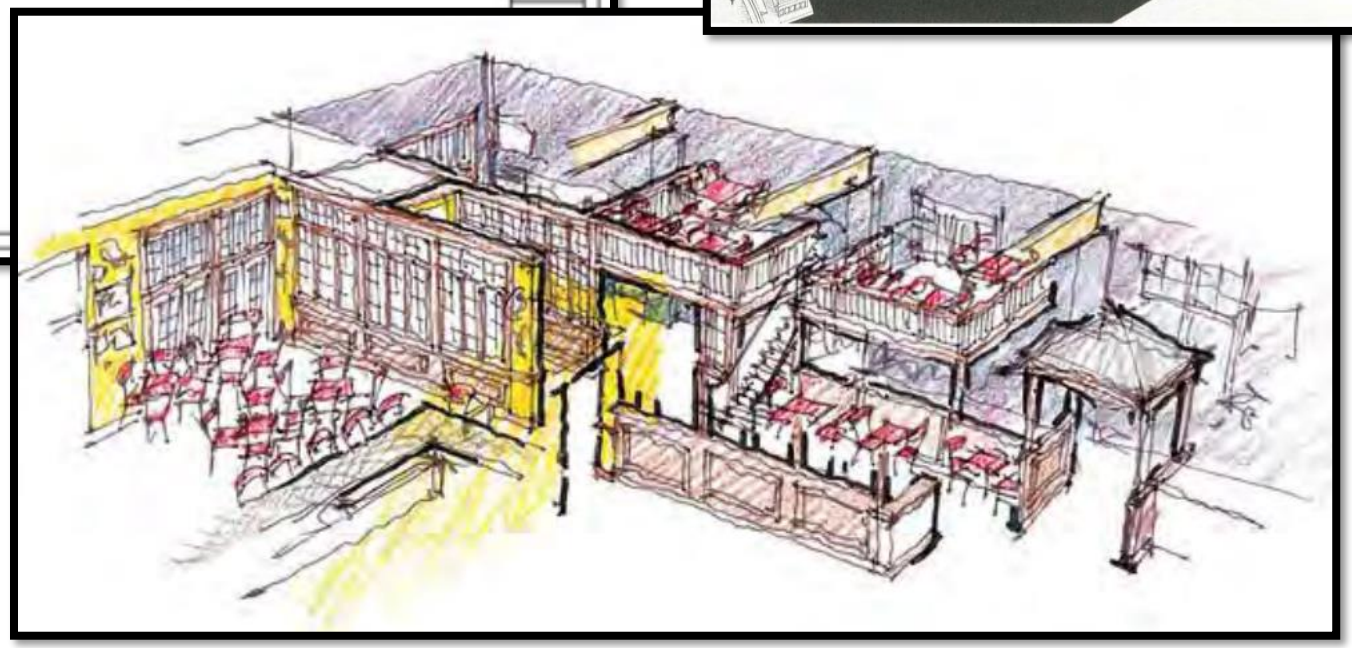
III/ Dessiner les détails tout en s'assurant du parallélisme des lignes



II/ finaliser le dessin (hachures, détails, ombre)


30°
30°


GROUND FLOOR PLAN
FIRST FLOOR PLAN
ROOF PLAN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