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

Lesson :

Orthogonal (Orthographic) projection

Année universitaire: 2023-2024

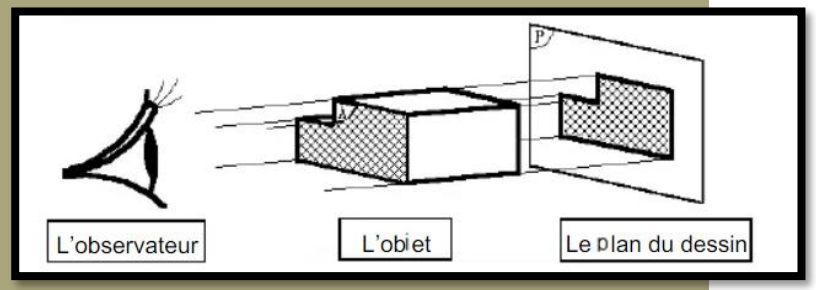
Professor : MELOUAH. L

Lesson plan

What is “orthogonal projection”

Steps to follow

practice



Definition:

The orthogonal (orthographic) projection is a two-dimensional (2D) representation, from one or more viewing angles, of an object.

The orthogonal projection allows an object to be represented unequivocally.

This representation has the advantages:

- Do not distort the object represented (respect dimensions and shapes)
- Show all views (front, right, top….)

The principle of projection: The observer positions himself perpendicular to one of the faces of the system to be defined. The observed face is then projected and drawn in a projection plane parallel to this face, located behind the system. The figure below represents 5 projections of a room.

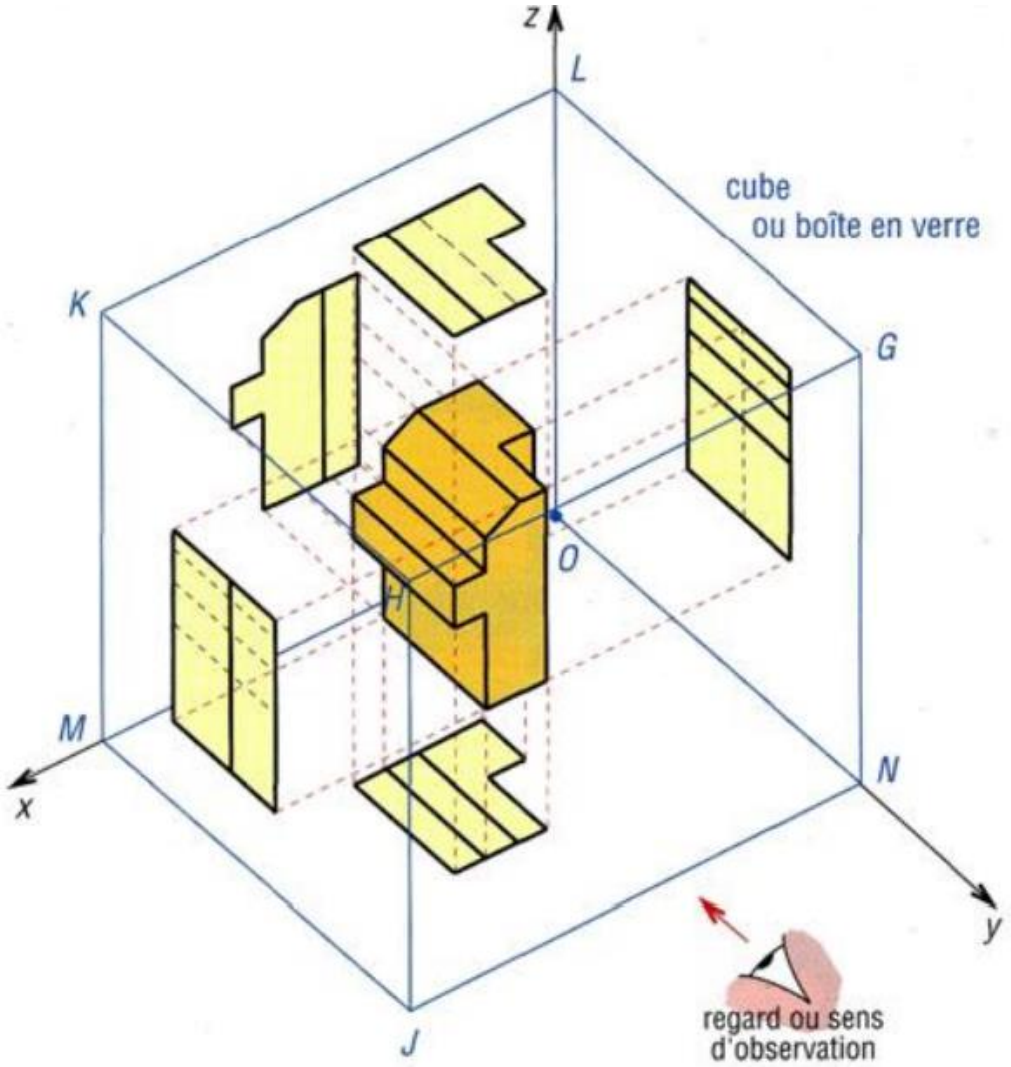
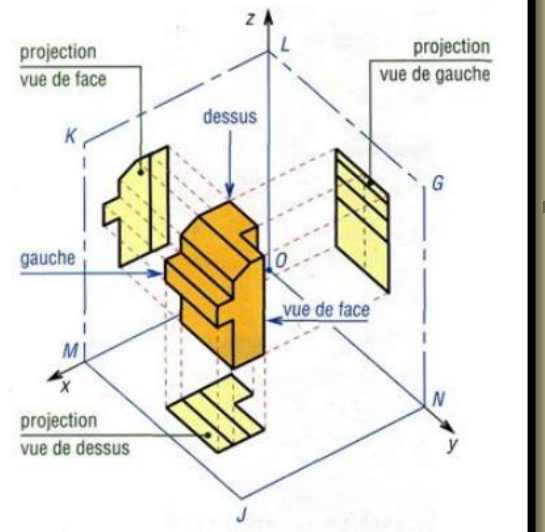
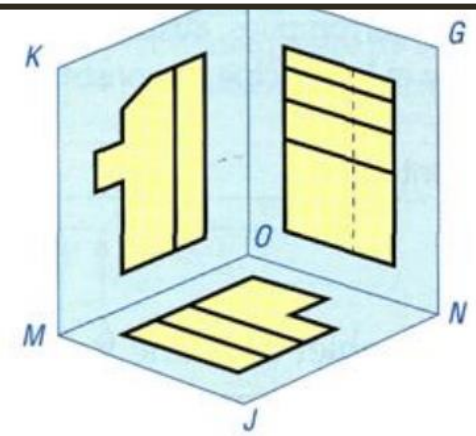


fig. 1 Projections d'une pièce

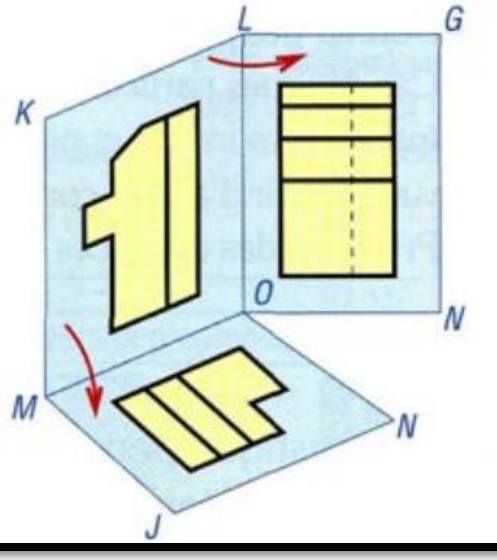
1/WE PROJECT



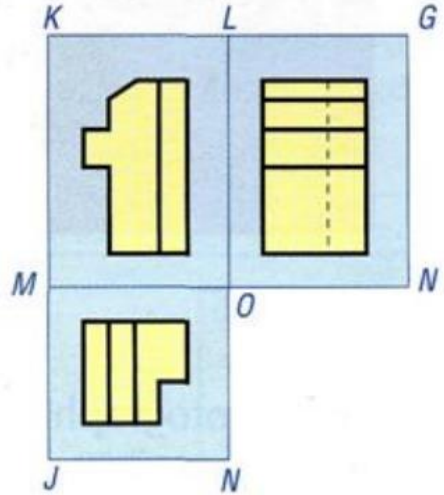
2/ WE REMOVE THE PIECE



3/ WE CUT AND UNFOLD



4/ WE LAY IT FLAT



In the case of a representation of 6 views, we obtain:

Rear view

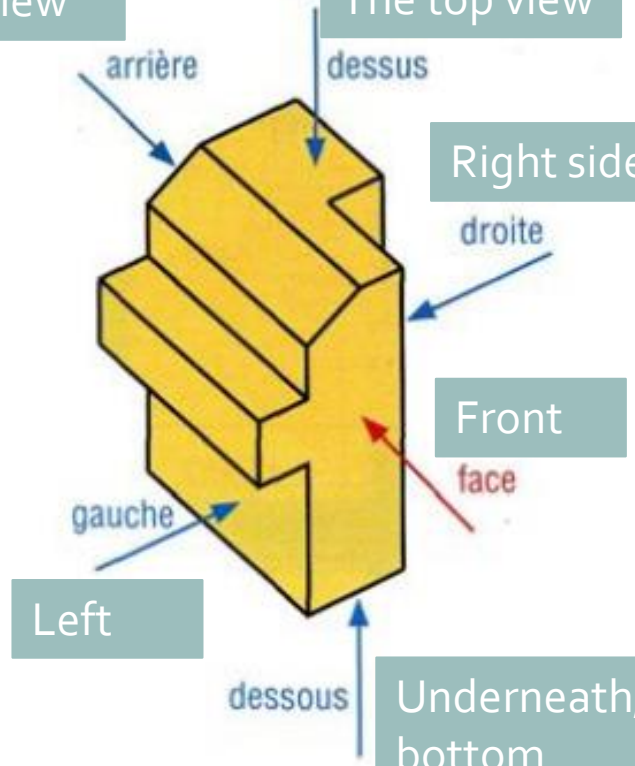
The top view

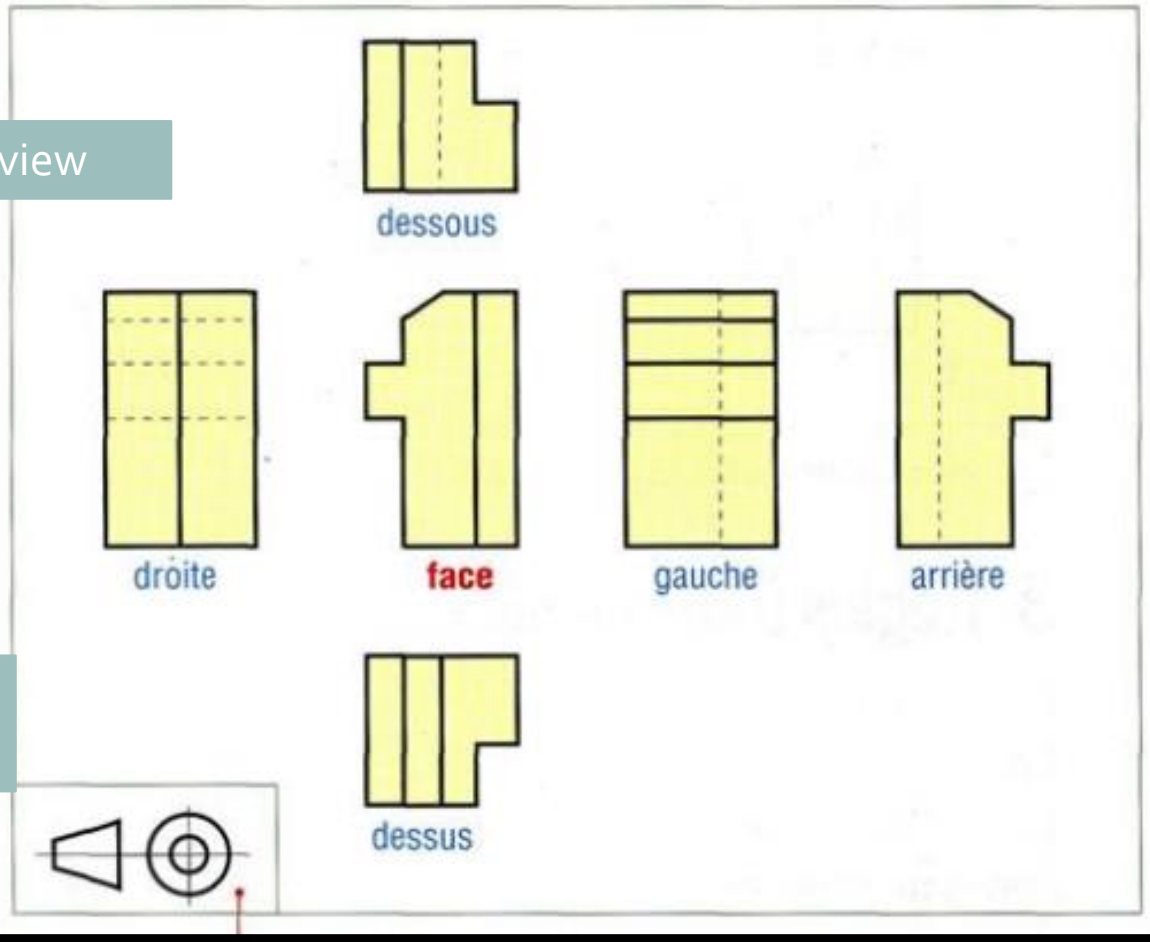
Right side view

Front

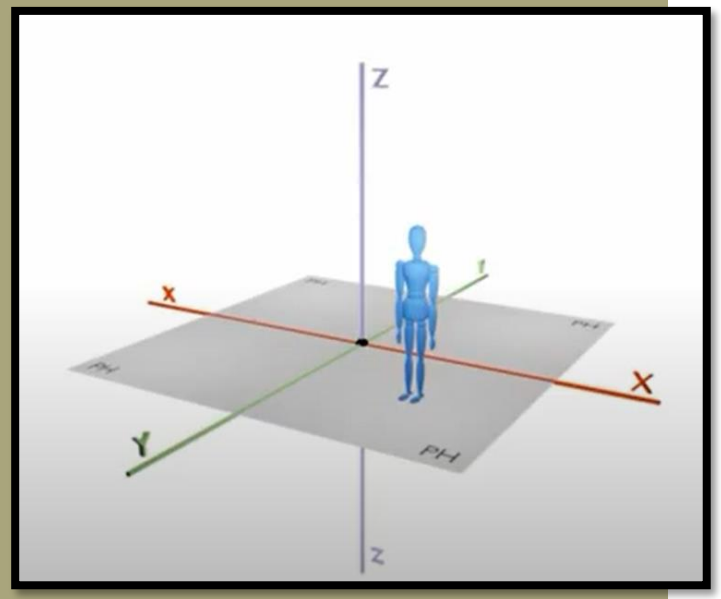
Left

Underneath/ bottom

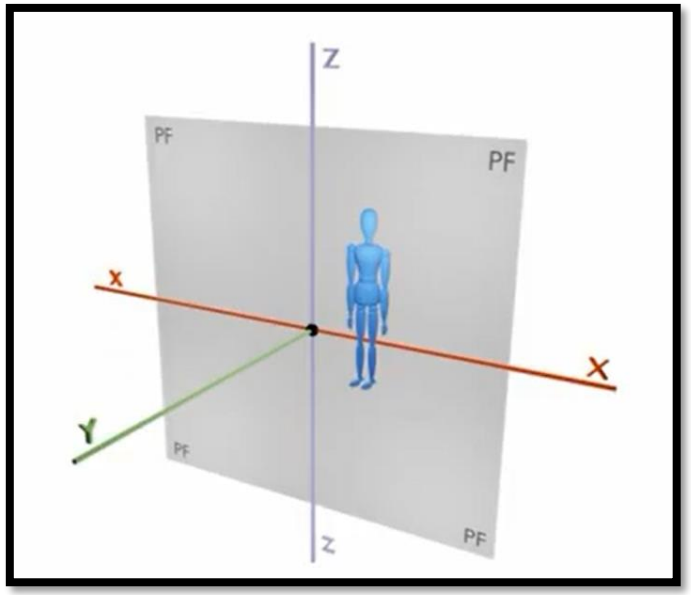




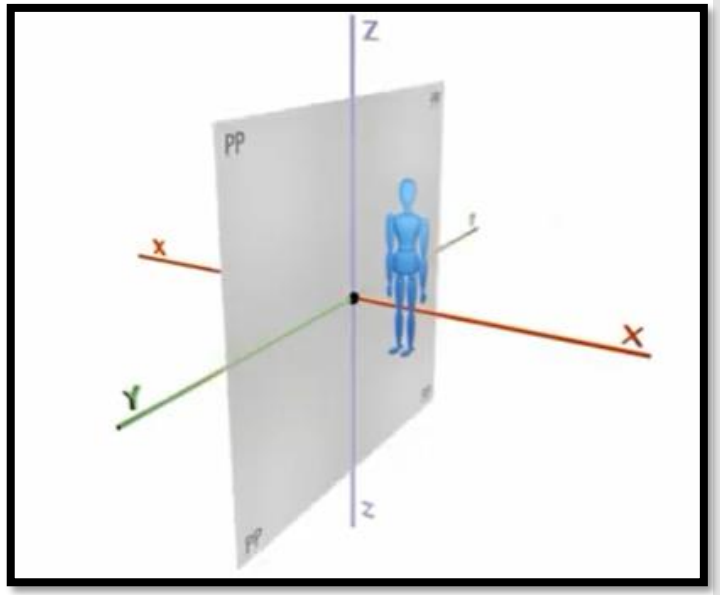
There are three projection planes:



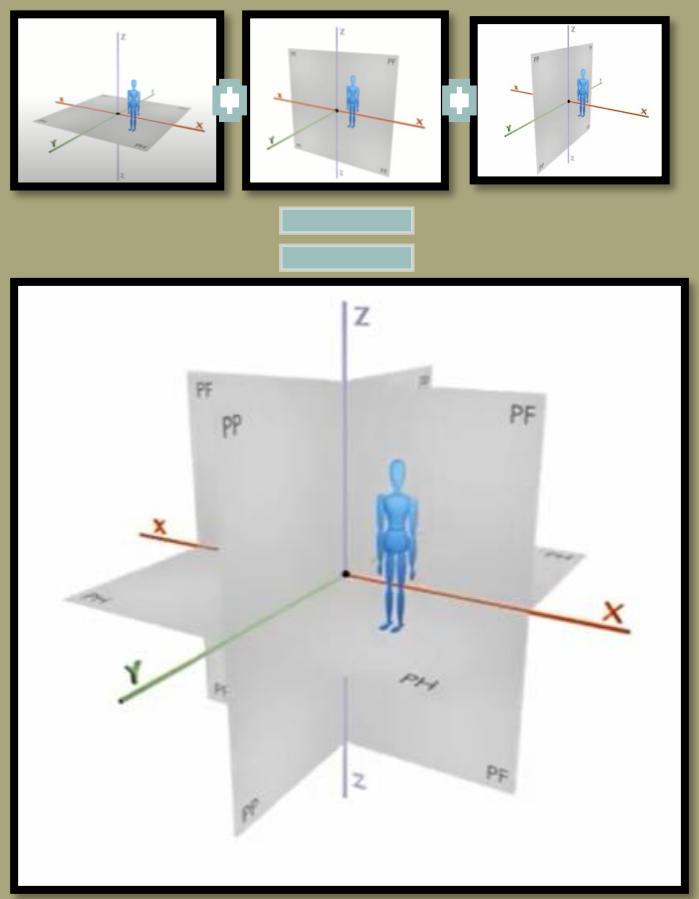
THE HORIZONTAL PLAN (HP):
Which cuts the space horizontally

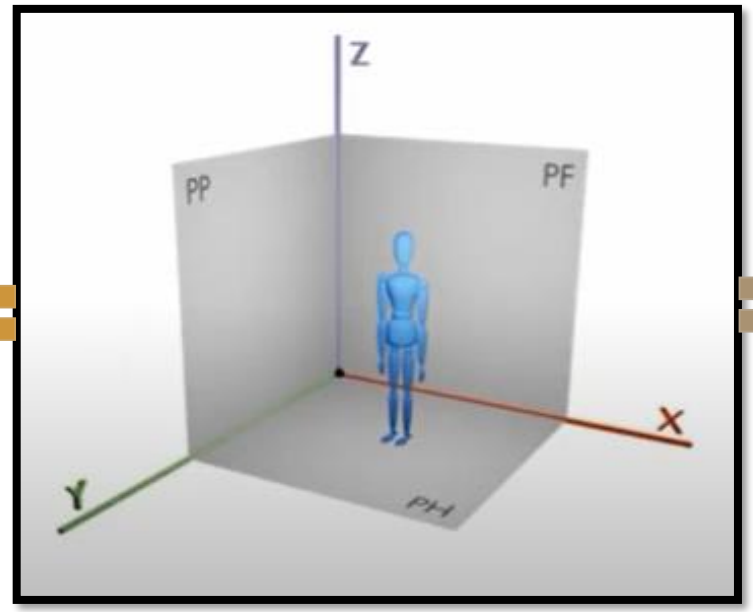


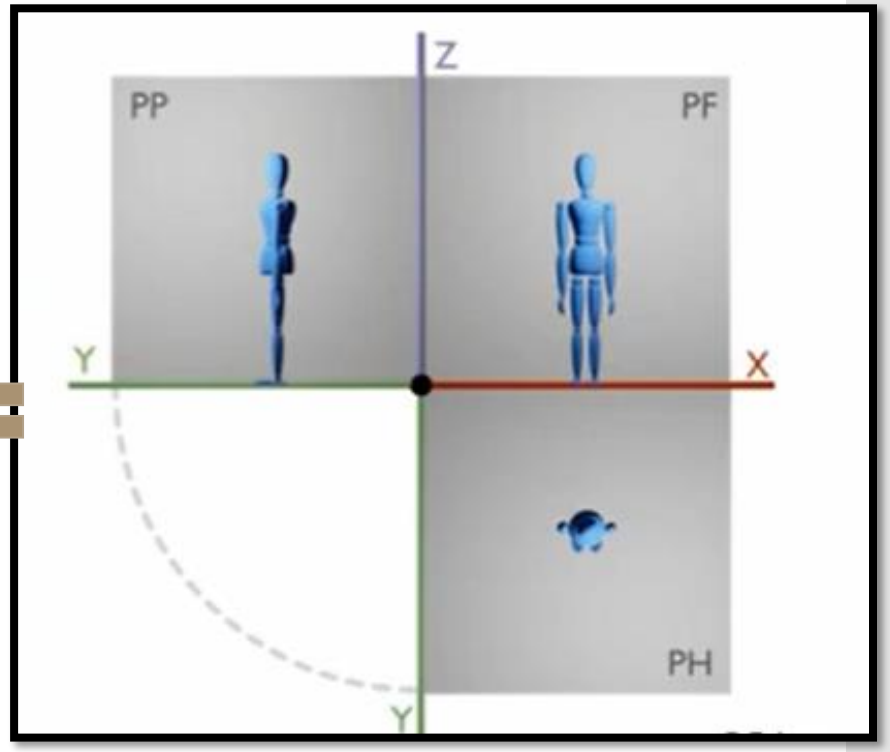
THE FRONTAL PLAN (FP):
Which cuts the space head-on



THE PROFILE PLAN (PP):
Which cuts the space vertically

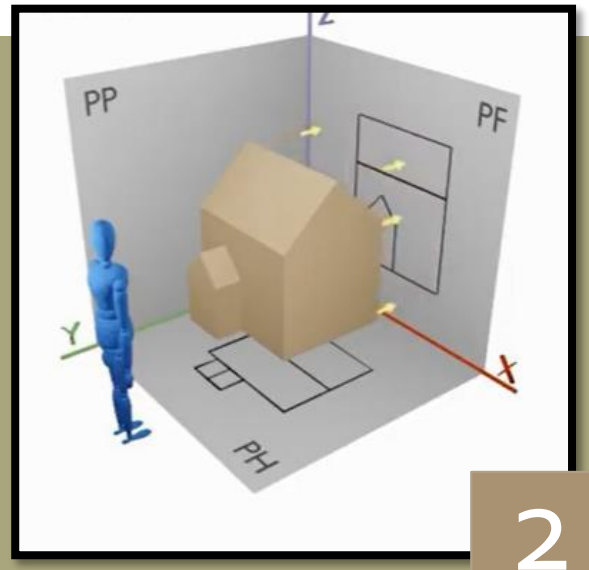




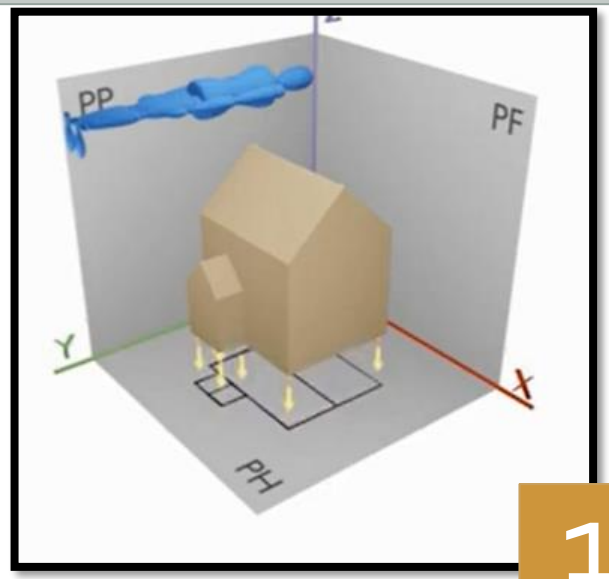


Mise à plat des plans (pour obtenir des plans e 2D)

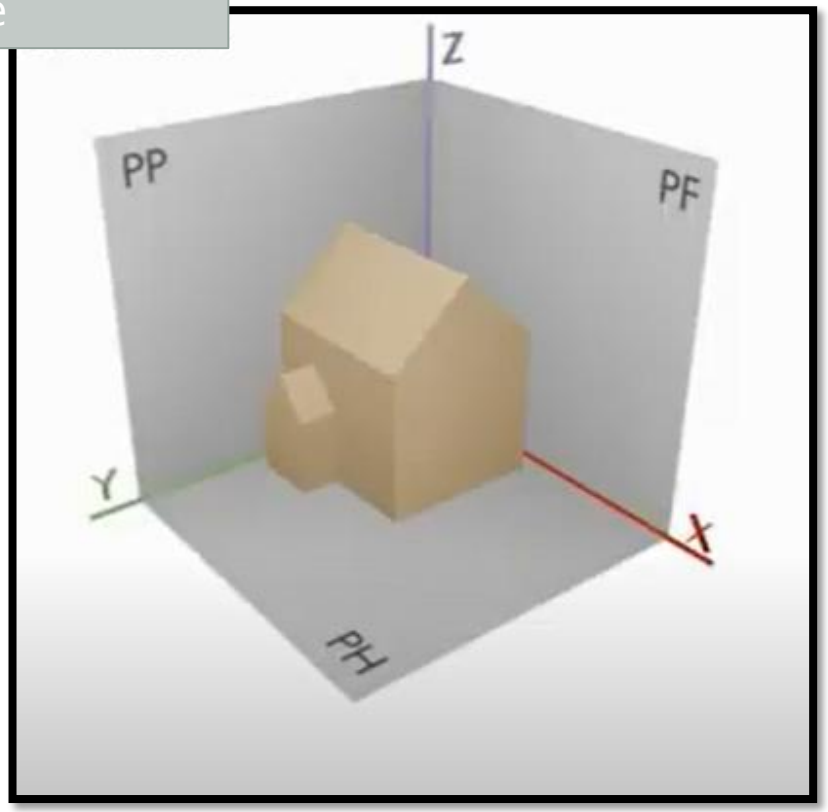
EXAMPLE: orthogonal projection of a house

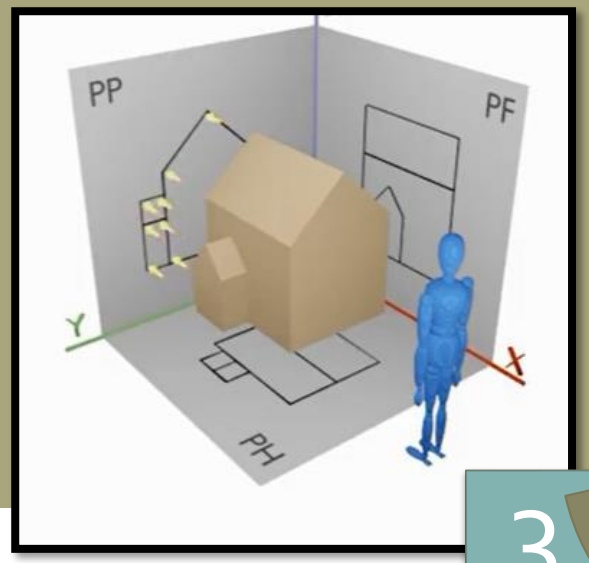


2

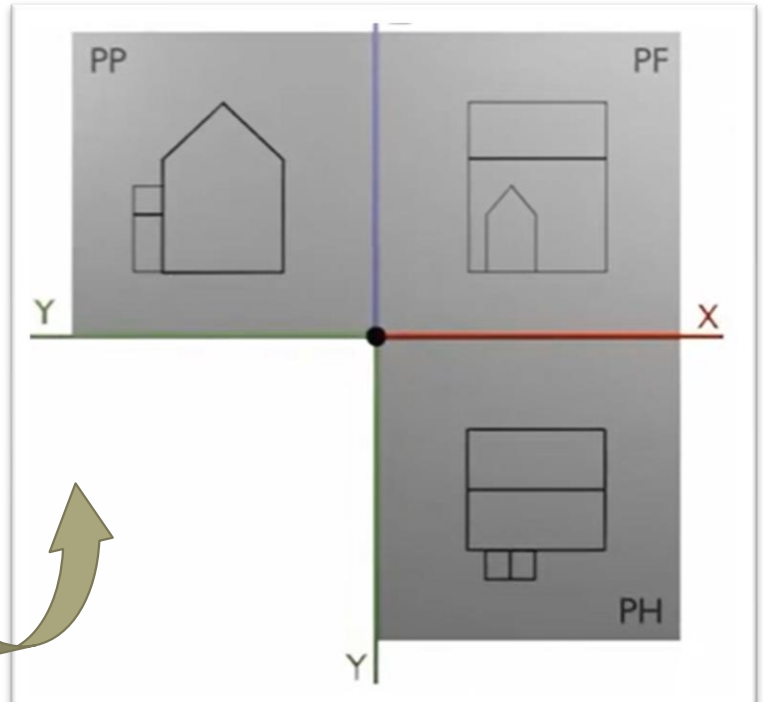


1





3



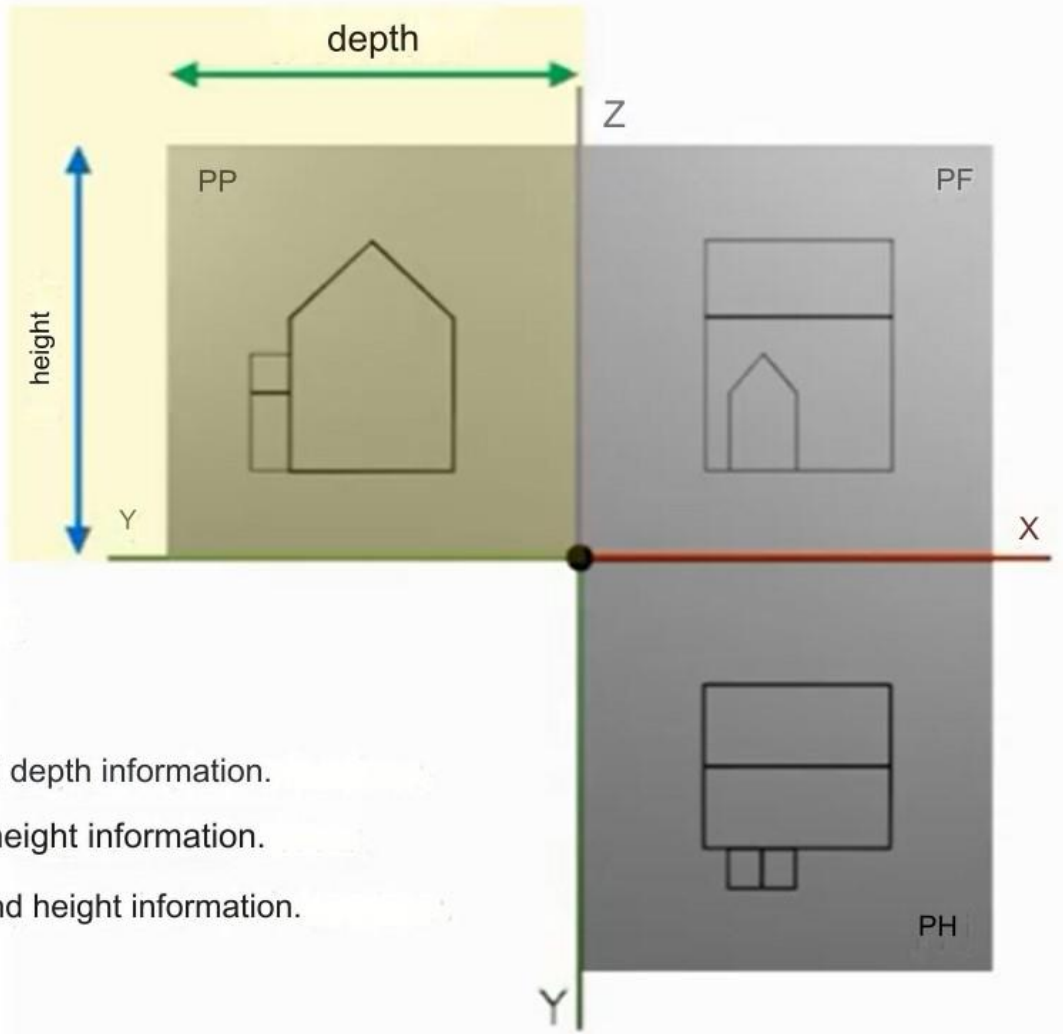
X, Y, Z axes (width, depth, height)

Space has three dimensions (3D), or three axes (X/Y/Z).

The X axis contains width information.

The Y axis contains depth information.

The Z axis contains height information.

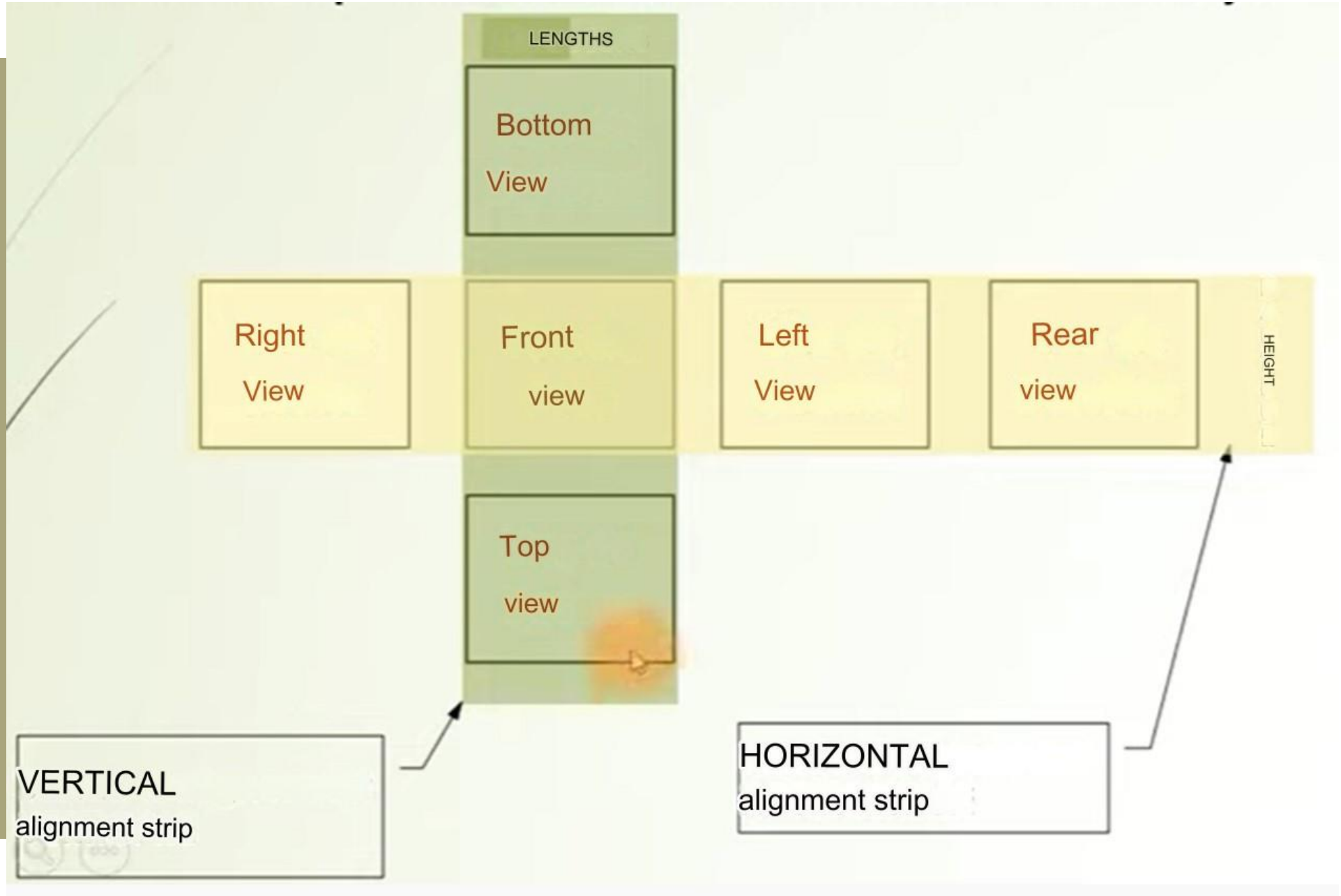


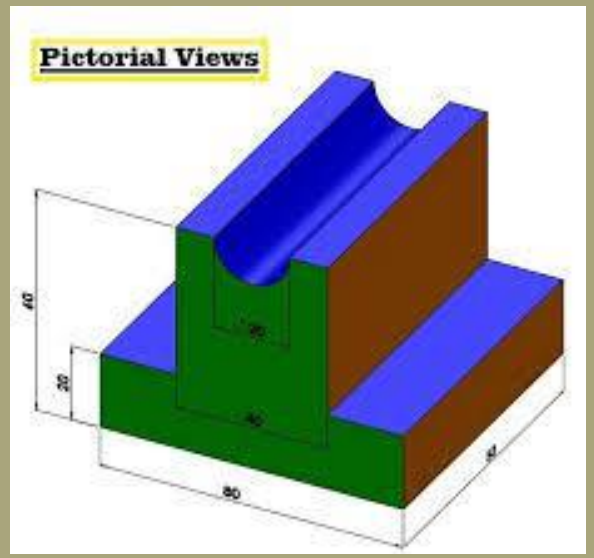
Each of the three projection planes has two dimensions (2D),
i.e. a combination of two axes (XY/XZ/YZ)

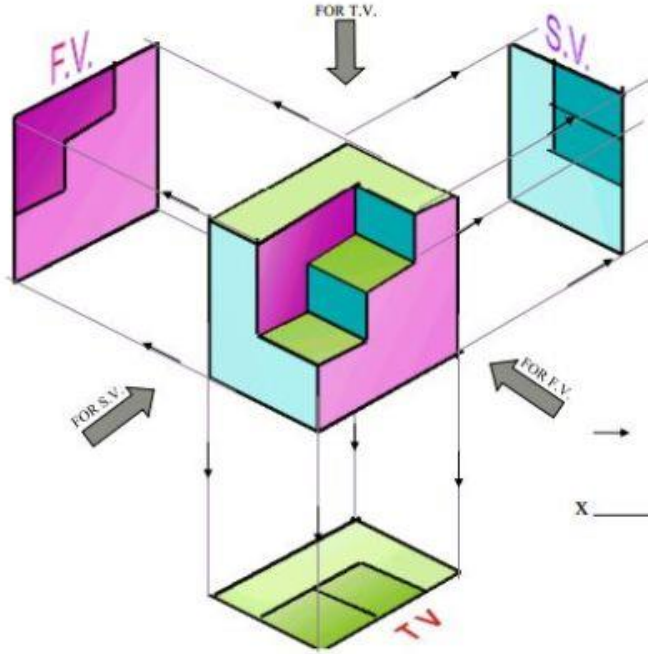
The XY plan view therefore contains width and depth information.

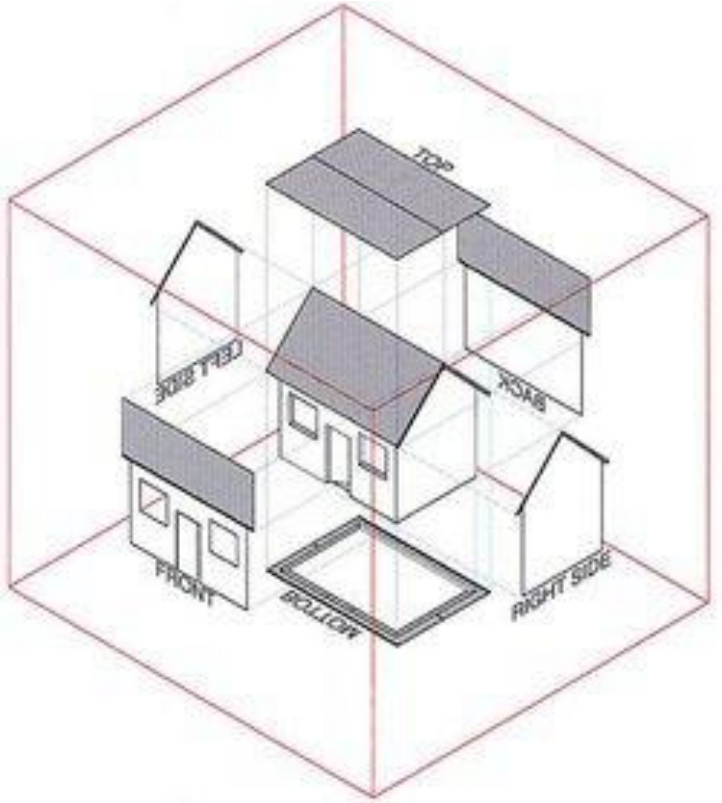
The XZ front view therefore contains width and height information.

The YZ profile view therefore contains depth and height information.


LENGTHS
Bottom
View
Right
View
Front
view
Left
View
Rear
view
HEIGHT
Top
view
VERTICAL
alignment strip
HORIZONTAL
alignment strip


Pictorial Views
40
20
20
40
80
40


FOR T.V.
F.V.
S.V.
FOR S.V.
FOR F.V.
X
T.V

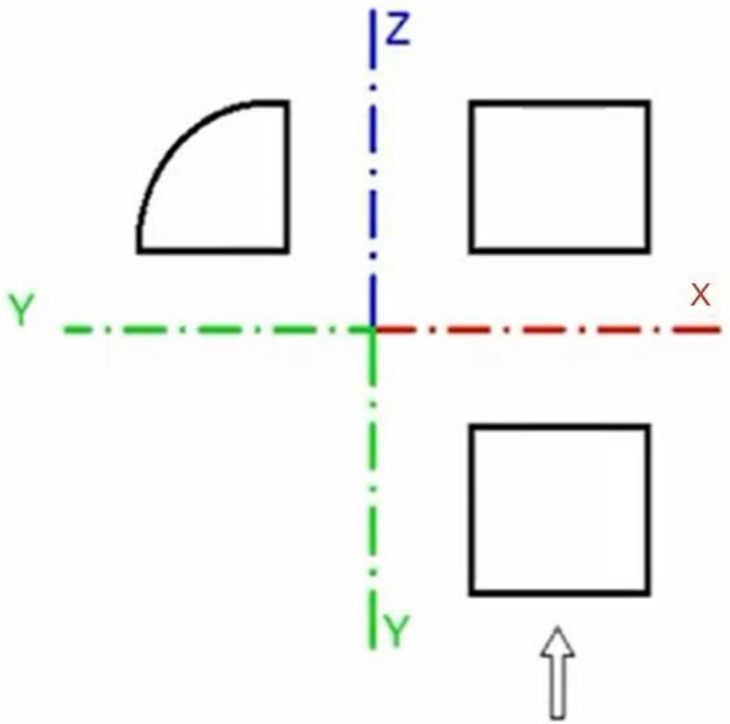

TOP
LEFT SIDE
BACK
FRONT
BOTTOM
RIGHT SIDE

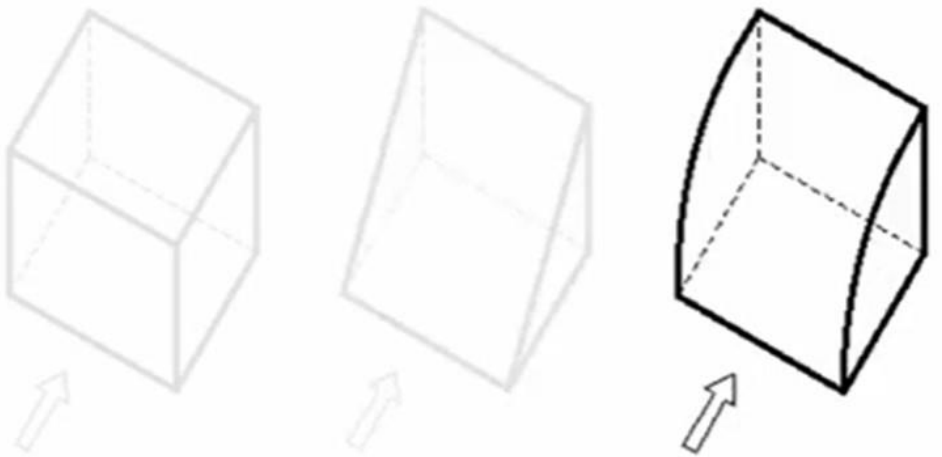
One, two or three projection planes?

Only a projection triad (three projection planes) can provide information on all the facets of an object.

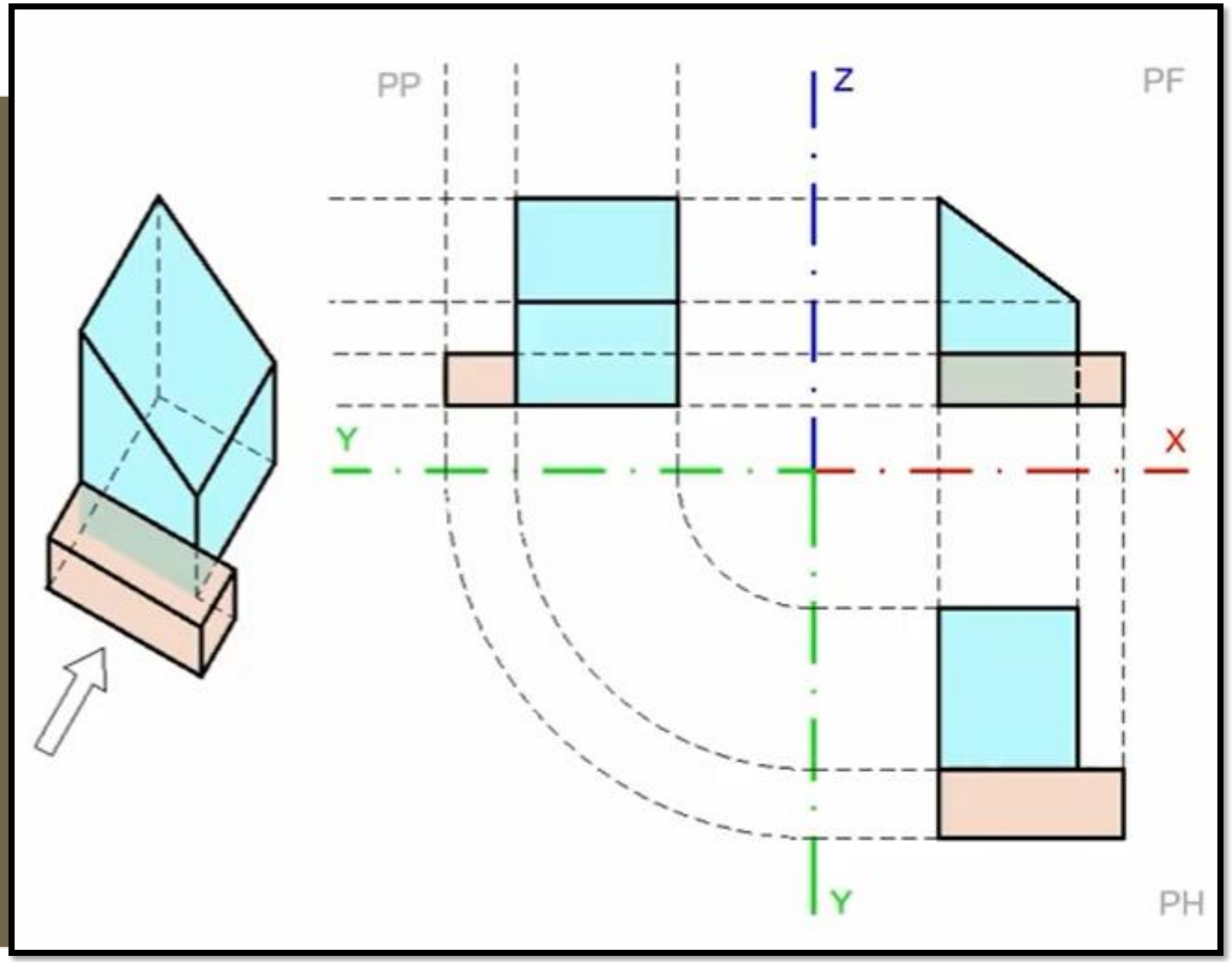
A single projection plan is not sufficient because information is necessarily missing at one of the three axes (in a plan view, there is no height information)

As we can see below, two views are also not sufficient to ensure that the entire volume/object is represented.

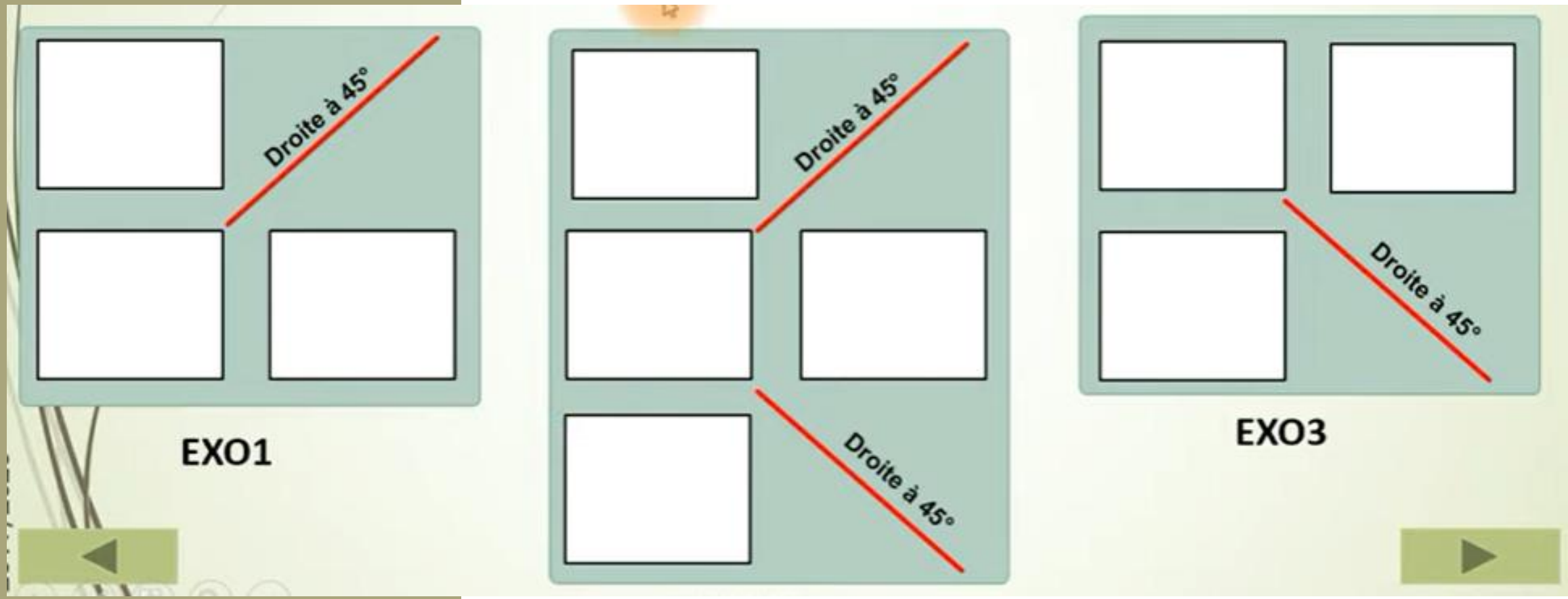


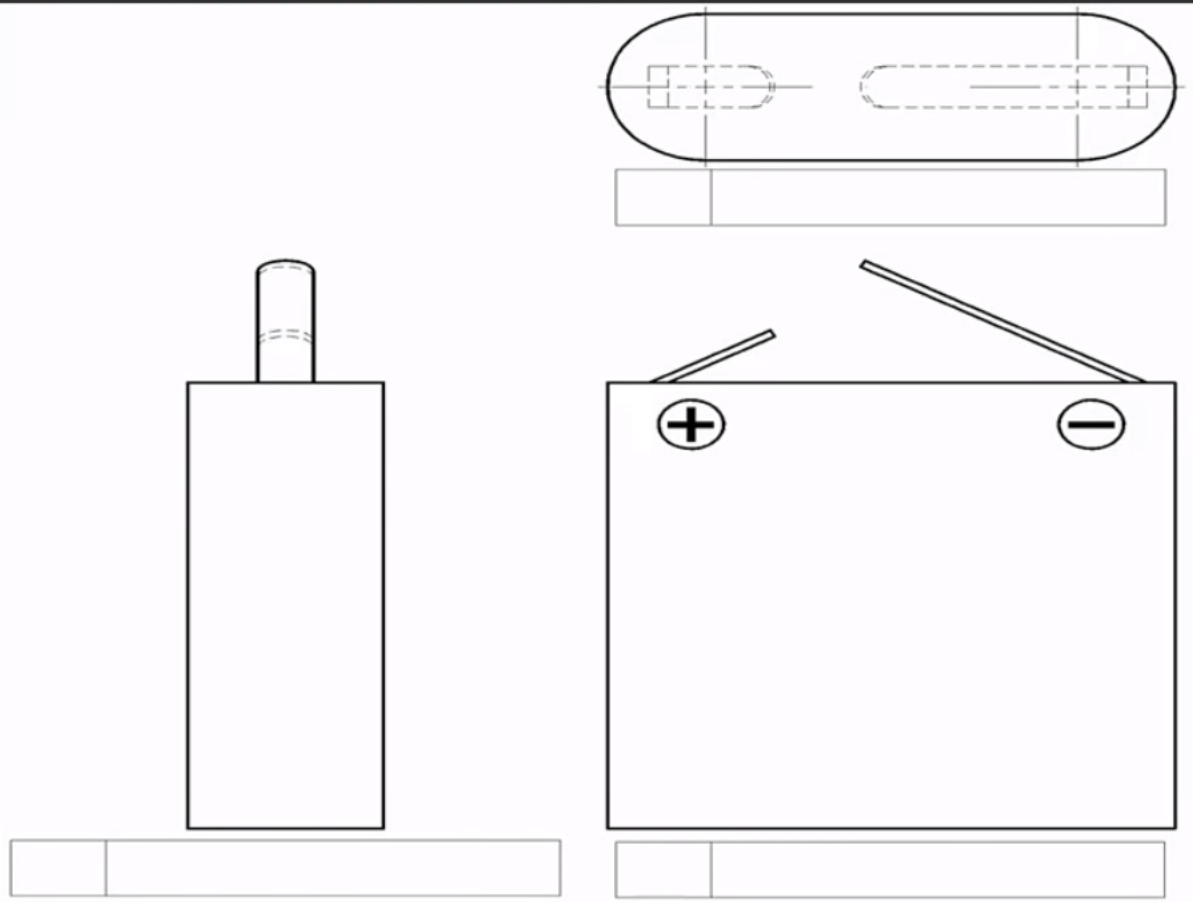


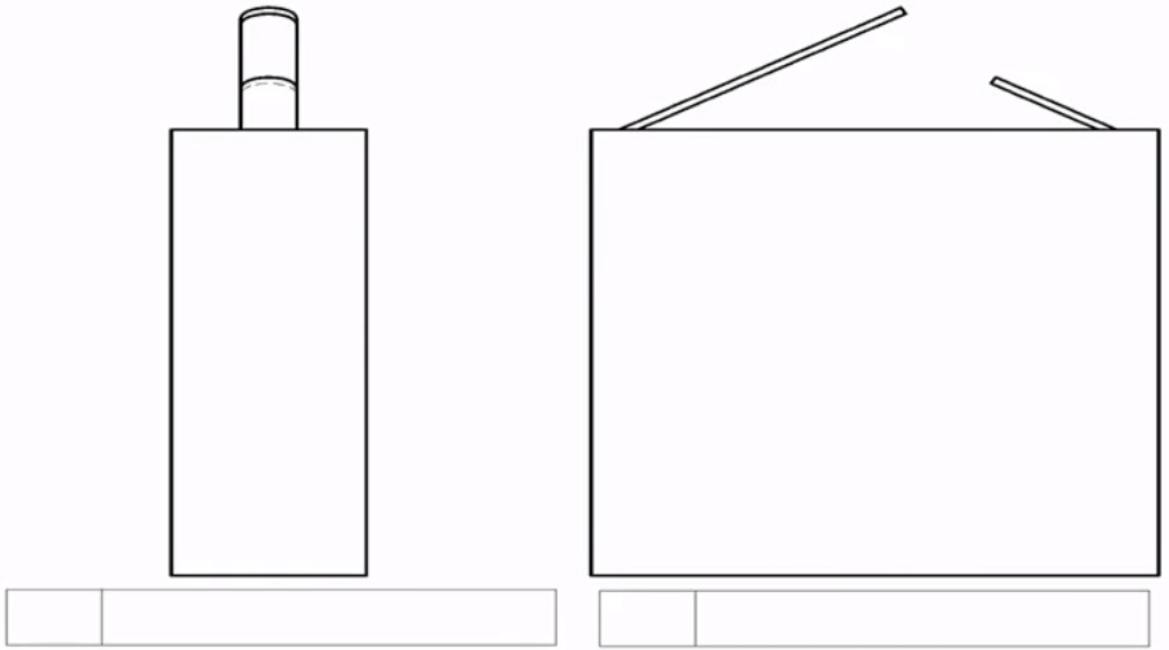
To be complete, we must therefore add the third view (profile view) to ensure that we provide information on the object in its entirety.

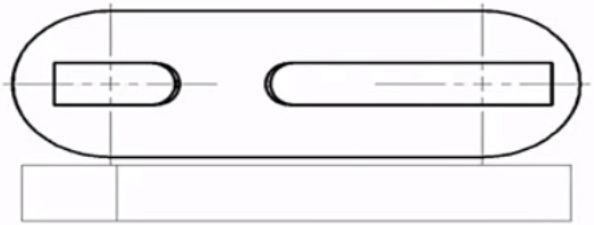


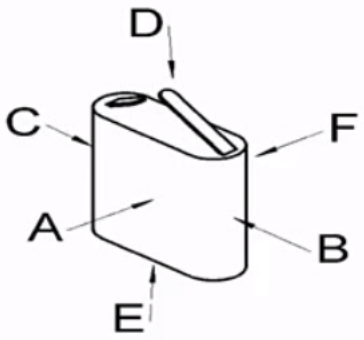
Note : le dessin des trois vues comporte des **traits d'axe** (XYZ), des **traits vus** (arêtes vues de l'objet), des **traits cachés** (arêtes cachées de l'objet) et des **traits de rappel** qui rappel un même point d'un plan à l'autre.


Droite à 45°
EXO1
Droite à 45°
Droite à 45°
Droite à 45°
EXO3

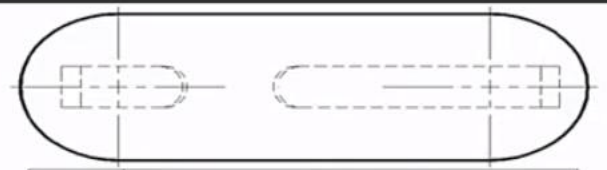




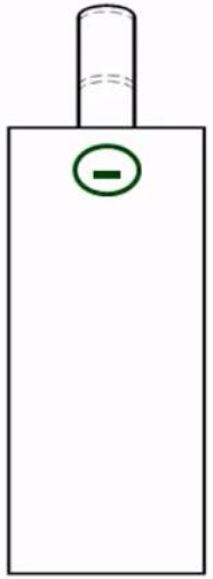




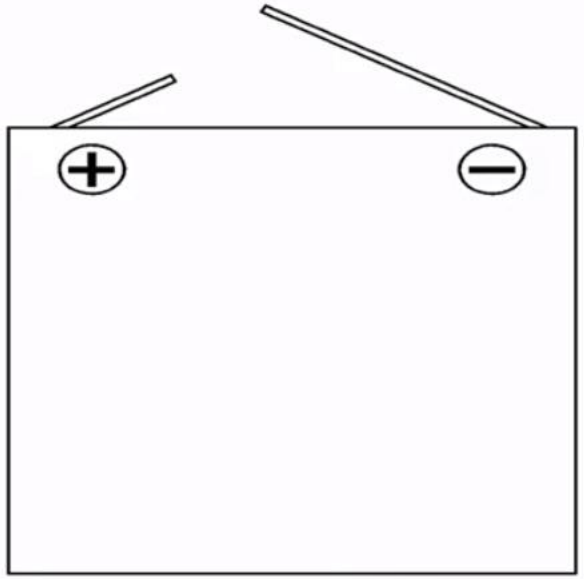
Repère	Position de l'observateur par rapport à la vue de face	Position de la vue par rapport à la vue de face	Nom de la vue
A			
B			
C			
D			
E			
F			



E Vue de DESSOUS

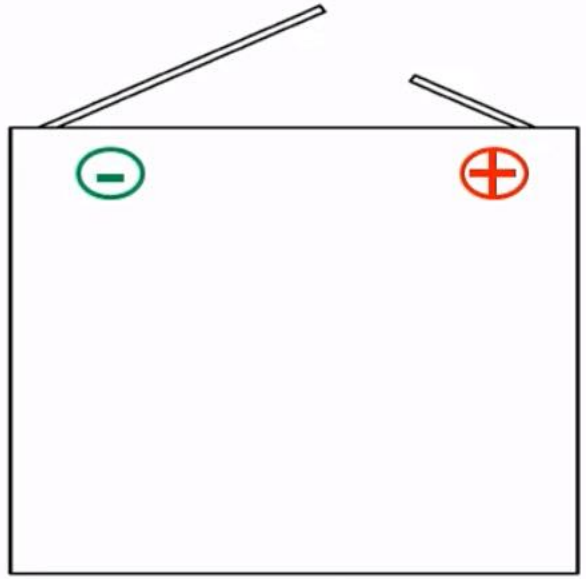


B Vue de DROITE

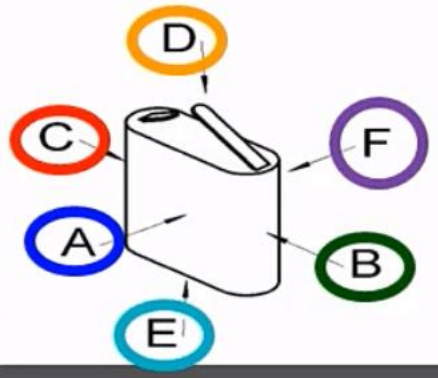


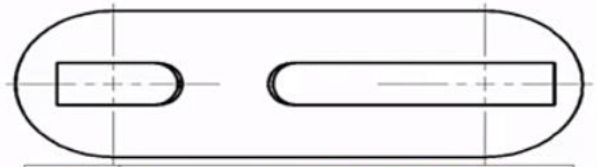
A Vue de FACE

C Vue de GAUCHE



F Vue ARRIERE



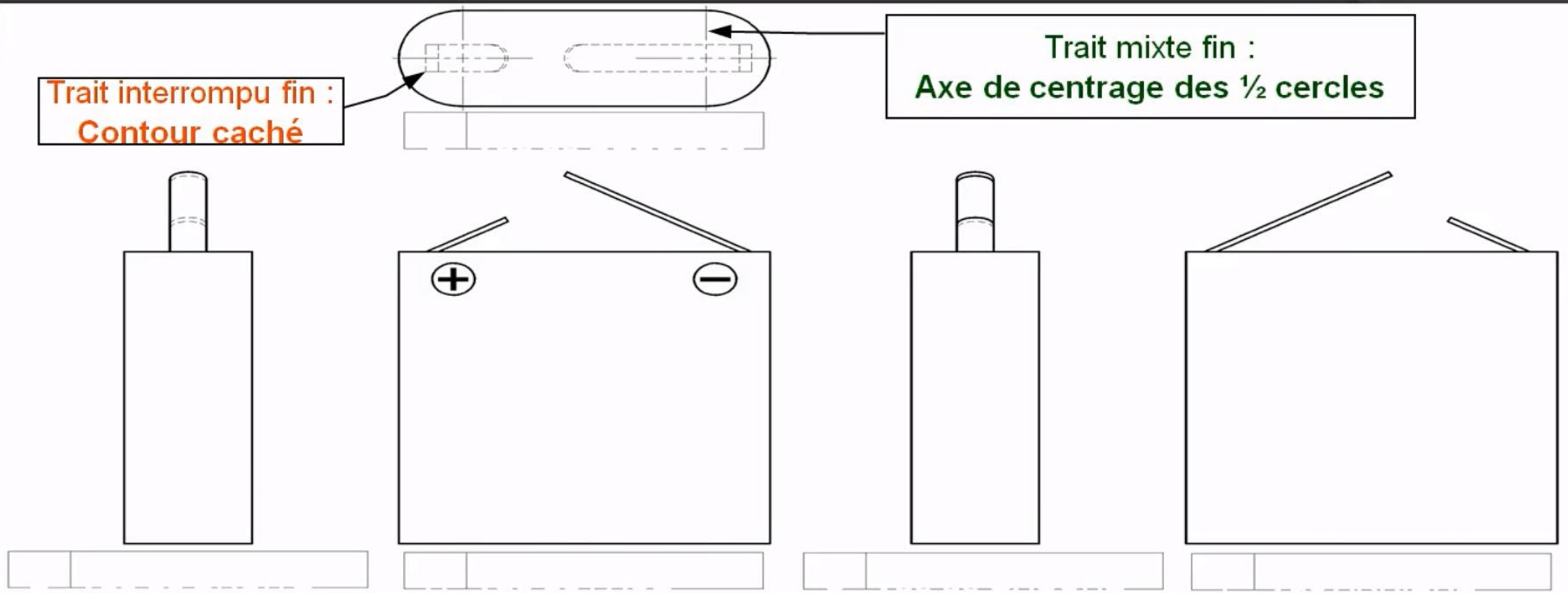


D Vue de DESSUS

Repère	Position de l'observateur par rapport à la vue de face	Position de la vue par rapport à la vue de face	Nom de la vue
A	en face		Vue de FACE
B	à droite	à gauche	Vue de DROITE
C	à gauche	à droite	Vue de GAUCHE
D	au dessus	en dessous	Vue de DESSUS
E	en dessous	au dessus	Vue de DESSOUS
F	à l'arrière		Vue ARRIERE

Trait interrompu fin :
Contour caché

Trait mixte fin :
Axe de centrage des ½ cercles

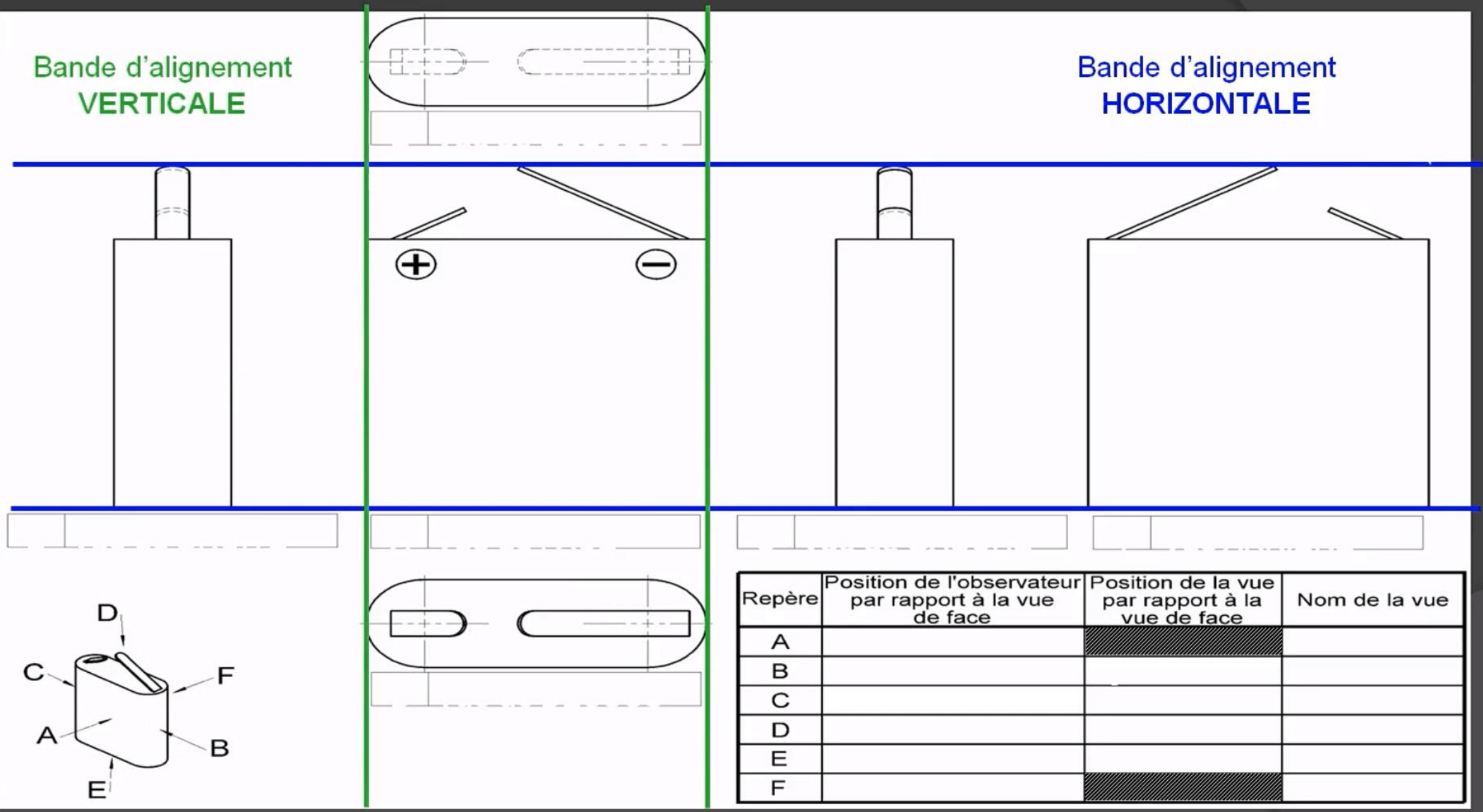


Trait continu fort :
Contour visible

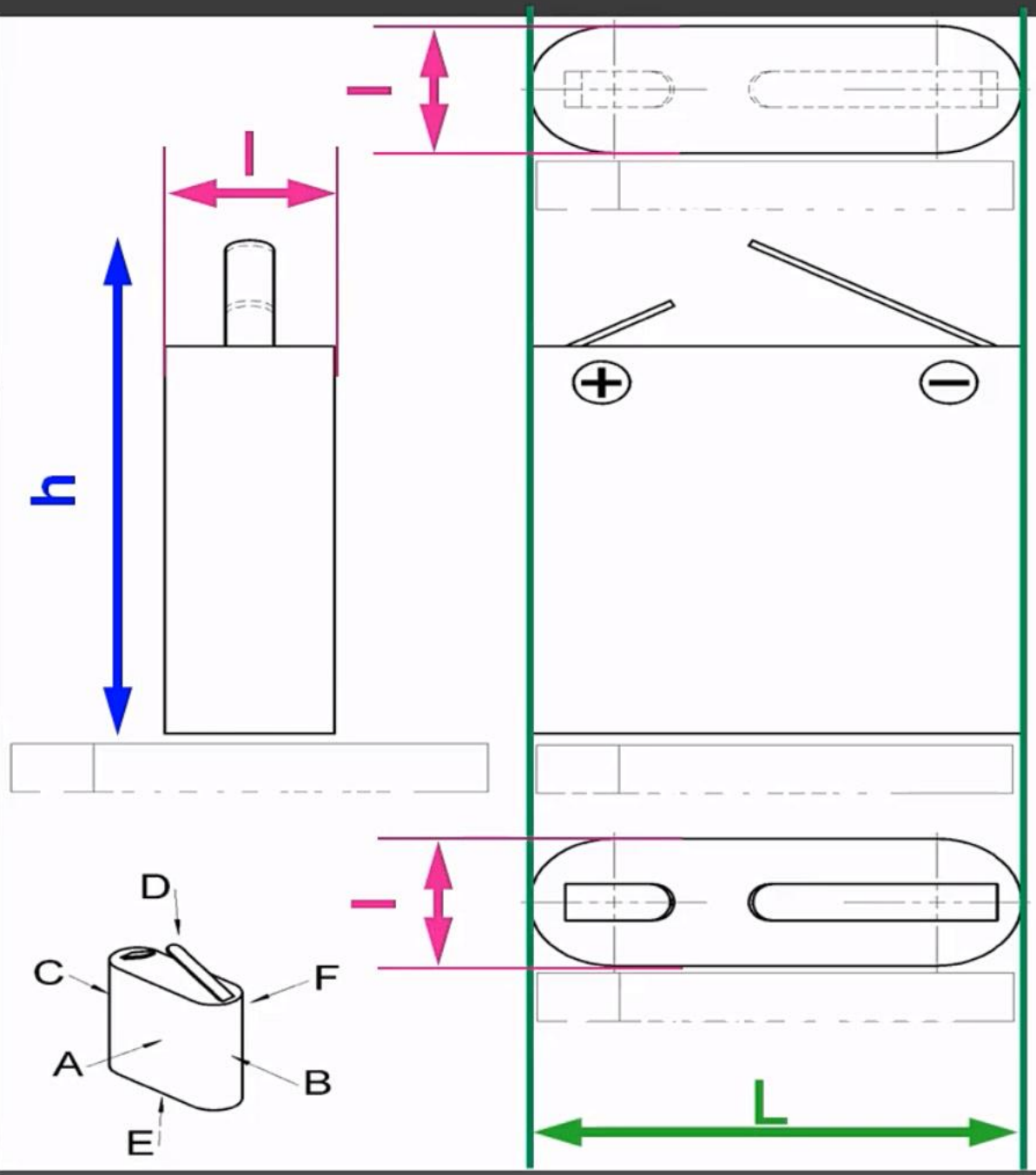
Repère	Position de l'observateur par rapport à la vue de face	Position de la vue par rapport à la vue de face	Nom de la vue
A			
B			
C			
D			
E			
F			

Bande d'alignement
VERTICALE

Bande d'alignement
HORIZONTALE

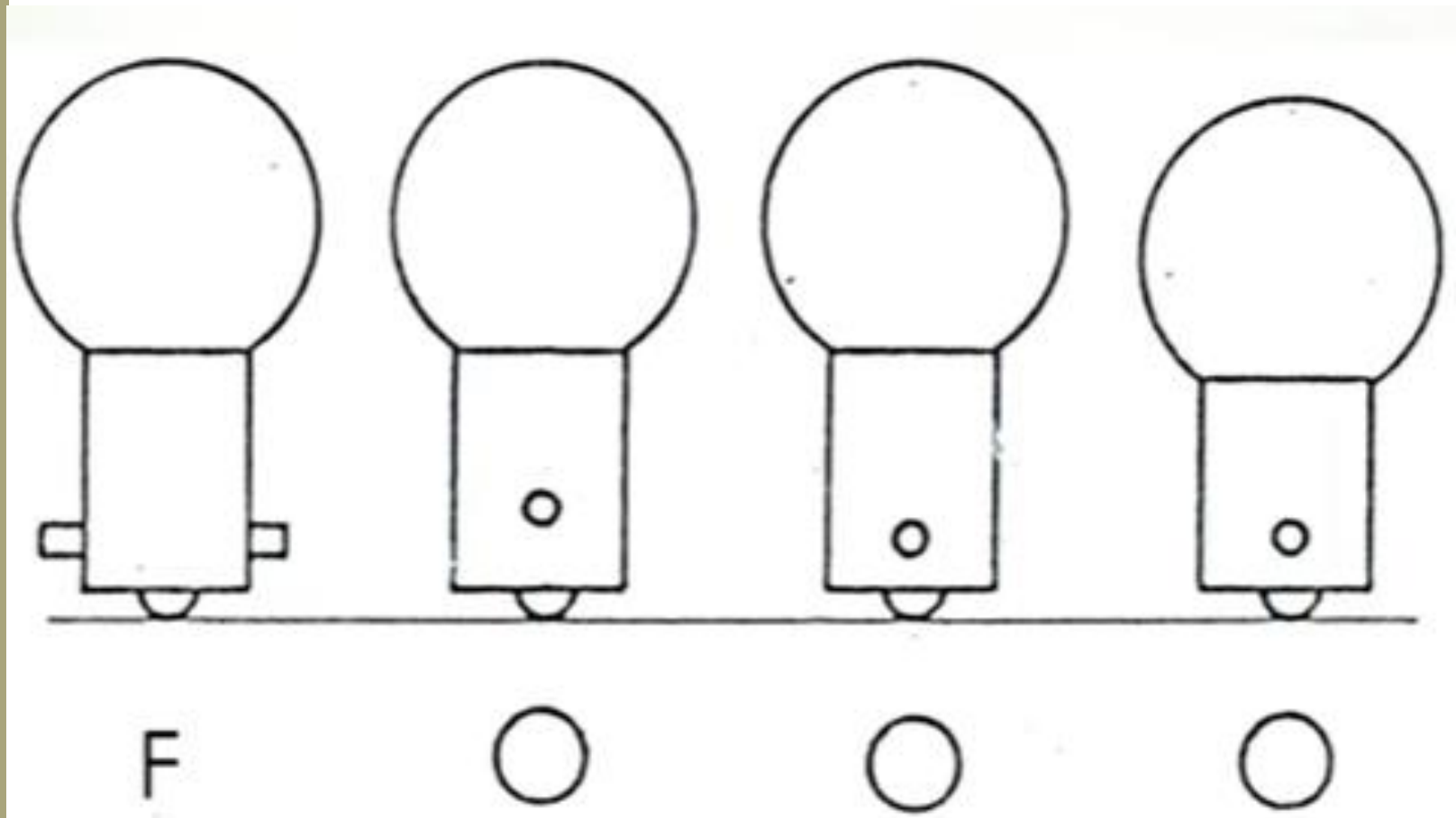


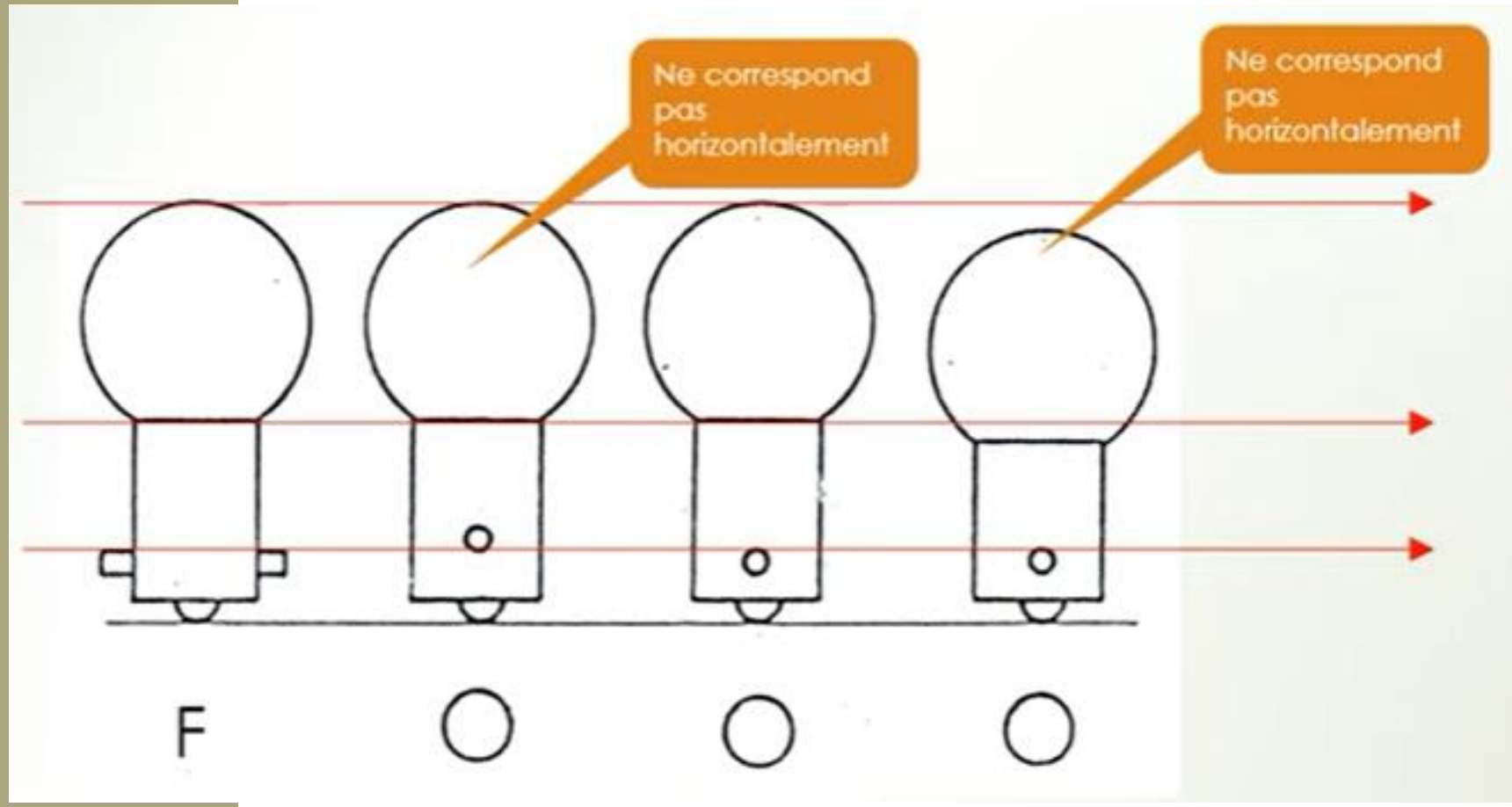
Repère	Position de l'observateur par rapport à la vue de face	Position de la vue par rapport à la vue de face	Nom de la vue
A			
B			
C			
D			
E			
F			



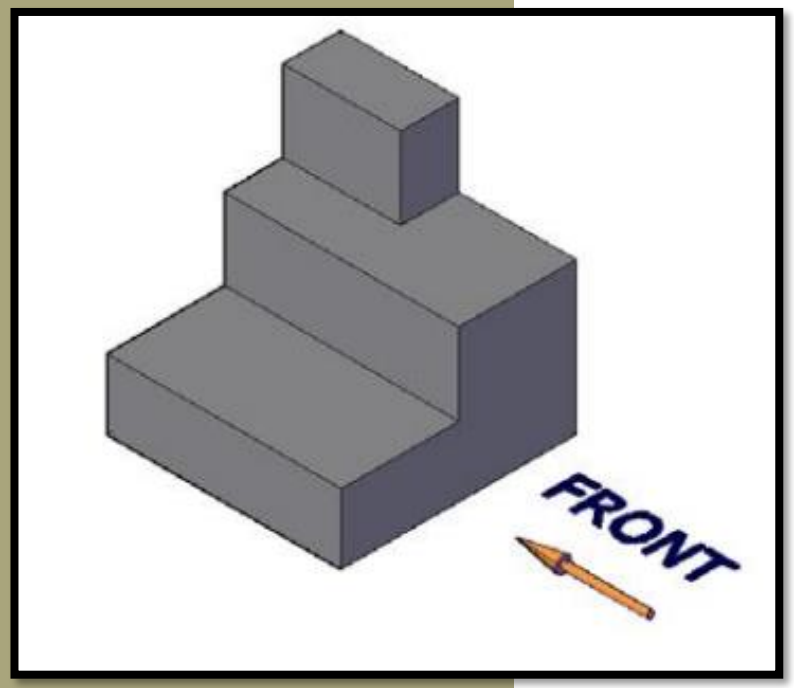
Repère	Position de l'observateur par rapport à la vue de face	Position de la vue par rapport à la vue de face	Nom de la vue
A			
B			
C			
D			
E			
F			

Using the leader lines find the left view adjacent to the front view F

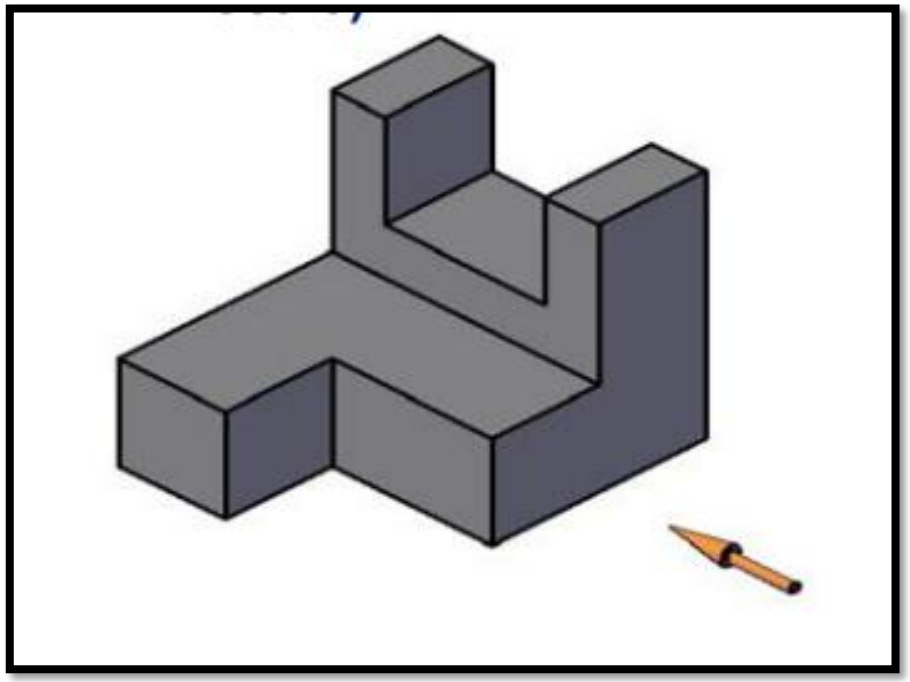


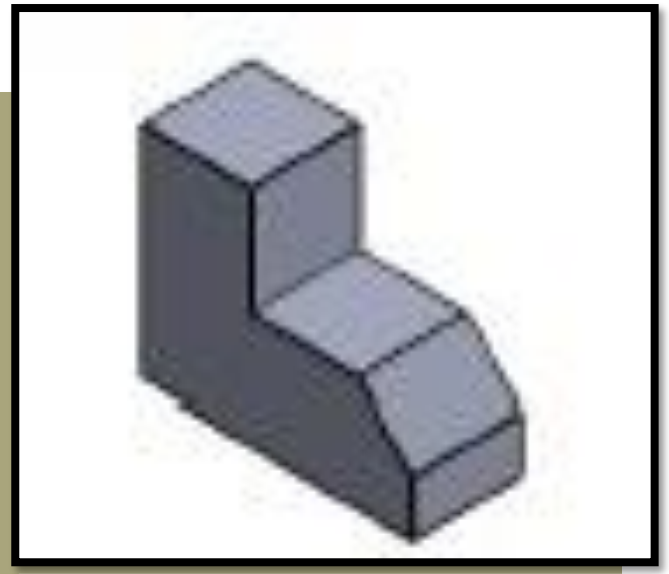

Ne correspond pas horizontalement
Ne correspond pas horizontalement
F
O
O
O

Draw the six principal views of the object below

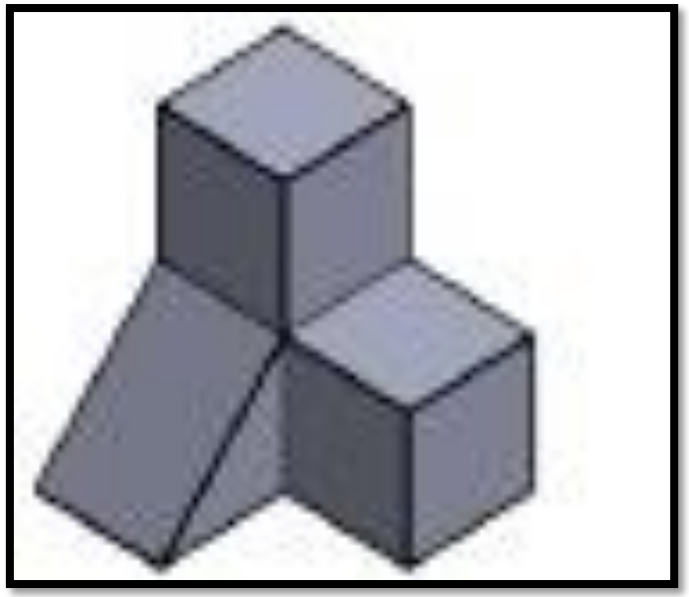


Draw the three principal views of the object below

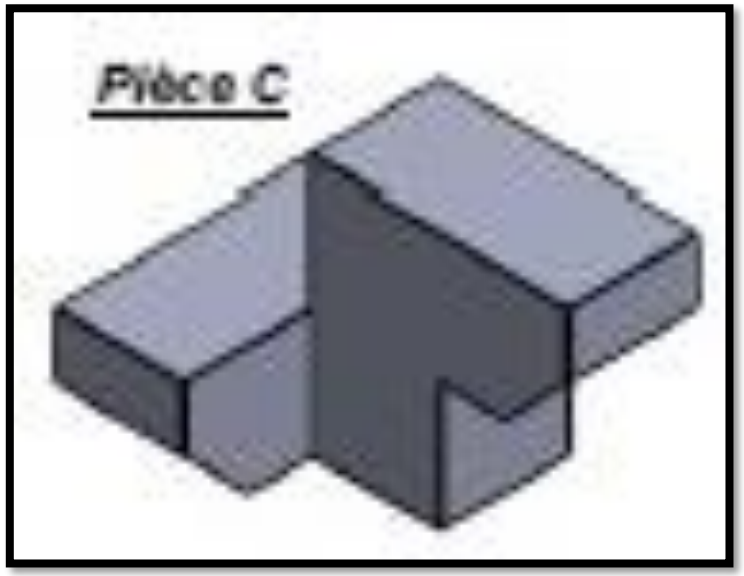




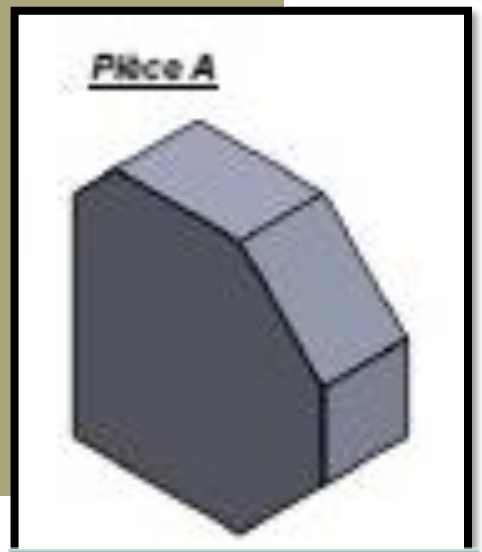
FORM 01



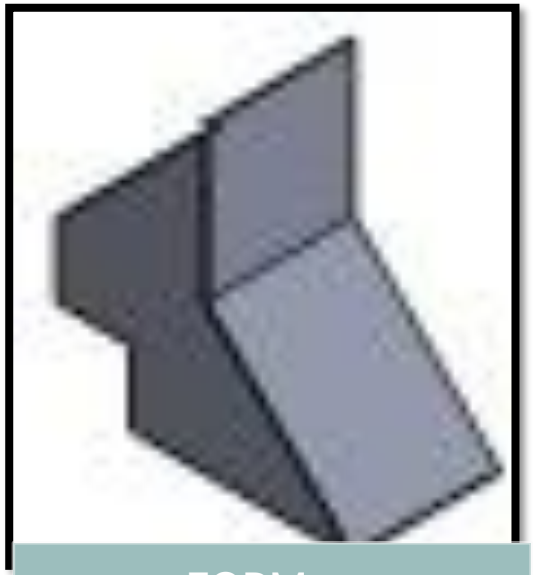
FORM 02



FORM 0 3

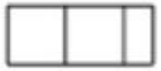


FORM 04



FORM 05

Rappel du cours



Compétence :
Décrire la position des surfaces et volumes d'une pièce

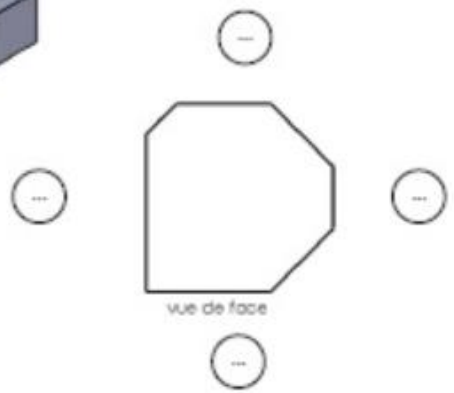
Autonomie

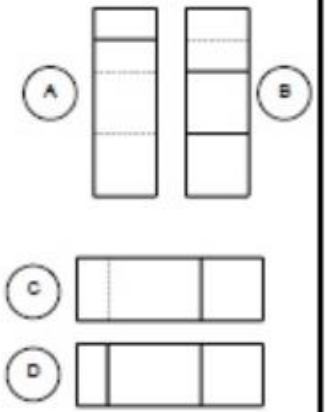
Consignes :

Pour chaque pièces ci dessous,
Repérer par la lettre correspondante les quatre vues manquantes du dessin de définition.

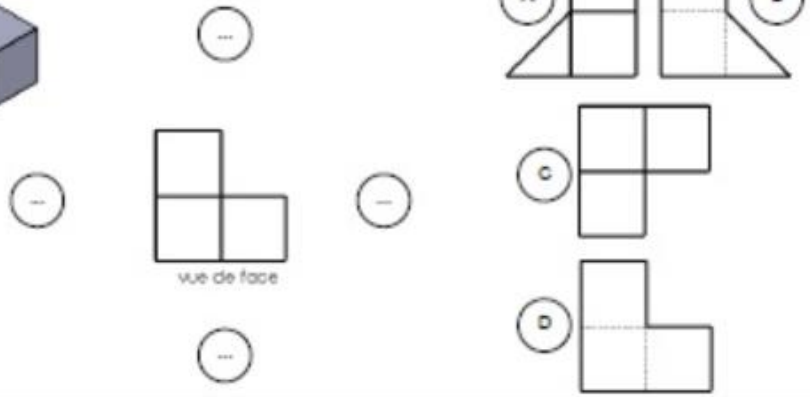
Ouvrir le dossier "projection orthogonale exercice partie 2"

Pièce A

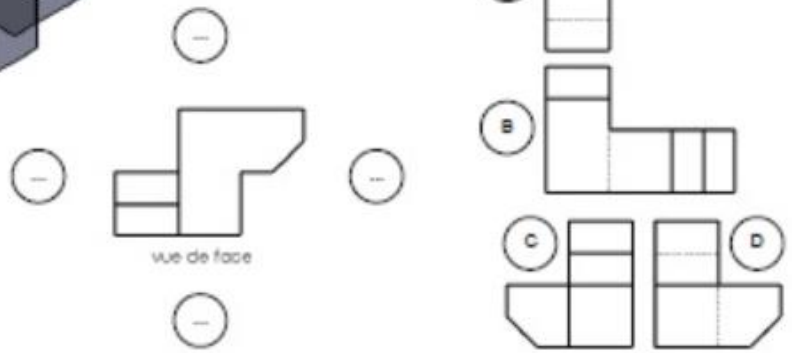




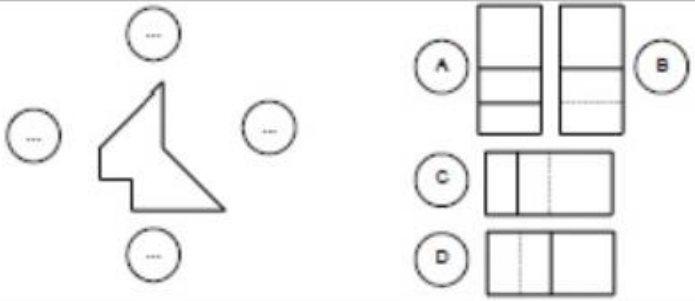
Pièce B

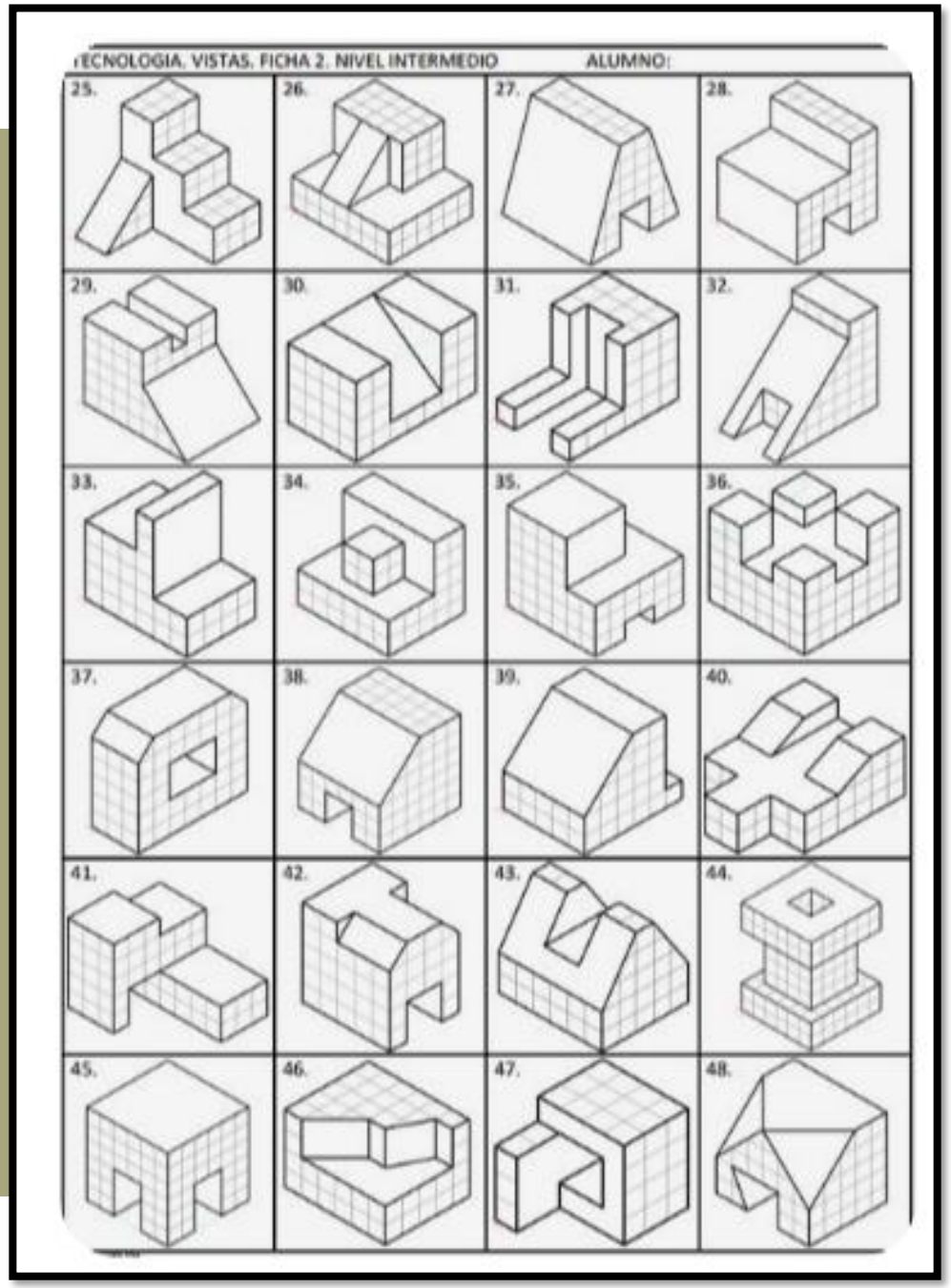


Pièce C



Pièce D

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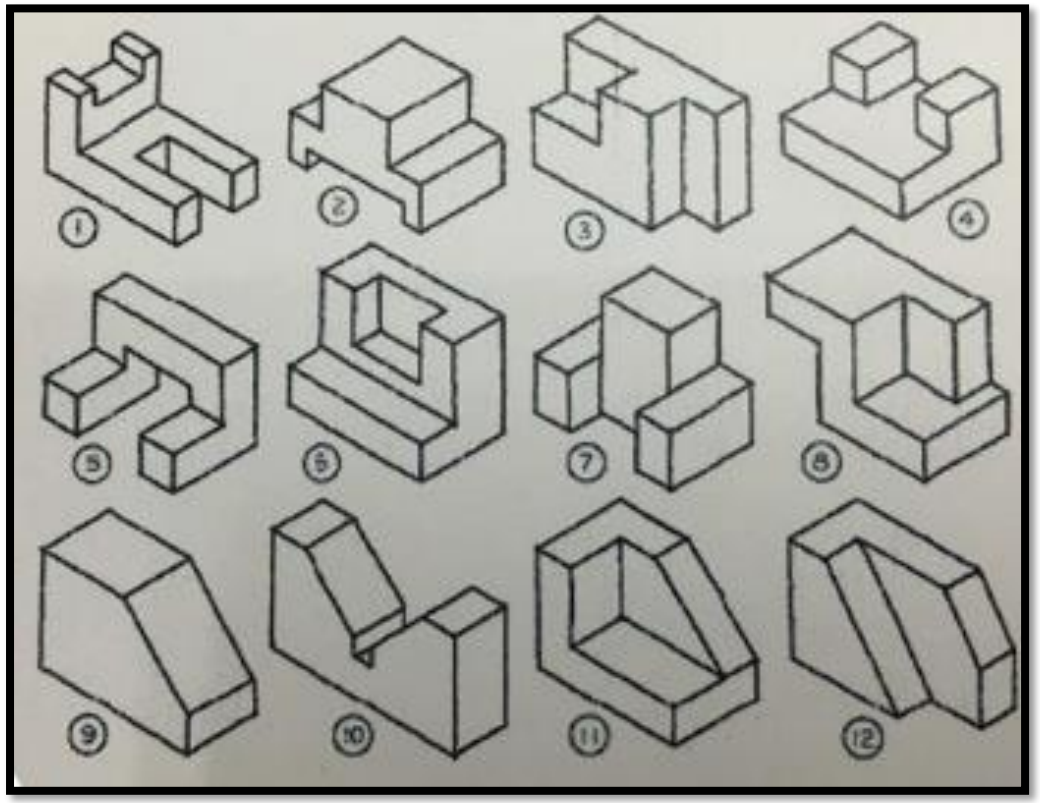
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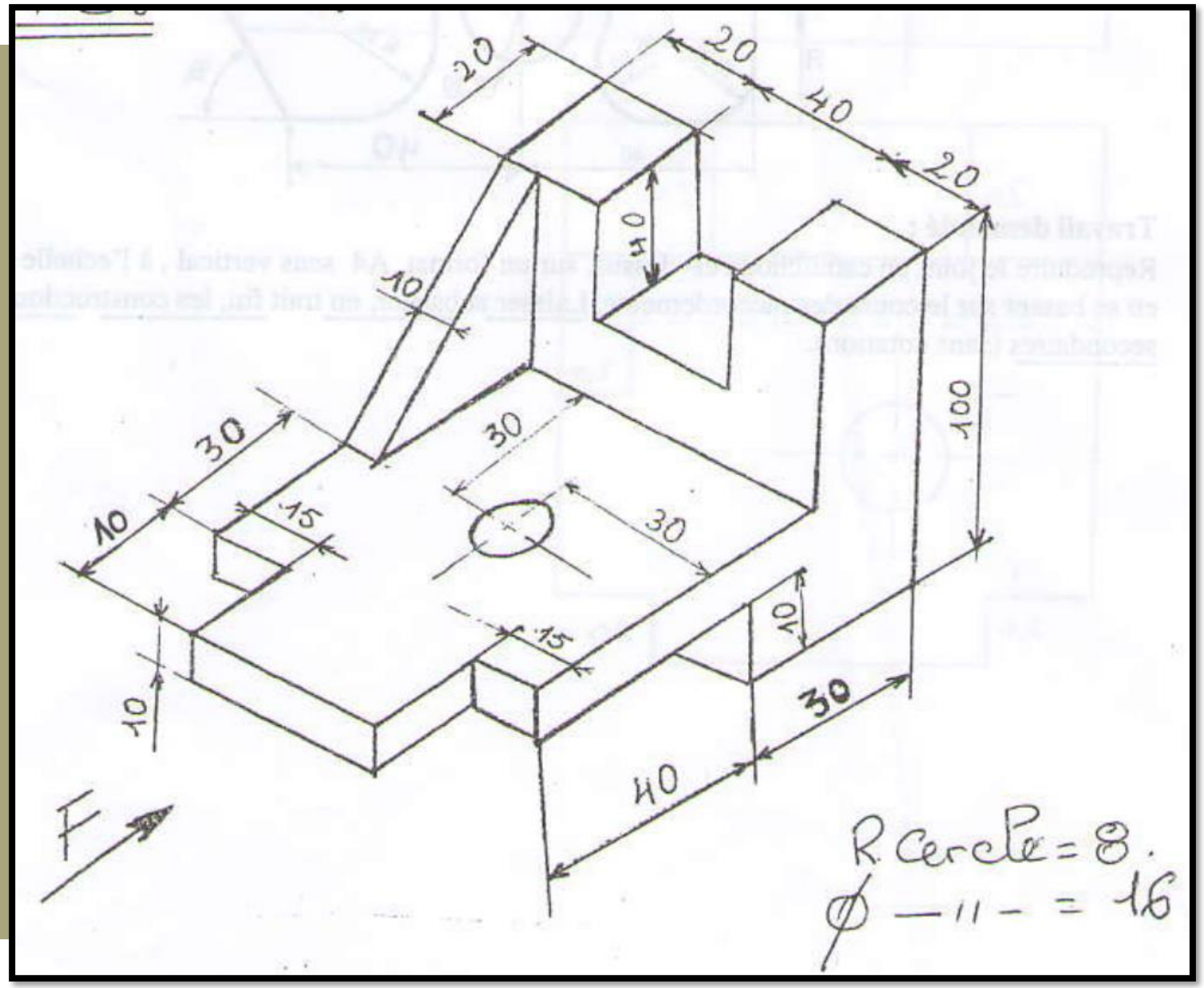
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