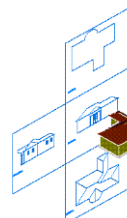


SISTEMAS DE PROJEÇÃO PONTO, RETA E PLANO

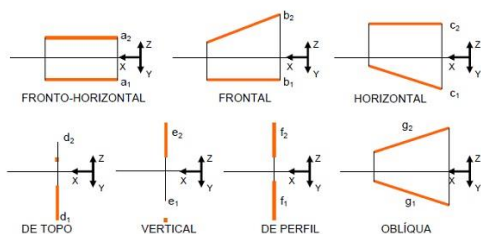
ufjf RMT 1 AULA 4

GEOMETRIA DESCRITIVA | GD

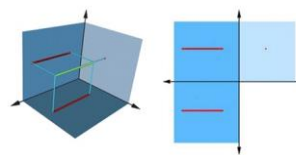
É a concepção gráfica dos **elementos do espaço**, em três dimensões, através de um **desenho descritivo**, em duas dimensões.



A RETA | TIPOS



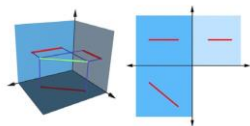
A RETA | FRONTO HORIZONTAL



- Paralela aos planos HORIZONTAL e FRONTAL de projeção: (VG)
- Perpendicular ao plano LATERAL de projeção: (PA)
- Possui AFASTAMENTOS (y) e COTAS (z) iguais.

EXEMPLO
(A) [1,3,4]
(B) [5,3,4]
Abcissa
Afastamento
cota

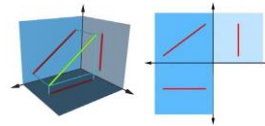
A RETA | HORIZONTAL



- Obliqua / Inclínada aos planos FRONTAL e LATERAL de projeção: (PR)
- Paralela ao plano HORIZONTAL de projeção: (VG)
- Possui AFASTAMENTOS (y) diferentes e COTAS (z) iguais.

EXEMPLO
(A) [1,1,3]
(B) [5,4,3]
Abcissa
Afastamento
cota

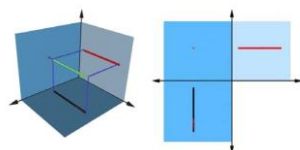
A RETA | FRONTAL



- Obliqua / Inclínada aos planos HORIZONTAL e LATERAL de projeção: (PR)
- Paralela ao plano FRONTAL de projeção: (VG)
- Possui AFASTAMENTOS (y) iguais e COTAS (z) diferentes.

EXEMPLO
(A) [1,4,1]
(B) [5,4,5]
Abcissa
Afastamento
cota

A RETA | DE TOPO

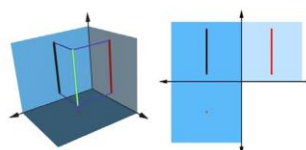


- **Paralela** aos planos HORIZONTAL e LATERAL de projeção: (VG)
- **Perpendicular** ao plano FRONTAL de projeção: (PA)
- Possui AFASTAMENTOS (y) **diferentes** e COTAS (z) **iguais**.

EXEMPLO
(A) [3, 1, 4]
(B) [3, 5, 4]

Abcissa
Afastamento
cota

A RETA | VERTICAL

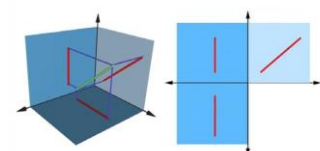


- **Paralela** aos planos FRONTAL e LATERAL de projeção: (VG)
- **Perpendicular** ao plano HORIZONTAL de projeção: (PA)
- Possui AFASTAMENTOS (y) **iguais** e COTAS (z) **diferentes**.

EXEMPLO
(A) [3, 3, 1]
(B) [3, 3, 5]

Abcissa
Afastamento
cota

A RETA | DE PERFIL

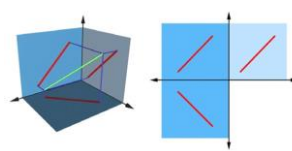


- **Paralela** ao plano LATERAL de projeção: (VG)
- **Obliqua** aos planos HORIZONTAL e FRONTAL de projeção: (PR)
- Possui AFASTAMENTOS (y) e COTAS (z) **diferentes**.

EXEMPLO
(A) [3, 1, 1]
(B) [3, 5, 5]

Abcissa
Afastamento
cota

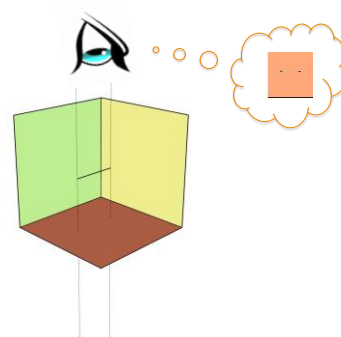
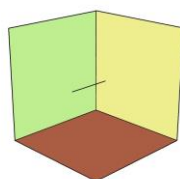
A RETA | OBLÍQUA OU QUALQUER

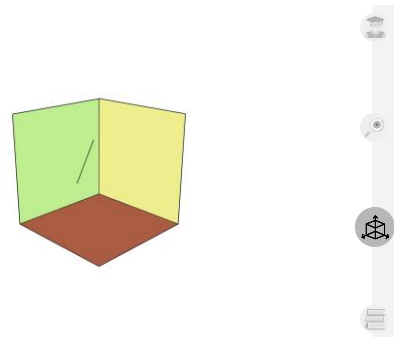
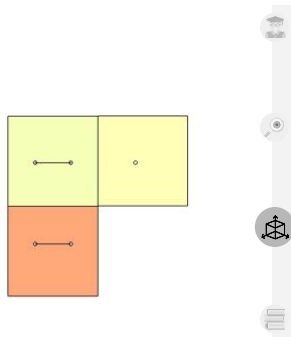
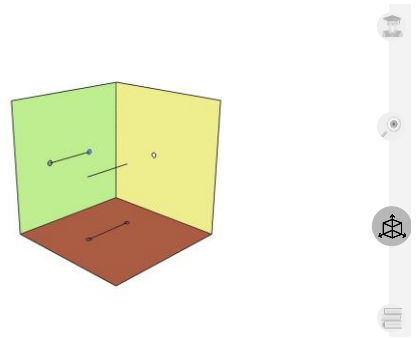
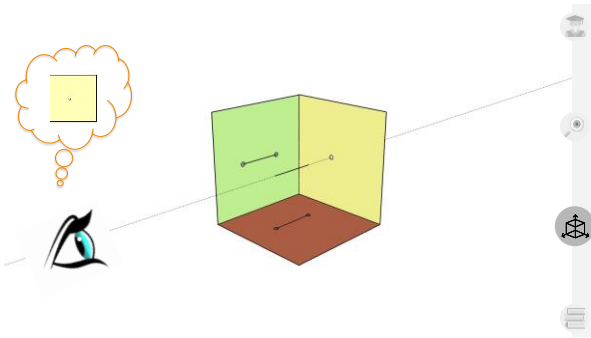
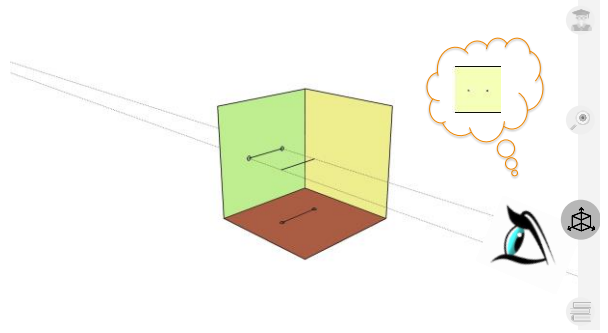
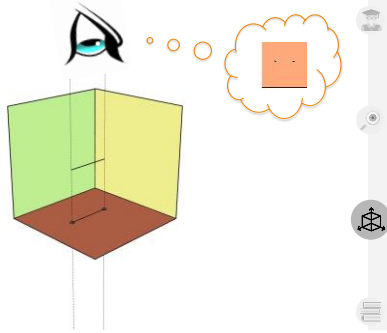


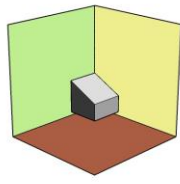
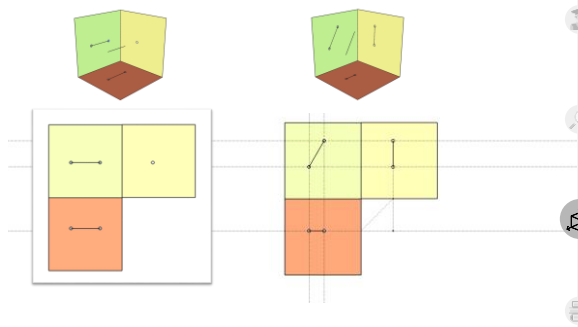
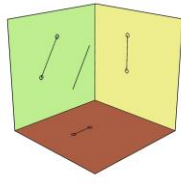
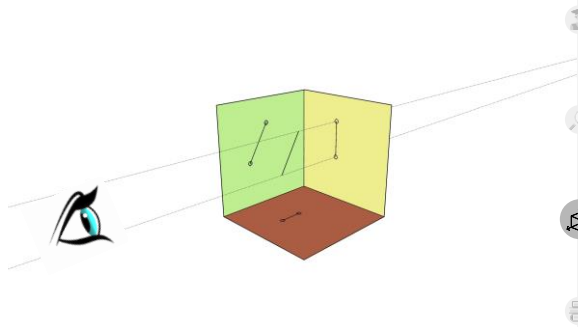
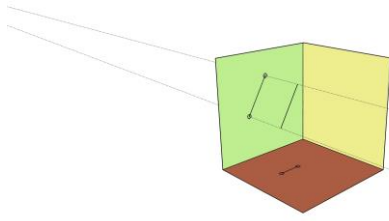
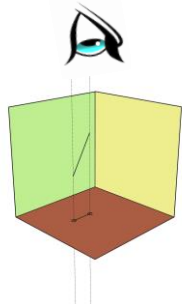
- **Obliqua** aos planos HORIZONTAL, FRONTAL e LATERAL de projeção: (PR)
- Possui AFASTAMENTOS (y) e COTAS (z) **diferentes**.

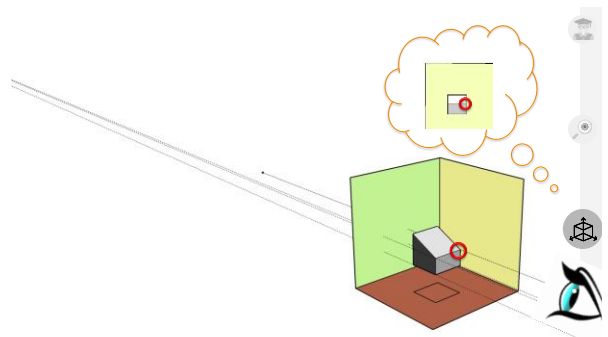
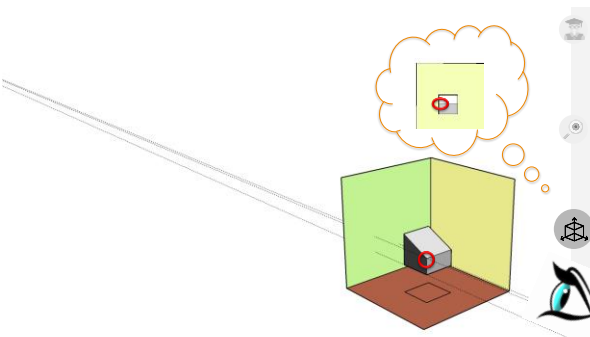
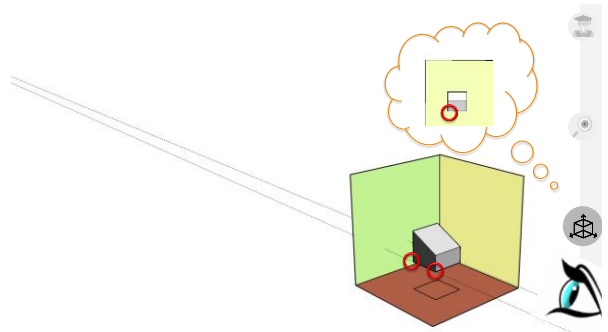
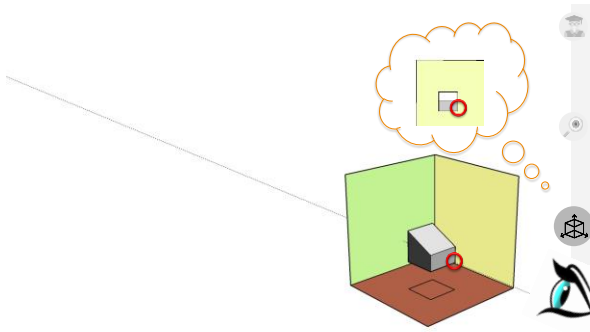
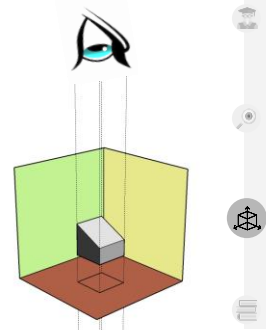
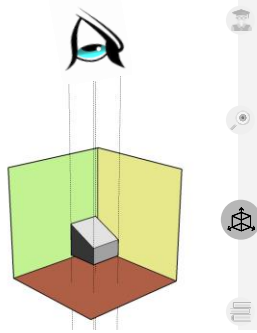
EXEMPLO
(A) [3, 1, 1]
(B) [3, 5, 5]

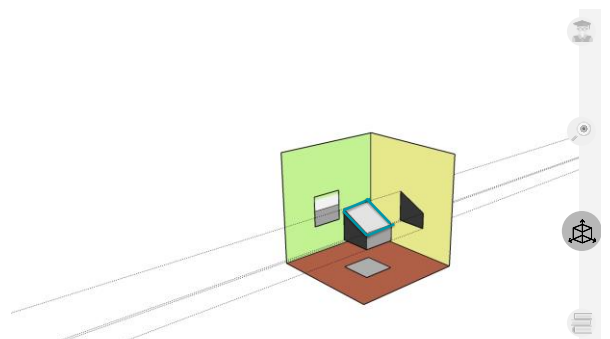
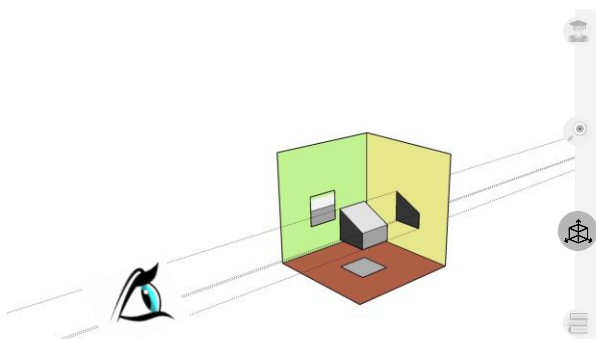
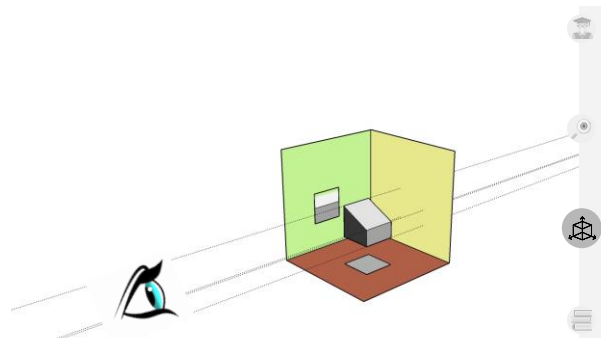
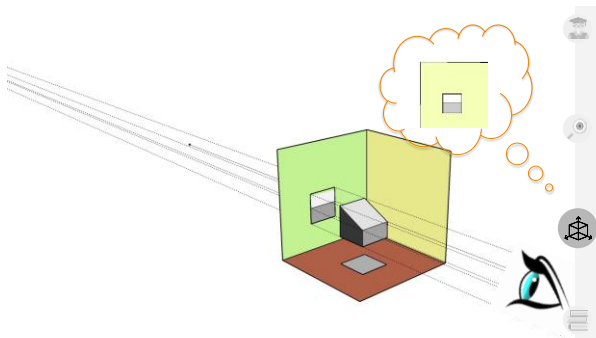
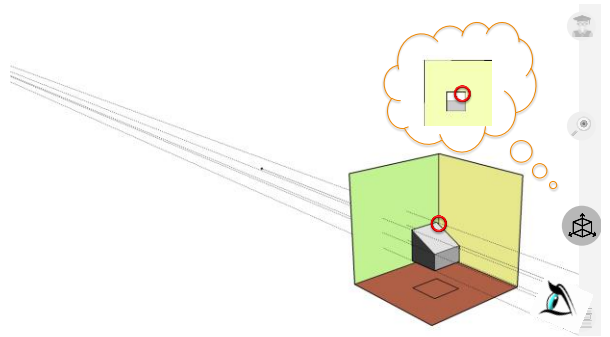
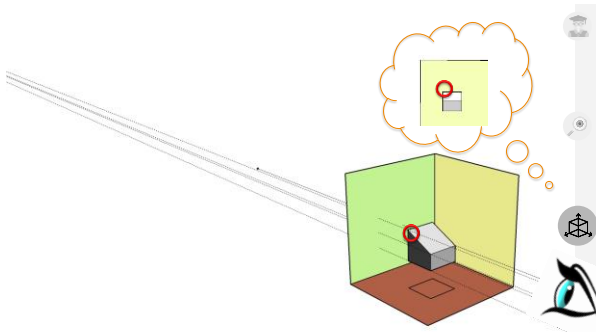
Abcissa
Afastamento
cota











PLANOS PROJETANTES

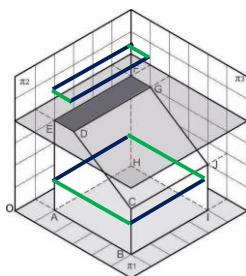
PLANO HORIZONTAL	Paralelo ao PH (π_1) \parallel Perpendicular PF (π_2) \perp Perpendicular PL (π_3) \perp
PLANO FRONTAL	Paralelo ao PF (π_2) \parallel Perpendicular PH (π_1) \perp Perpendicular PL (π_3) \perp
PLANO DE PERFIL	Paralelo ao PL (π_3) \parallel Perpendicular PH (π_1) \perp Perpendicular PF (π_2) \perp
PLANO VERTICAL	Perpendicular ao PH (π_1) \perp Obliquo ao PF (π_2) \angle Obliquo ao PL (π_3) \angle
PLANO DE TOPO	Perpendicular ao PF (π_2) \perp Obliquo ao PH (π_1) \angle Obliquo ao PL (π_3) \angle

PLANOS NÃO PROJETANTES

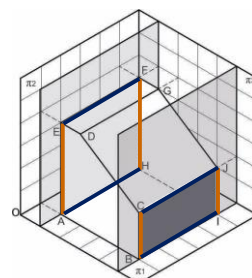
PLANO DE RAMPA	Obliquo ao PH (π_1) \angle Obliquo ao PF (π_2) \angle Perpendicular ao PL (π_3) \perp
PLANO QUALQUER	Obliquo ao PH (π_1) \angle Obliquo ao PF (π_2) \angle Obliquo ao PL (π_3) \angle

PLANO HORIZONTAL

- Perpendicular PF (π_2) e PL (π_3); Paralelo ao PH (π_1)
- **Projeção Horizontal** (π_1) - VG
- Pontos ϵ ao Plano Horizontal: **cotas iguais**;
- Retas ϵ ao Plano Horizontal:
- **Fronto-horizontal** – PH e PF em VG
- **de topo** – PH e PL em VG
- **Horizontal** – PH em VG

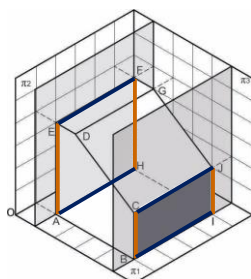


PLANO FRONTAL

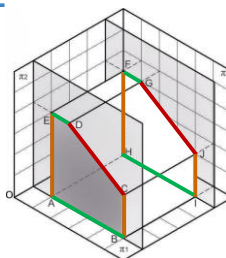


PLANO FRONTAL

- Perpendicular PH (π_1) e PL (π_3); Paralelo ao PF (π_2)
- **Projeção Frontal** (π_2) - VG
- Pontos ϵ ao Plano Frontal: **afastamentos iguais**;
- Retas ϵ ao Plano Frontal:
- **Fronto-horizontal** – PH e PF em VG
- **Vertical** – PF e PL em VG
- **Frontal** – PF em VG

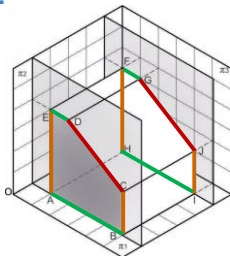


PLANO DE PERFIL

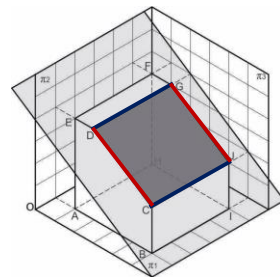


PLANO DE PERFIL

- **Perpendicular** PH (π_1) e PF (π_2)
Paralelo ao PL (π_3);
- **Projeção Lateral** (π_3) - **VG**
- Pontos ϵ ao Plano de Perfil: **abscissas iguais**;
- Retas ϵ ao Plano de Perfil:
 - **de topo** – PH e PL em VG
 - **Vertical** – PF e PL em VG
 - **de perfil** – PL em VG

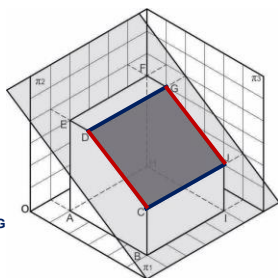


PLANO DE RAMPA

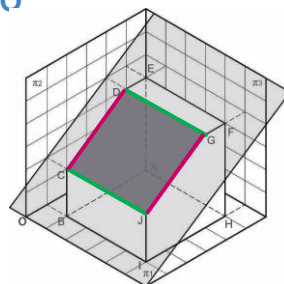


PLANO DE RAMPA

- **Obliquo** PH (π_1) e PF (π_2);
- **Perpendicular** ao PL (π_3);
- **Paralelo** à LT;
- Retas ϵ ao Plano de Rampa:
 - **Fronto-horizontal** – PH e PF em VG
 - **de perfil** – PL em VG
 - **Qualquer** – sem PVG

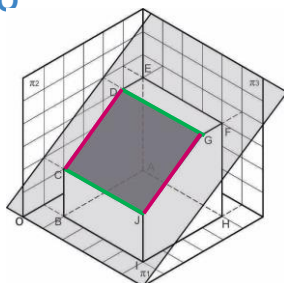


PLANO DE TOPO

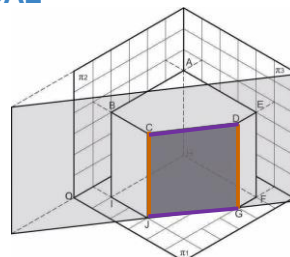


PLANO DE TOPO

- **Perpendicular** PF (π_2);
- **Obliquo** ao PH (π_1) e PL (π_3);
- Retas ϵ ao Plano de Topo:
 - **de topo** – PH e PL em VG
 - **Frontal** – PF em VG
 - **Qualquer** – sem PVG

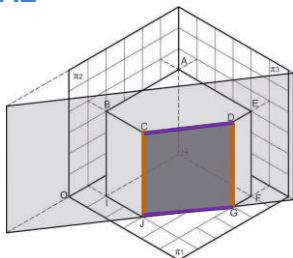


PLANO VERTICAL

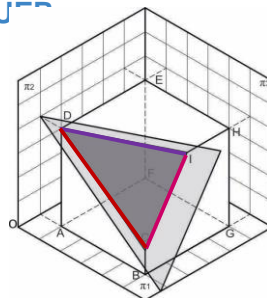


PLANO VERTICAL

- **Perpendicular** PH (π_1)
- **Obliquo** ao PF (π_2) e PL (π_3);
- **Retas** ϵ ao Plano Vertical:
 - **Vertical** – PF e PL em VG
 - **Horizontal** – PH em VG
 - **Qualquer** – sem PVG

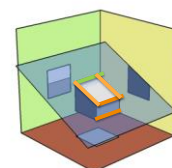
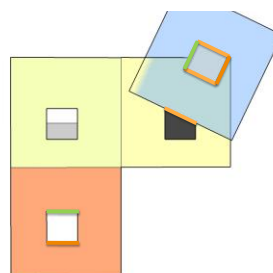
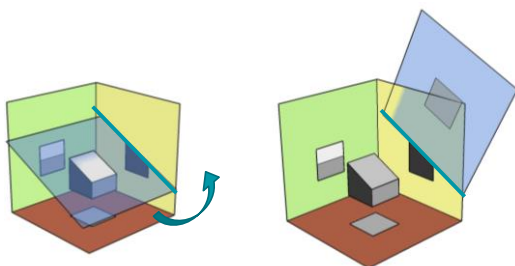
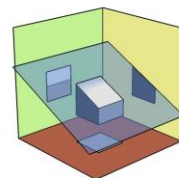
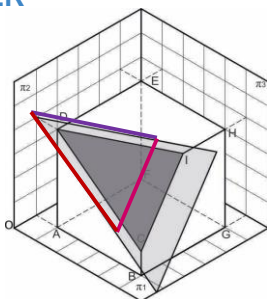


PLANO QUALQUER

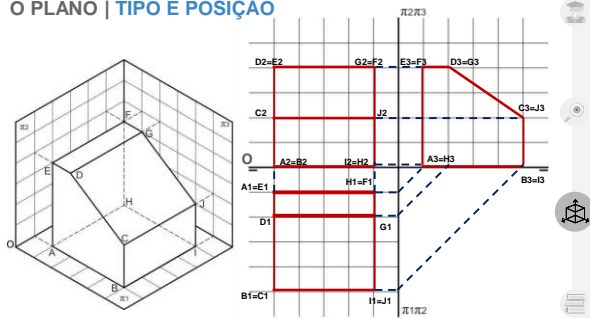


PLANO QUALQUER

- **Obliquo** aos PH (π_1), PF (π_2) e PL (π_3);
- Identificado por **exclusão**;
- **Retas** ϵ ao Plano Qualquer:
 - **Horizontal** – PH em VG
 - **Frontal** – PF em VG
 - **de perfil** – PL em VG
 - **Qualquer** – sem PVG



O PLANO | TIPO E POSIÇÃO



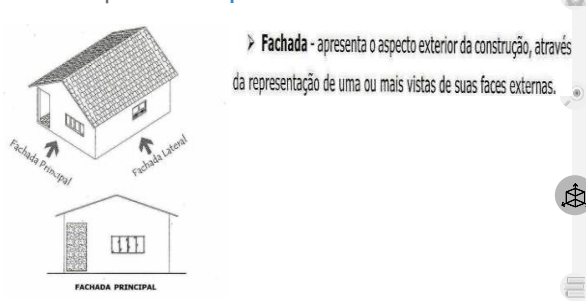
O PLANO | Desenho arquitetônico



O PLANO | Desenho arquitetônico



O PLANO | Desenho arquitetônico



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