

# Desenho Técnico - Projeções

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Universidade Federal do Paraná

14 de maio de 2015

# Parte I

## NIVELAMENTO - I

## 1 Tipos de Projeção

Desenho  
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eek.edu@outlook.com

Tipos de  
Projeção

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## 1 Tipos de Projeção

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## Projeção

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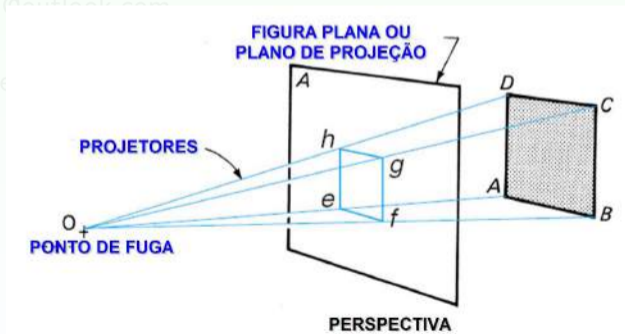
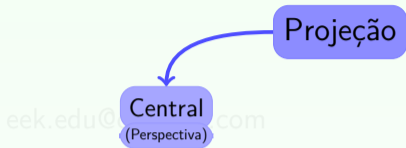
Tipos de  
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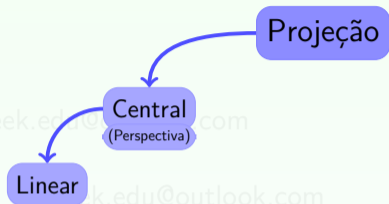
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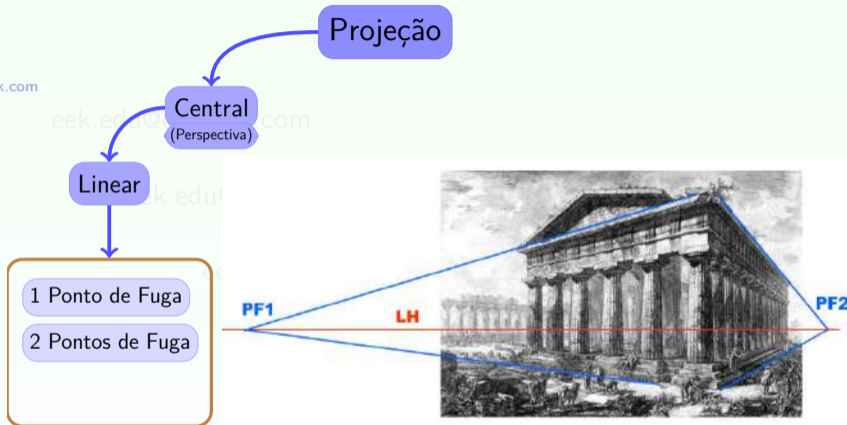
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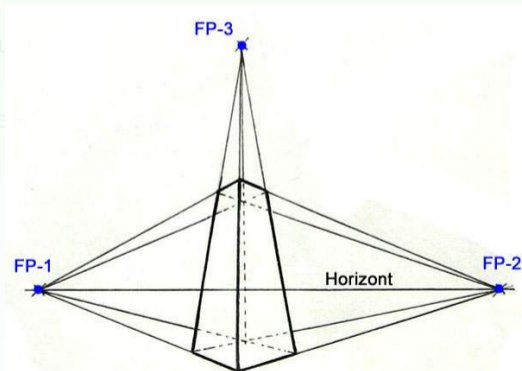
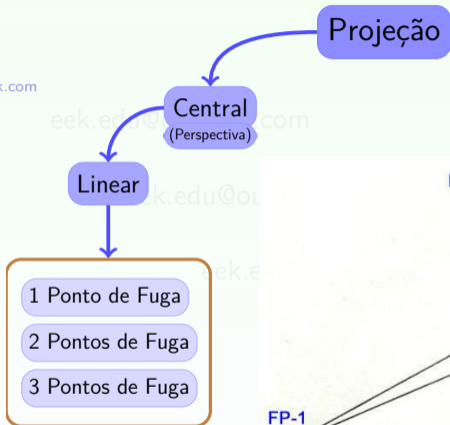
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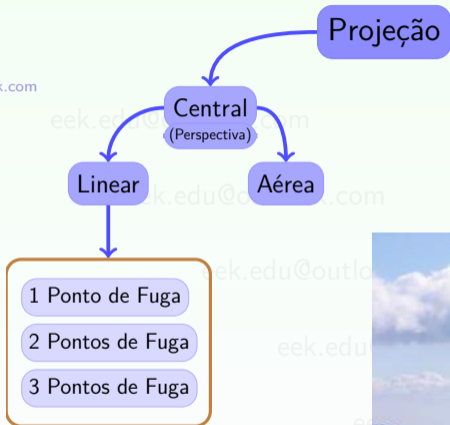


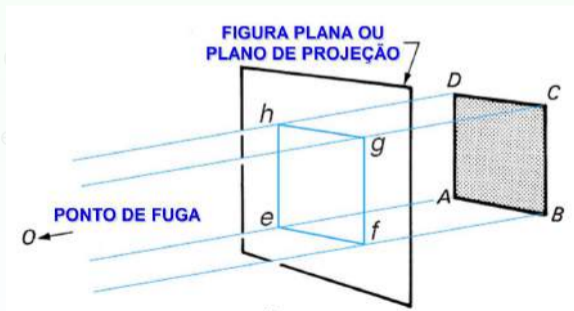
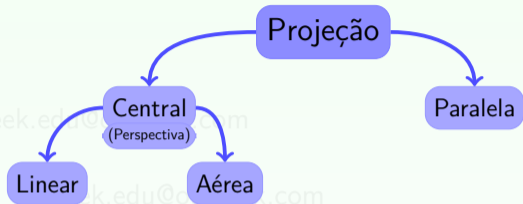


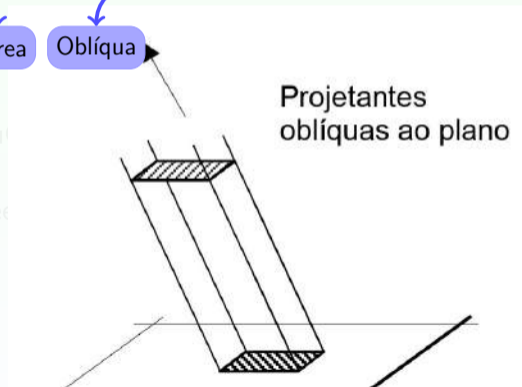
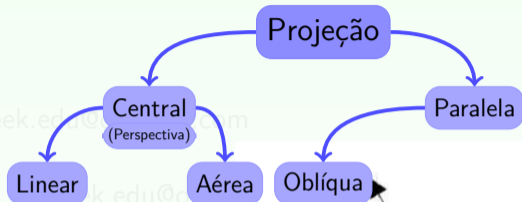


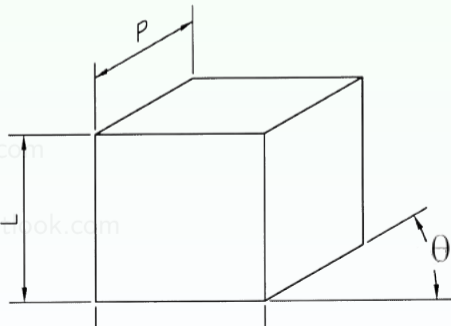
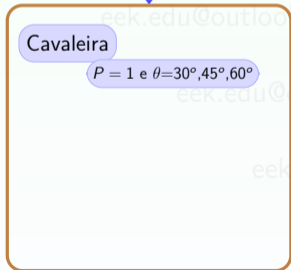
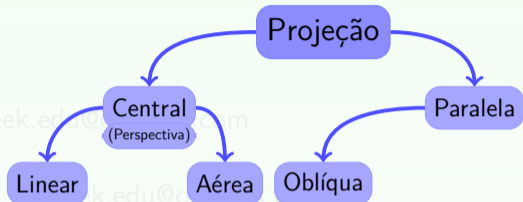


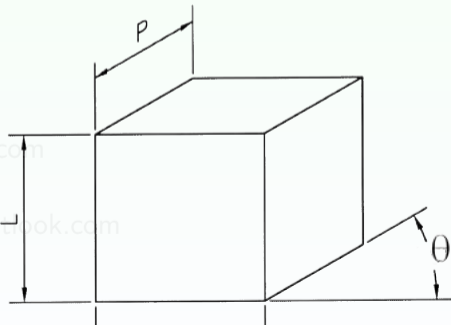
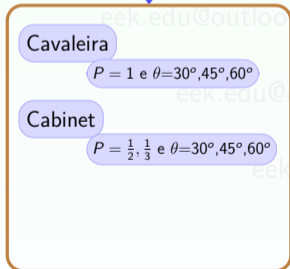
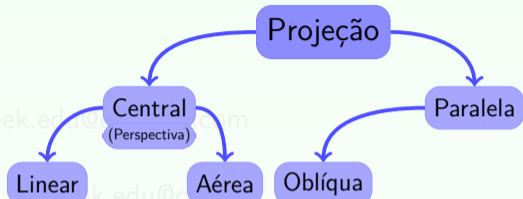


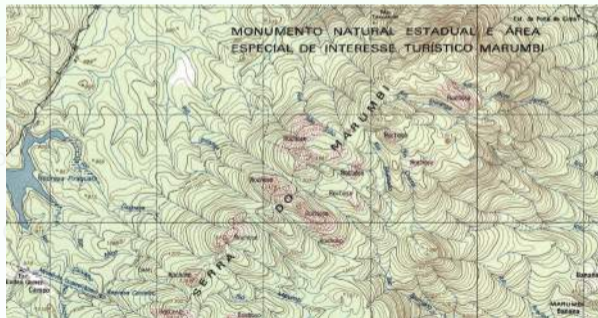
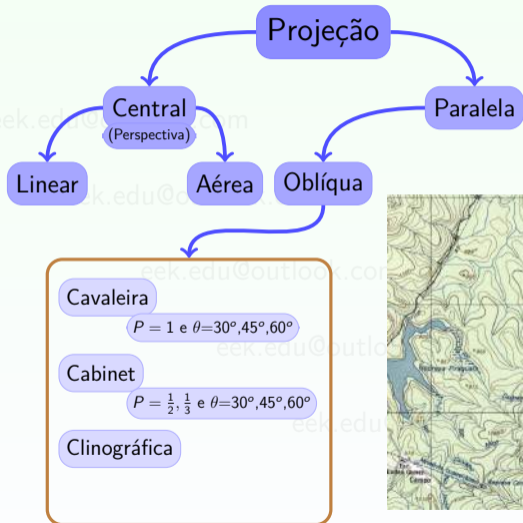


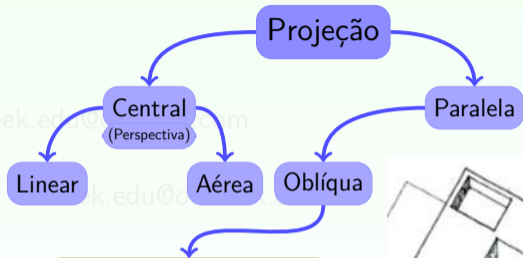




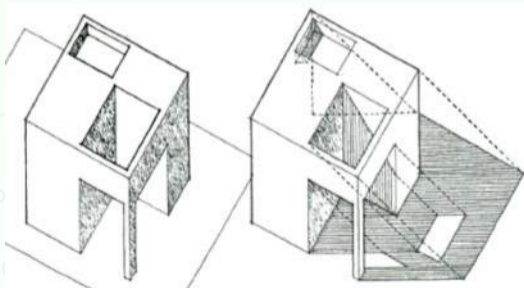


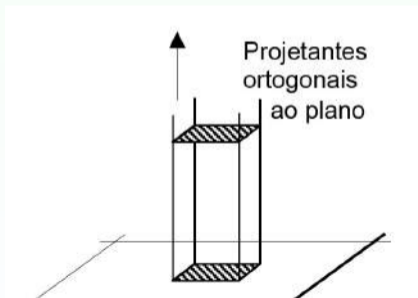
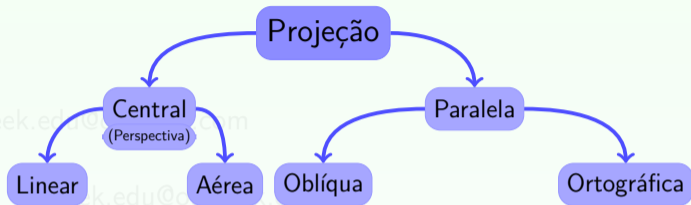


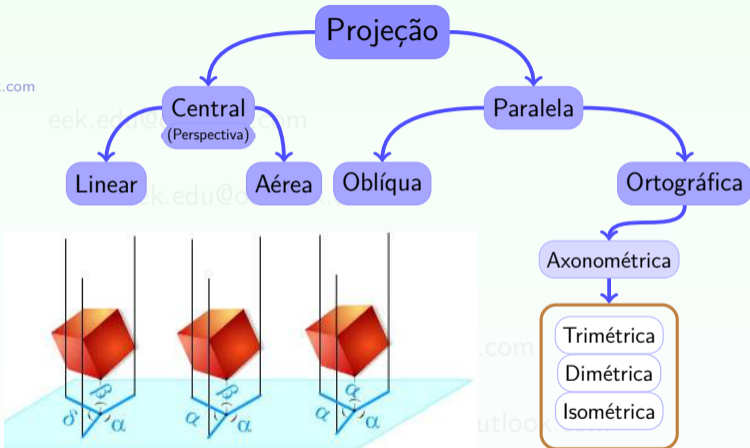


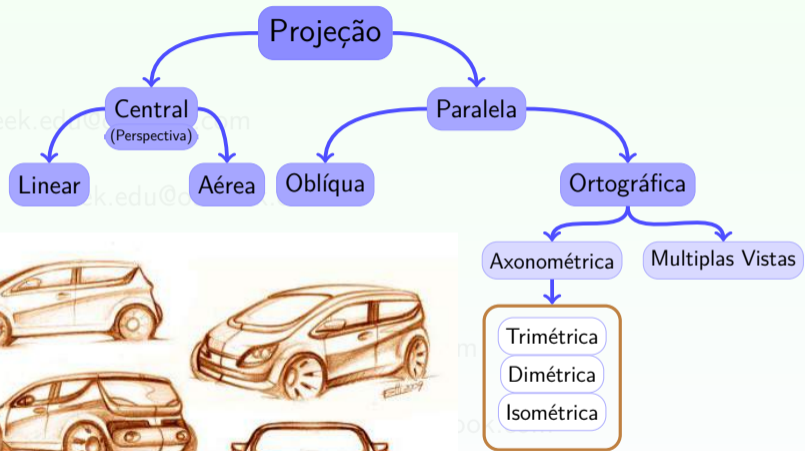


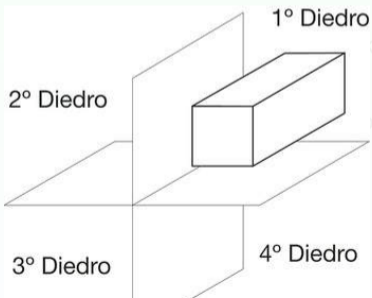
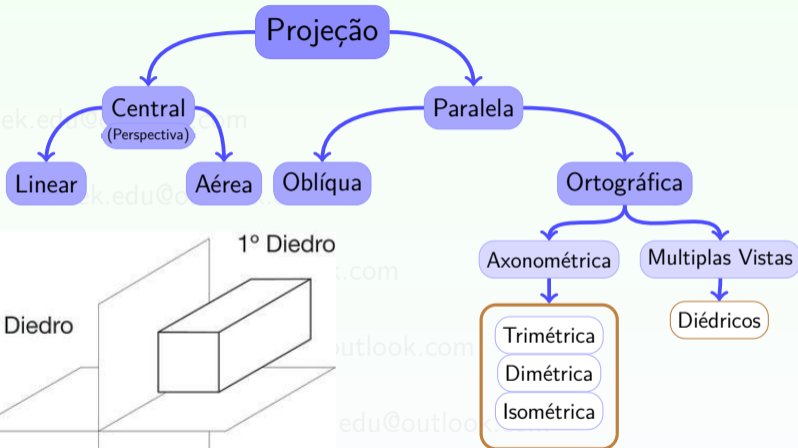
- Cavaleira  
 $P = 1$  e  $\theta = 30^\circ, 45^\circ, 60^\circ$
- Cabinet  
 $P = \frac{1}{2}, \frac{1}{3}$  e  $\theta = 30^\circ, 45^\circ, 60^\circ$
- Clinográfica
- Sombras & Penumbbras

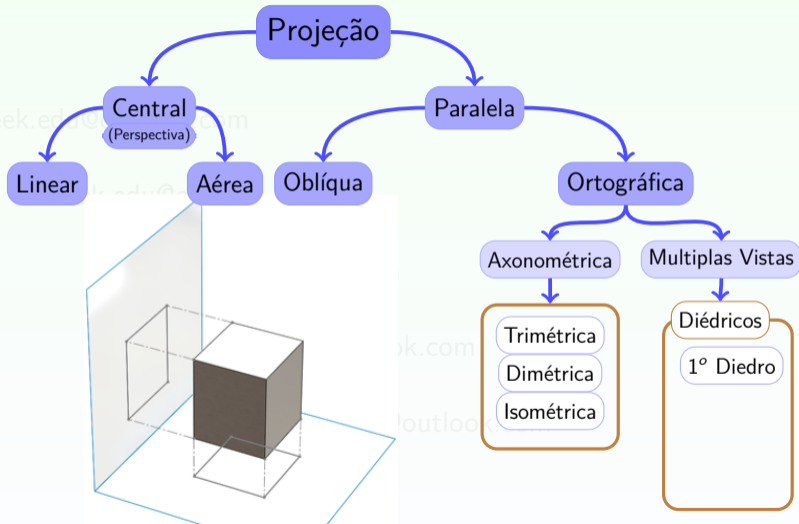


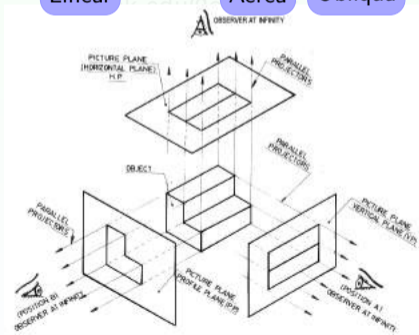
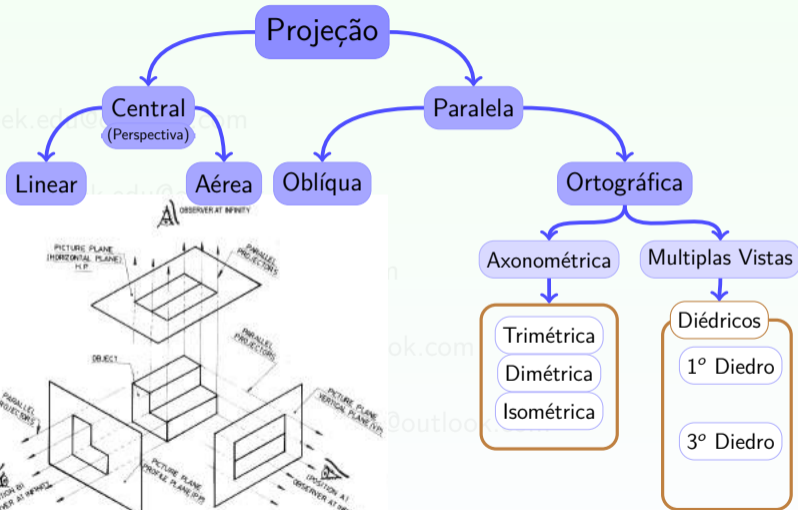


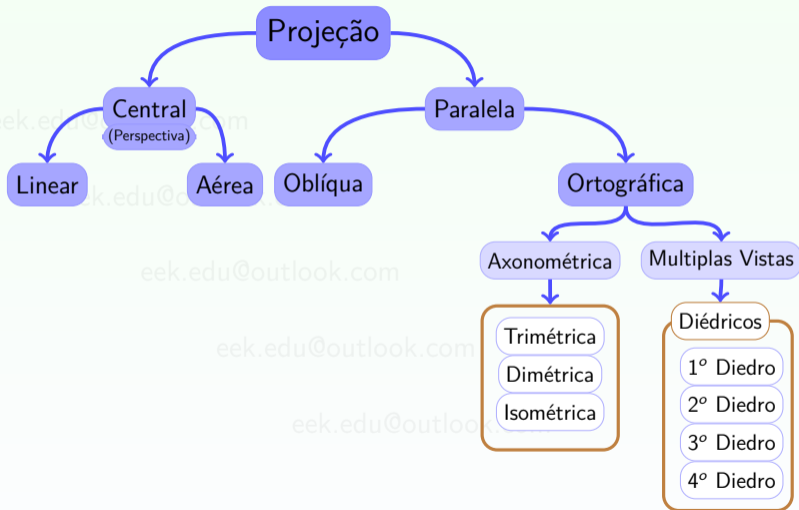


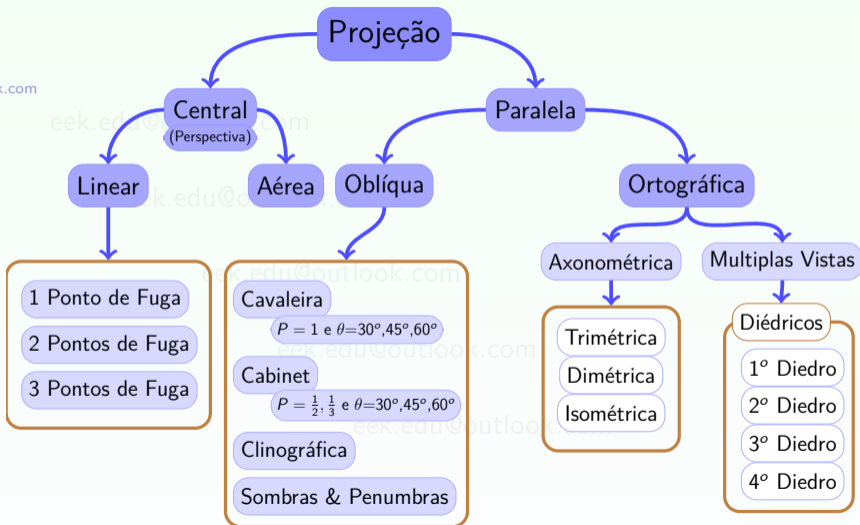












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## Parte VI

# Introdução às Projeções

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Desenho  
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Projeções

Projeção  
Isométrica

Isométrica  
x Pers-  
pectiva

Definições:

Nomenclatura

Vistas  
Redun-  
dantes

Vistas  
Preferên-  
ciais

Cotagem

Erros  
comuns

Flipse de

## 2 Projeções

## 3 Definições:

## 2 Projeções

- Projeção Isométrica
- Isométrica x Perspectiva

## 3 Definições:

- Nomenclatura
- Vistas Redundantes
- Vistas Preferenciais
- Cotagem
- Erros comuns
- Elipse de quatro focos

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2

## Projeções

Projeções

Projeção  
Isométrica

Isométrica  
x Perspectiva

Definições:

Nomenclatura

Vistas  
Redundantes

Vistas  
Preferenciais

Cotagem

Erros  
comuns

Elipse de

- Projeção Isométrica

- Isométrica x Perspectiva

- Nomenclatura

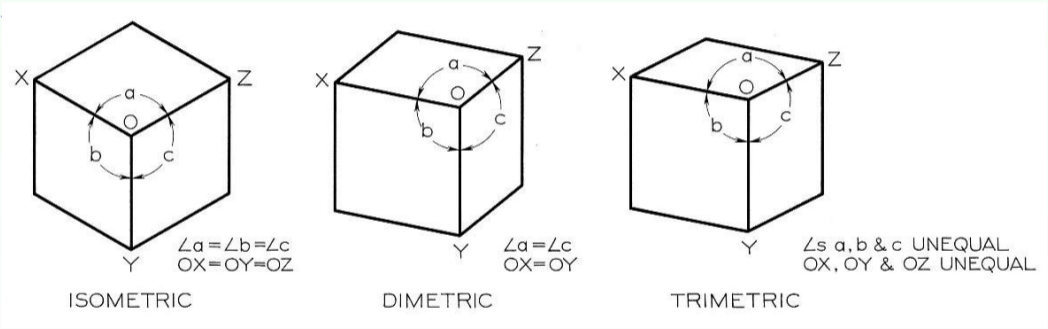
- Vistas Redundantes

- Vistas Preferenciais

- Cotagem

- Erros comuns

- Elipse de quatro focos



$\angle \alpha = \angle \beta = \angle \gamma$   
 $OX = OY = OZ$   
**ISOMETRIC**

$\angle \alpha = \angle \gamma$   
 $OX = OY$   
**DIMETRIC**

$\angle \alpha, \beta \text{ \& \ } \gamma \text{ UNEQUAL}$   
 $OX, OY \text{ \& \ } OZ \text{ UNEQUAL}$   
**TRIMETRIC**

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Projeções

## 2 Projeções

Projeção  
Isomé-  
trica

- Projeção Isométrica
- Isométrica x Perspectiva

Isométrica  
x Pers-  
pectiva

Definições:

## 3 Definições:

Nomenclatura

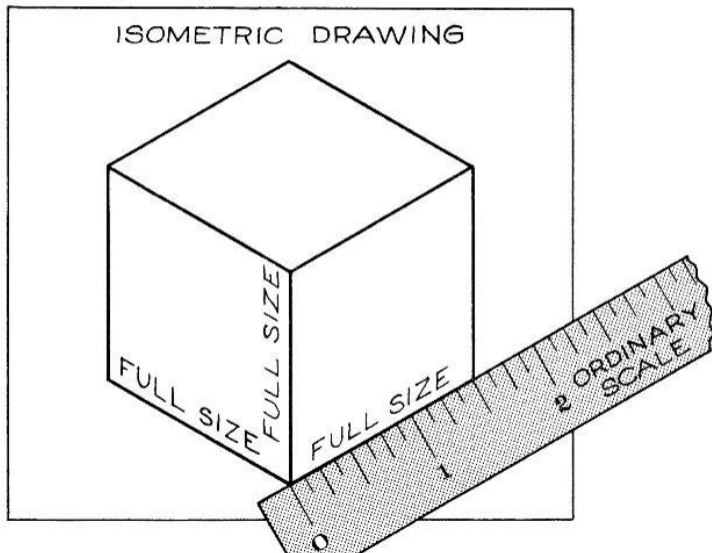
Vistas  
Redun-  
dantes

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ciais

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Projeções

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trica

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pectiva

Definições:

Nomenclatura

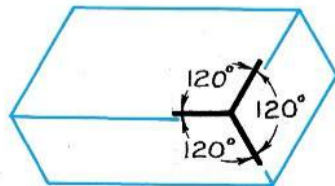
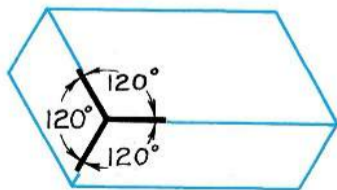
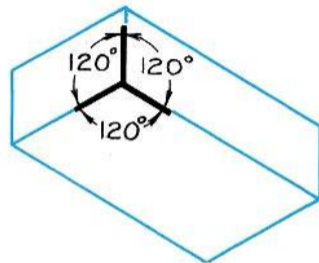
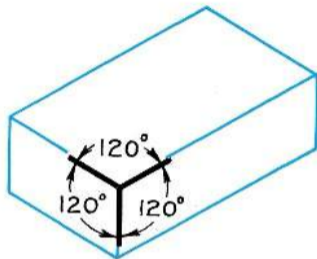
Vistas  
Redun-  
dantes

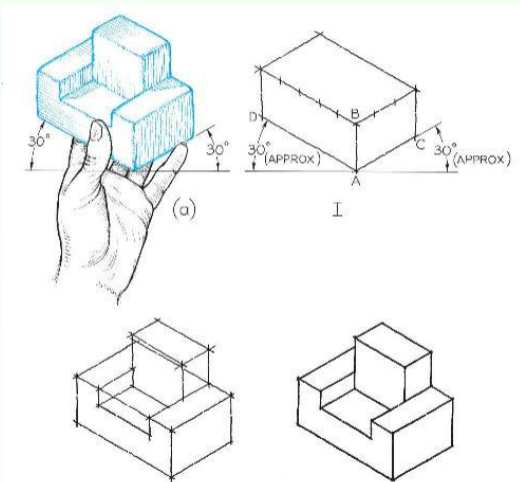
Vistas  
Preferên-  
ciais

Cotagem

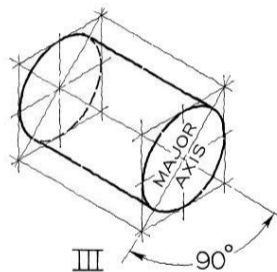
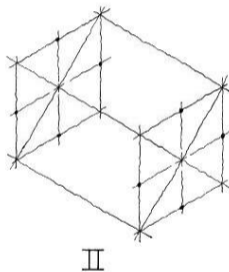
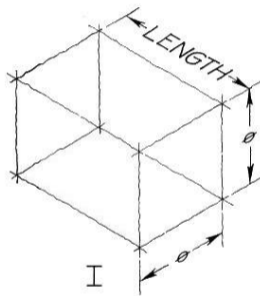
Erros  
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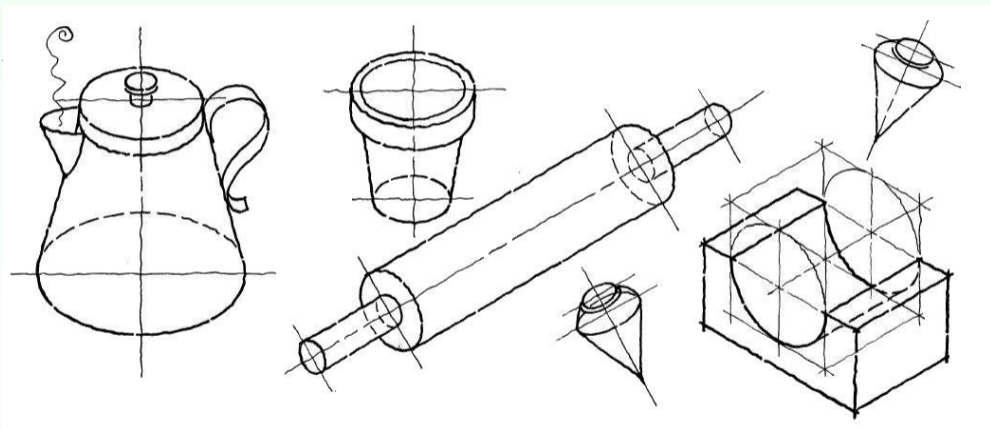
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Projeções

Projeção  
Isométrica

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Definições:

Nomenclatura

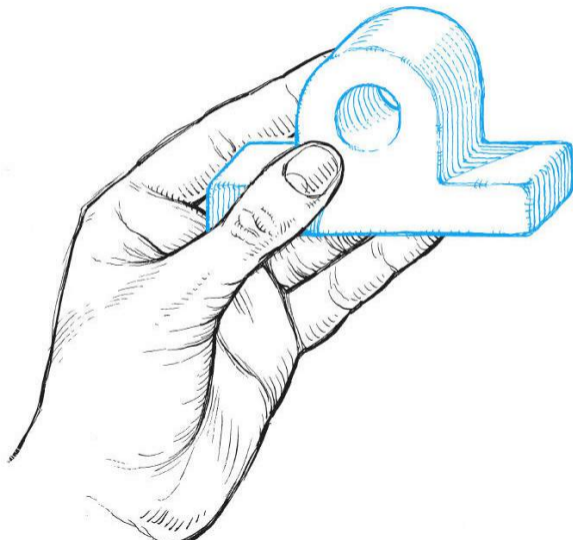
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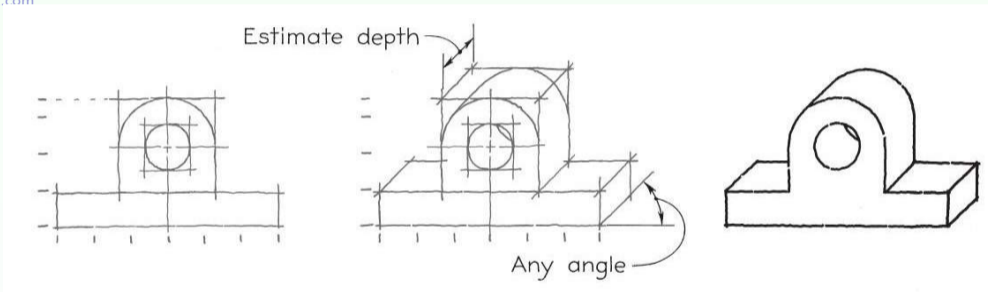
Vistas  
Preferenciais

Cotagem

Erros  
comuns

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Projeções

## 2 Projeções

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trica

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Isométrica  
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## 3 Definições:

Nomenclatura

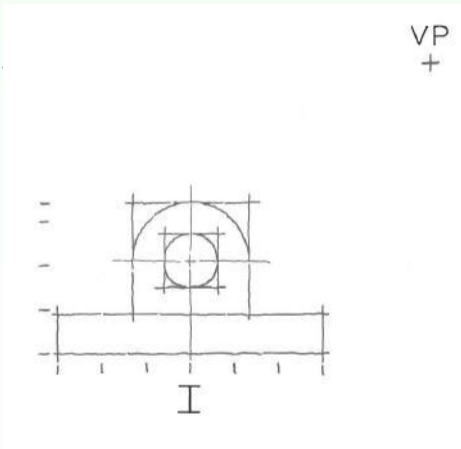
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Vistas  
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ciais

Cotagem

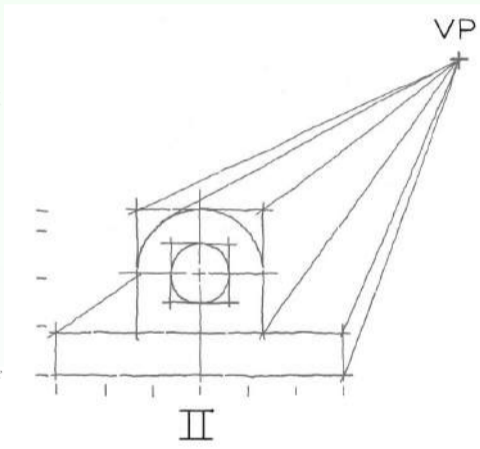
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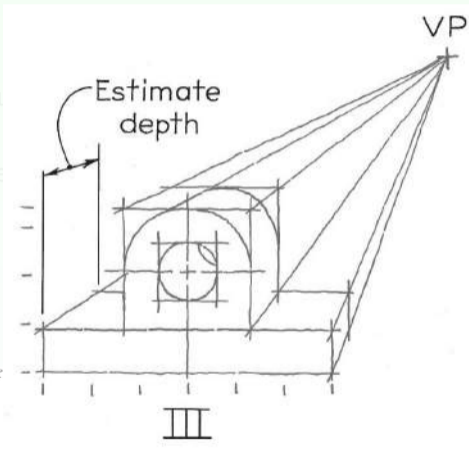
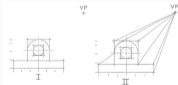
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Projeções

Projeção  
Isométrica

Isométrica  
x Perspectiva

Definições:

Nomenclatura

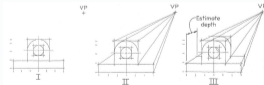
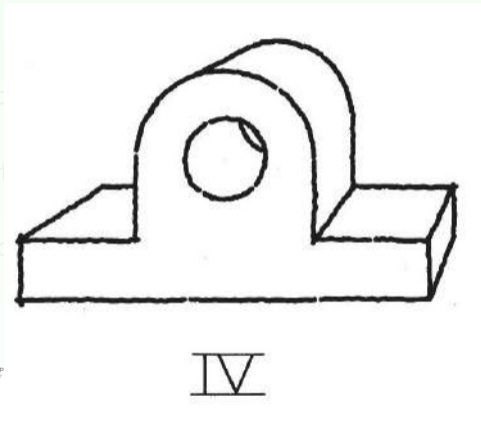
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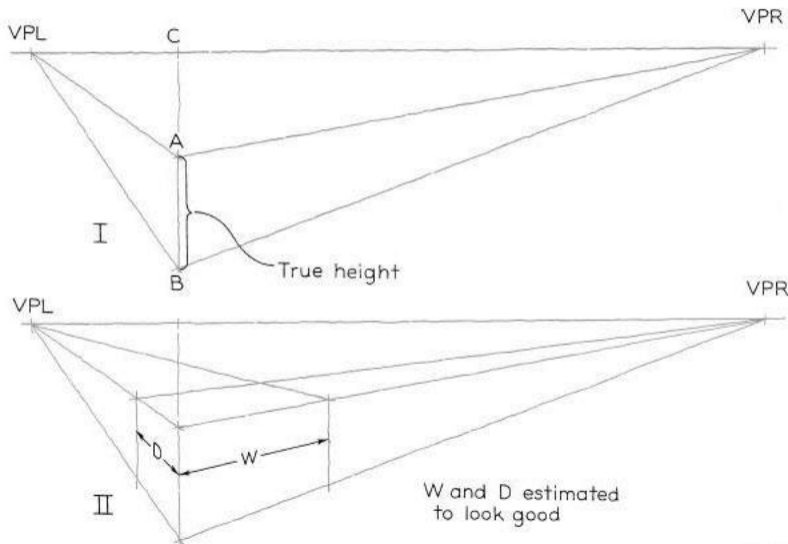
Vistas  
Preferenciais

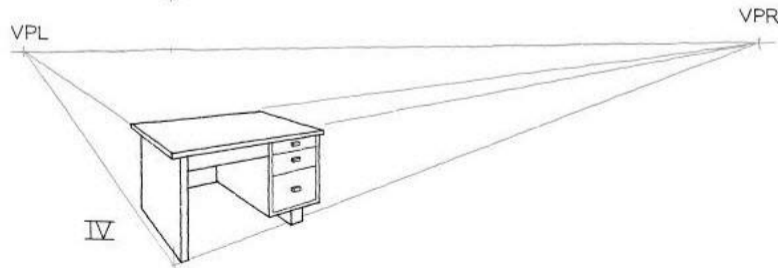
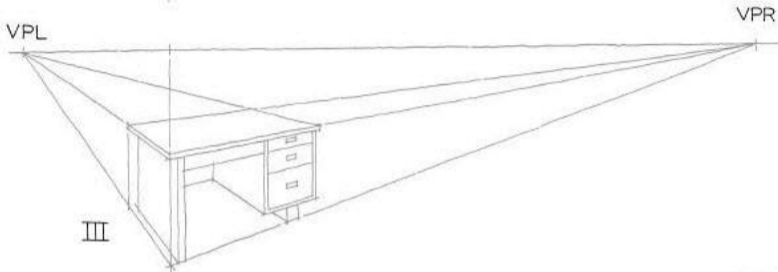
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Erros  
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Projeção  
Isométrica

Isométrica  
x Pers-  
pectiva

Nomenclatura

Nomenclatura

Vistas  
Redun-  
tantes

Vistas  
Preferên-  
ciais

Cotagem

Erros  
comuns

Elipse de

- Projeção Isométrica
- Isométrica x Perspectiva

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### 3 Definições:

- Nomenclatura
- Vistas Redundantes
- Vistas Preferenciais
- Cotagem
- Erros comuns
- Elipse de quatro focos

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Isométrica  
x Perspectiva

Definições:

Nomenclatura

Vistas  
Redundantes

Vistas  
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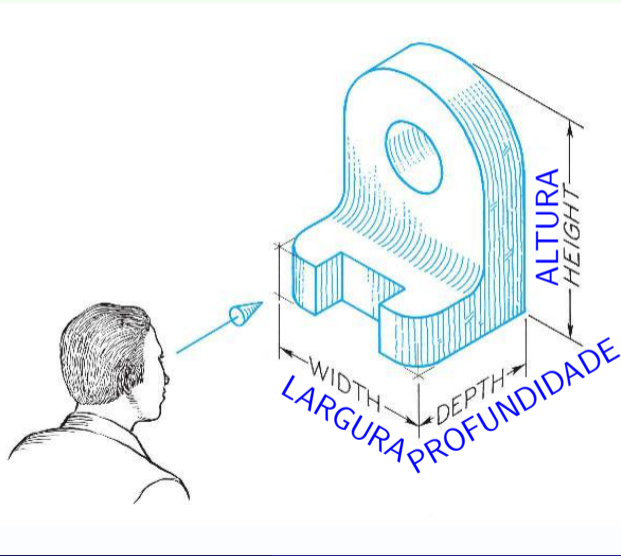
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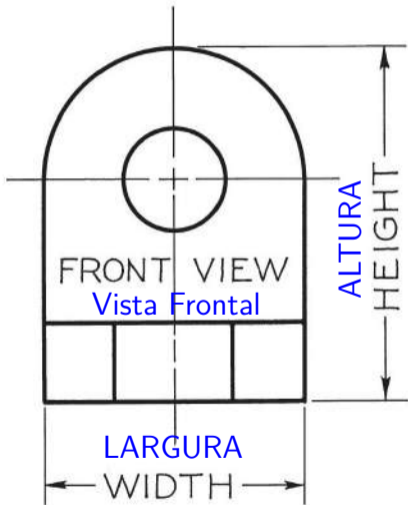
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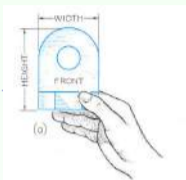
- **Nomenclatura**
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- Cotagem
- Erros comuns
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Projeção  
Isométrica

Isométrica  
x Pers-  
pectiva

Definições:

Nomenclatura

Vistas  
Redun-  
dantes

Vistas  
Preferên-  
ciais

Cotagem

Erros  
comuns

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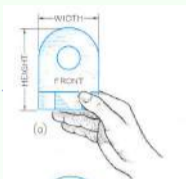
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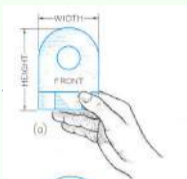
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Nomenclatura

Vistas  
Redundantes

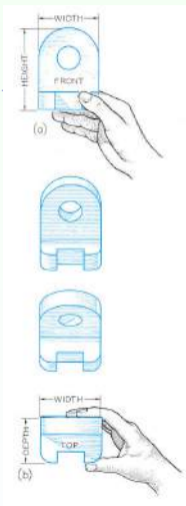
Vistas  
Preferenciais

Cotagem

Erros  
comuns

Flipse de





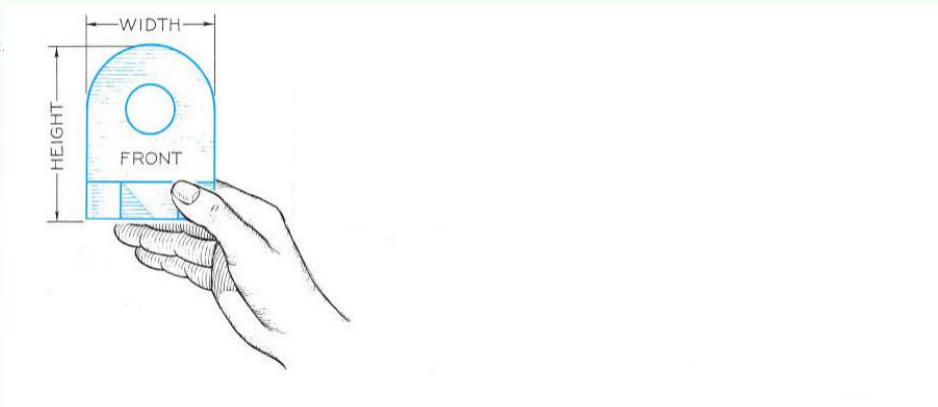
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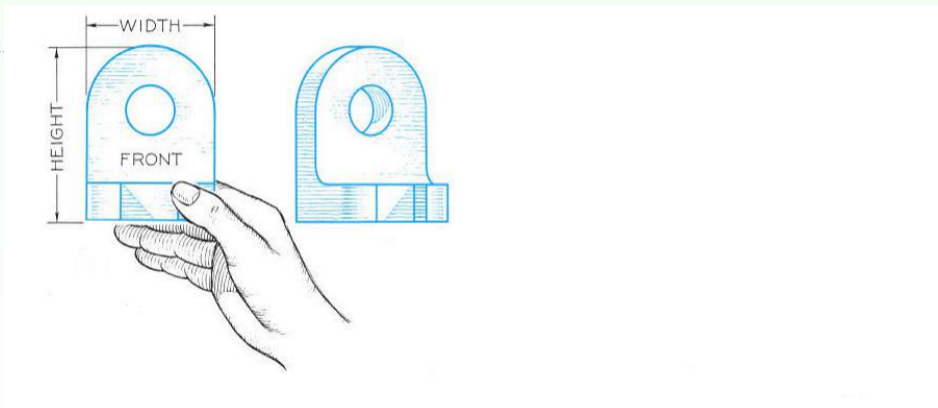
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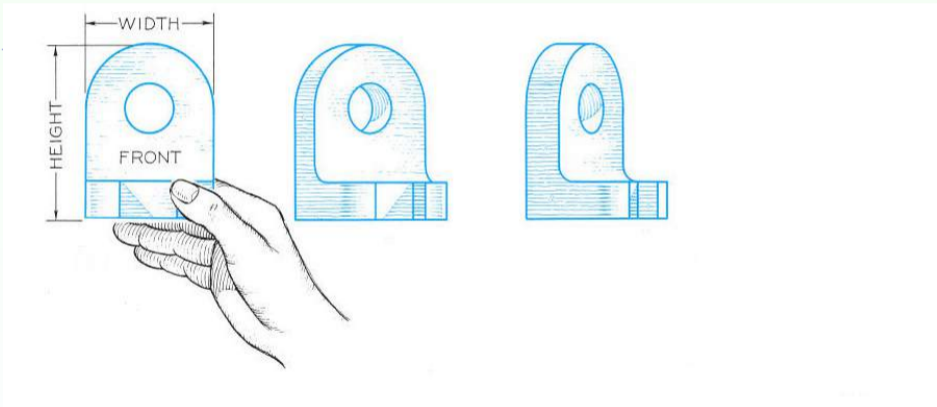
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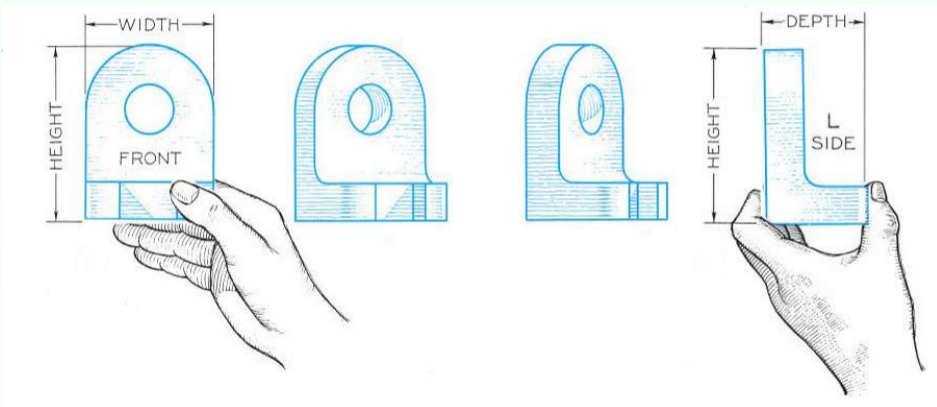
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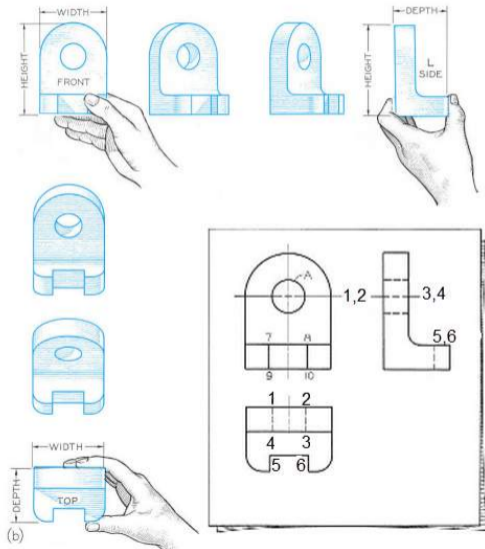
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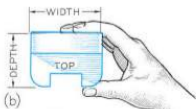
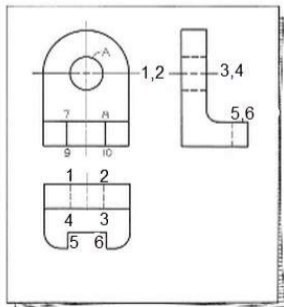
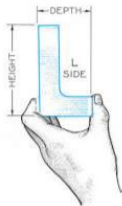
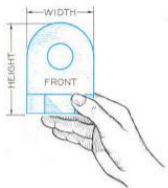


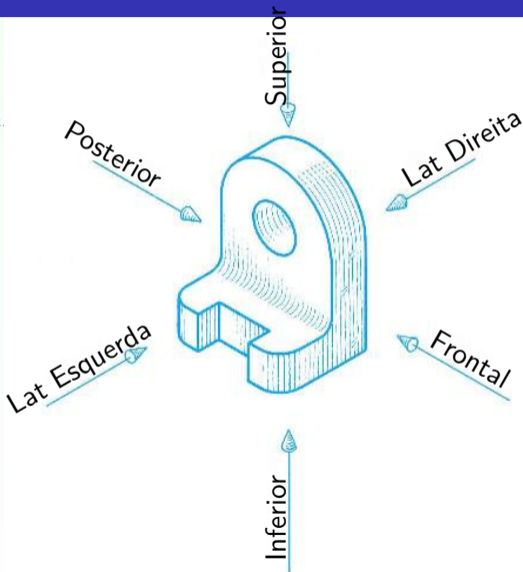




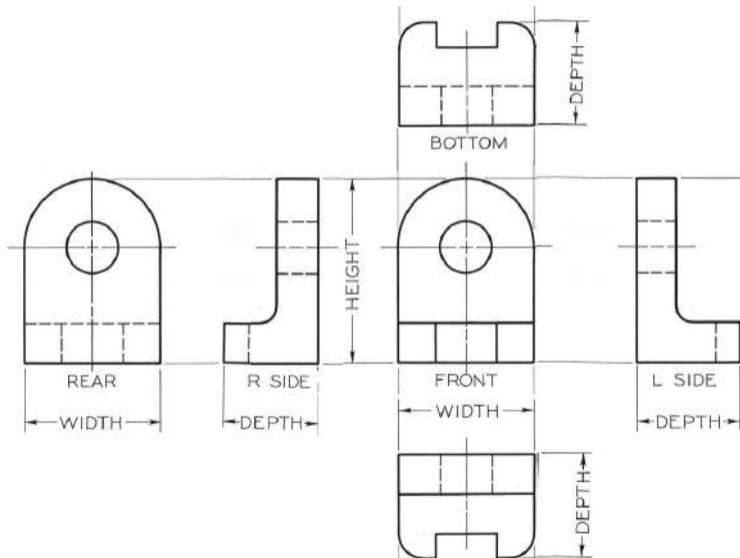


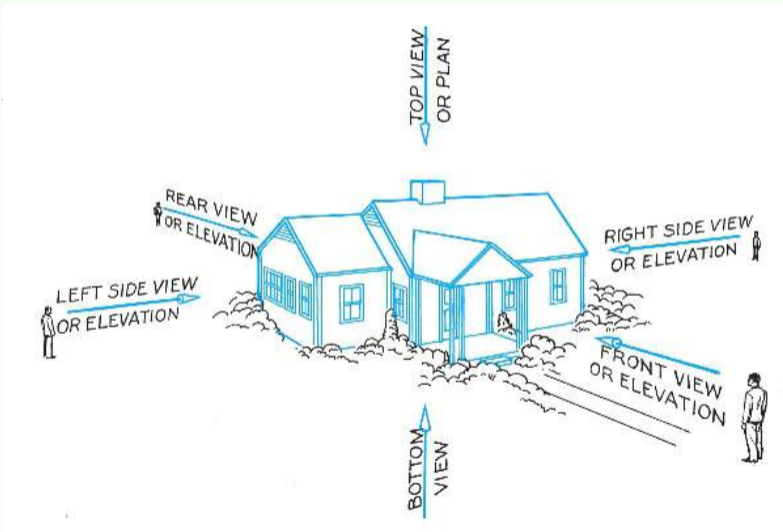


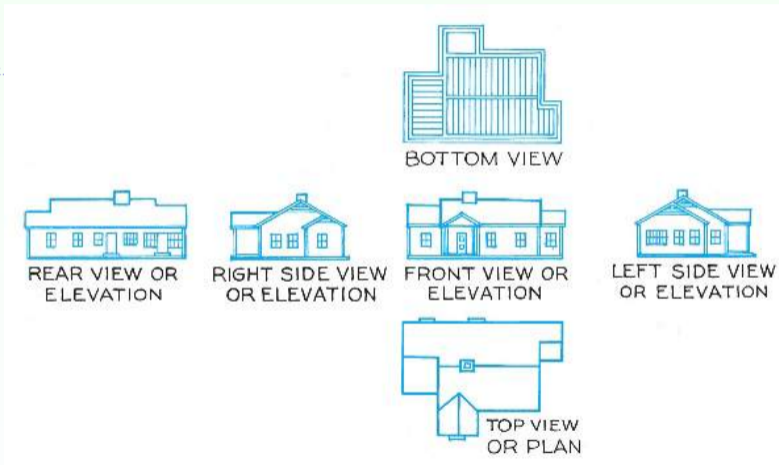




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Nomenclatura

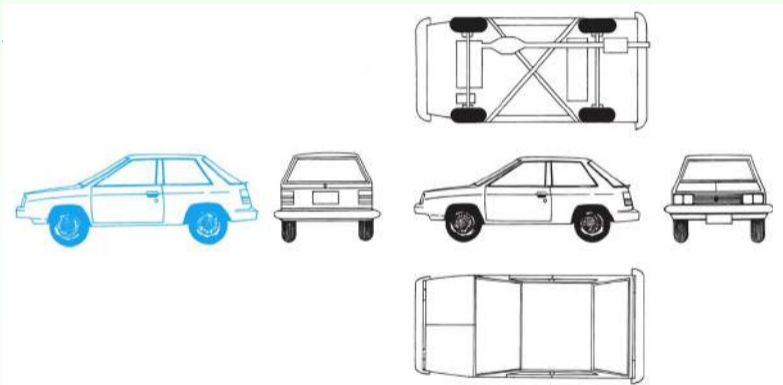
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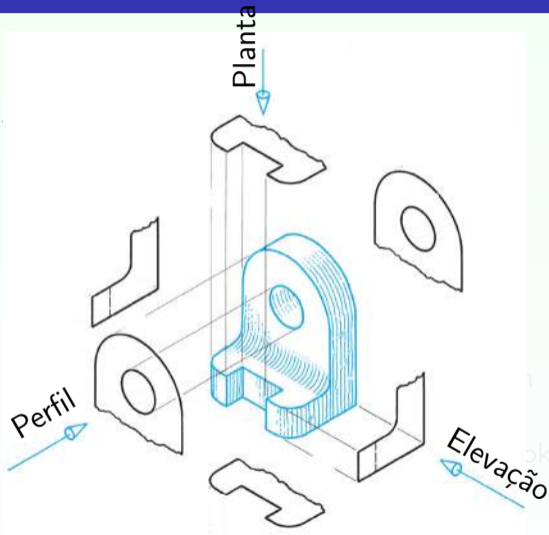
Vistas  
Preferenciais

Cotagem

Erros  
comuns

Flipse de





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Projeção  
Isométrica

Isométrica  
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Nomenclatura

Vistas  
Redundantes

Vistas  
Preferenciais

Cotagem

Erros  
comuns

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Projeções

Projeção  
Isométrica

Isométrica  
x Perspectiva

Definições:

Nomenclatura

Vistas  
Redundantes

Vistas  
Preferenciais

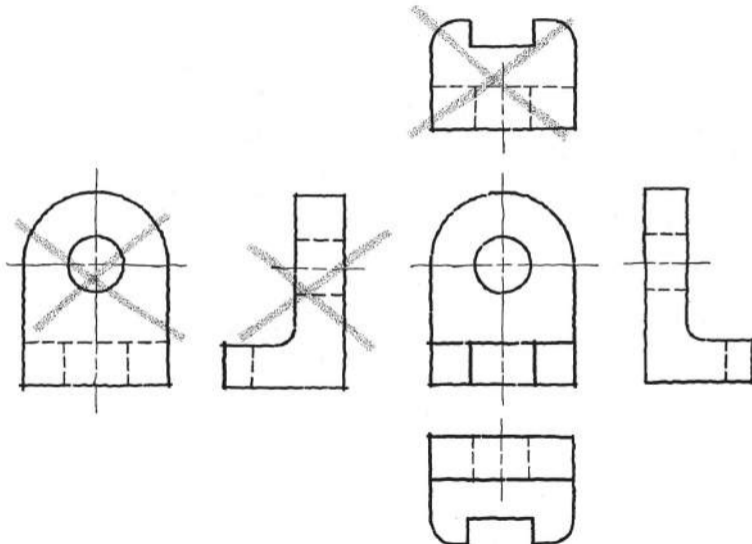
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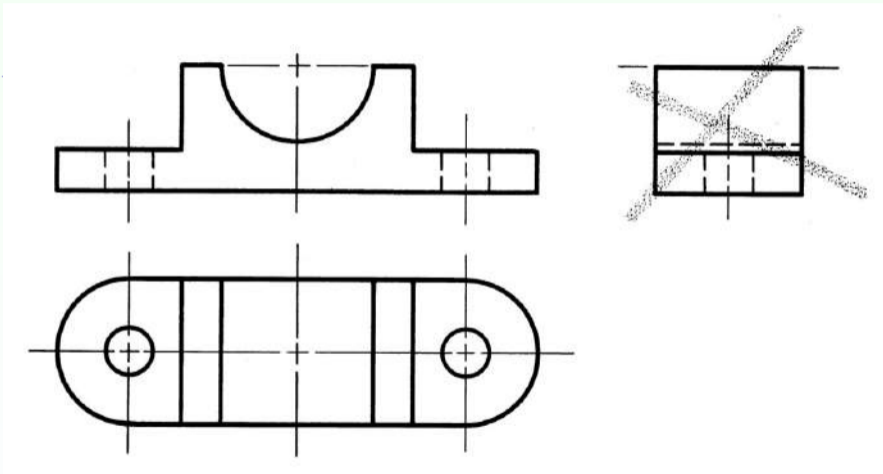
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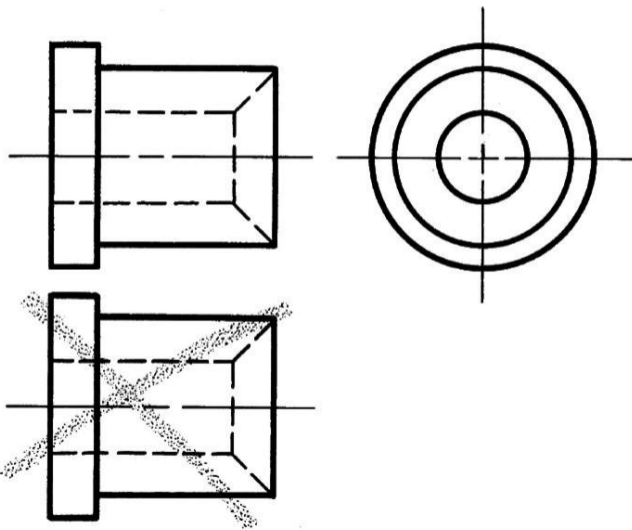
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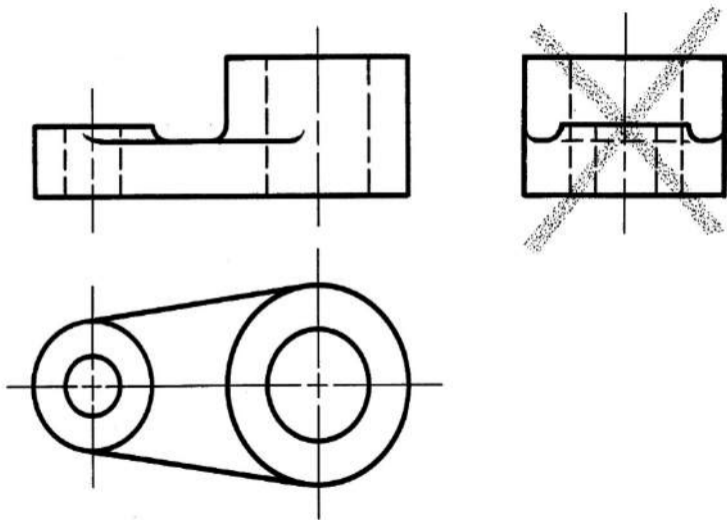
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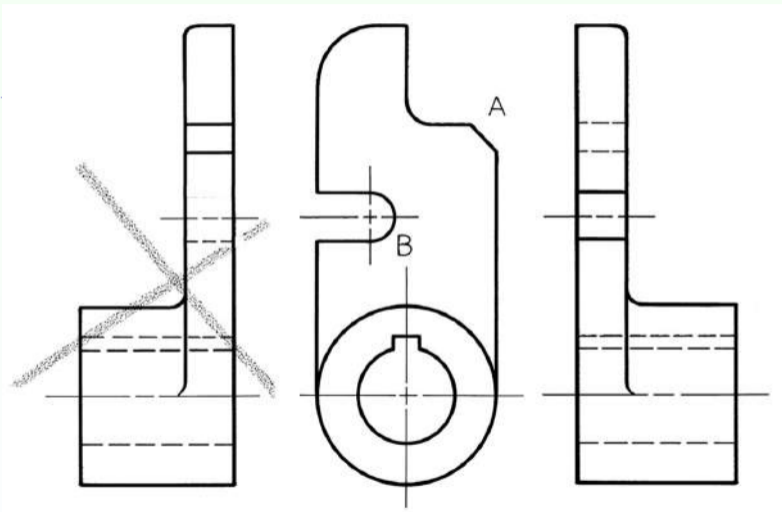
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- **Vistas Redundantes**
- Vistas Preferenciais
- Cotagem
- Erros comuns
- Elipse de quatro focos

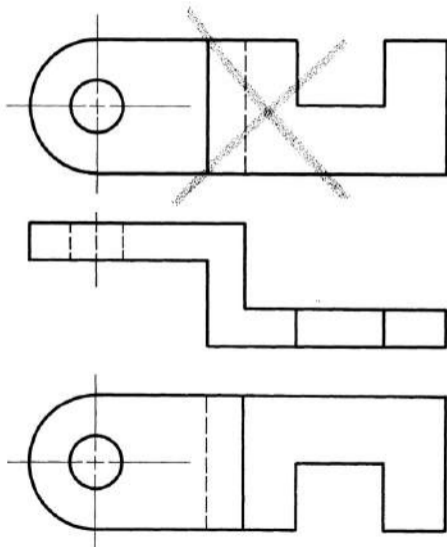












Desenho  
Técnico  
Projeções

## 2 Projeções

Projeções

Projeção  
Isométrica

Isométrica  
x Perspectiva

Definições:

Nomenclatura

Vistas  
Redundantes

Vistas  
Preferenciais

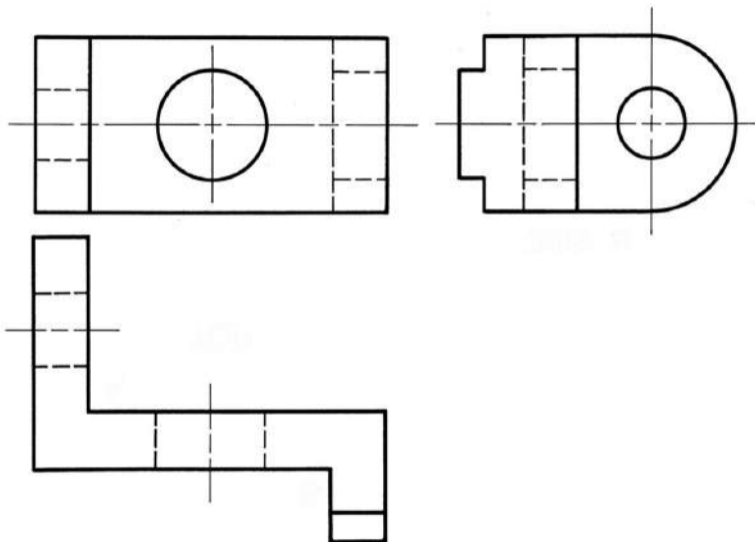
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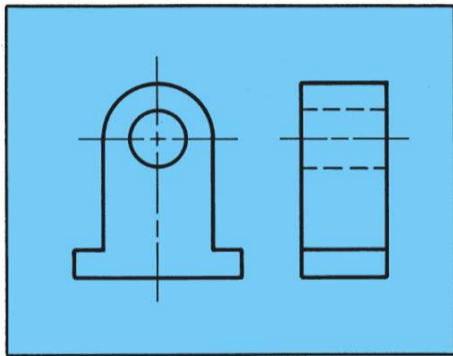
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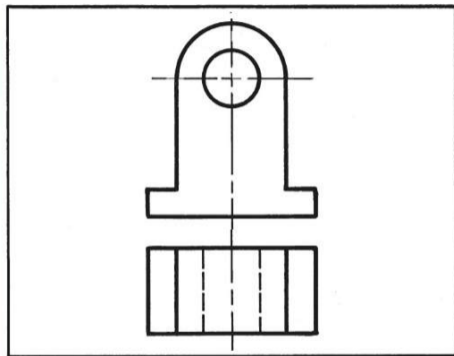
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- Vistas Redundantes
- **Vistas Preferenciais**
- Cotagem
- Erros comuns
- Elipse de quatro focos

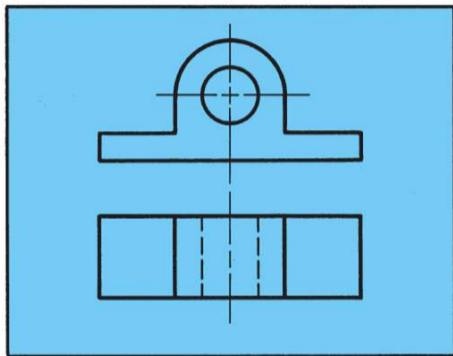




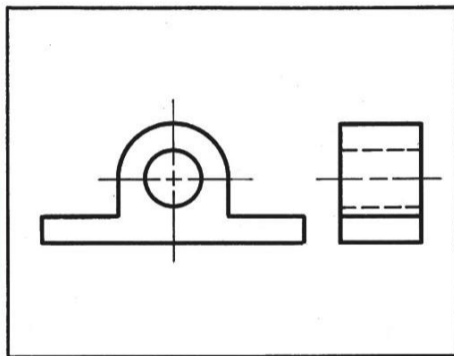
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(b) POOR



(c) PREFERRED



(d) POOR

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Projeções

Projeção  
Isométrica

Isométrica  
x Perspectiva

Definições:

Nomenclatura

Vistas  
Redundantes

Vistas  
Preferenciais

Cotagem

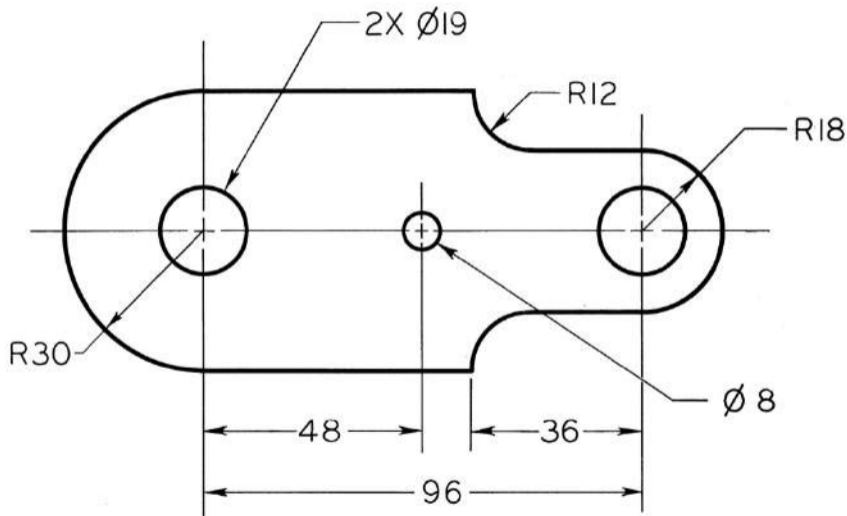
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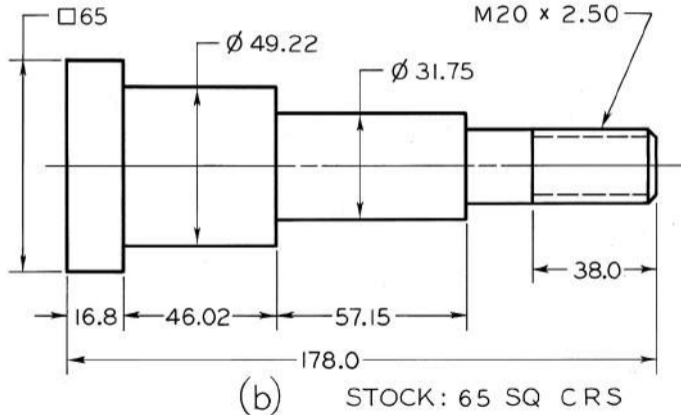
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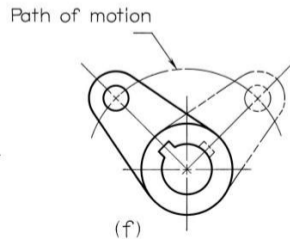
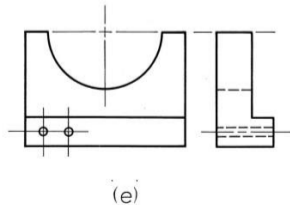
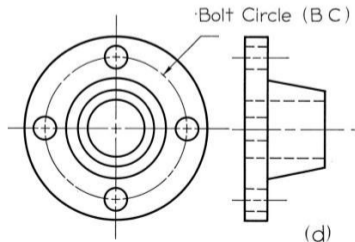
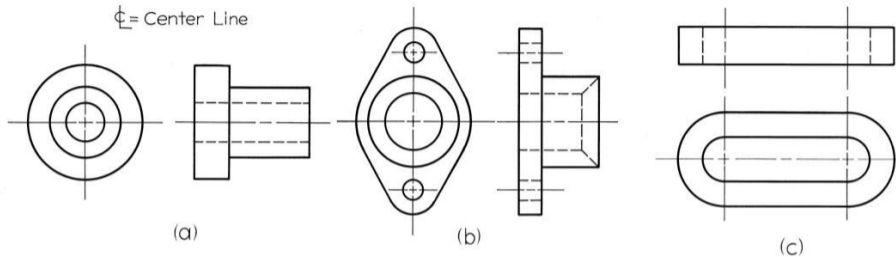
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- Nomenclatura
- Vistas Redundantes
- Vistas Preferenciais
- Cotagem
- Erros comuns
- Elipse de quatro focos



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Desenho  
Técnico -  
Projeções

## 2 Projeções

Projeções

Projeção  
Isométrica

Isométrica  
x Pers-  
pectiva

Definições:

Nomenclatura

Vistas  
Redun-  
tantes

Vistas  
Preferên-  
ciais

Cotagem

Erros  
comuns

Elipse de

## 3 Definições:

- Nomenclatura
- Vistas Redundantes
- Vistas Preferenciais
- Cotagem
- **Erros comuns**
- Elipse de quatro focos

Desenho  
Técnico -  
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Projeções

Projeção  
Isométrica

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Definições:

Nomenclatura

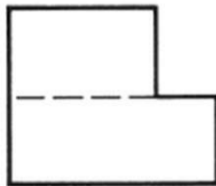
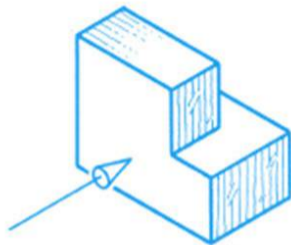
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Cotagem

Erros  
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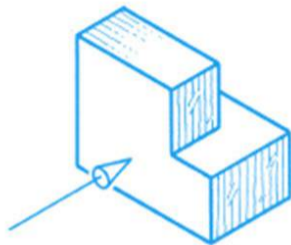
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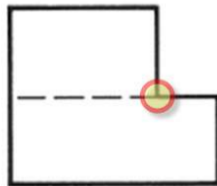
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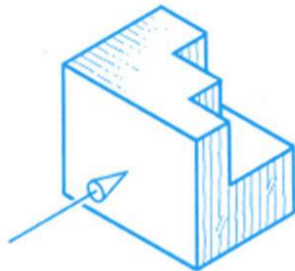
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Cotagem

Erros  
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Definições:

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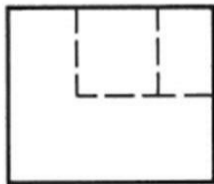
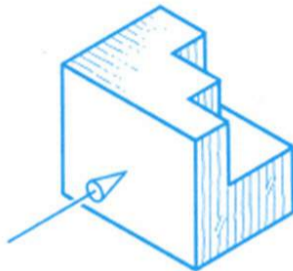
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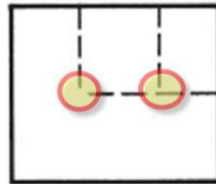
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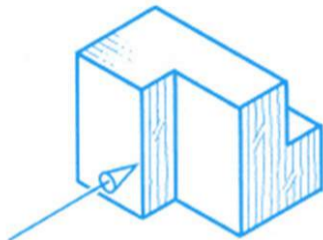
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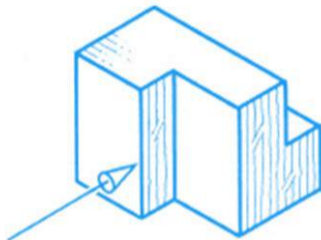
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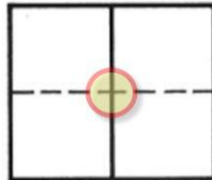
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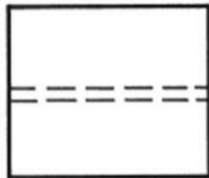
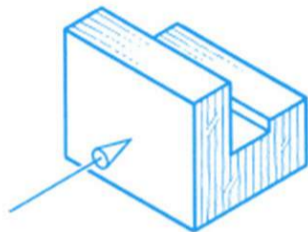
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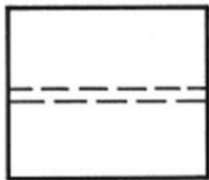
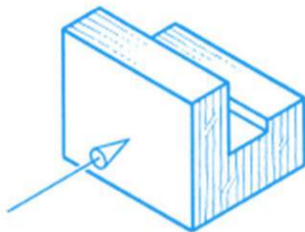
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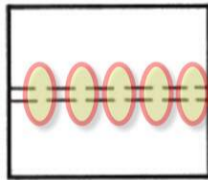
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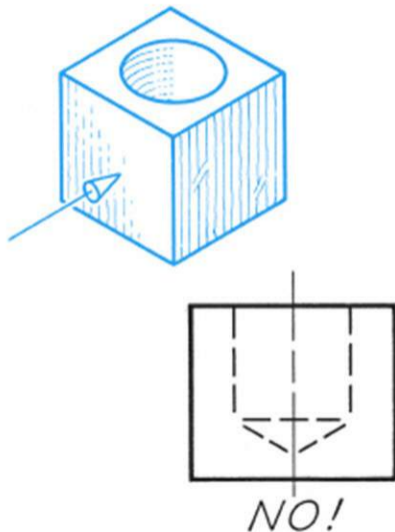
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pectiva

Definições:

Nomenclatura

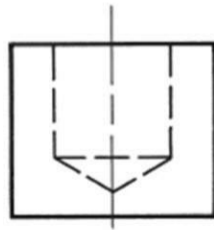
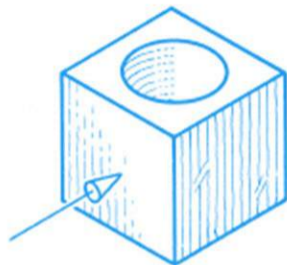
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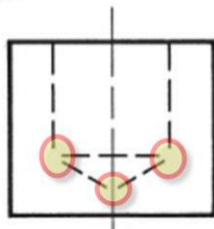
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pectiva

Definições:

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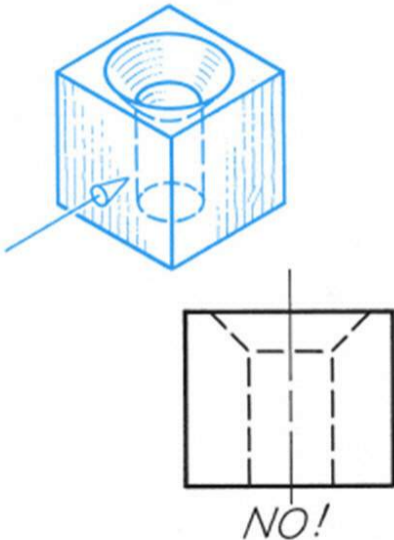
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Vistas  
Preferên-  
ciais

Cotagem

Erros  
comuns

Flinse de



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Projeção  
Isométrica

Isométrica  
x Perspectiva

Definições:

Nomenclatura

Vistas  
Redundantes

Vistas  
Preferenciais

Cotagem

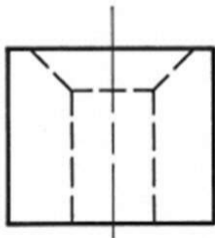
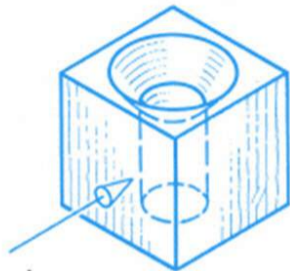
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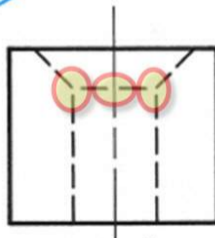
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Definições:

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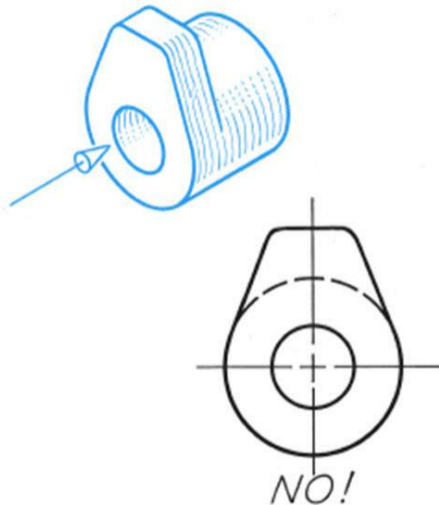
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Vistas  
Preferên-  
ciais

Cotagem

Erros  
comuns

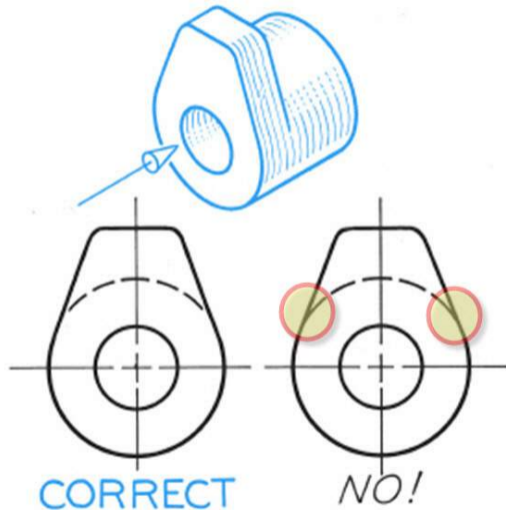
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Isométrica  
x Pers-  
pectiva

Definições:

Nomenclatura

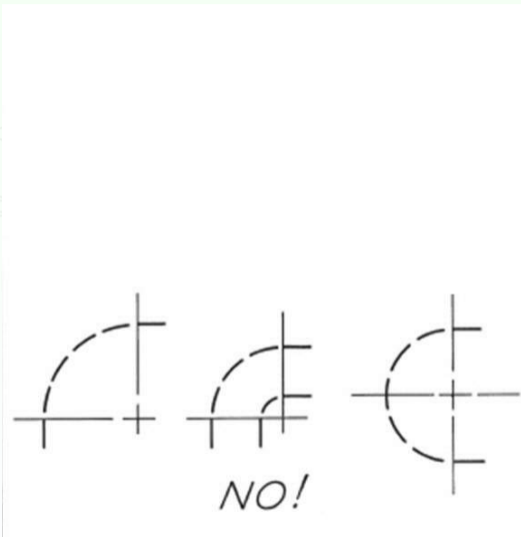
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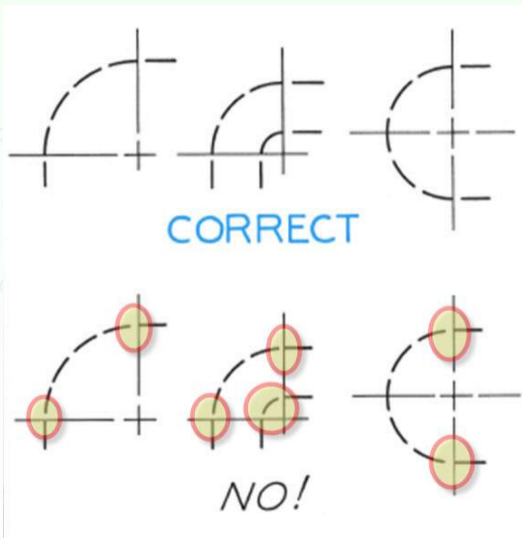
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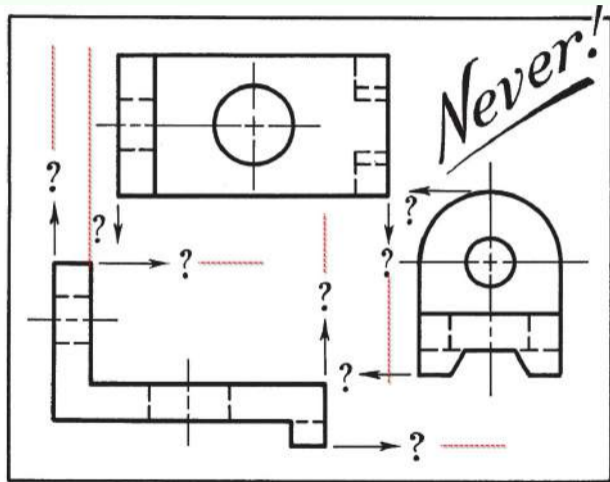
Cotagem

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comuns

Flinse de







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Projeção  
Isométrica

Isométrica  
x Perspectiva

Definições:

Nomenclatura

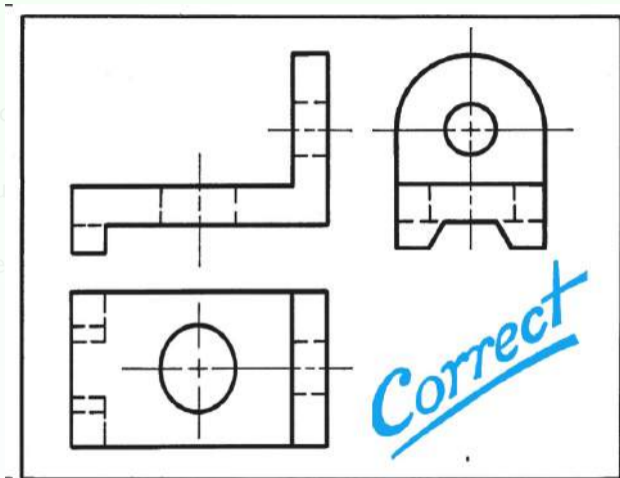
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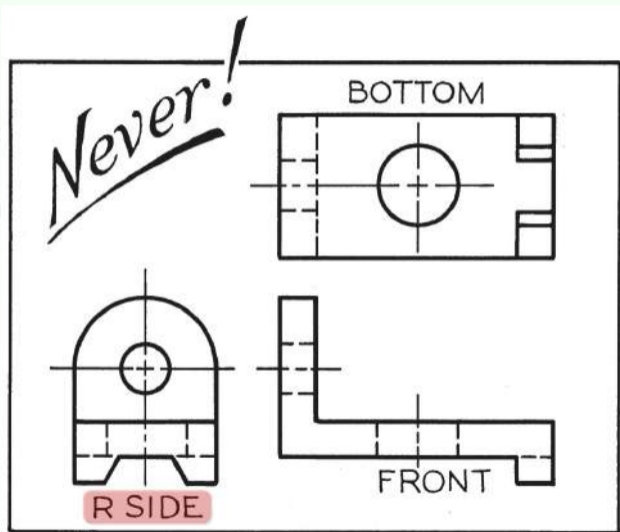
Vistas  
Preferenciais

Cotagem

Erros  
comuns

Erros de





Desenho  
Técnico -  
Projeções

## 2 Projeções

Projeções

Projeção  
Isométrica

Isométrica  
x Pers-  
pectiva

Definições:

Nomenclatura

Vistas  
Redun-  
tantes

Vistas  
Preferên-  
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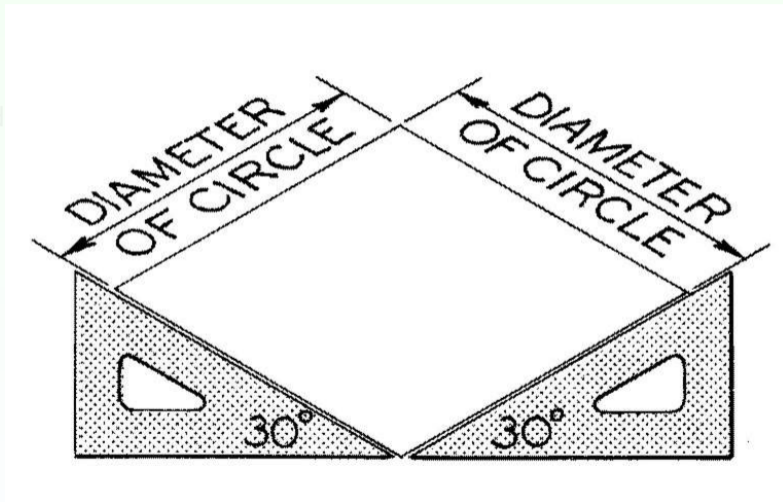
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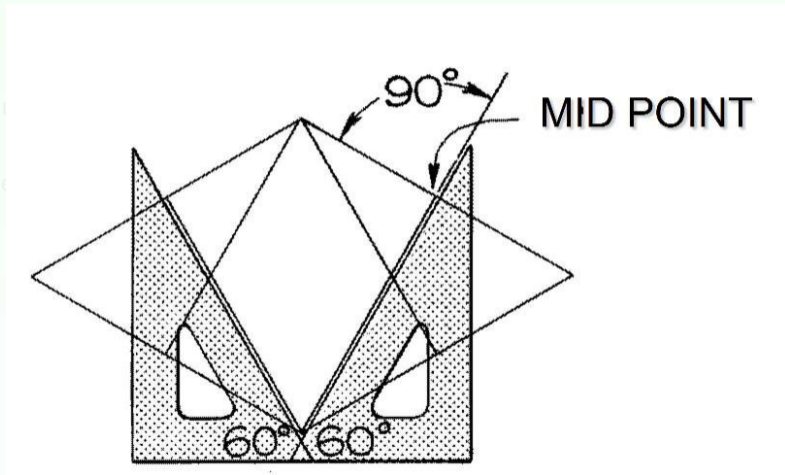
Erros  
comuns

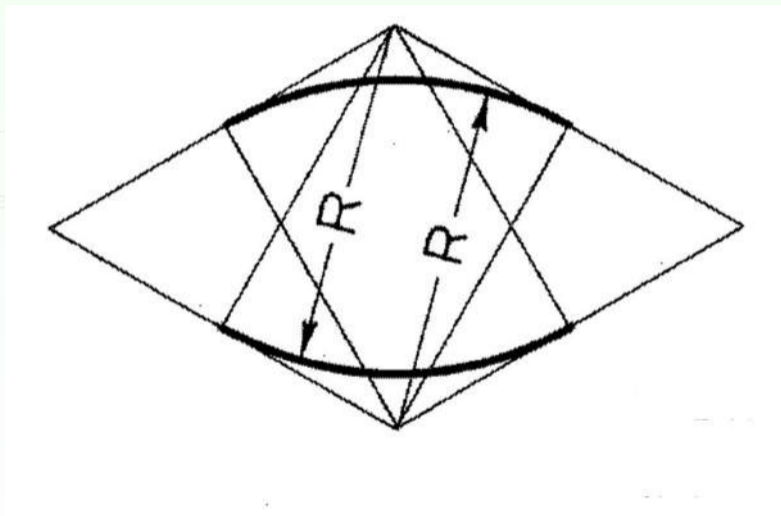
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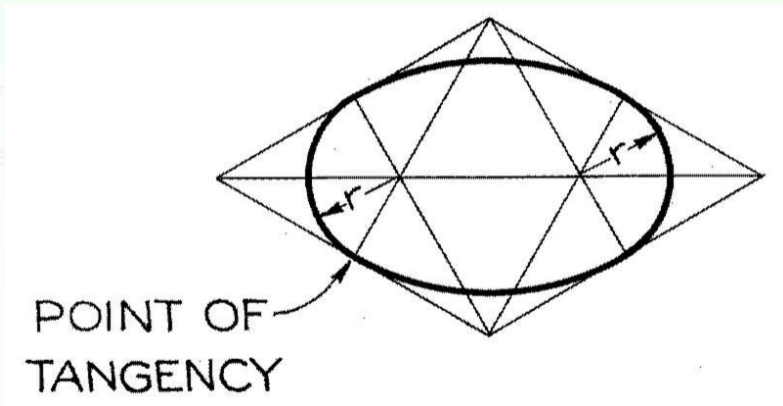
## 3 Definições:

- Nomenclatura
- Vistas Redundantes
- Vistas Preferenciais
- Cotagem
- Erros comuns
- **Elipse de quatro focos**









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Cotagem

Erros  
comuns

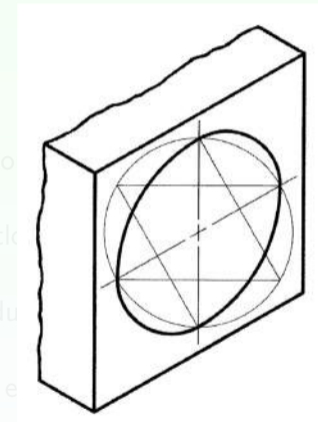
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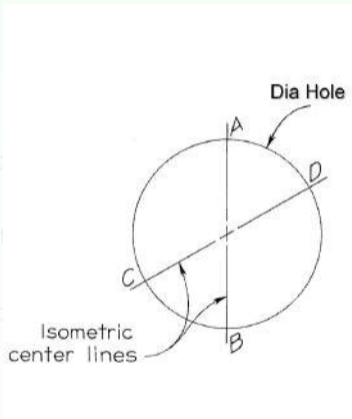
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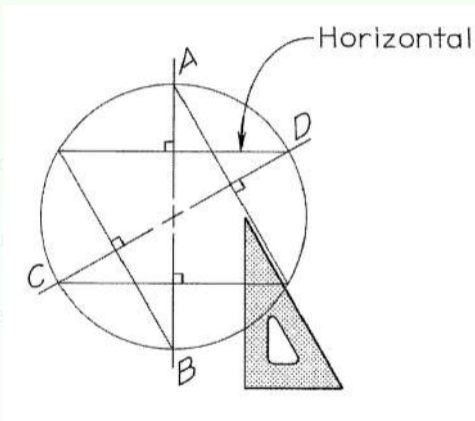
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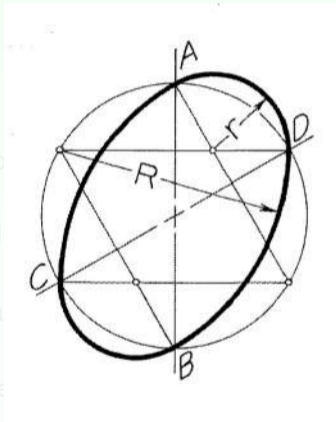
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 Redundantes

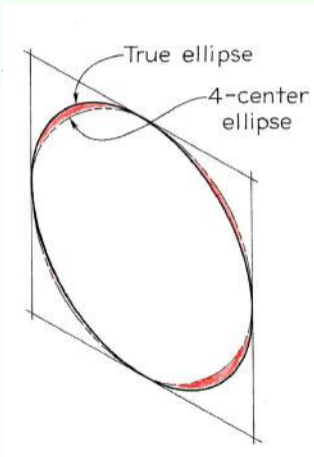
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Cotagem

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 comuns

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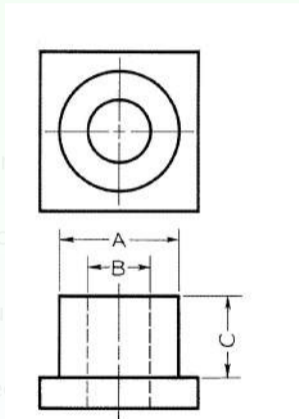
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Cotagem

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comuns

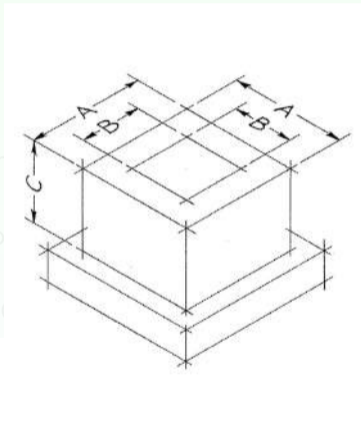
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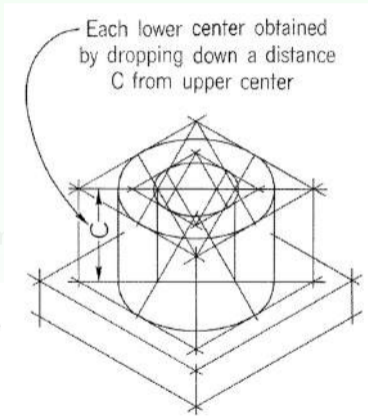
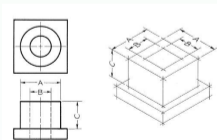
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Nomenclatura

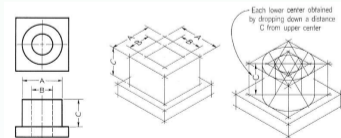
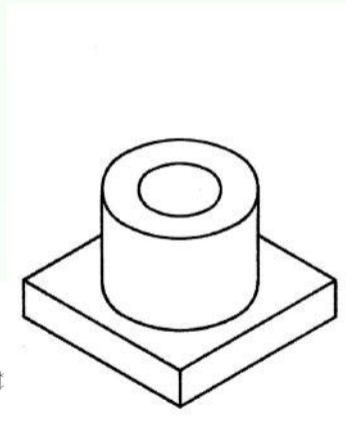
Vistas  
Redundantes

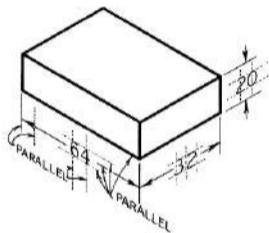
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Preferenciais

Cotagem

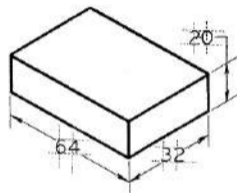
Erros  
comuns

Elipse de

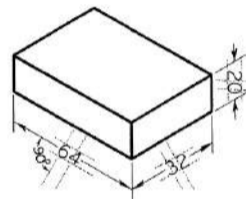




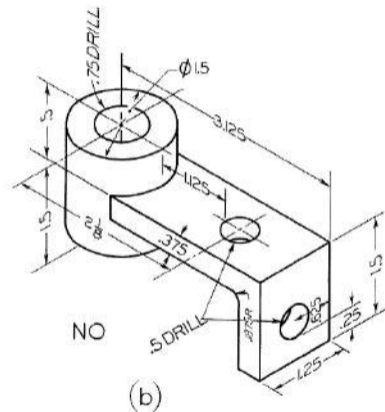
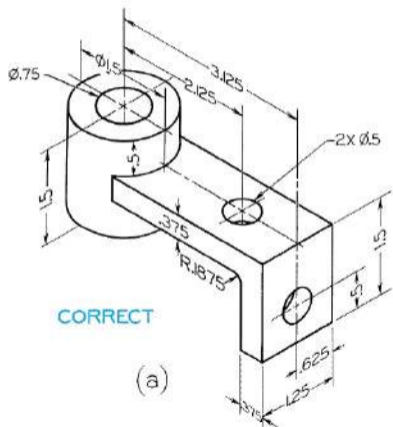
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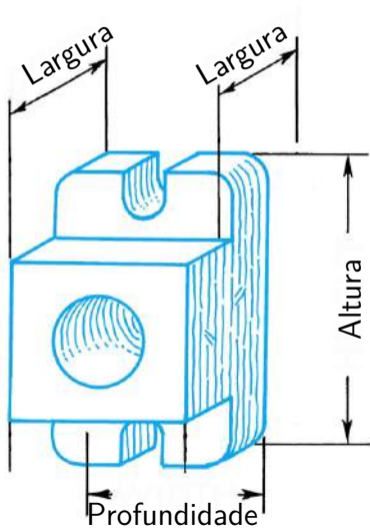


(b) UNIDIRECTIONAL



(c) INCORRECT

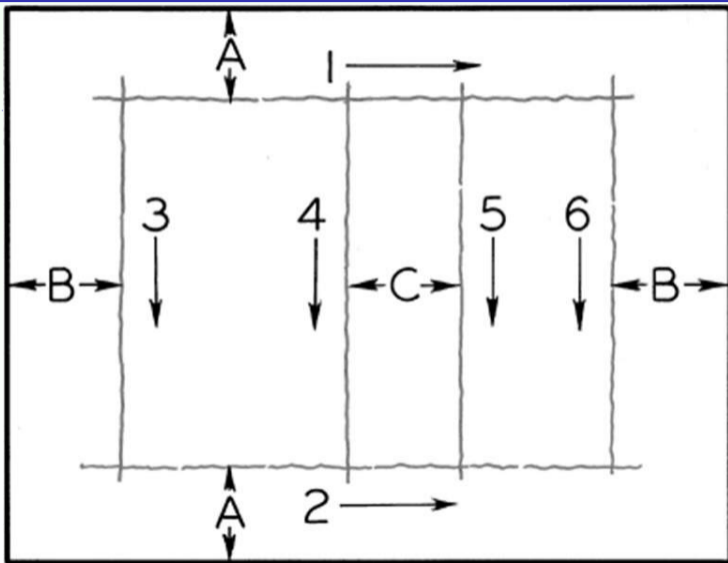




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# Prática 1: Façam as projeções em duas vistas

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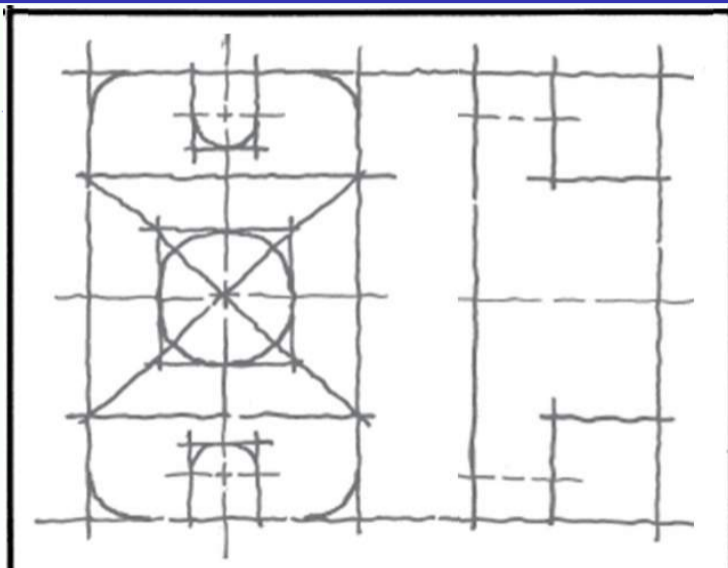
Vistas  
Redundantes

Vistas  
Preferenciais

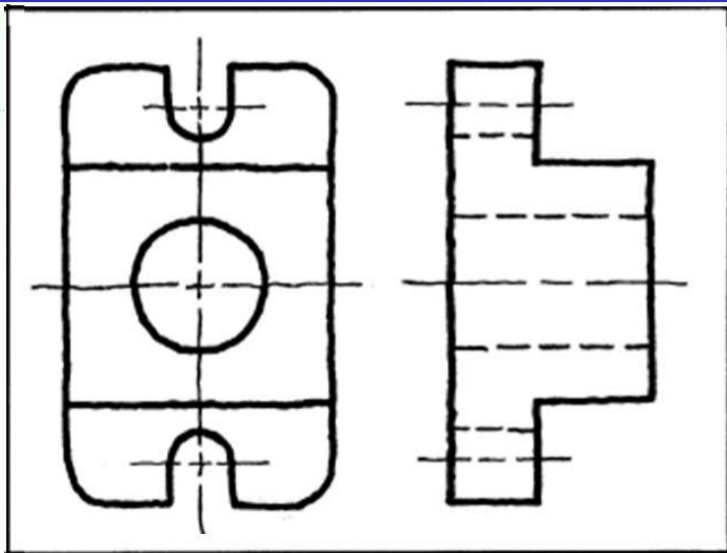
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# Prática 1: Façam as projeções em duas vistas



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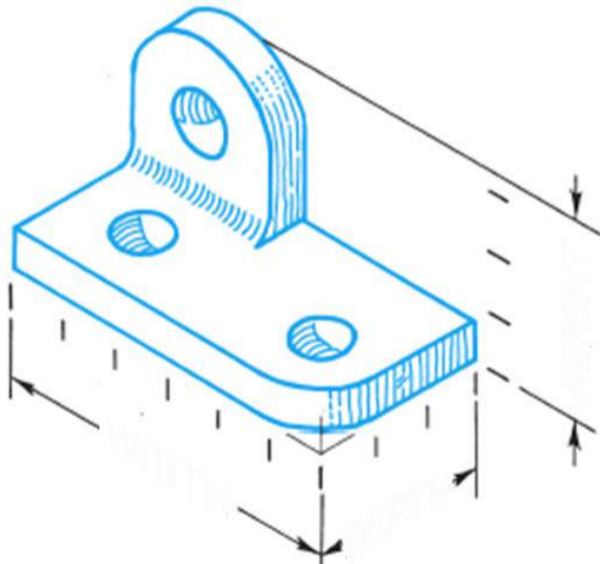
Vistas  
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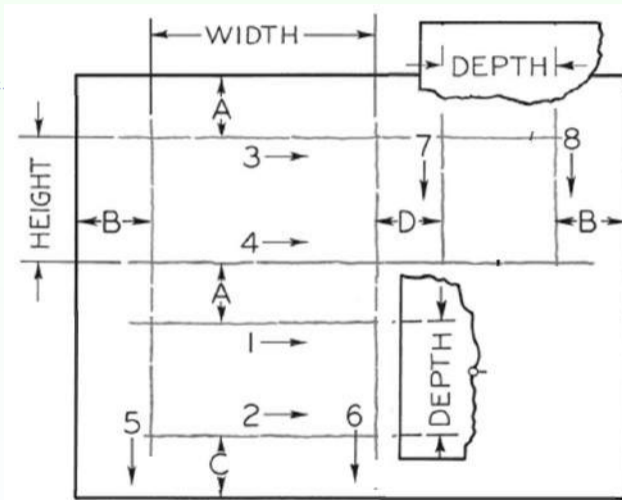
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Preferenciais

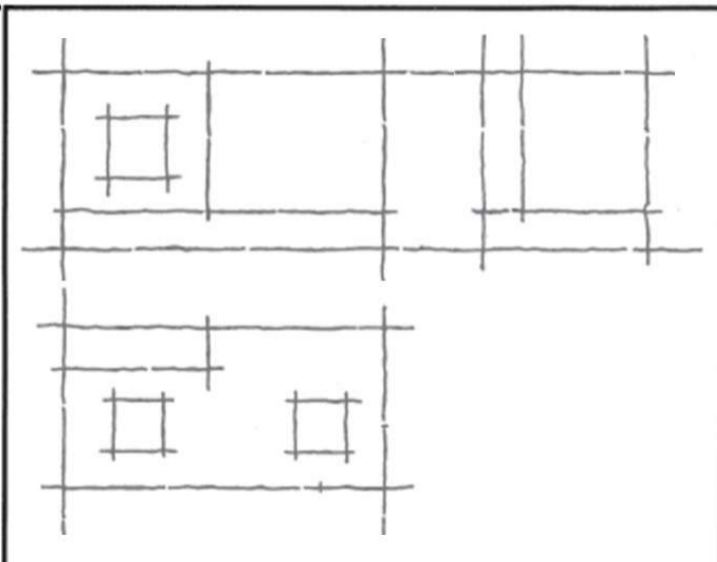
Cotagem

Erros  
comuns

Fim de







## Prática 2: Façam as projeções em três vistas

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Nomenclatura

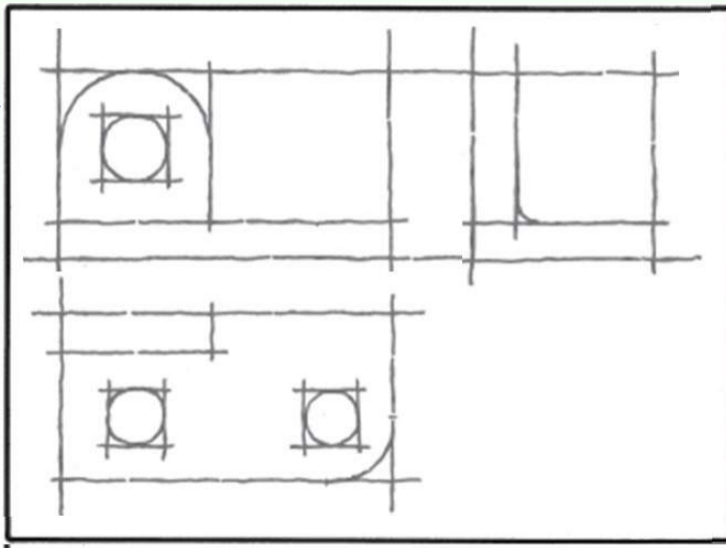
Vistas  
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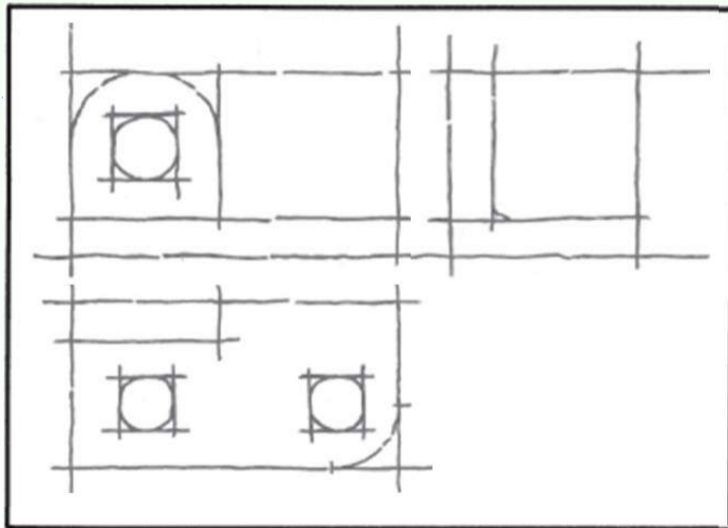
Vistas  
Preferenciais

Cotagem

Erros  
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Nomenclatura

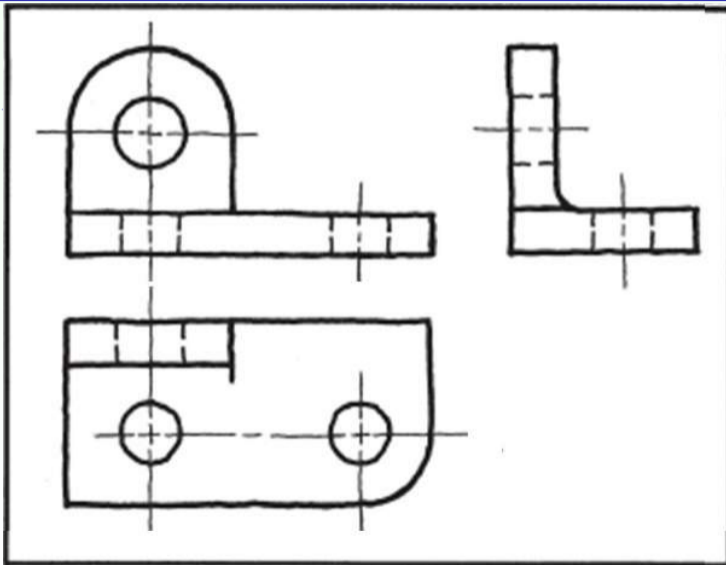
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Redundantes

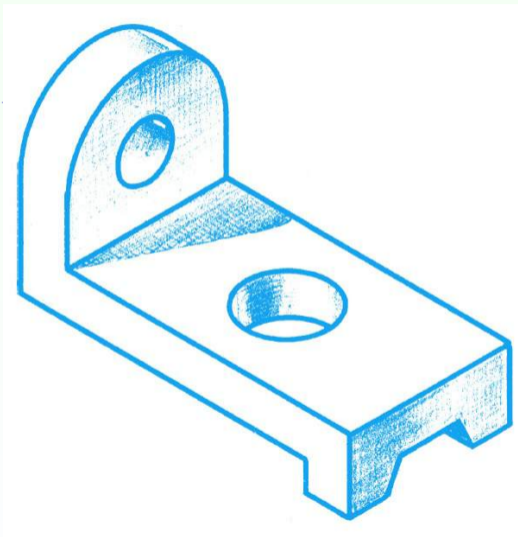
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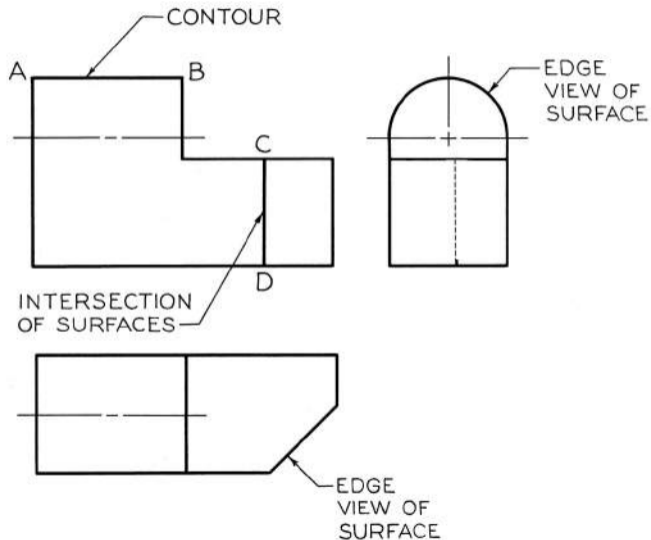
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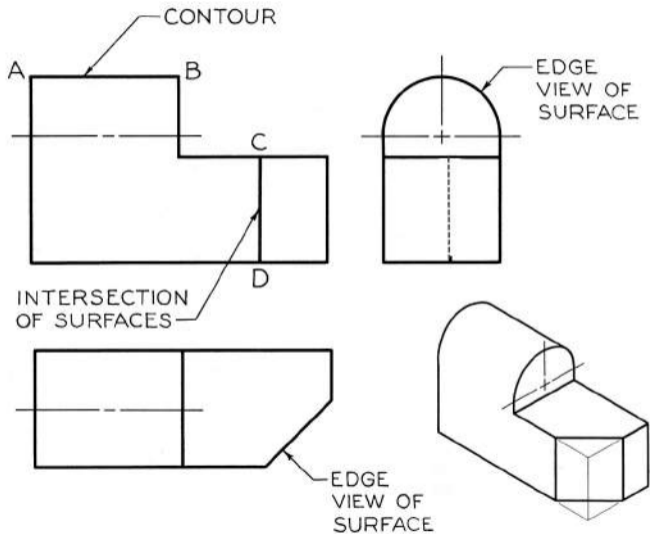
Erros  
comuns

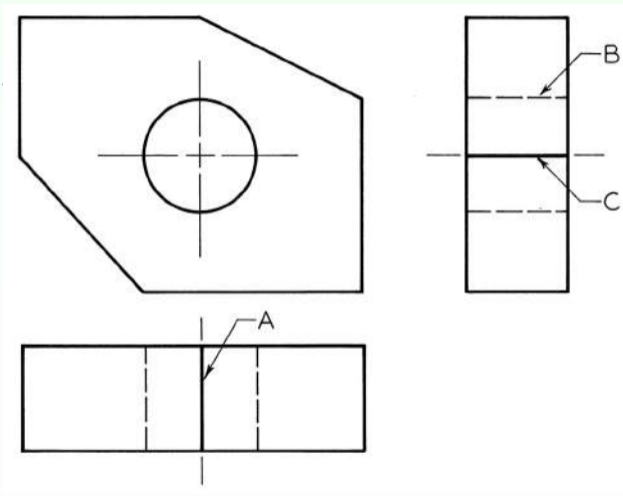
Flipse de











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Nomenclatura

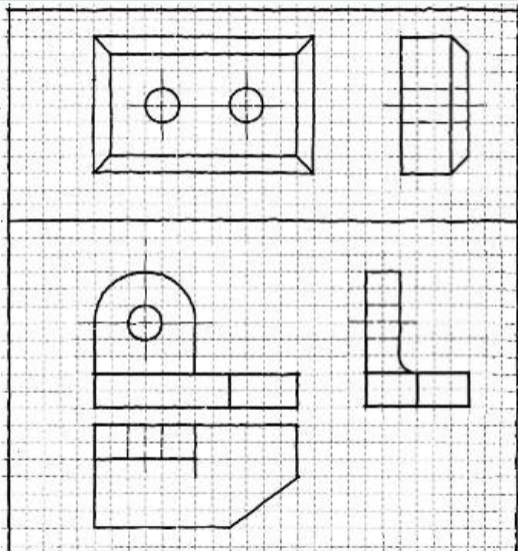
Vistas  
Redundantes

Vistas  
Preferenciais

Cotagem

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comuns

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## Parte VII

# Estudo das Projeções

## 4 Projeções ortogonais

## 5 Estudo Preliminar de Projeções

## 6 Projeção Ortográfica de Sólidos

## 7 Vistas Ortográficas - exemplo de desenvolvimento

## 8 Linhas de Centro

## 9 Eixos de Simetria

## 4 Projeções ortogonais

## 5 Estudo Preliminar de Projeções

## 6 Projeção Ortográfica de Sólidos

## 7 Vistas Ortográficas - exemplo de desenvolvimento

## 8 Linhas de Centro

## 9 Eixos de Simetria

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Estudo

Sólidos

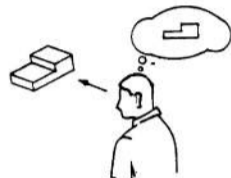
Vistas

L. Centro

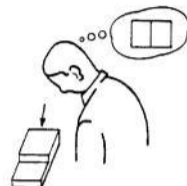
Simetria

Exercícios  
Elabora-  
dos

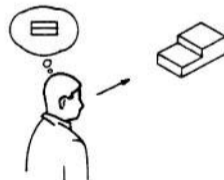
## 4 Projeções ortogonais



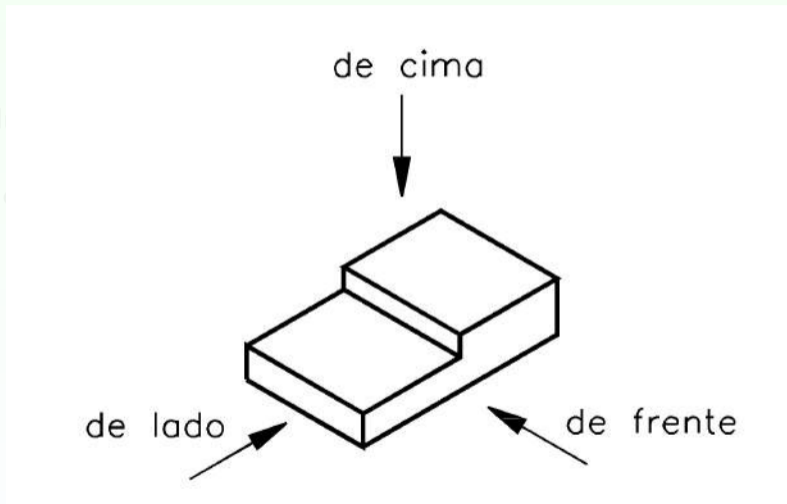
Vendo o modelo de frente

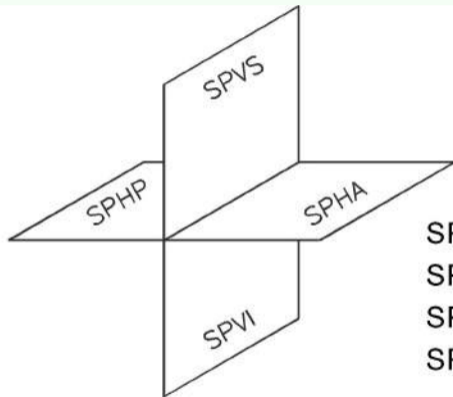


Vendo o modelo de cima

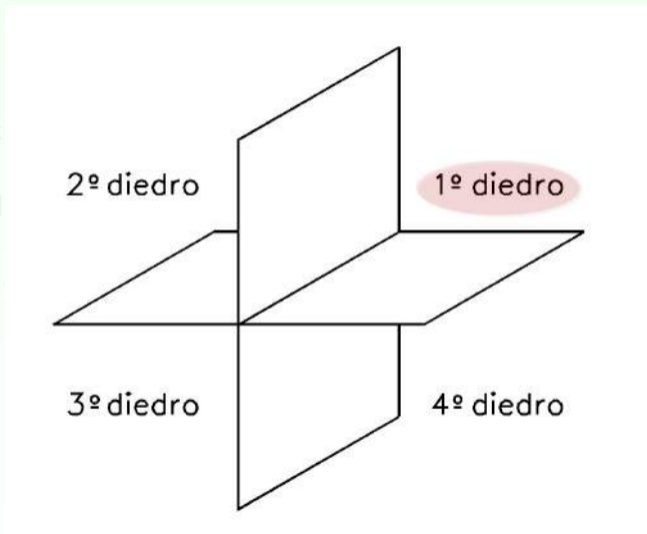


Vendo o modelo de lado





- SPVS - semiplano vertical superior
- SPVI - semiplano vertical inferior
- SPHA - semiplano horizontal anterior
- SPVP - semiplano horizontal posterior



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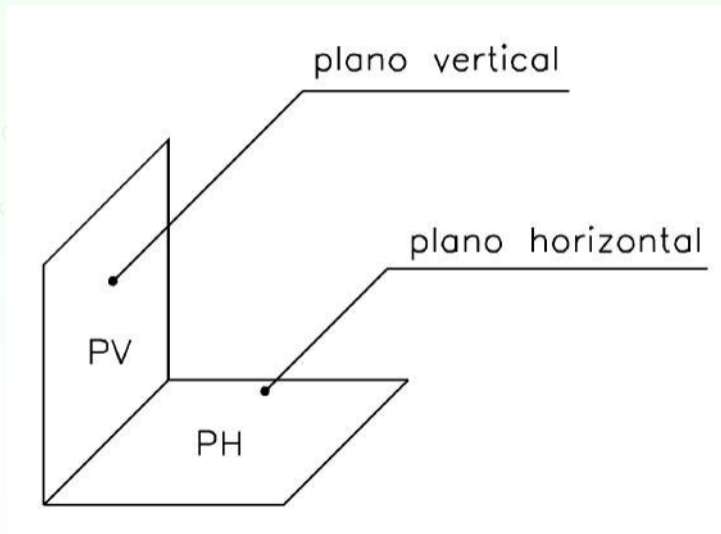
Vistas

L. Centro

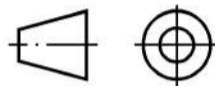
Simetria

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dos

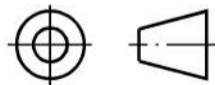
## 5 Estudo Preliminar de Projeções

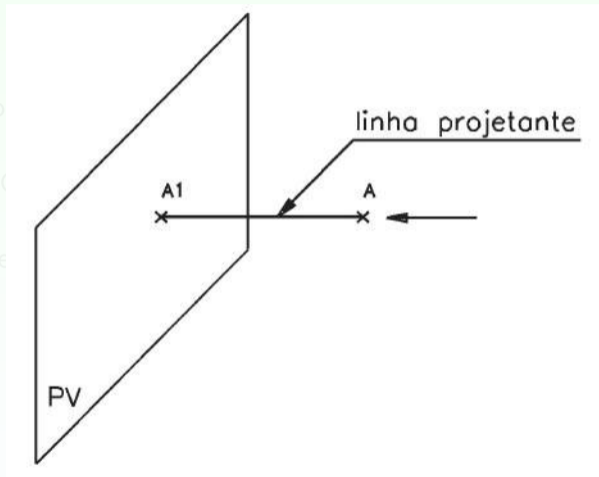


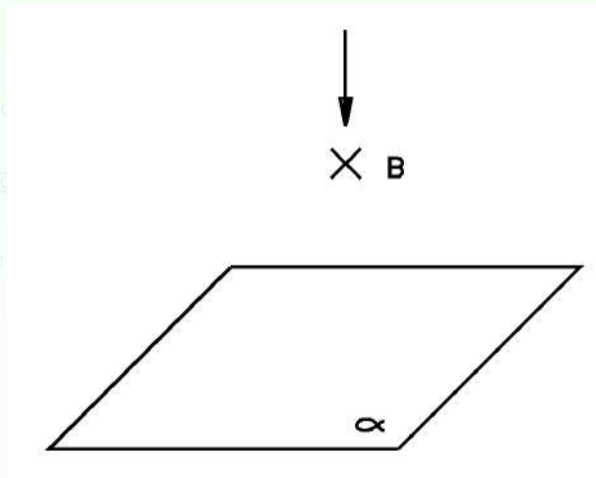
O símbolo ao lado indica que o desenho técnico está representado no **1º diedro**. Este símbolo aparece no **canto inferior direito** da folha de papel dos desenhos técnicos, dentro da legenda.

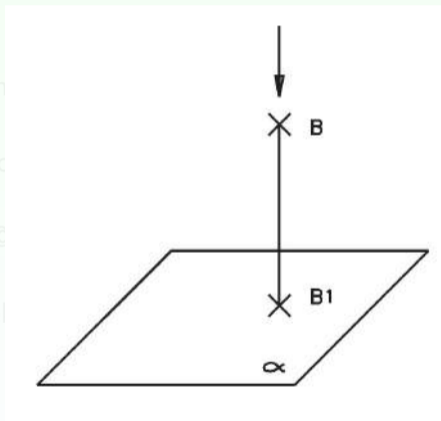


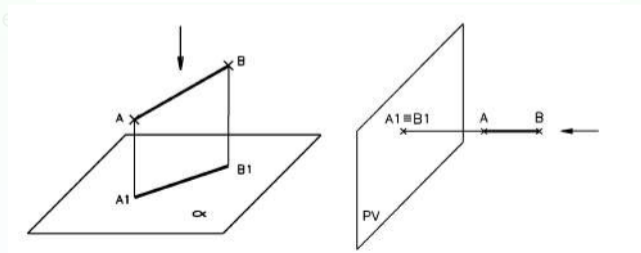
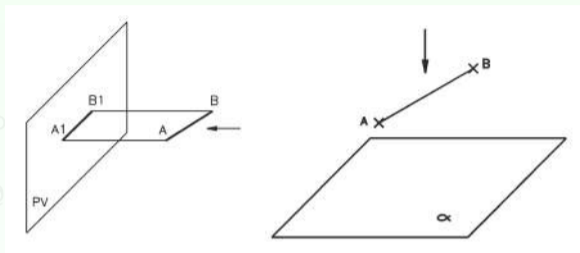
Quando o desenho técnico estiver representado no **3º diedro**, você verá este outro símbolo:

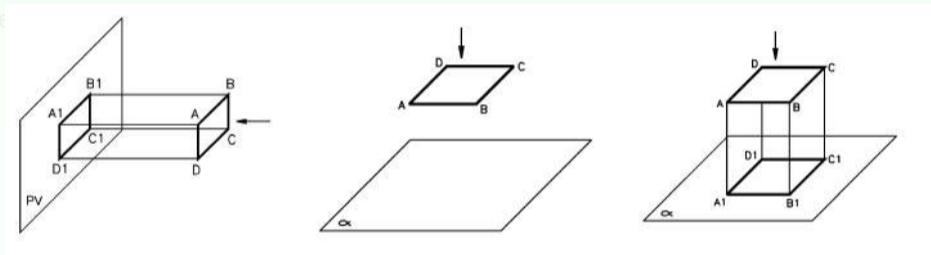


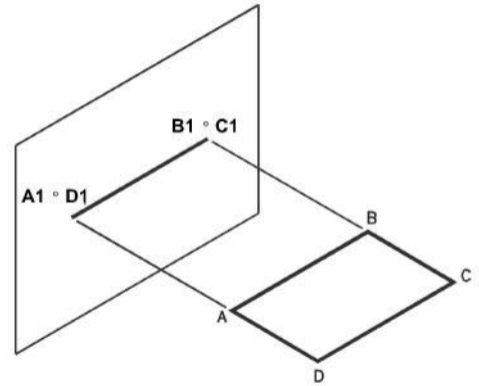
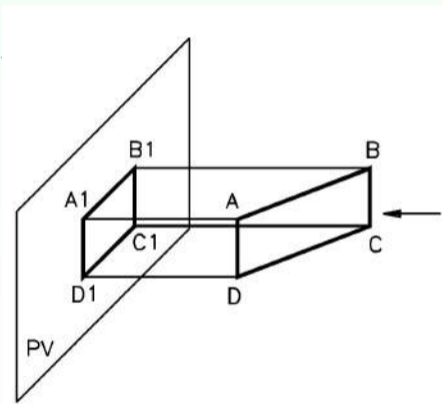












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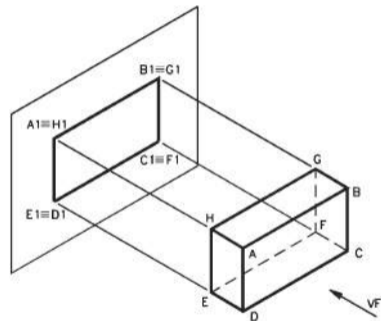
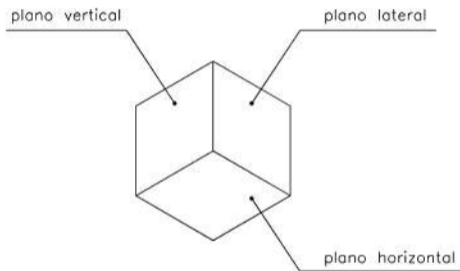
Vistas

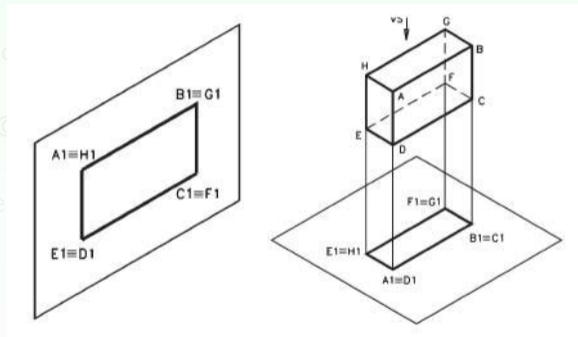
L. Centro

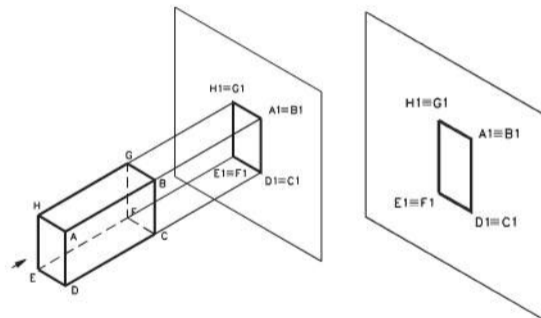
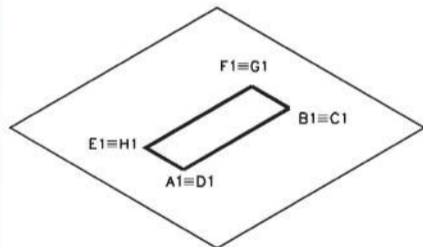
Simetria

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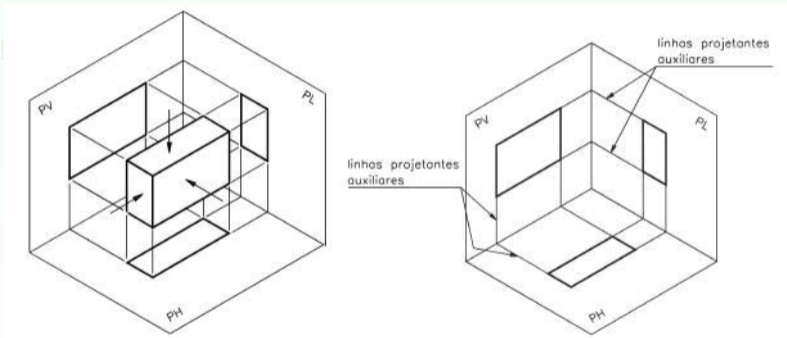
## 6 Projeção Ortográfica de Sólidos



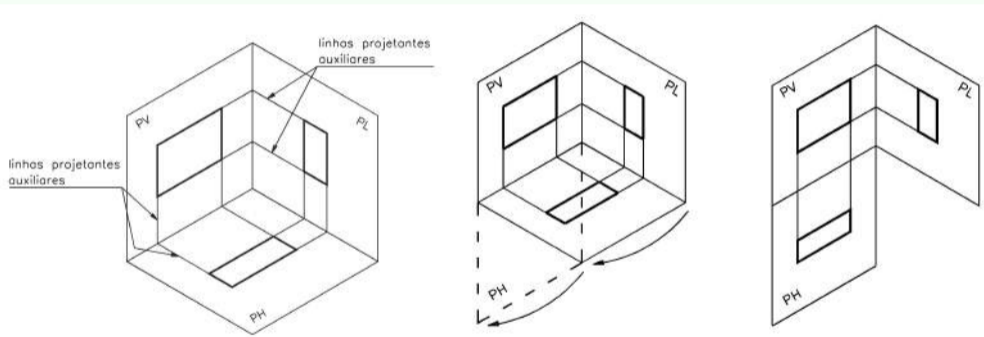


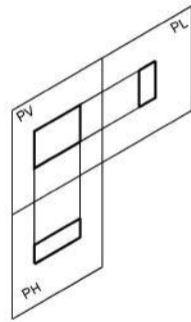
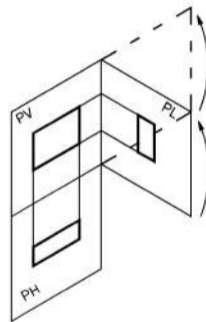
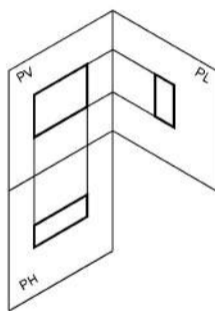
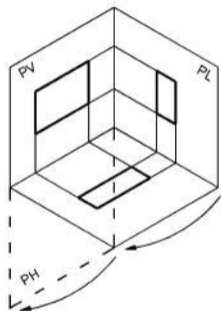


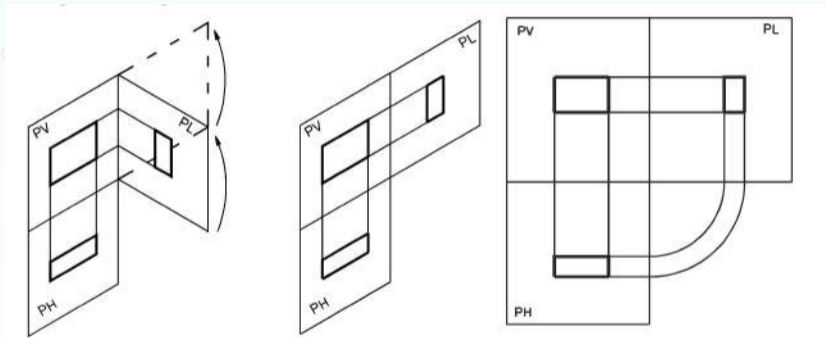
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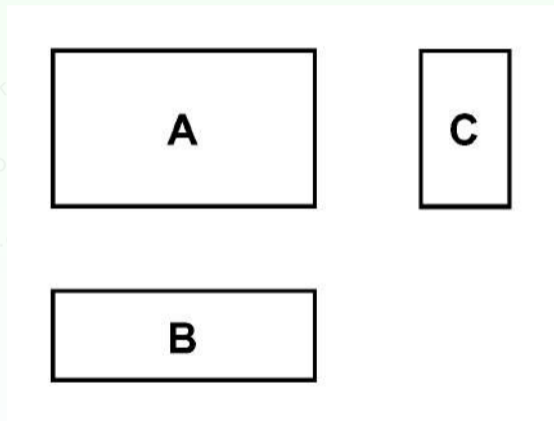
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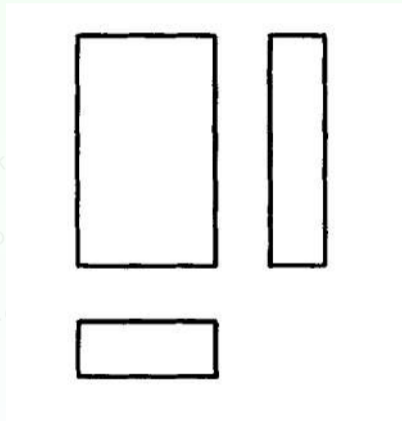
Sólidos

Vistas

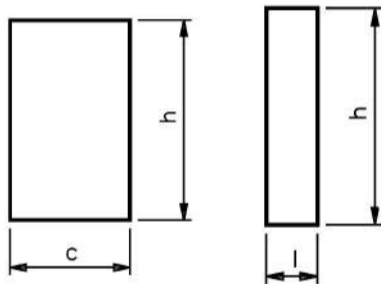
L. Centro

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1



# A partir das 3 vistas gere um sólido em persp. isométrica

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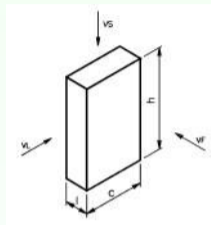
Sólidos

Vistas

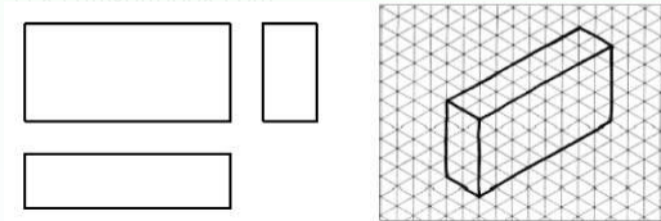
L. Centro

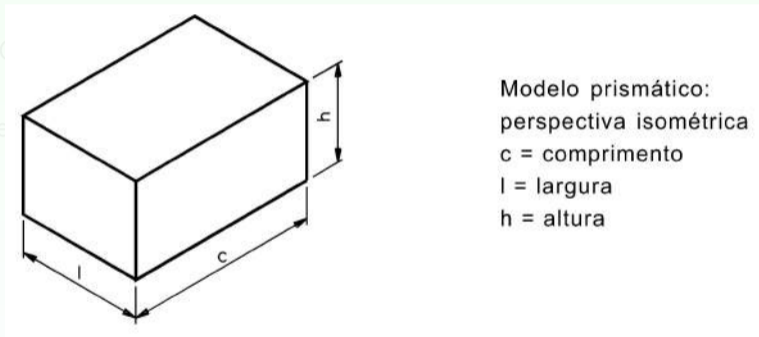
Simetria

Exercícios  
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2





Modelo prismático:  
perspectiva isométrica  
 $c$  = comprimento  
 $l$  = largura  
 $h$  = altura

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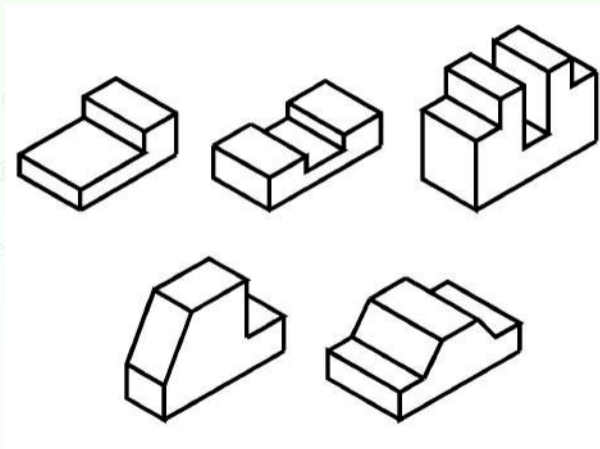
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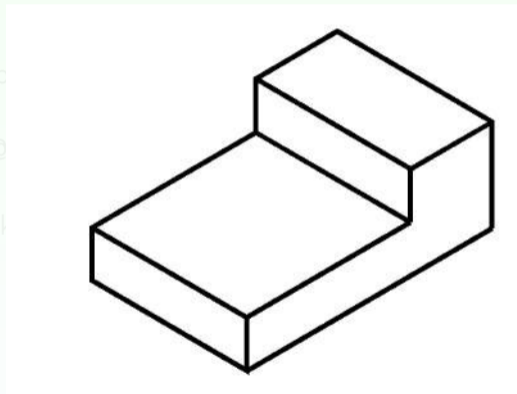
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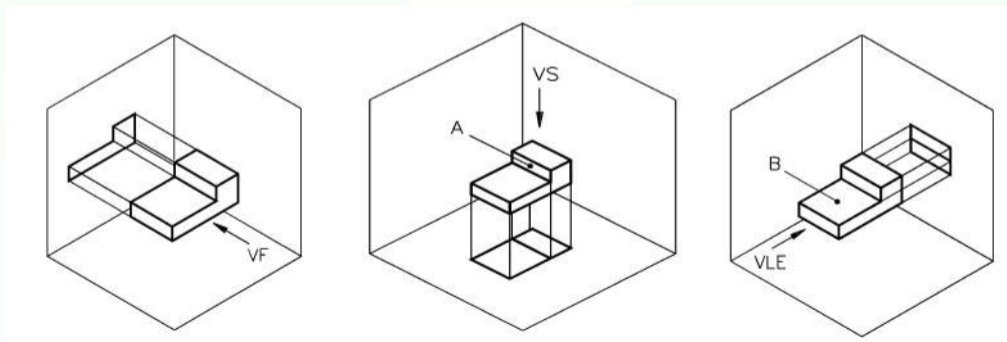
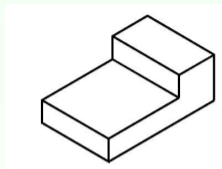
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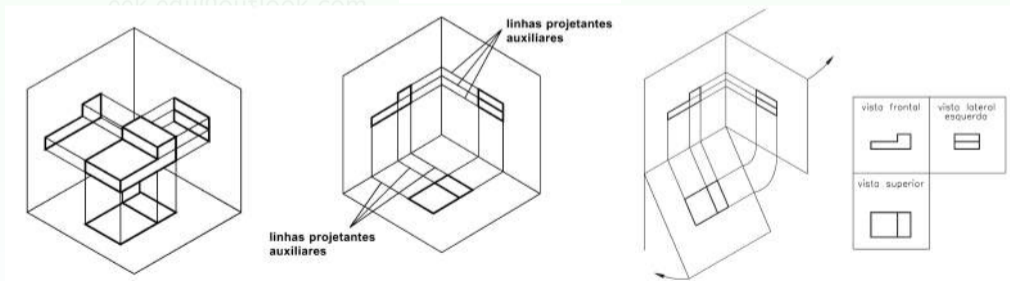
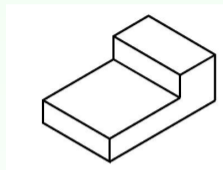
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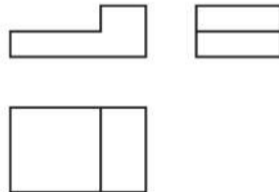
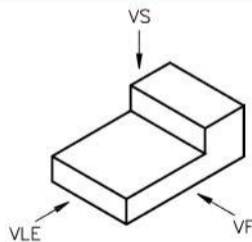
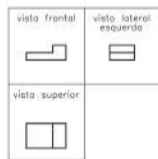
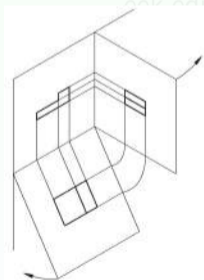
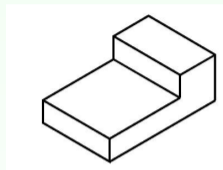
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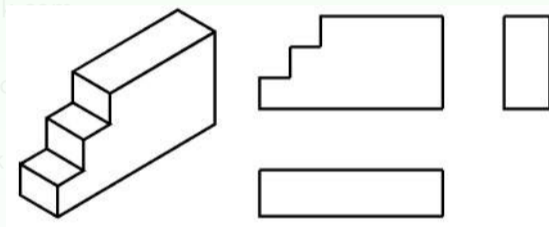
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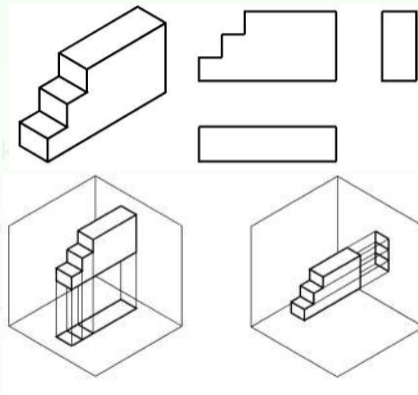


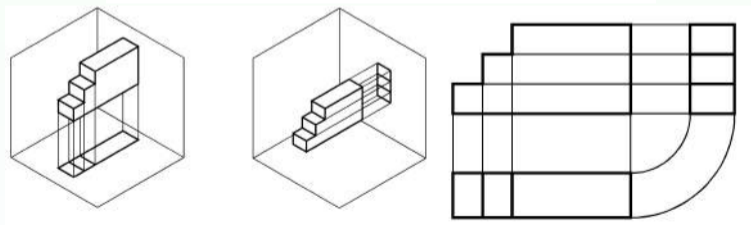
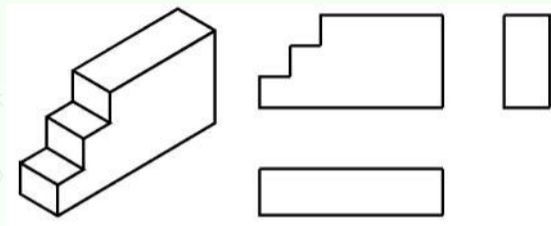


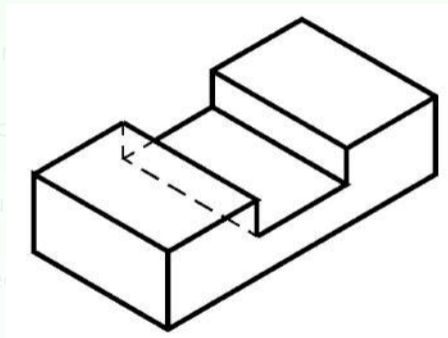


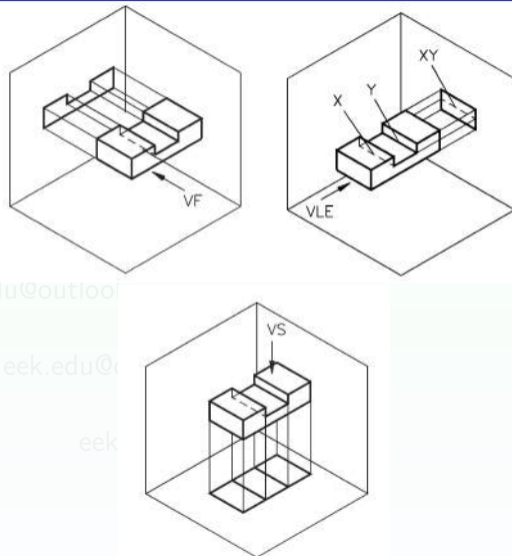


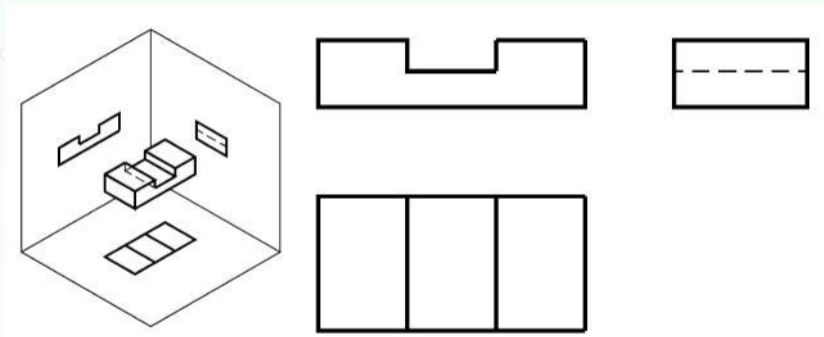




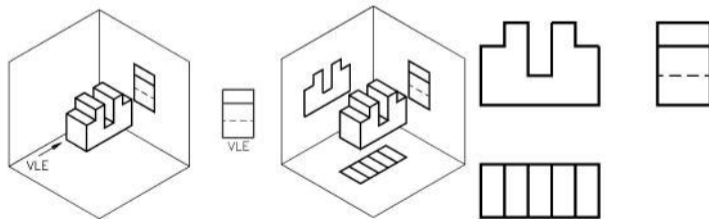
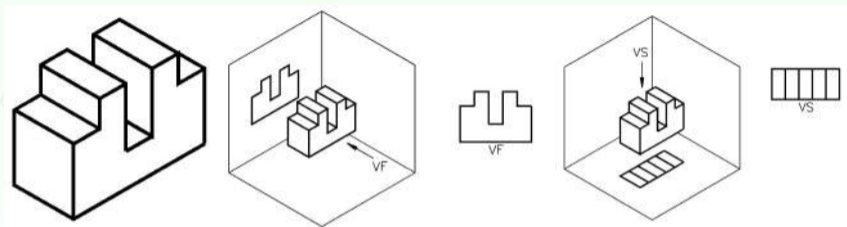


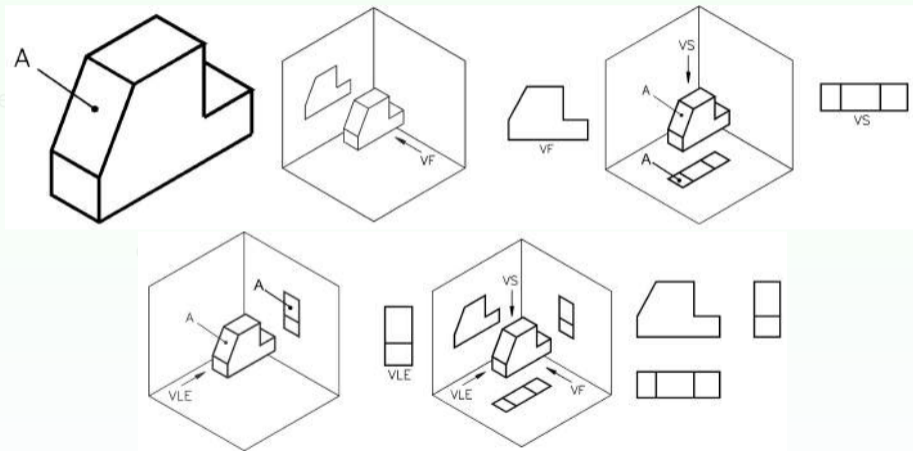


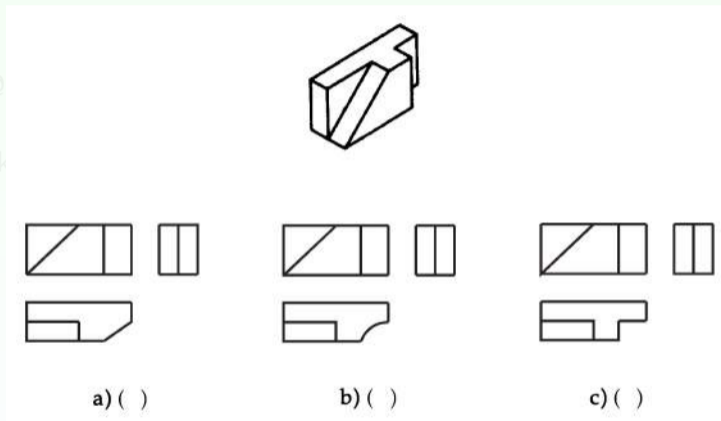


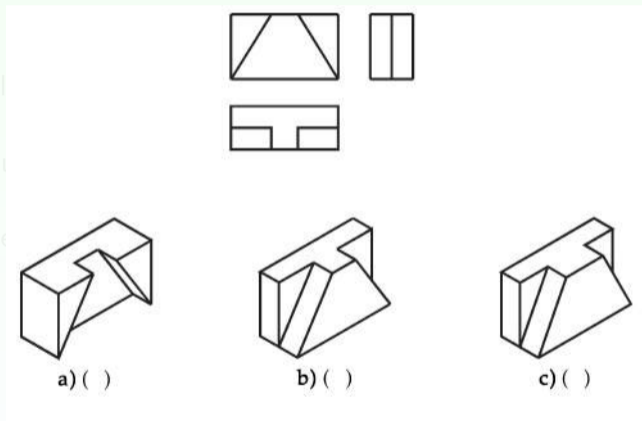


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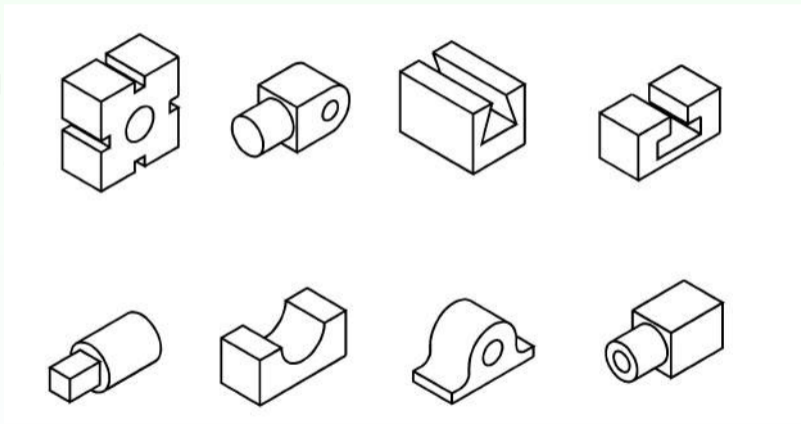
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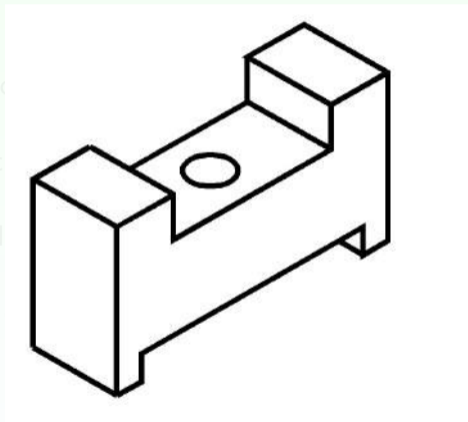
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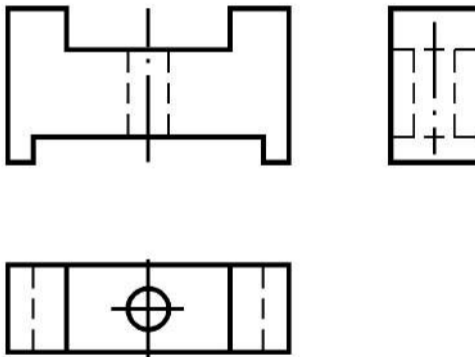
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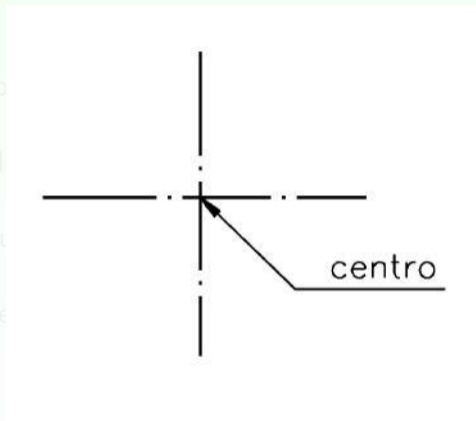
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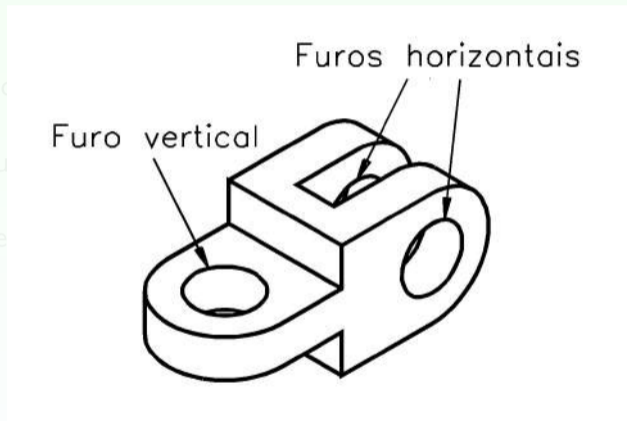
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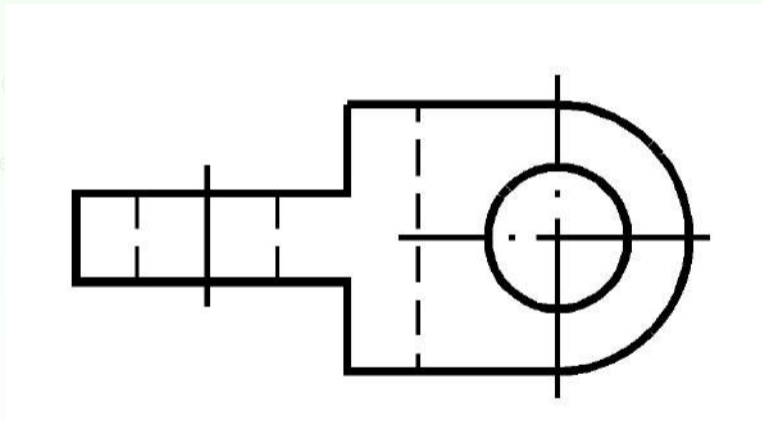
Construção

Simetria

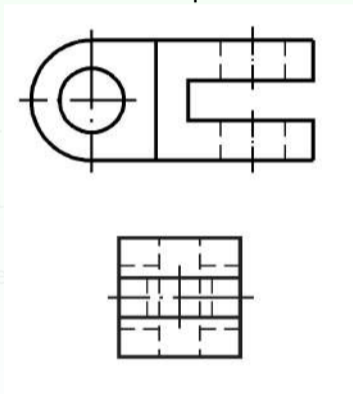
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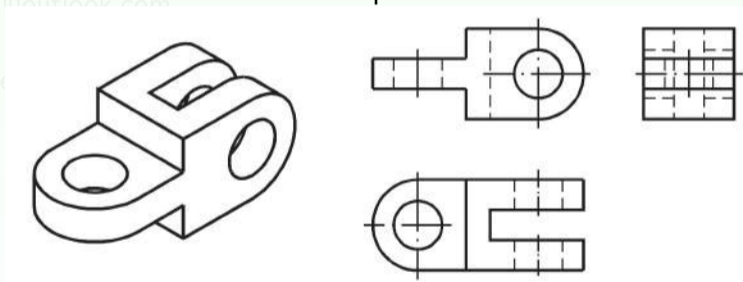




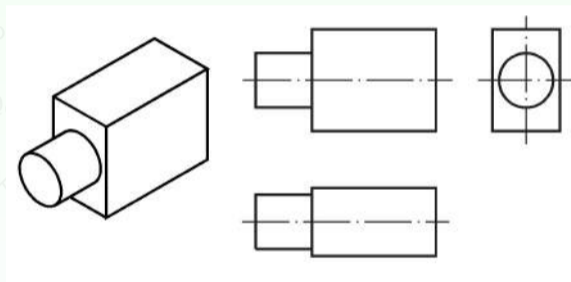
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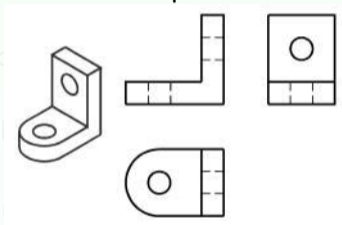
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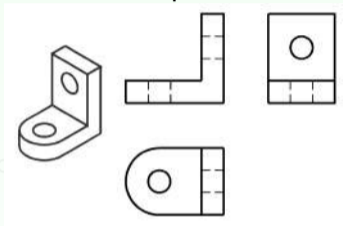
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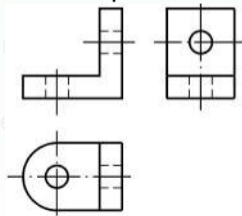
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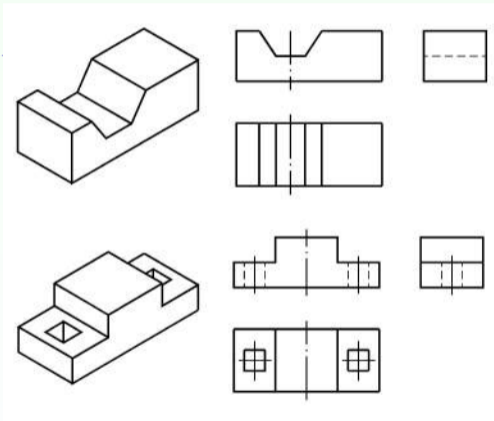


Complete:



Resposta:





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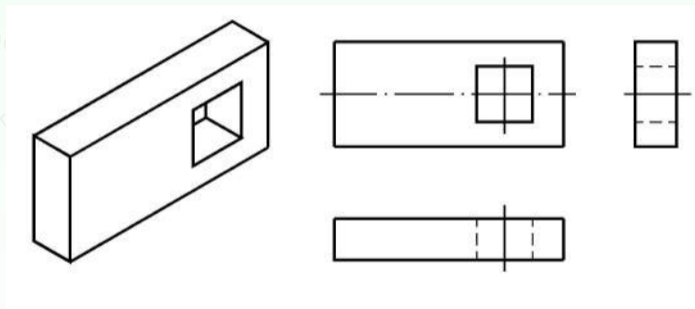
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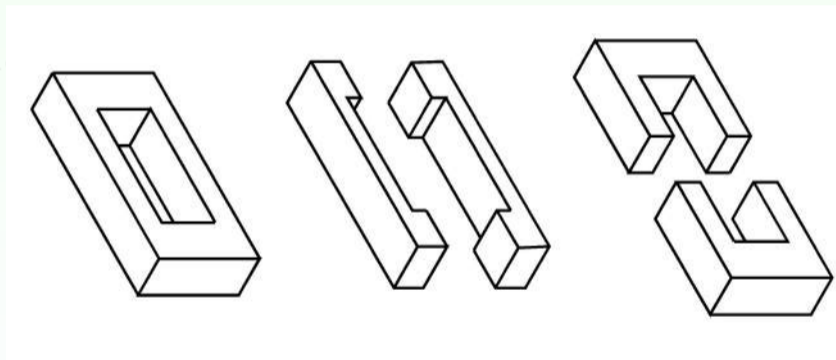
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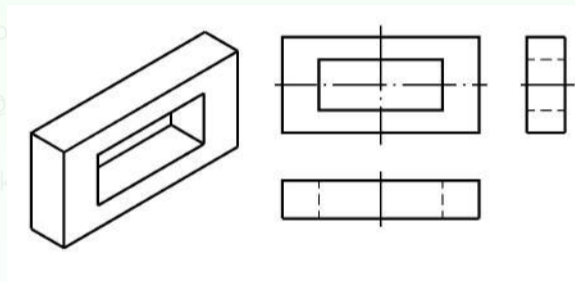
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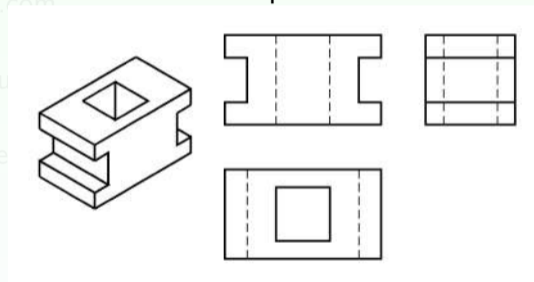
## 9 Eixos de Simetria





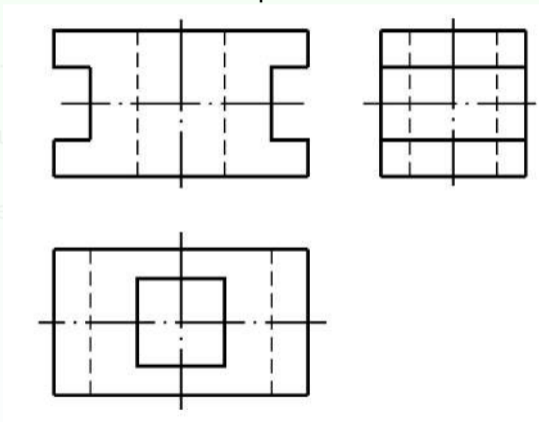


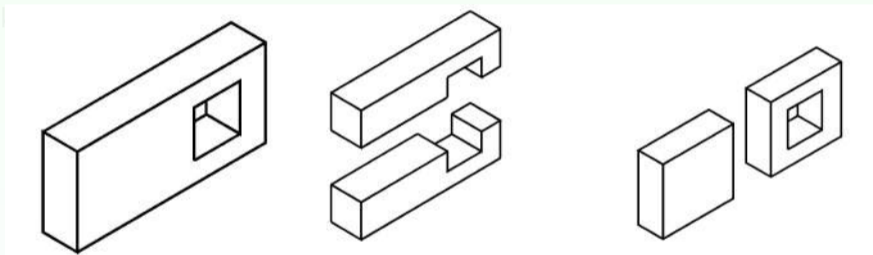
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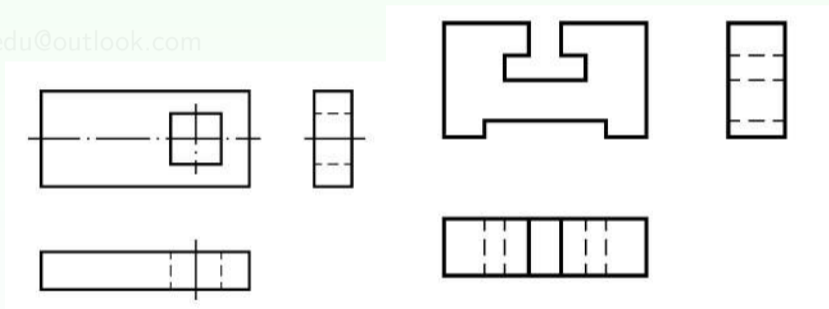
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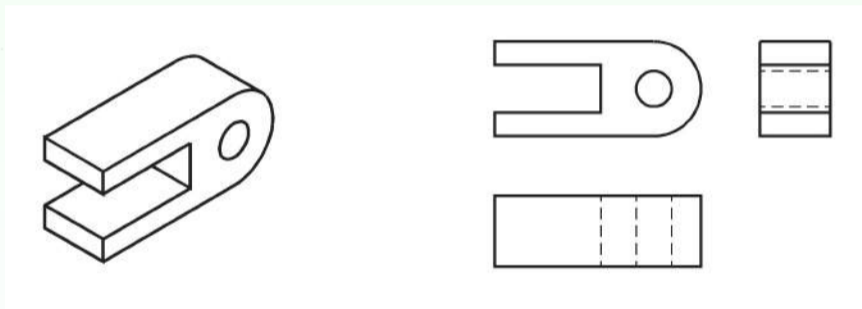


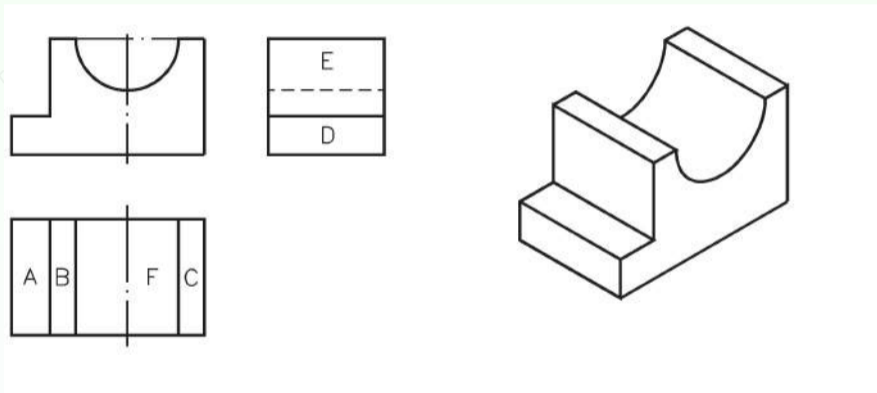


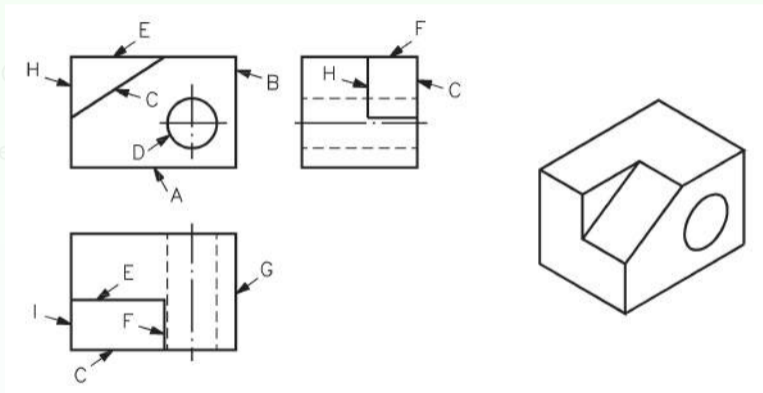
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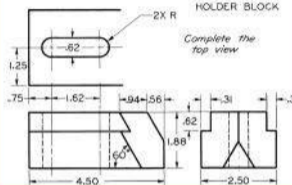


**1**

HOLDER BLOCK

2X R

Complete the top view

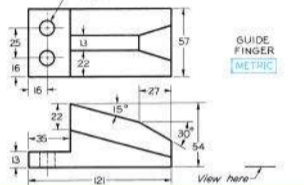


**2**

2X  $\phi 13$

GUIDE FINGER

METRIC



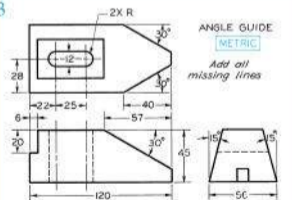
**3**

2X R

ANGLE GUIDE

METRIC

Add all missing lines

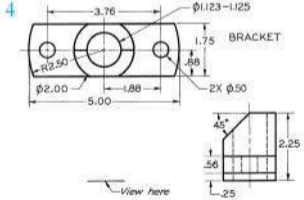


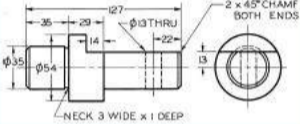
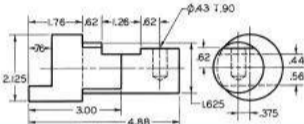
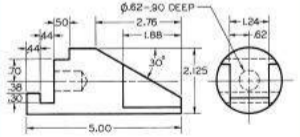
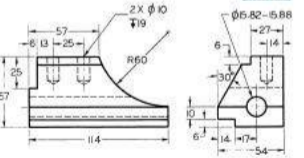
**4**

$\phi 1.123-1.125$

BRACKET

METRIC



<p>5</p> <p>ROD HEAD METRIC</p> <p>Add top view</p>  <p>2 x 45° CHAMF BOTH ENDS</p> <p>NECK 3 WIDE x 1 DEEP</p>	<p>6</p> <p>ECCENTRIC</p> <p>Add top view</p>  <p>2 x 43 T.90</p>
<p>7</p> <p>WEDGE</p> <p>Add top view</p>  <p>30°</p> <p>2.125</p>	<p>8</p> <p>HOLDER METRIC</p> <p>Add top view</p>  <p>2 x 19</p> <p>R60</p>

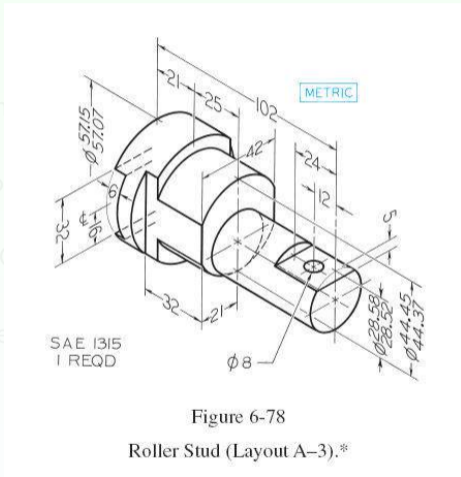
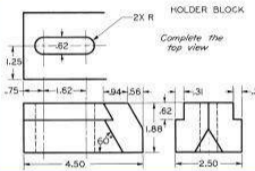
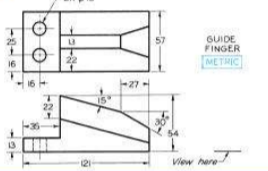
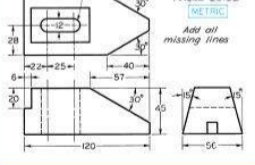
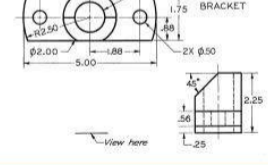


Figure 6-78

Roller Stud (Layout A-3).\*



<p><b>1</b></p>  <p>HOLDER BLOCK      2X R      Complete the top view</p>	<p><b>2</b></p>  <p>GUIDE FINGER      METRIC      2X φ13      View here</p>
<p><b>3</b></p>  <p>ANGLE GUIDE      METRIC      Add all missing lines</p>	<p><b>4</b></p>  <p>BRACKET      METRIC      View here</p>

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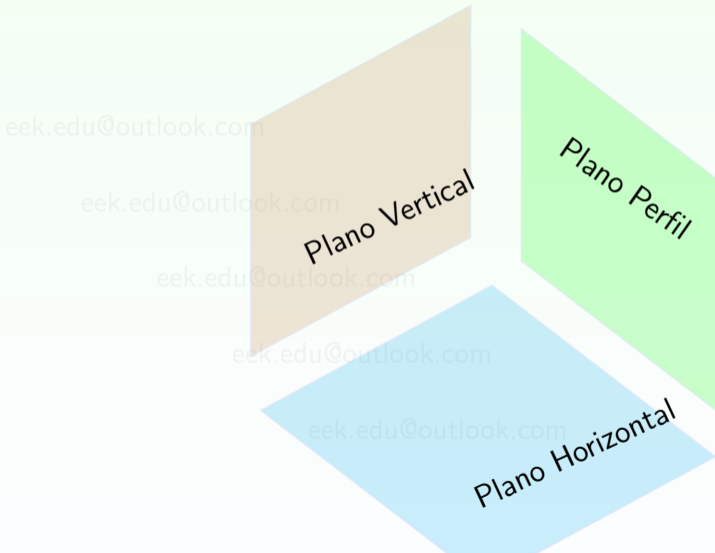
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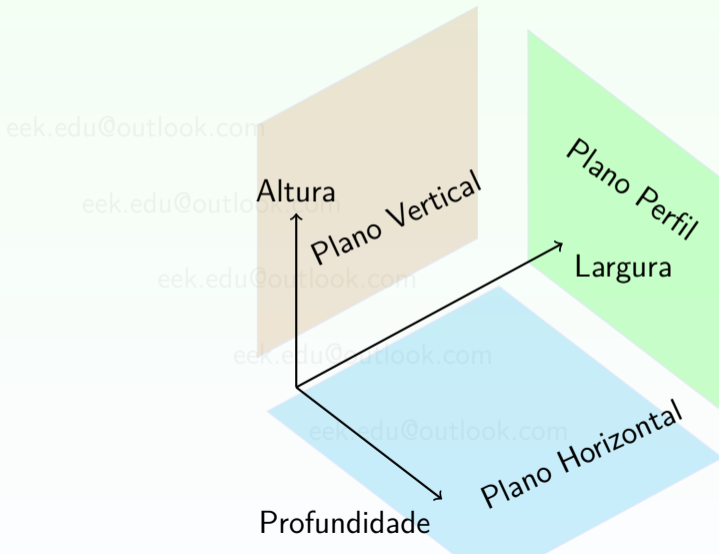
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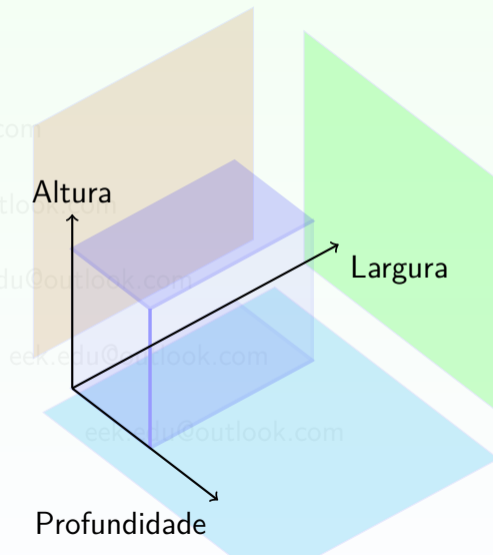
Revisão

Revisão

Revisão







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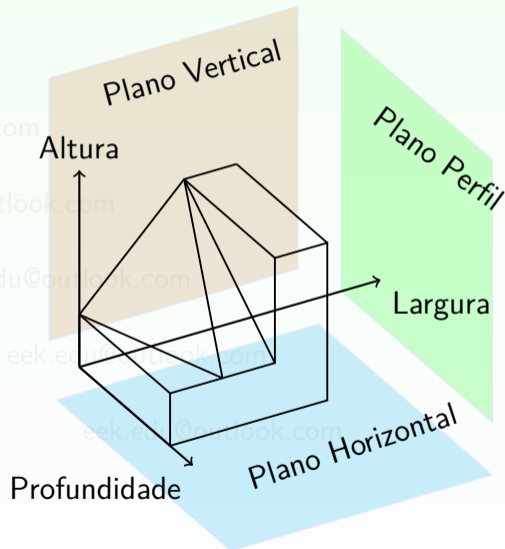
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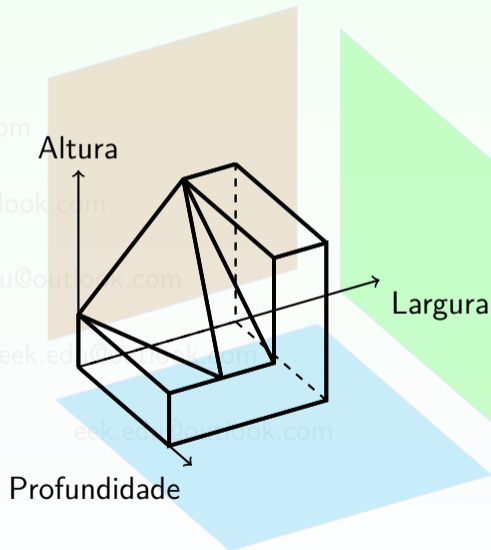
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