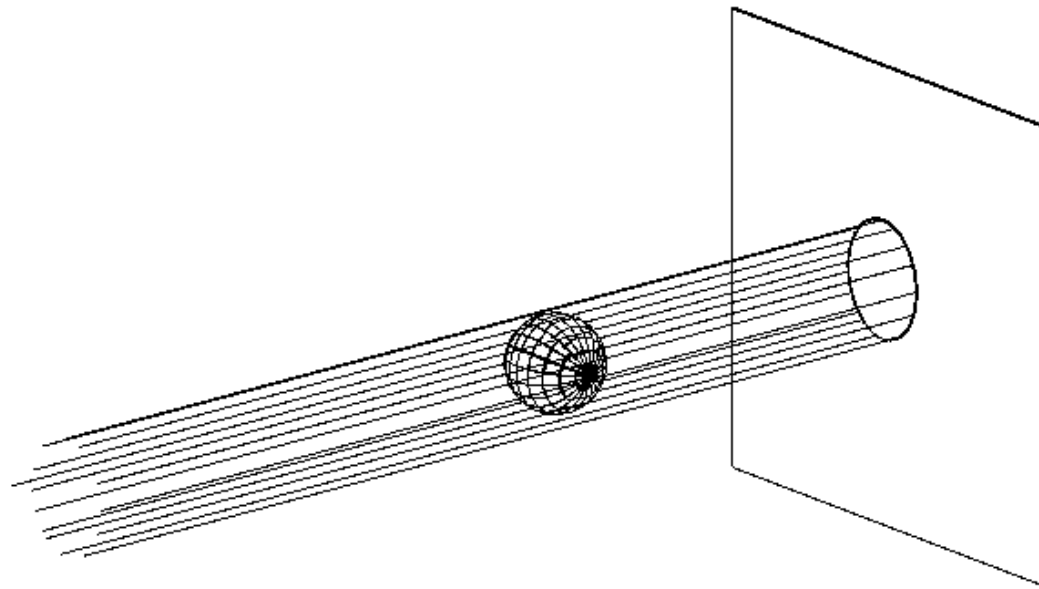


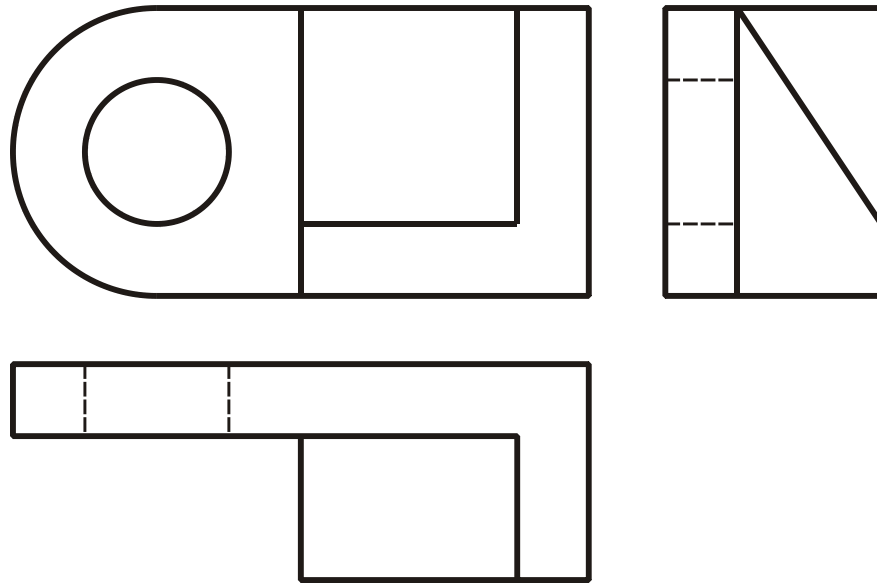


PERSPECTIVAS AXONOMÉTRICAS

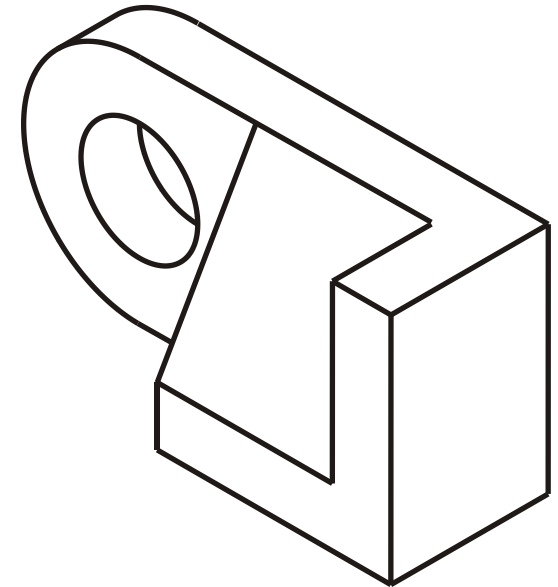
Na projeção cilíndrica, o observador está muito longe do objeto (a rigor, infinitamente distante).

Os raios projetantes são todos paralelos.



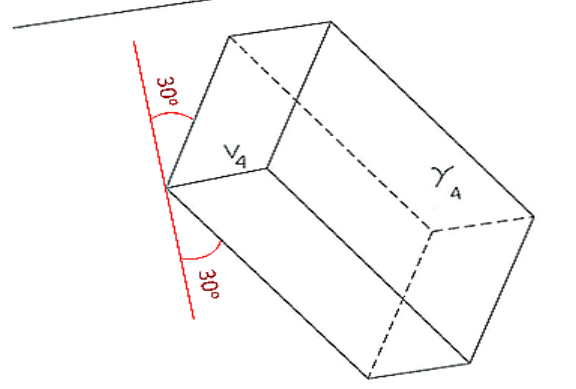
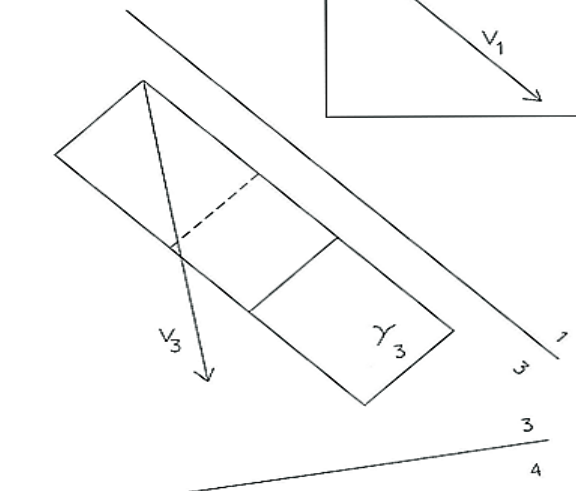
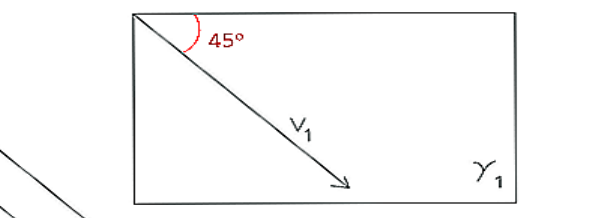
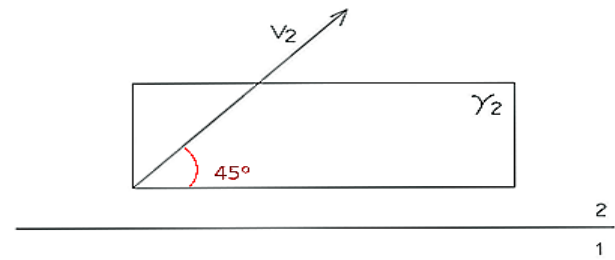
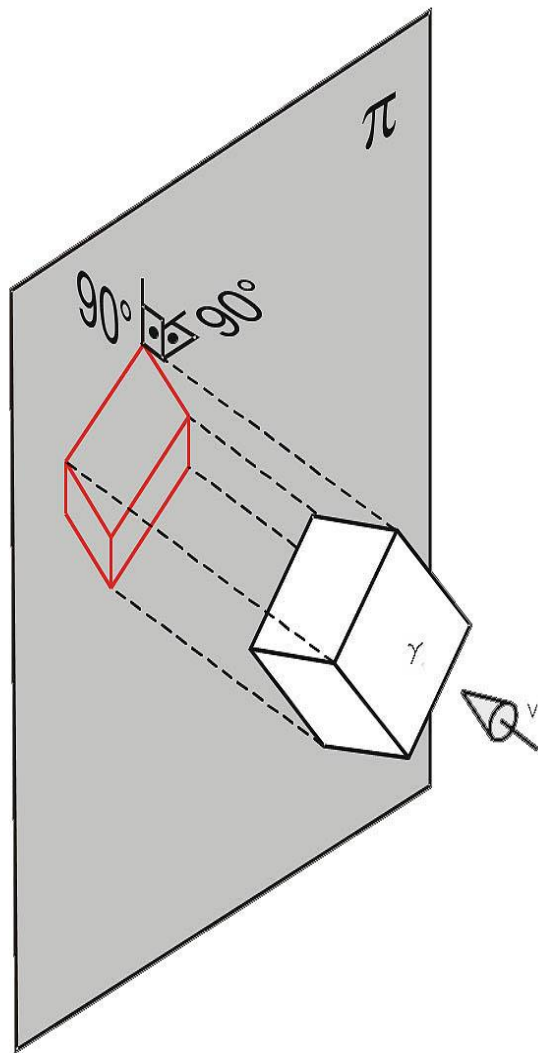


**VISTAS
ORTOGRÁFICAS**



**PERSPECTIVA
AXONOMÉTRICA**

PROJEÇÃO CILÍNDRICA ORTOGONAL: Vistas x Perspectiva



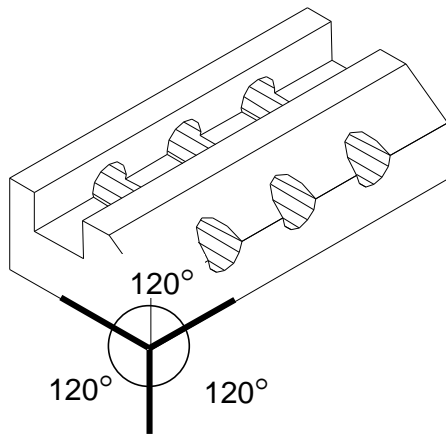
PROJEÇÃO CILÍNDRICA ORTOGONAL: Perspectiva Axonométrica

SISTEMAS	$x_0:y_0:z_0$	Coef. de Redução			Ângulos dos Eixos		
		k_x	k_y	k_z	x_0Oy_0	x_0Oz_0	y_0Oz_0
ISOMÉTRICO	1:1:1	0,8165	0,8165	0,8165	120°	120°	120°
DIMÉTRICOS	$1:\frac{1}{2}:1$	0,9428	0,4714	0,9428	131°25'	97°10'	131°25'
	$1:\frac{1}{3}:1$	0,9733	0,3244	0,9733	133°25'	93°10'	133°25'
	$1:\frac{1}{4}:1$	0,9847	0,2462	0,9847	134°7'	91°46'	134°7'
TRIMÉTRICOS	$\frac{5}{6}:\frac{2}{3}:1$	0,8058	0,6446	0,9670	150°40'	101°8'	108°12'
	$\frac{9}{10}:\frac{1}{2}:1$	0,8867	0,4926	0,9853	157°2'	95°10'	107°48'

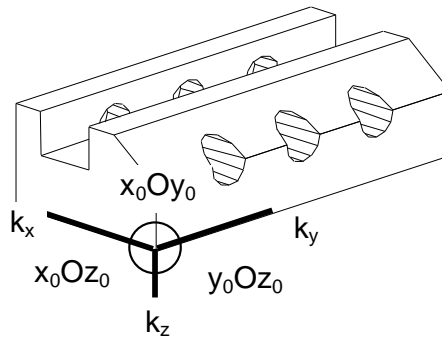
Teorema de Guarnerie: $\cos^2 \alpha + \cos^2 \beta + \cos^2 \delta = 2 \Leftrightarrow k_x^2 + k_y^2 + k_z^2 = 2$

POSIÇÕES MAIS USADAS PARA GERAR PERSPECTIVAS AXONOMÉTRICAS

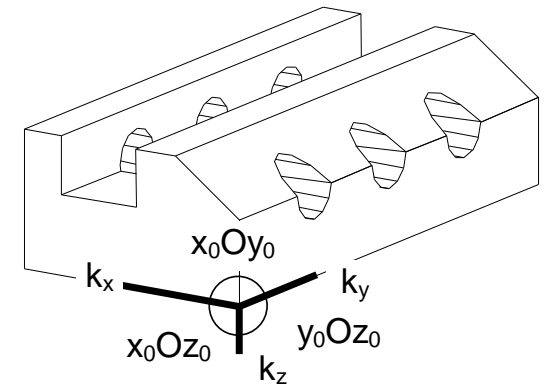
Aplicação dos ângulos e coeficientes de redução.



**A) PERSPECTIVA
ISOMÉTRICA**



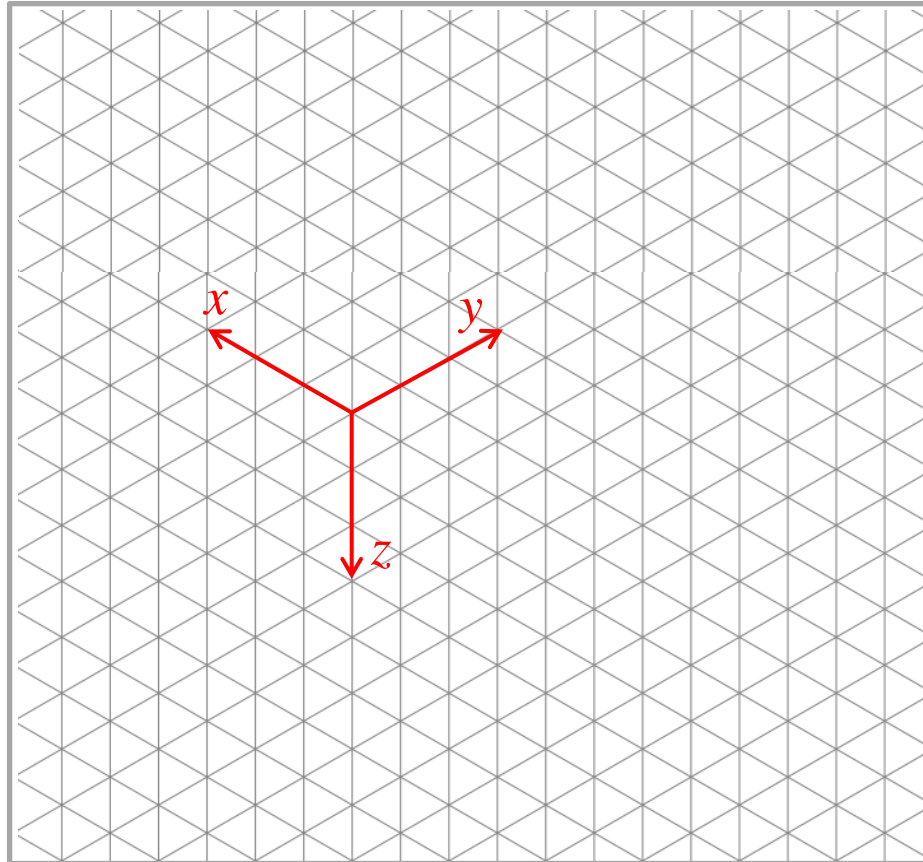
**B) PERSPECTIVA
DIMÉTRICA**



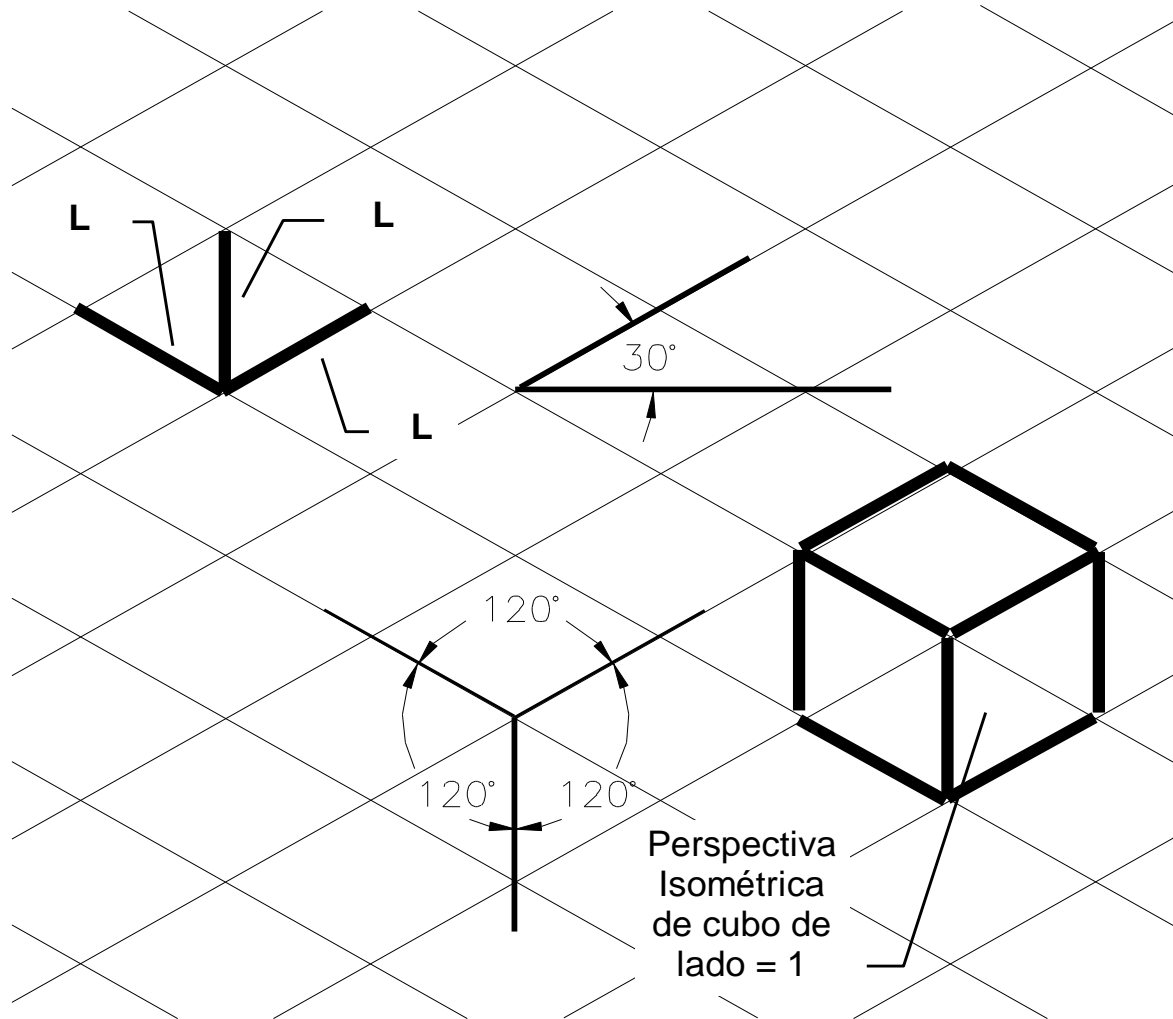
**C) PERSPECTIVA
TRIMÉTRICA**

Papel com grade isométrica

As linhas são usadas para orientar o traçado da perspectiva isométrica

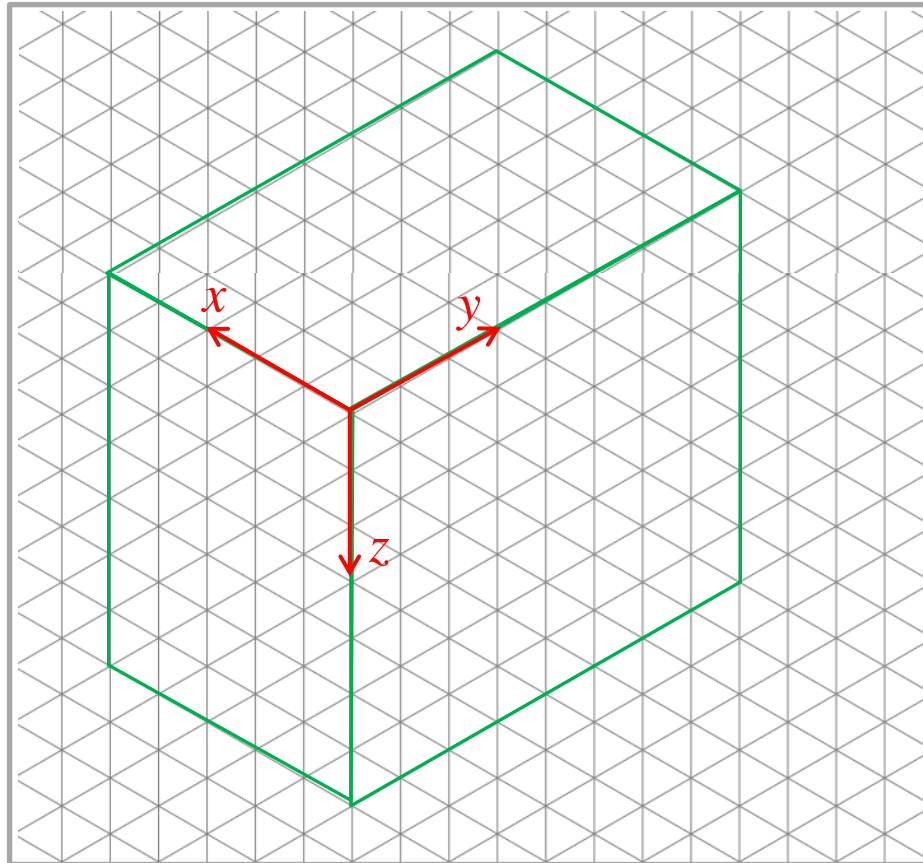


Eixos isométricos \rightarrow formam entre si ângulos de 120°

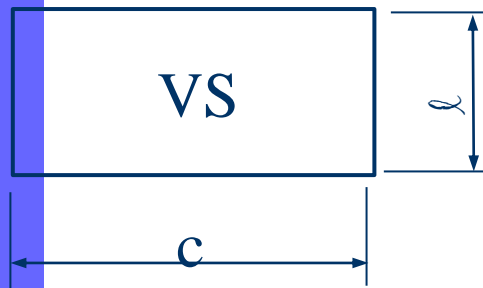
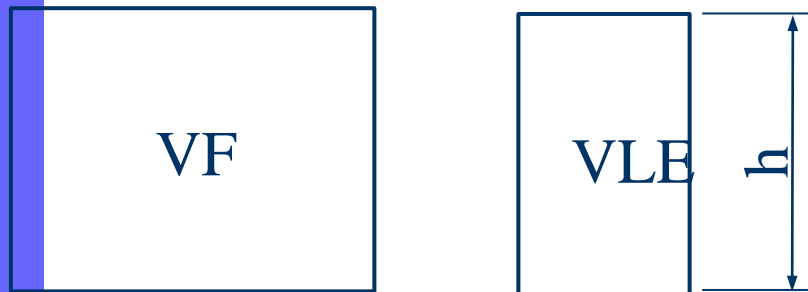


O PAPEL ISOMÉTRICO

Caixa auxiliar

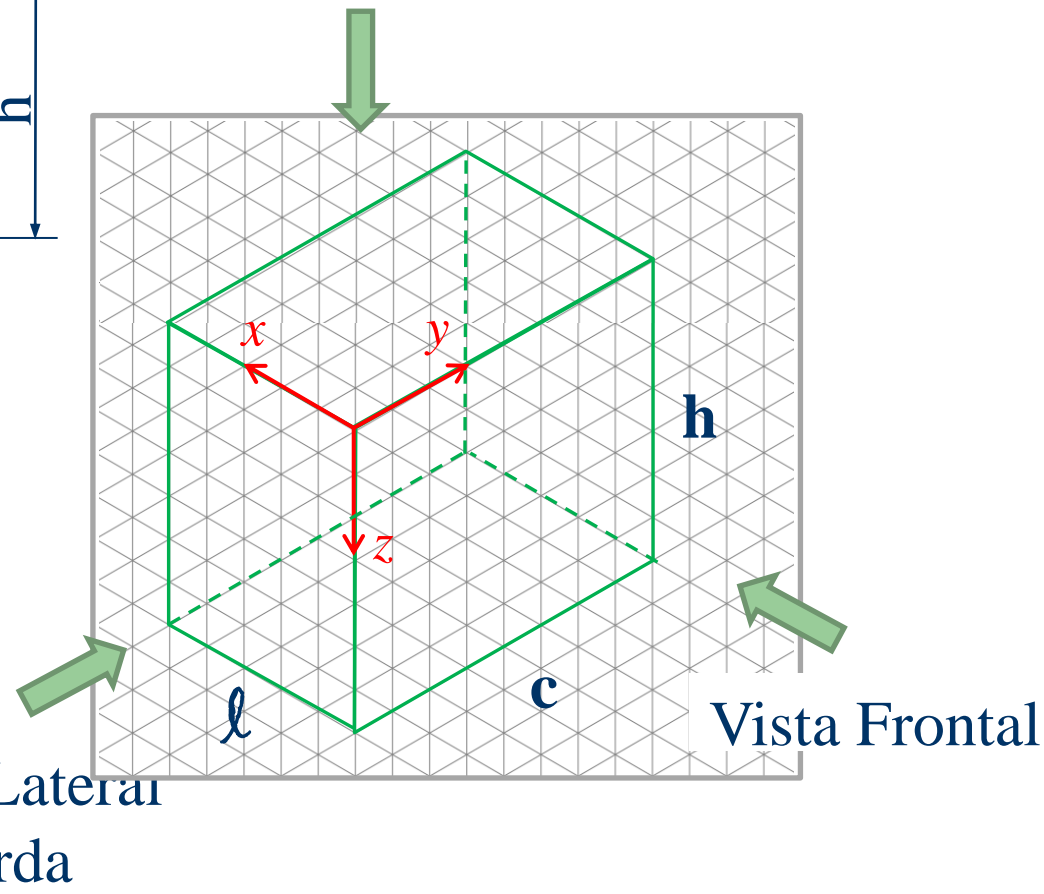


Vistas ortográficas



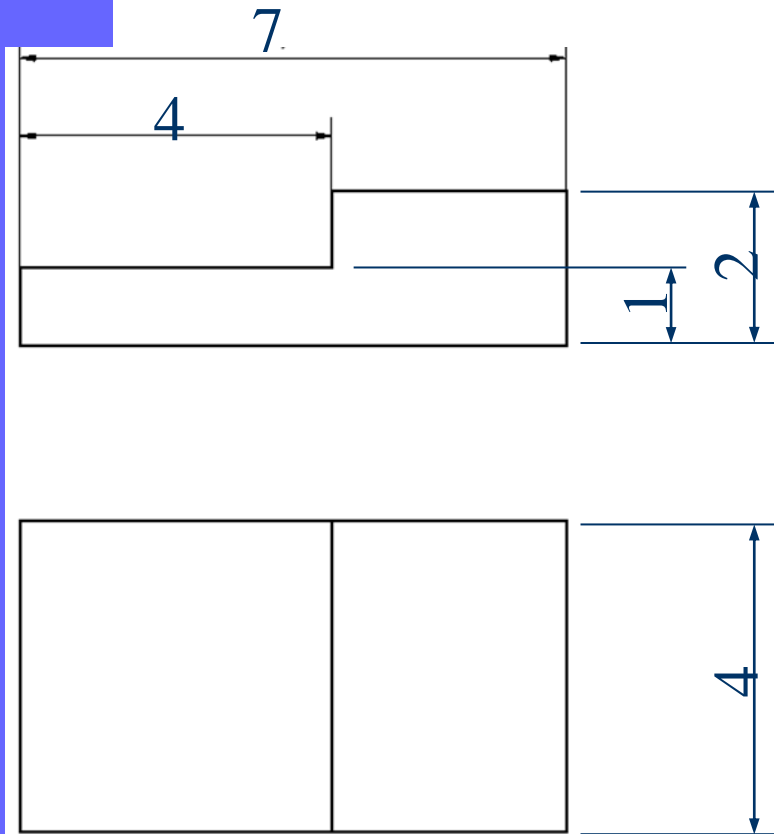
Perspectiva Isométrica

Vista Superior

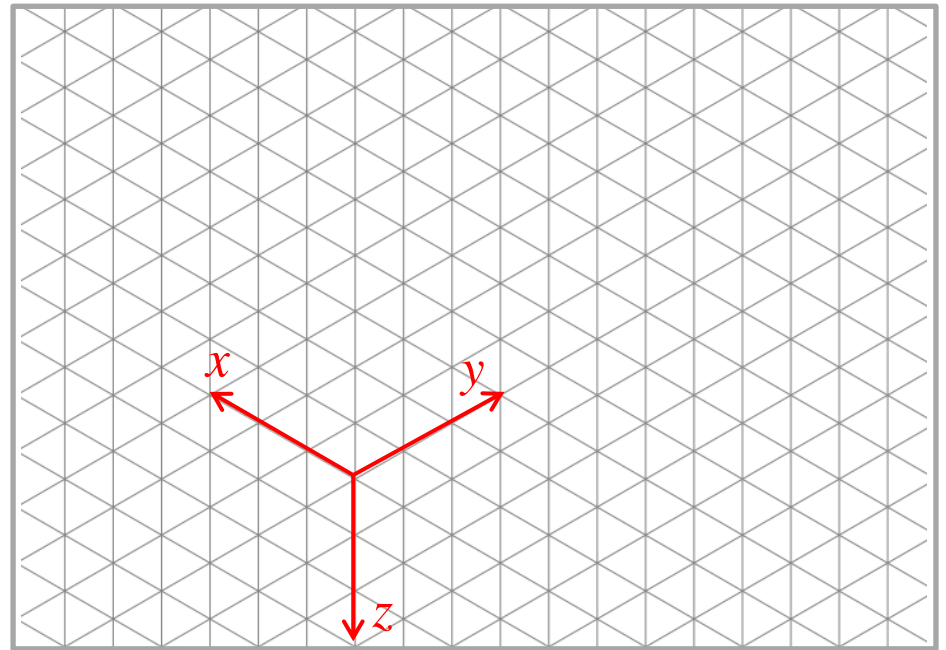


MÉTODO DA CAIXA AUXILIAR – PERSPECTIVA ISOMÉTRICA

Vistas ortográficas

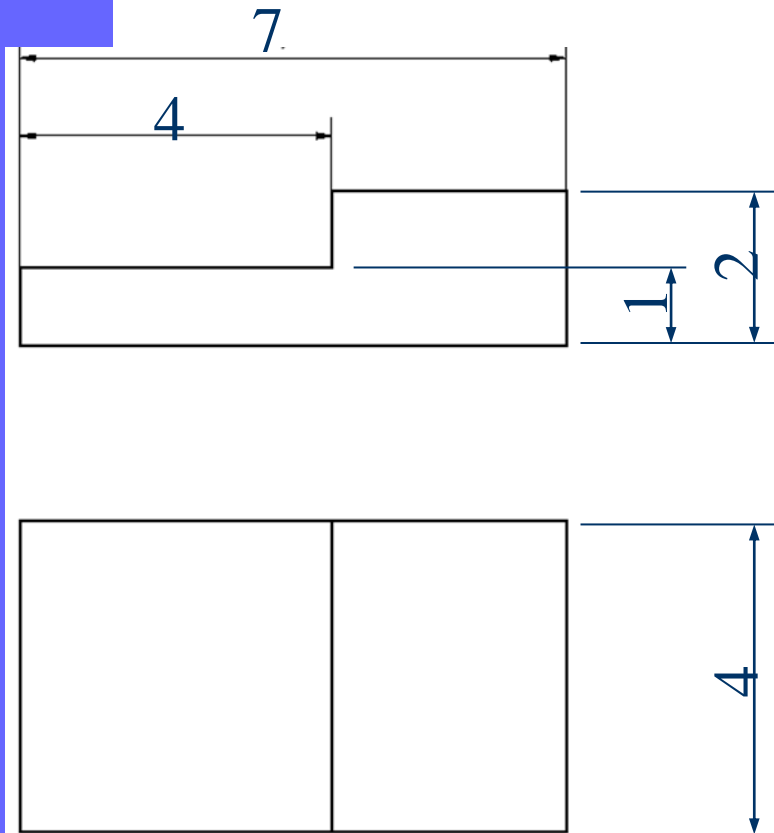


Perspectiva Isométrica - 1

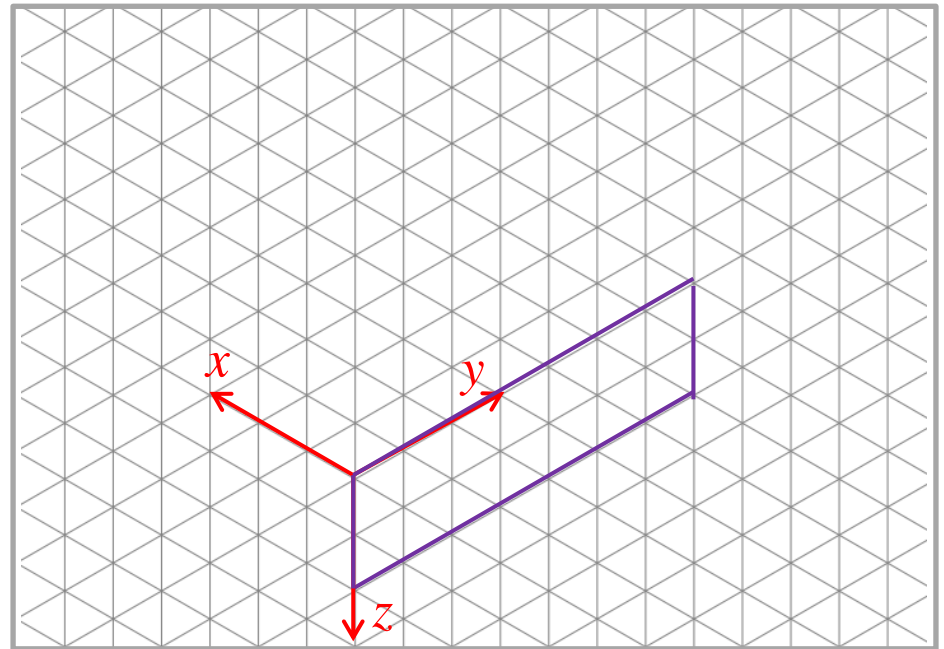


Eixos isométricos

Vistas ortográficas

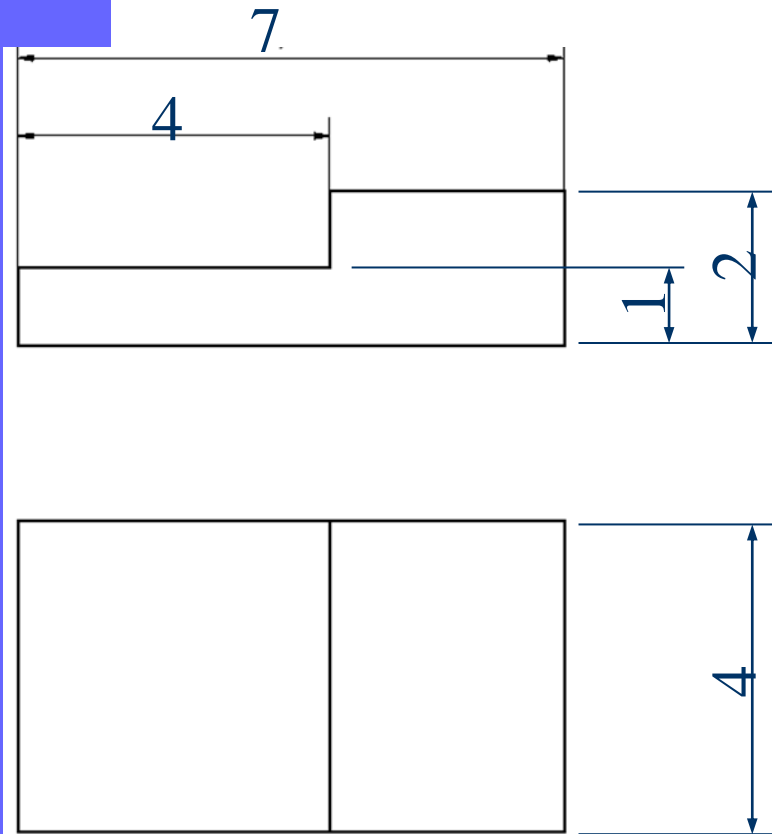


Perspectiva Isométrica - 1

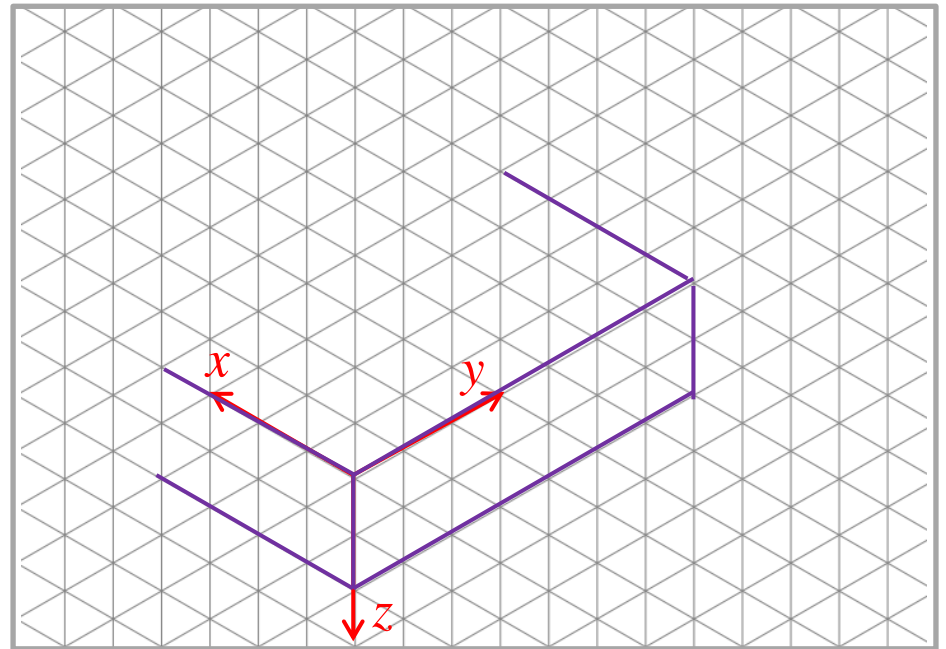


Desenhando a caixa auxiliar

Vistas ortográficas

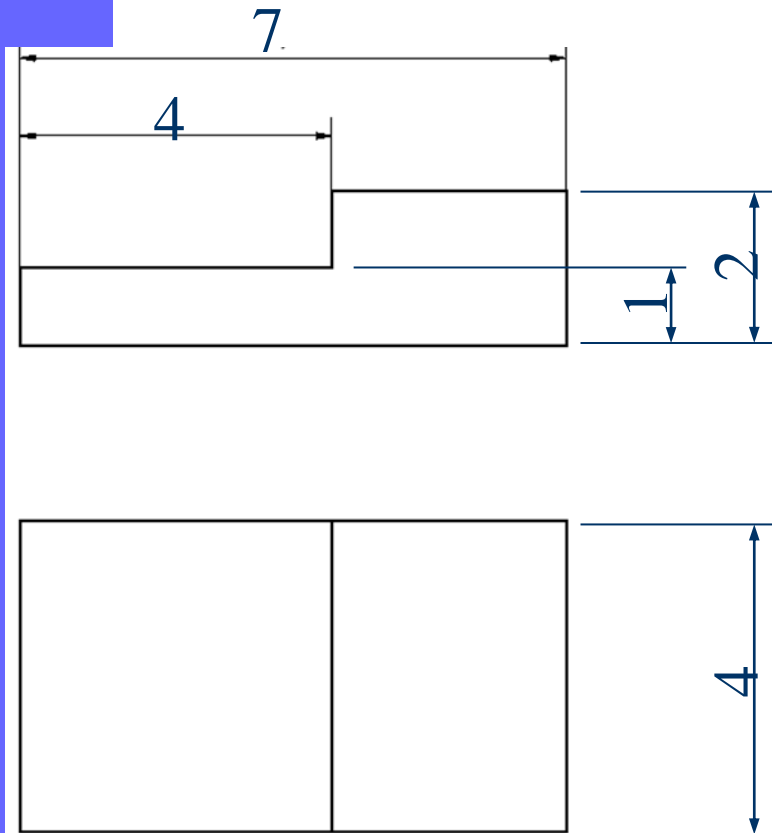


Perspectiva Isométrica - 1

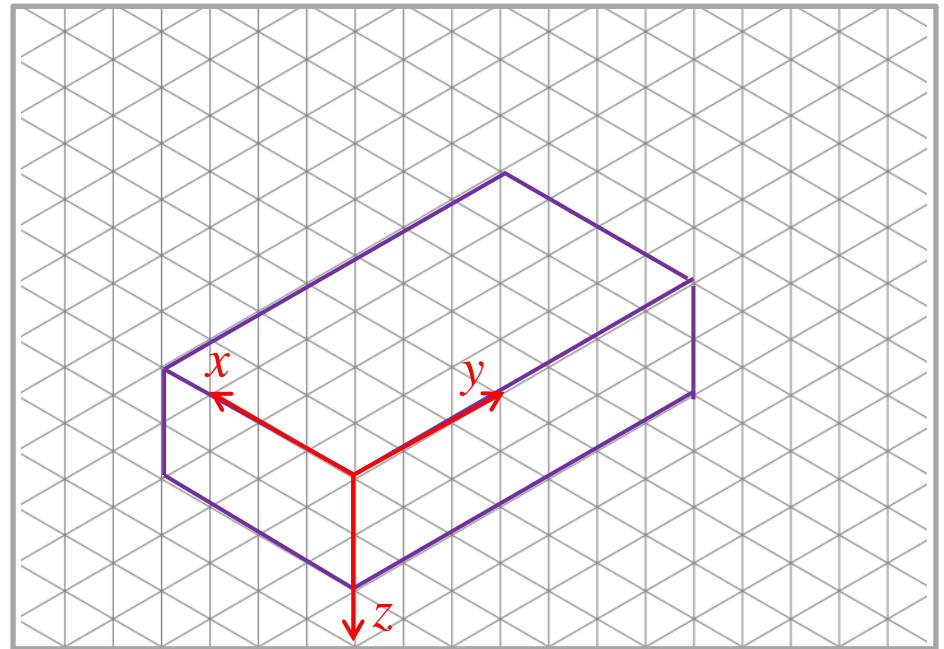


Desenhando a caixa auxiliar

Vistas ortográficas

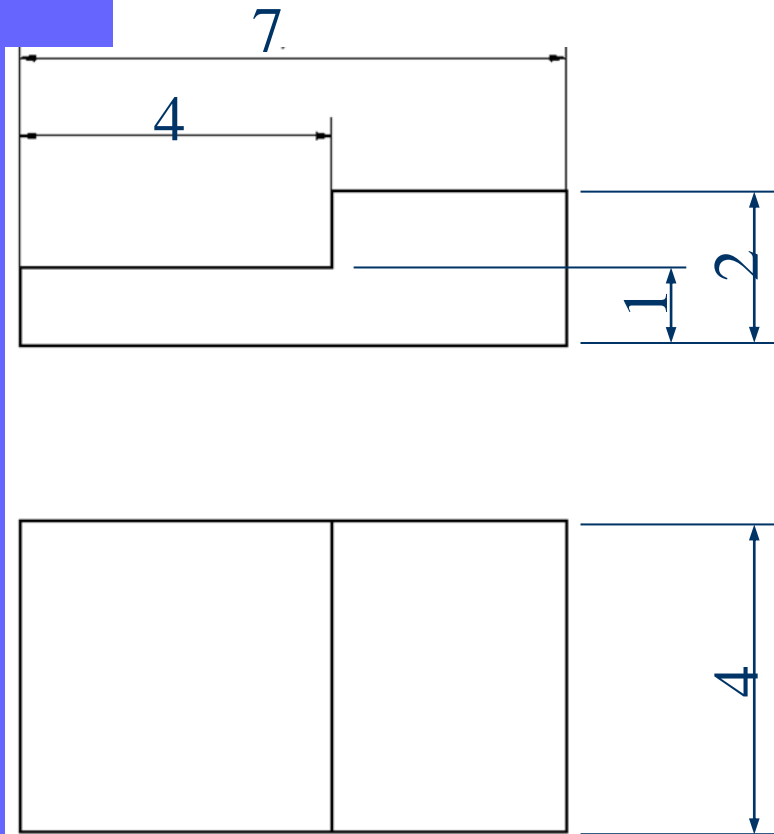


Perspectiva Isométrica - 1

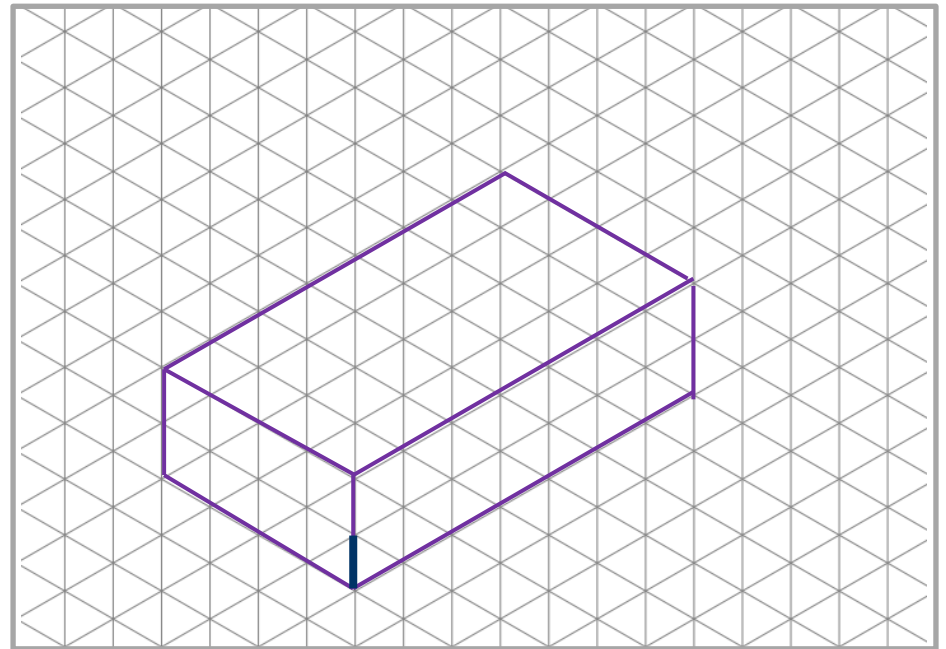


Desenhando a caixa auxiliar

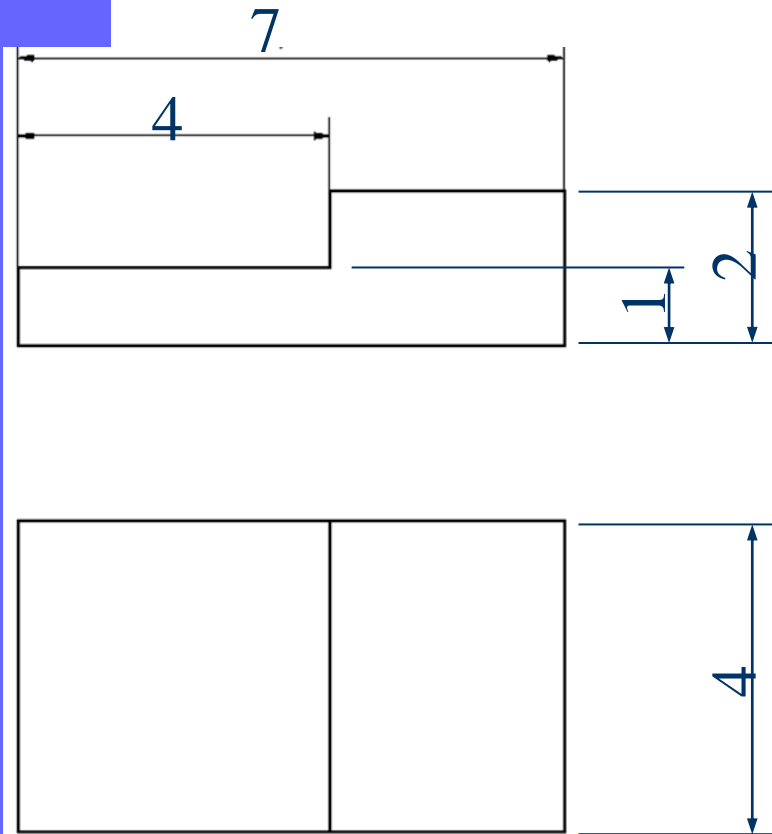
Vistas ortográficas



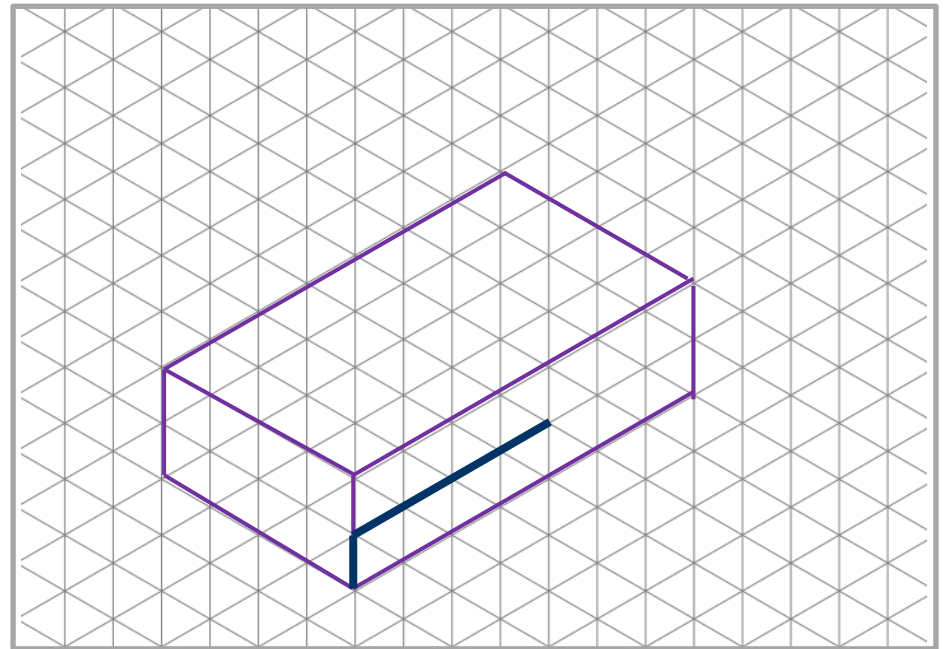
Perspectiva Isométrica - 1



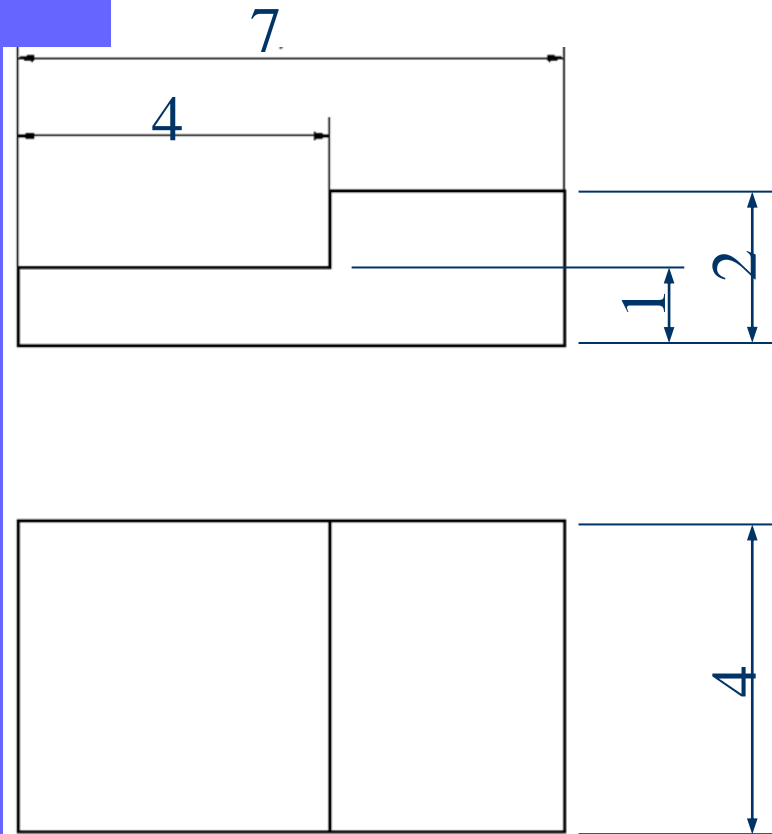
Vistas ortográficas



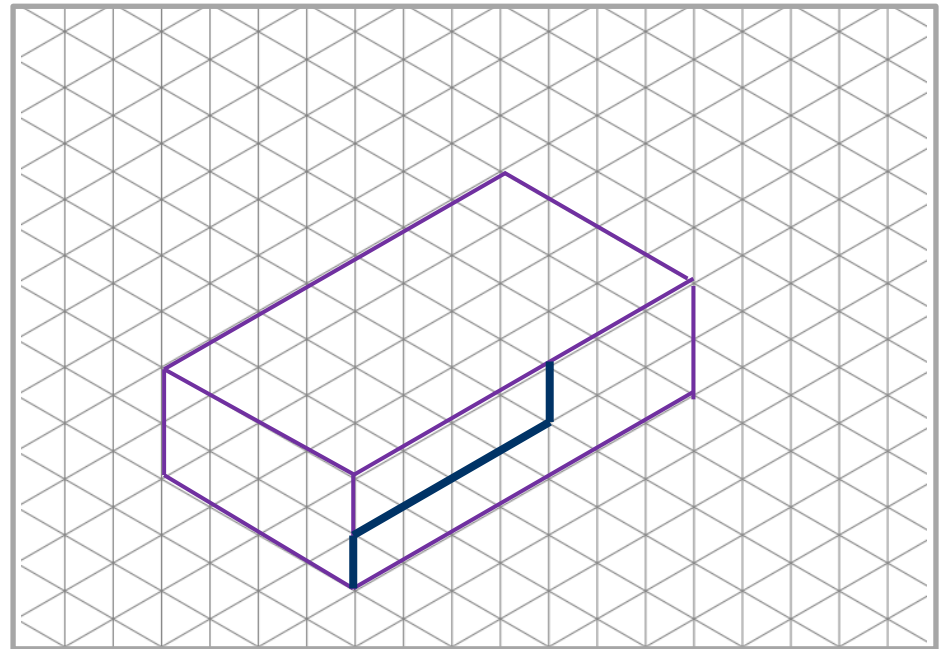
Perspectiva Isométrica - 1



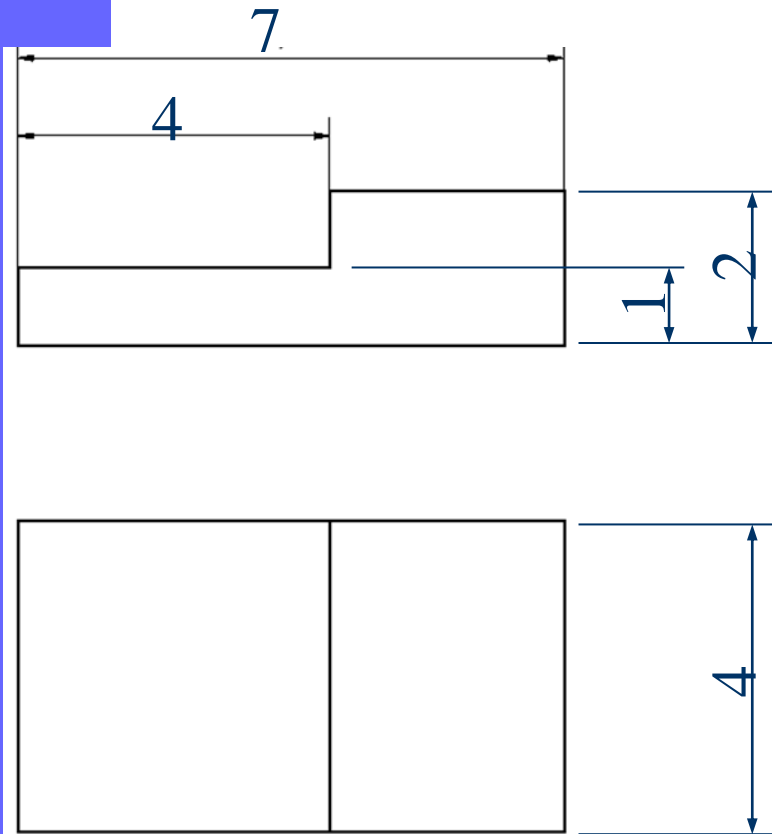
Vistas ortográficas



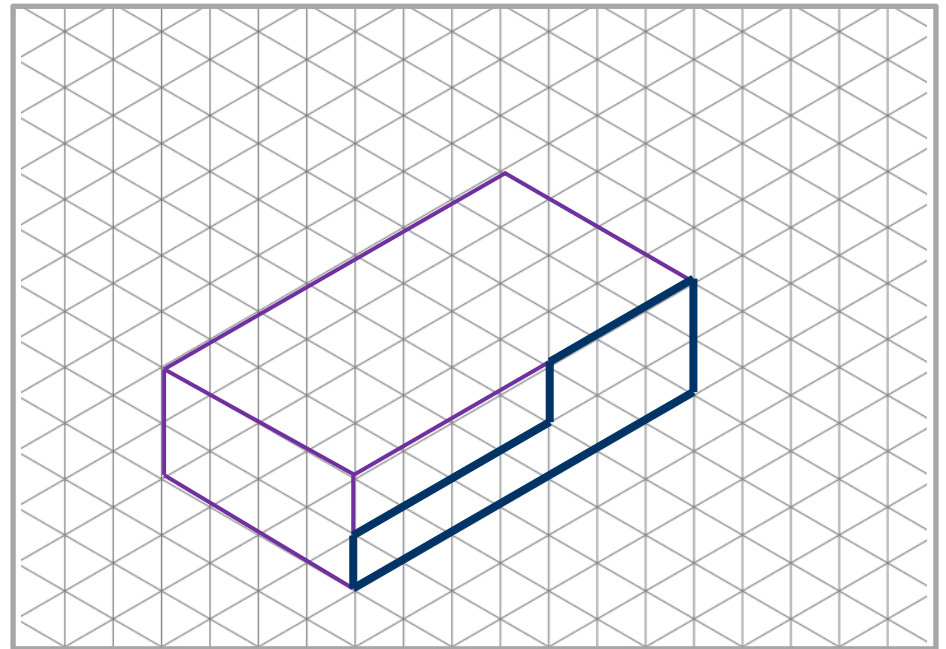
Perspectiva Isométrica - 1



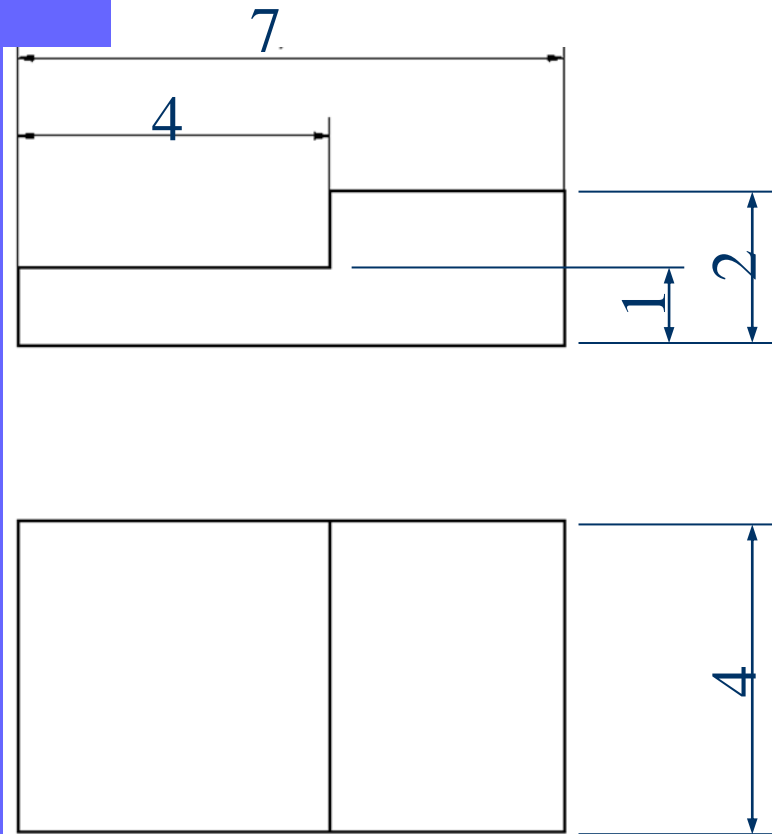
Vistas ortográficas



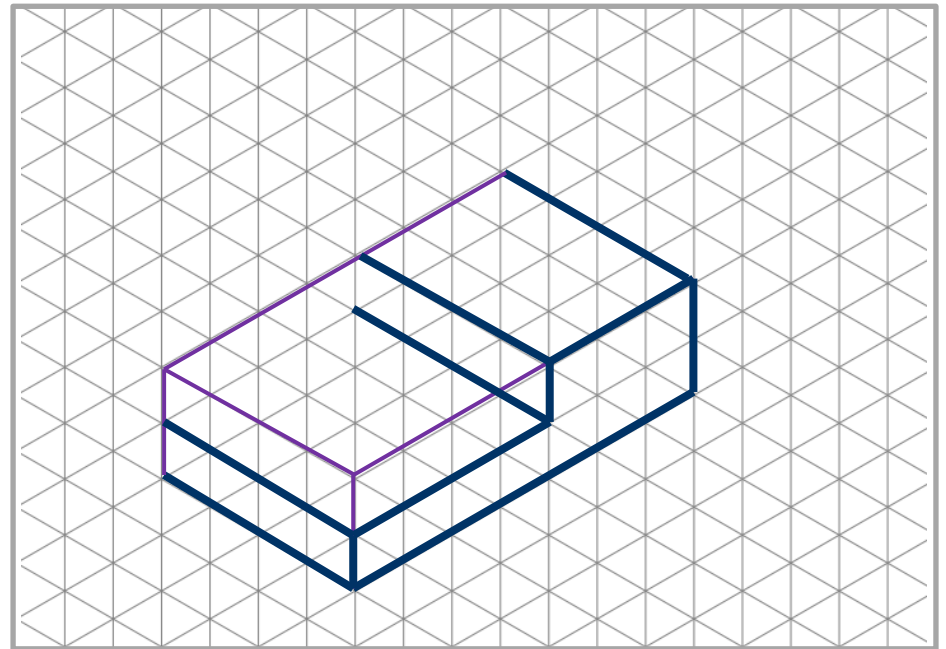
Perspectiva Isométrica - 1



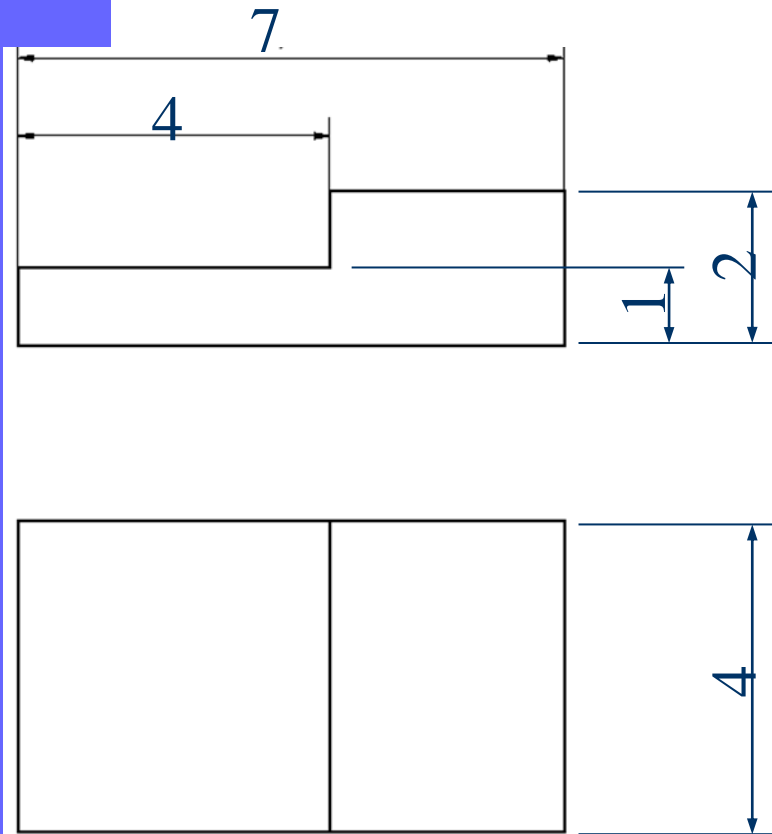
Vistas ortográficas



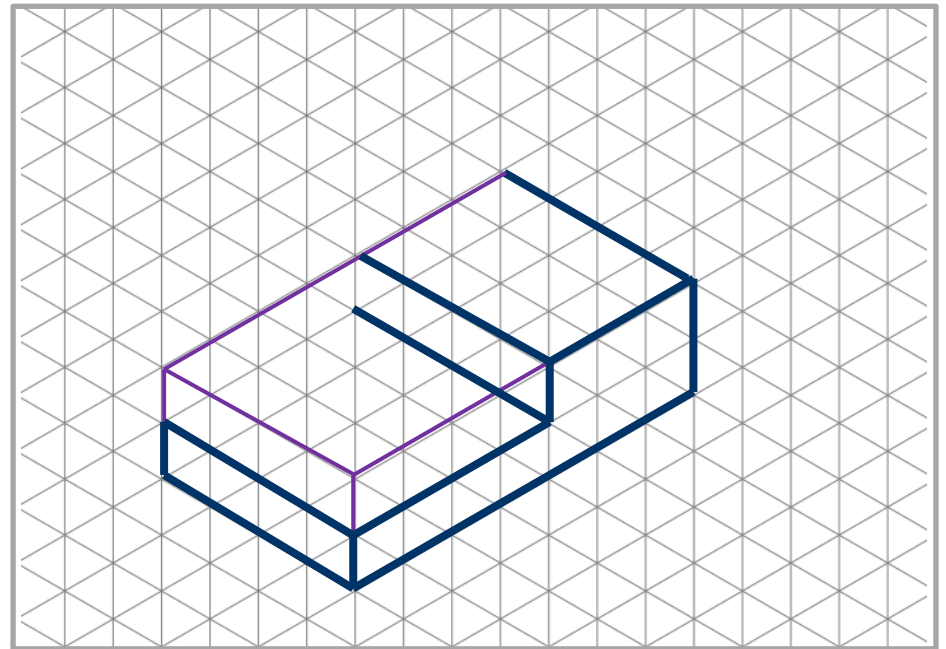
Perspectiva Isométrica - 1



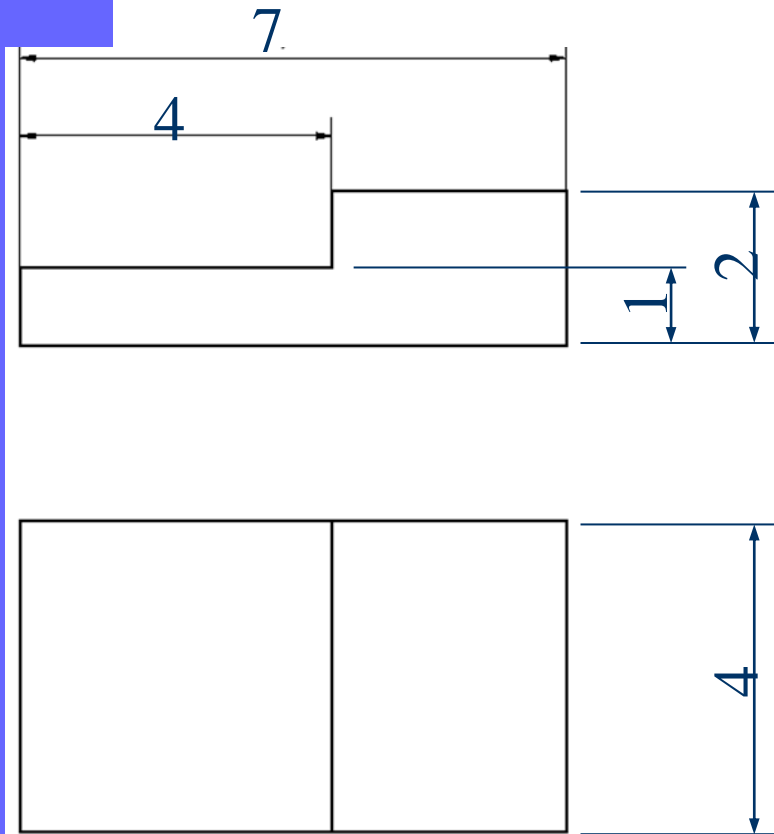
Vistas ortográficas



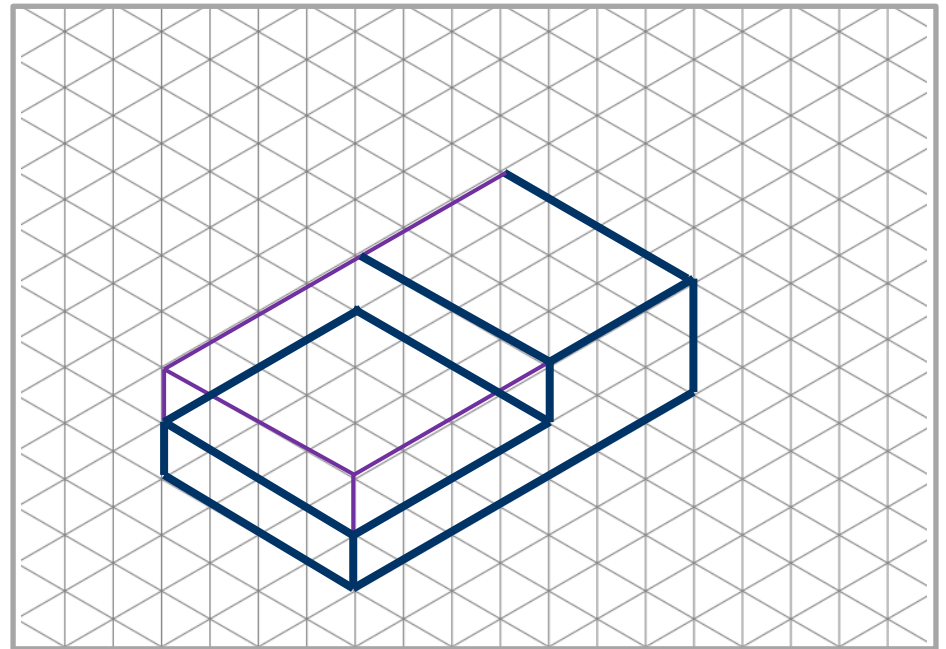
Perspectiva Isométrica - 1



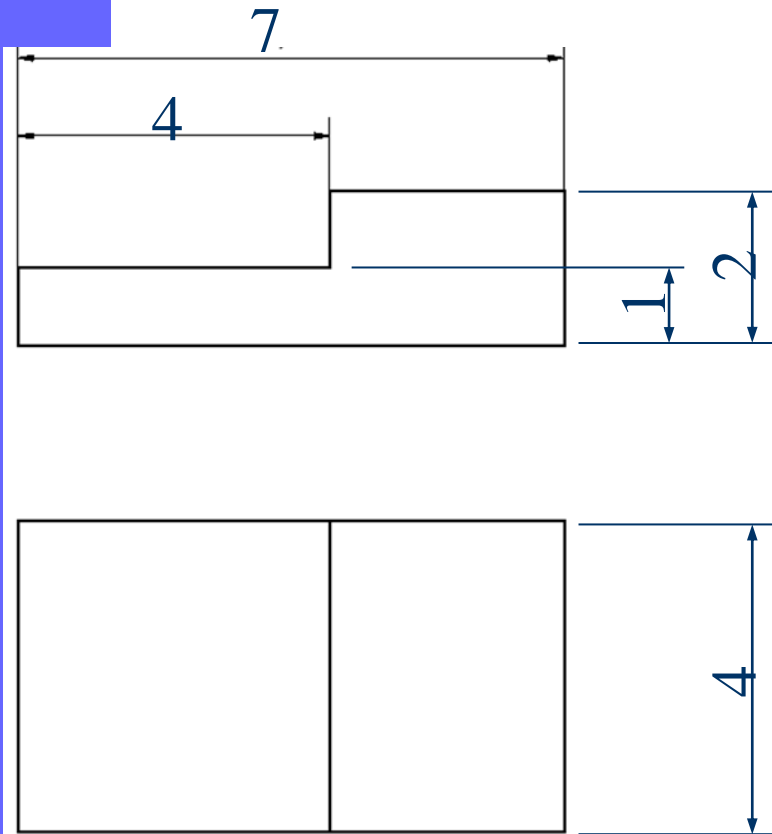
Vistas ortográficas



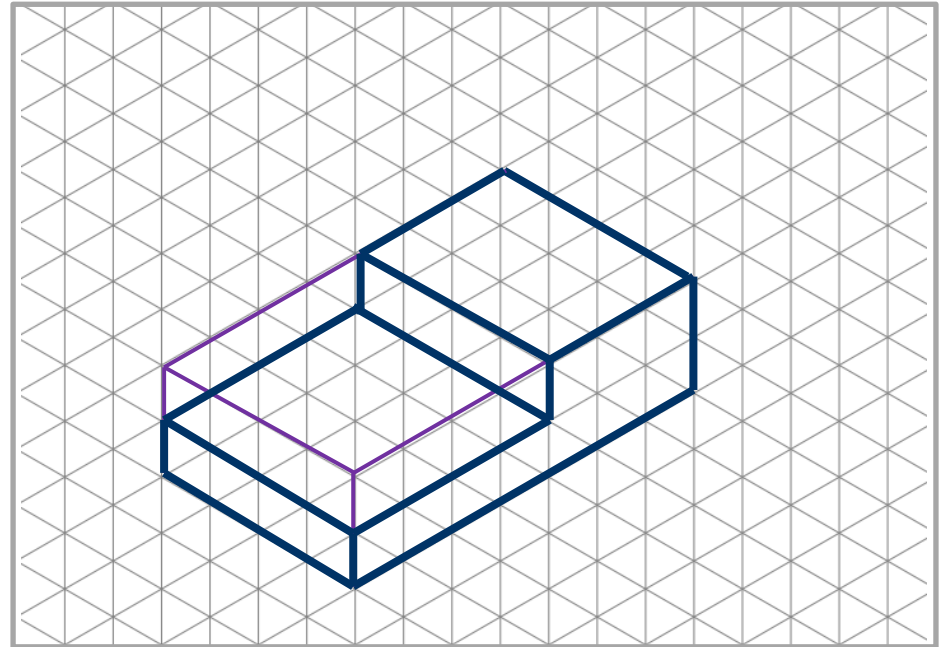
Perspectiva Isométrica - 1



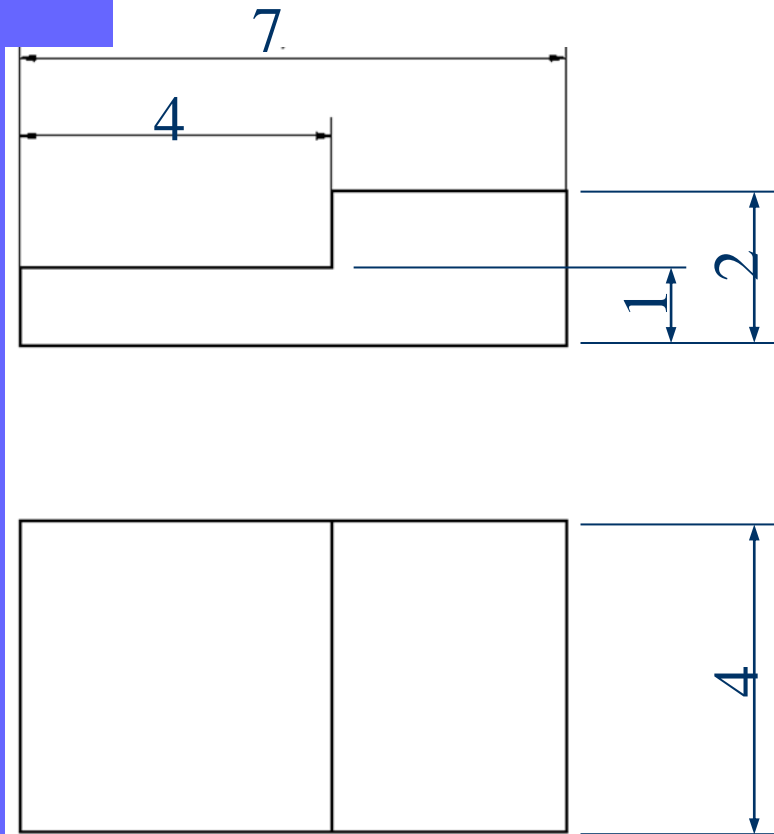
Vistas ortográficas



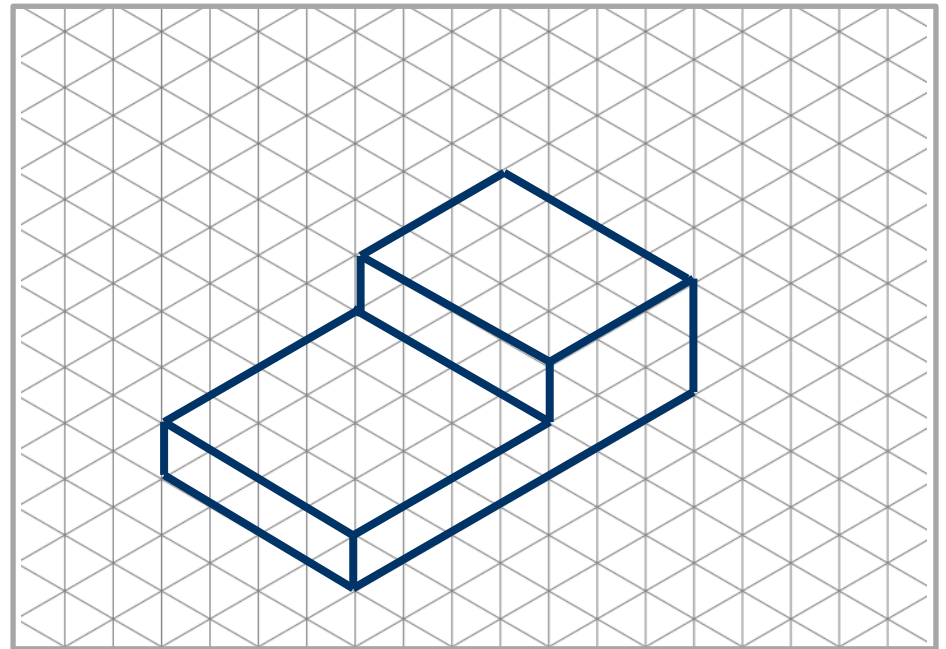
Perspectiva Isométrica - 1



Vistas ortográficas



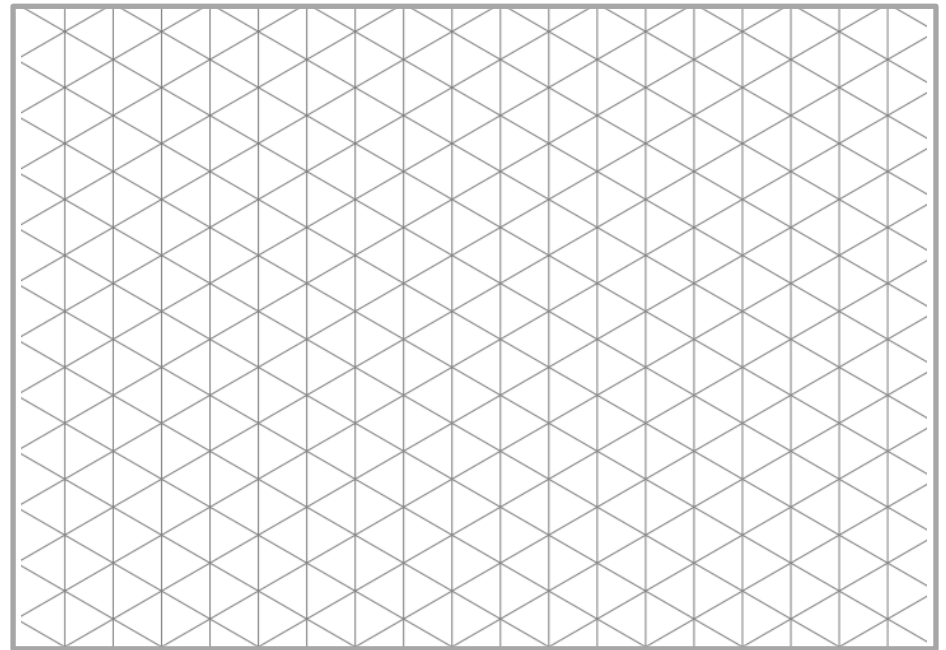
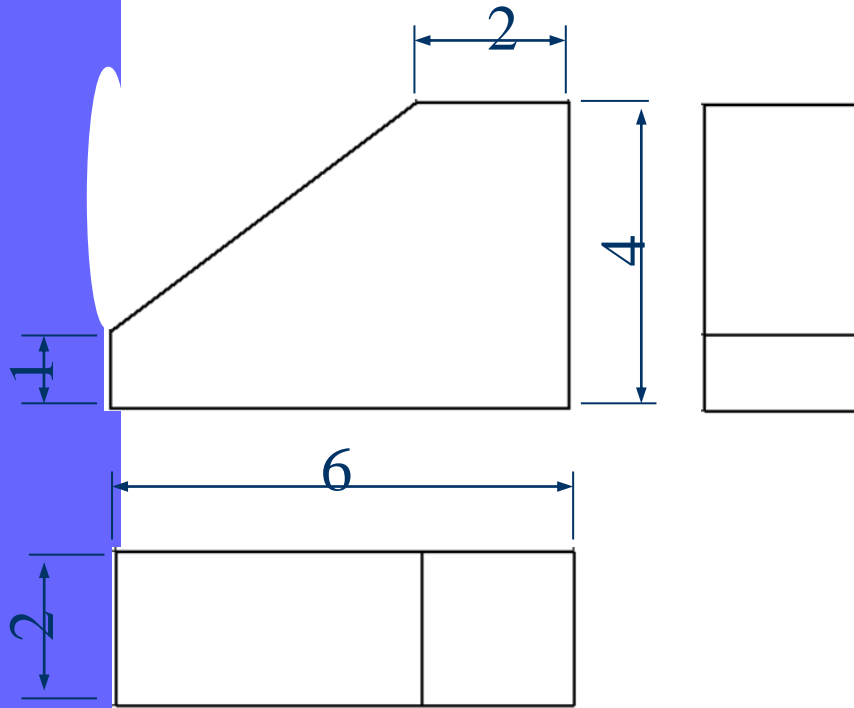
Perspectiva Isométrica - 1



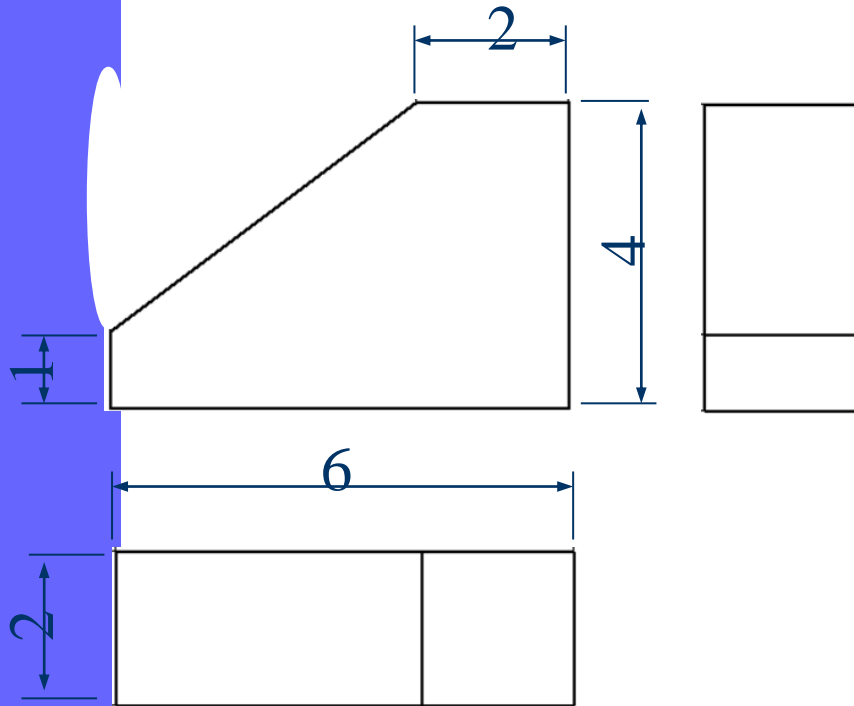
Apagando a caixa auxiliar

Vistas ortográficas

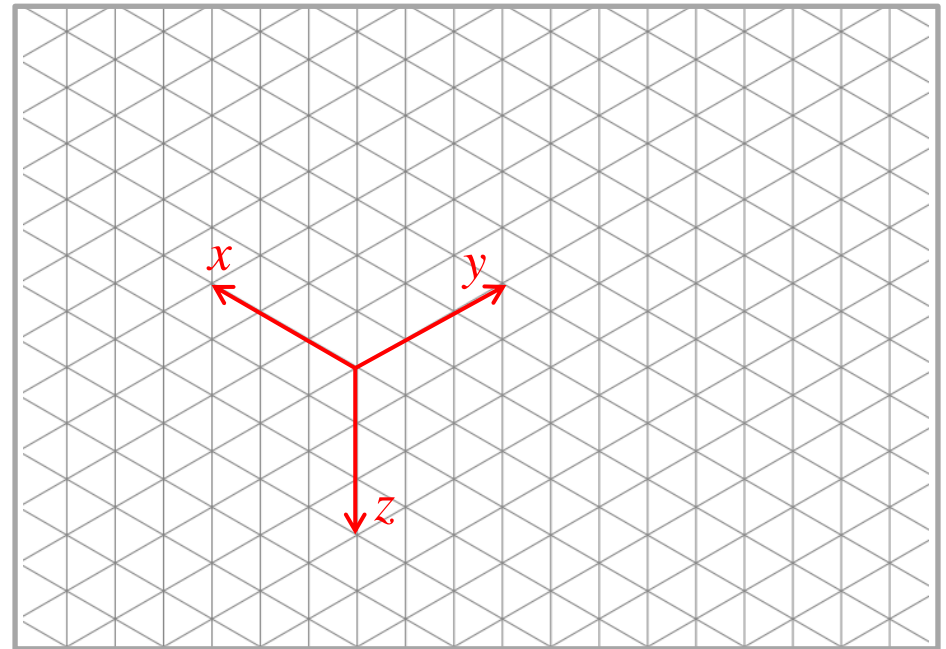
Perspectiva Isométrica - 2



Vistas ortográficas

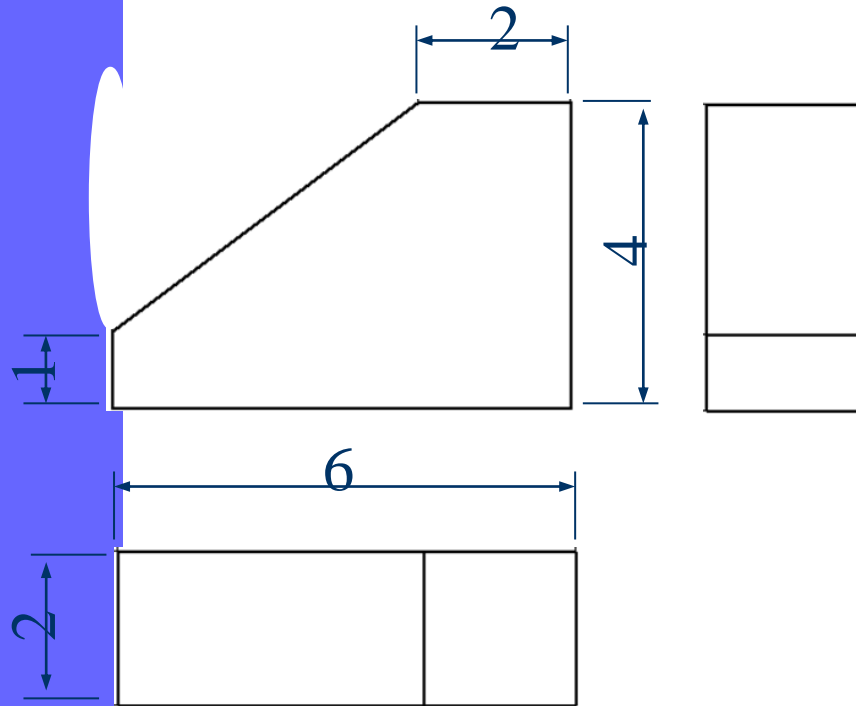


Perspectiva Isométrica - 2

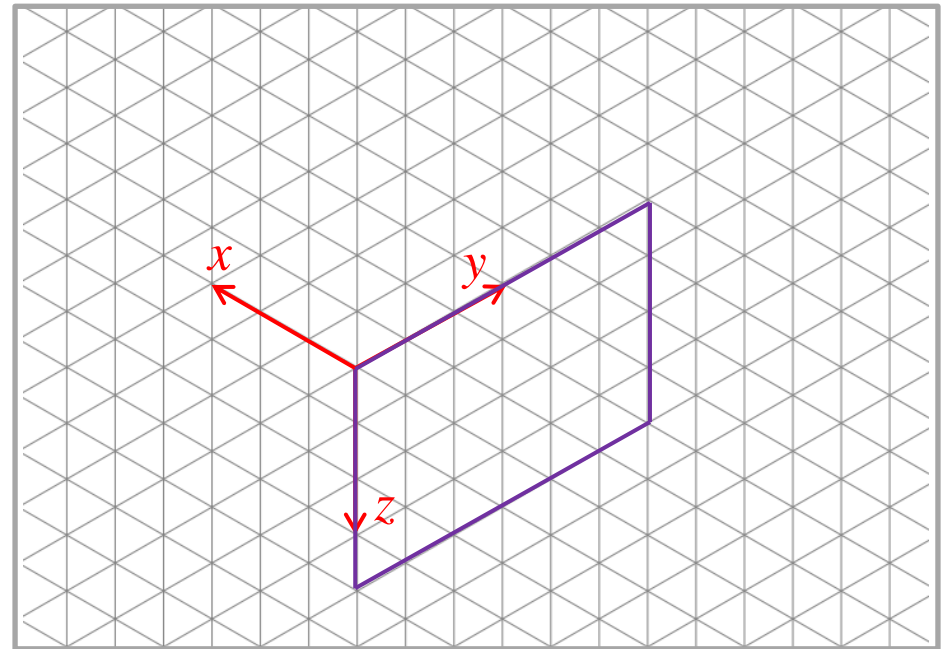


Eixos isométricos

Vistas ortográficas

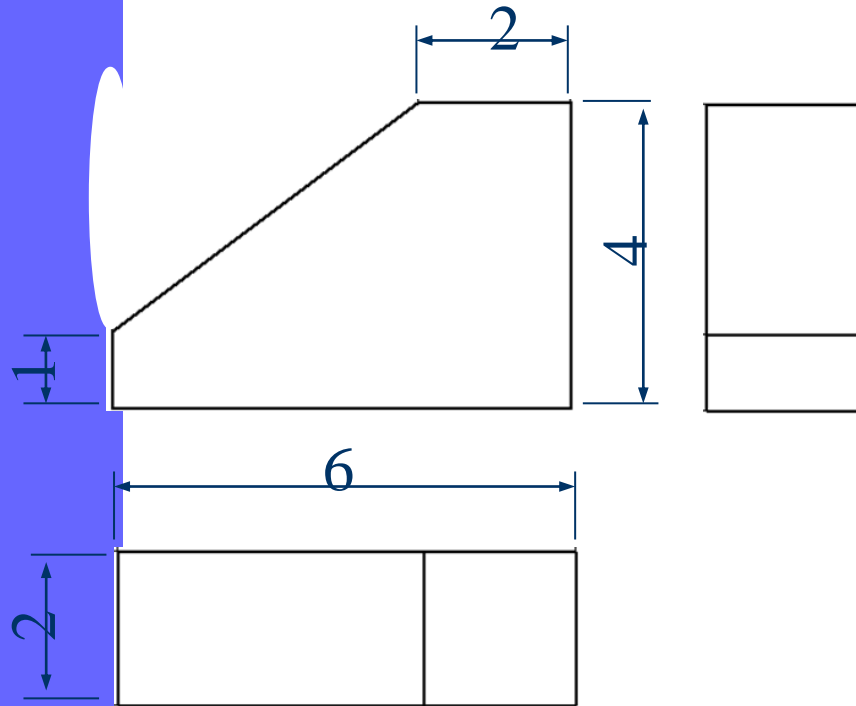


Perspectiva Isométrica - 2

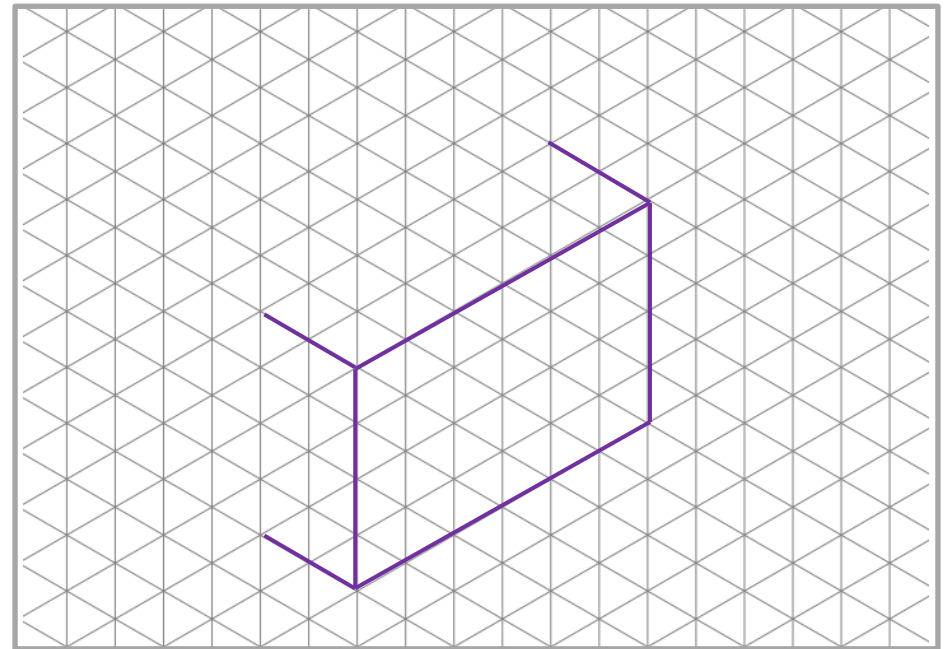


Desenhando a caixa auxiliar

Vistas ortográficas

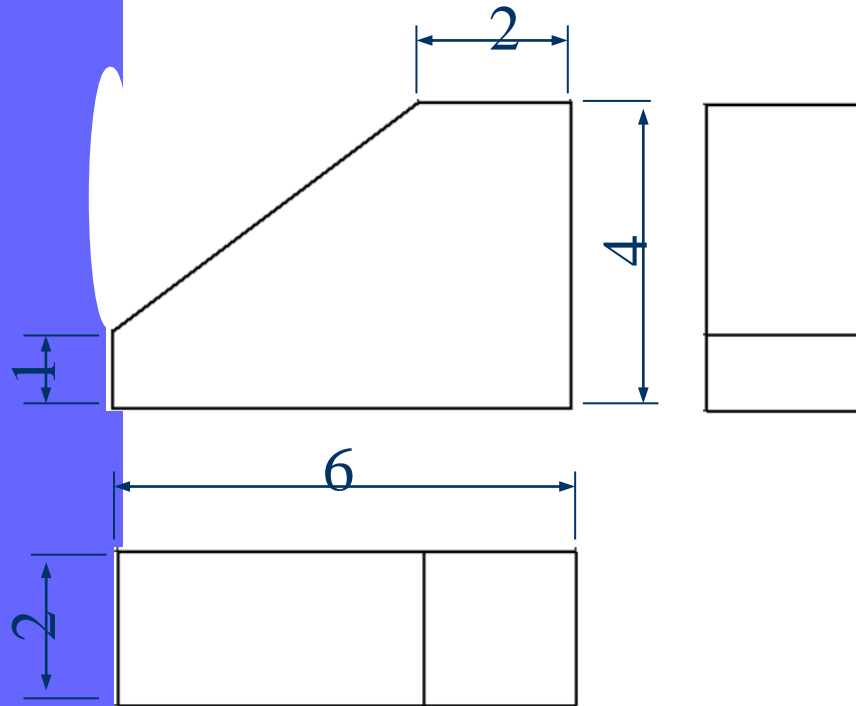


Perspectiva Isométrica - 2

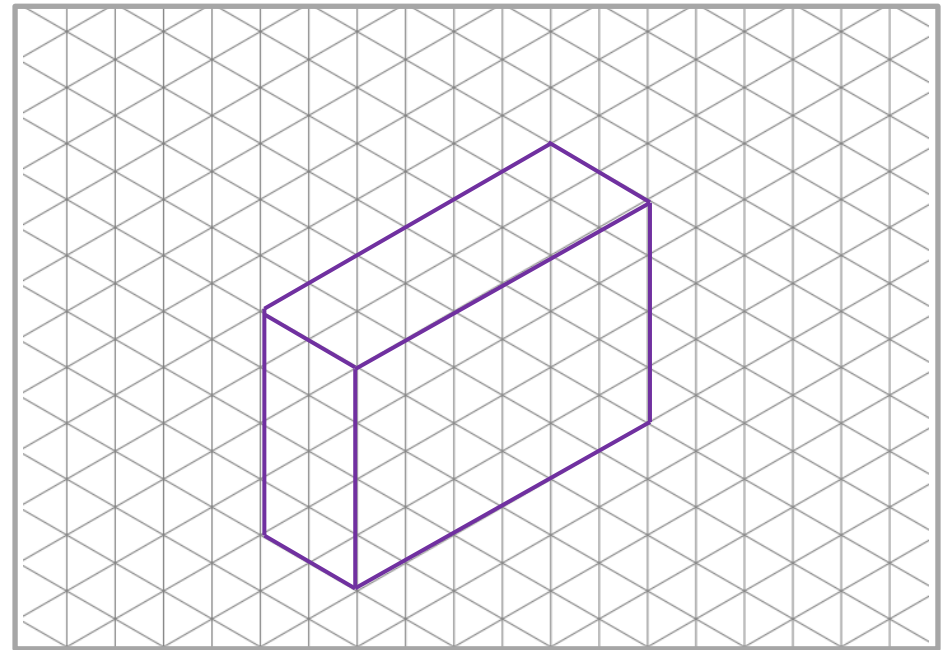


Desenhando a caixa auxiliar

Vistas ortográficas

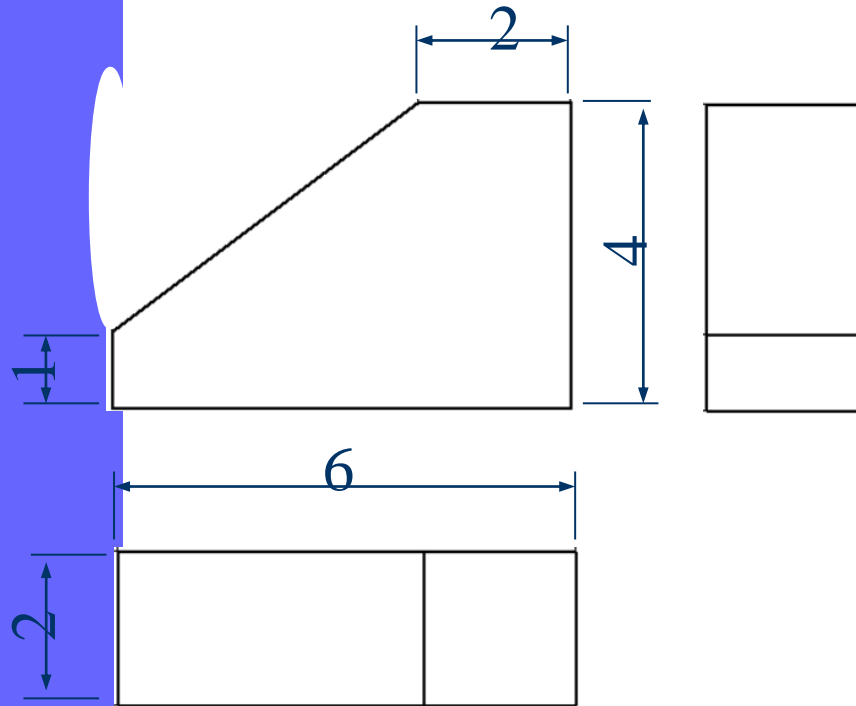


Perspectiva Isométrica - 2

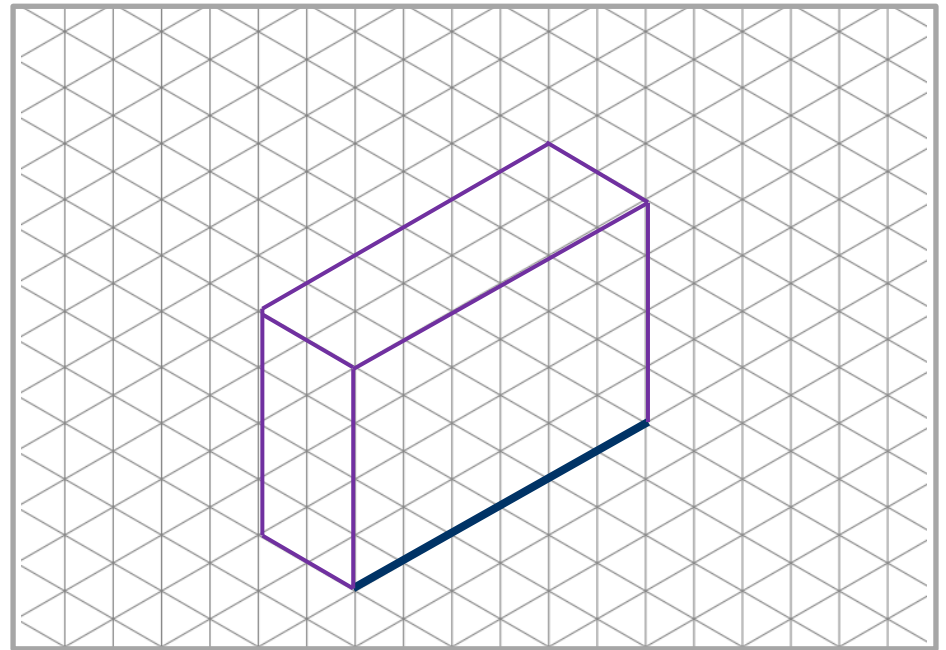


Desenhando a caixa auxiliar

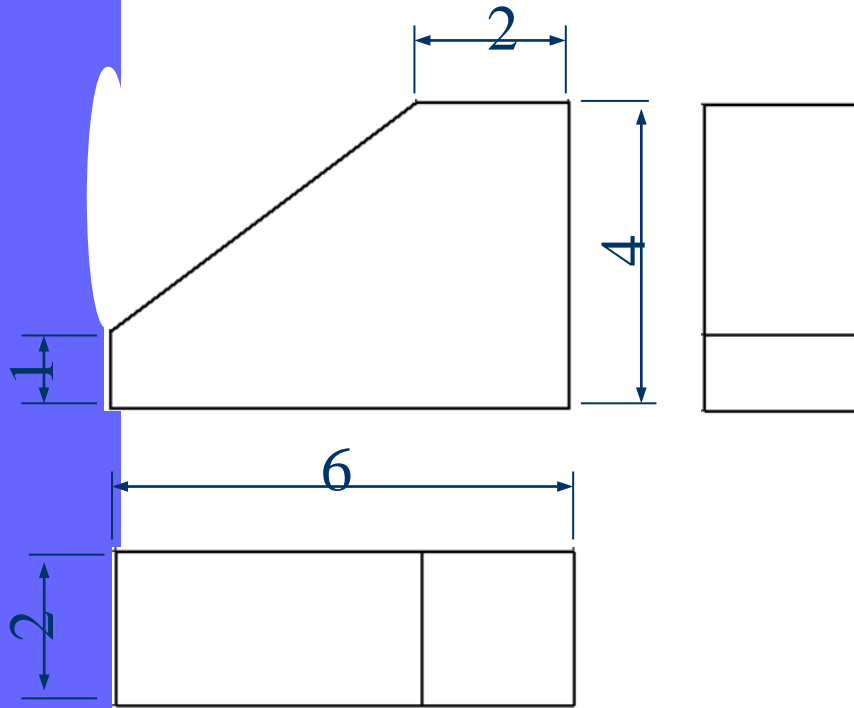
Vistas ortográficas



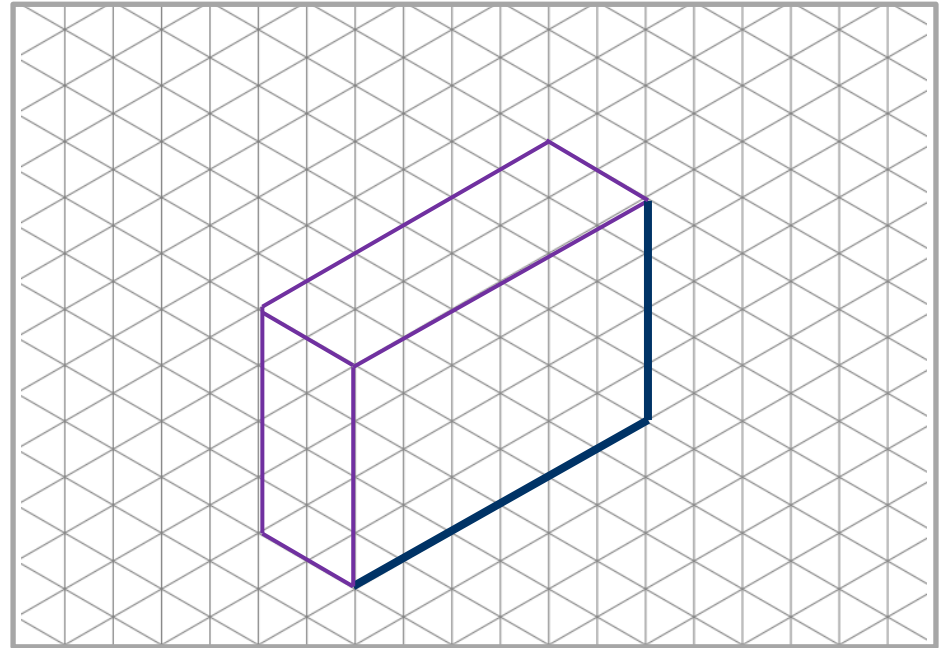
Perspectiva Isométrica - 2



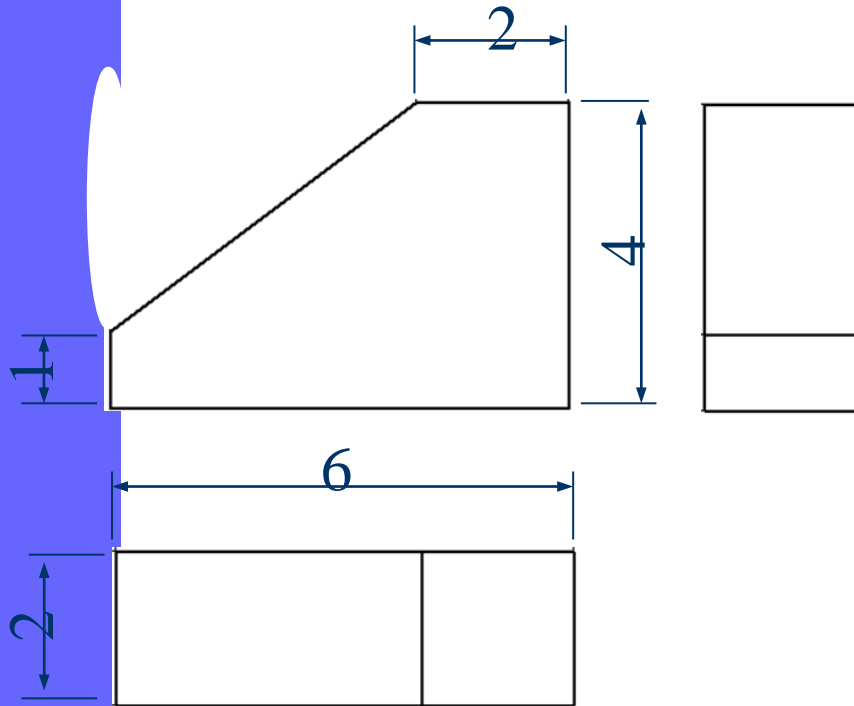
Vistas ortográficas



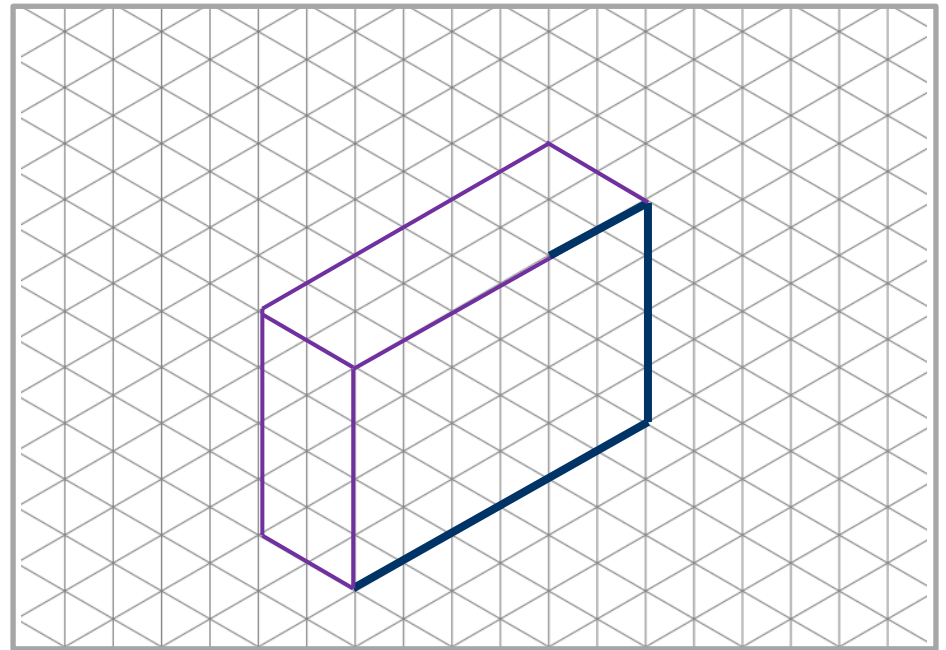
Perspectiva Isométrica - 2



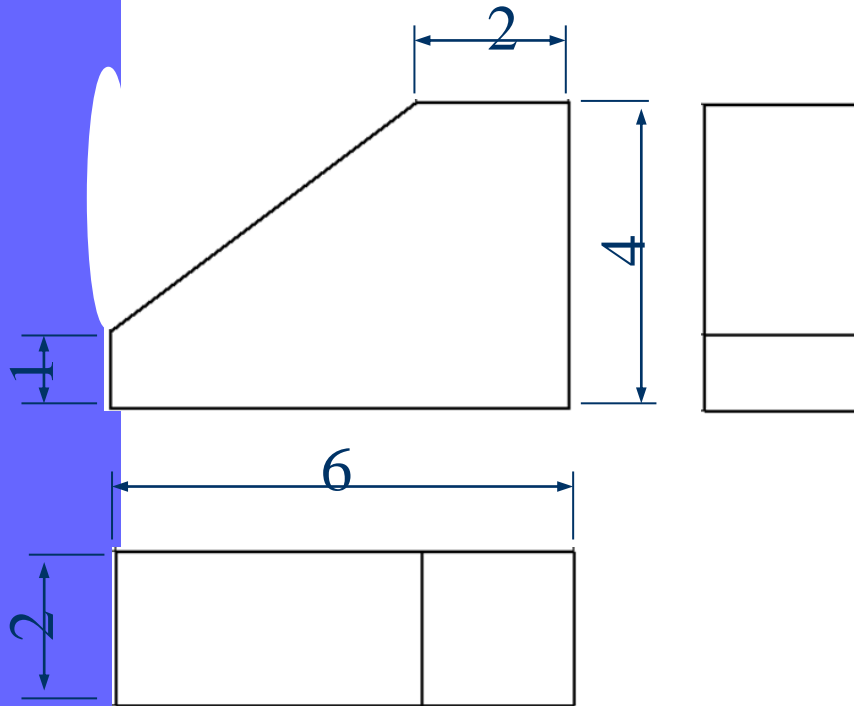
Vistas ortográficas



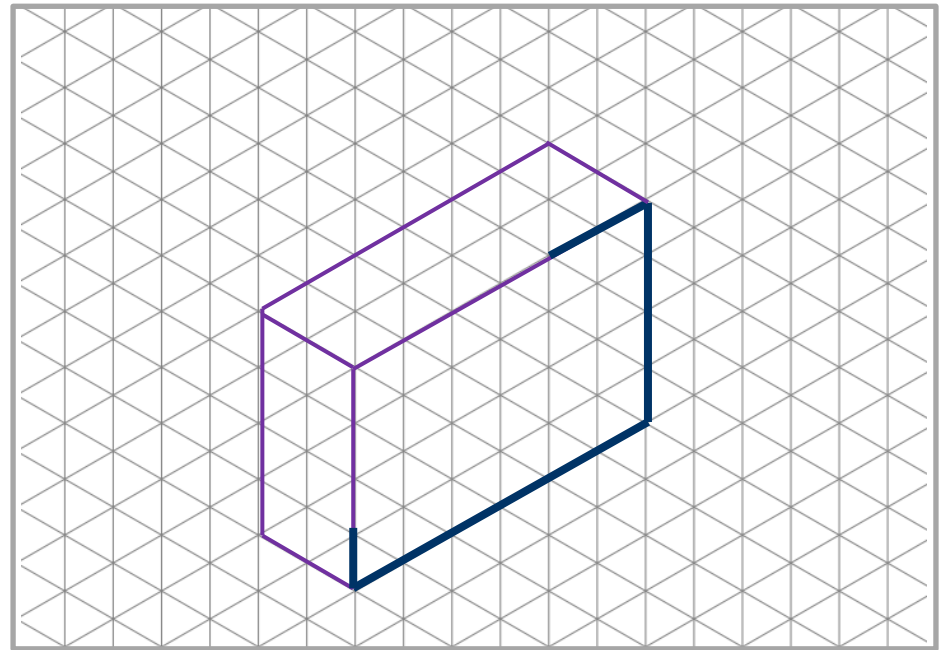
Perspectiva Isométrica - 2



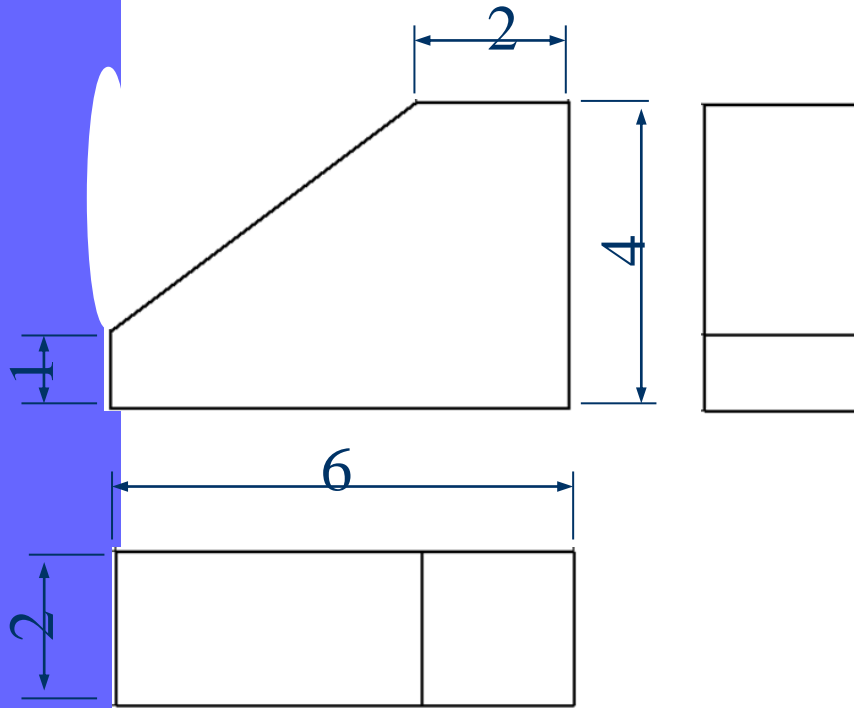
Vistas ortográficas



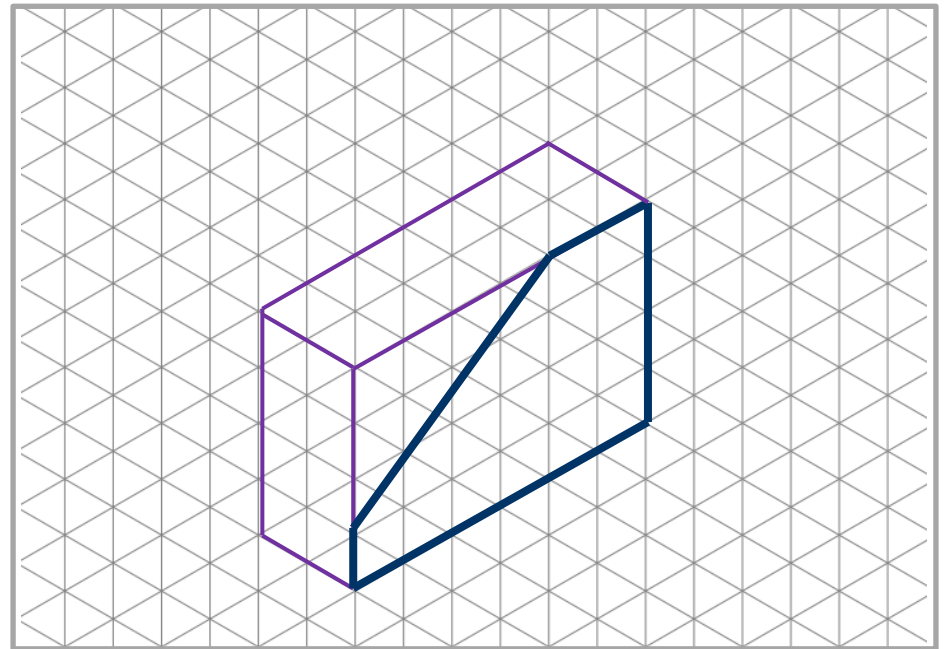
Perspectiva Isométrica - 2



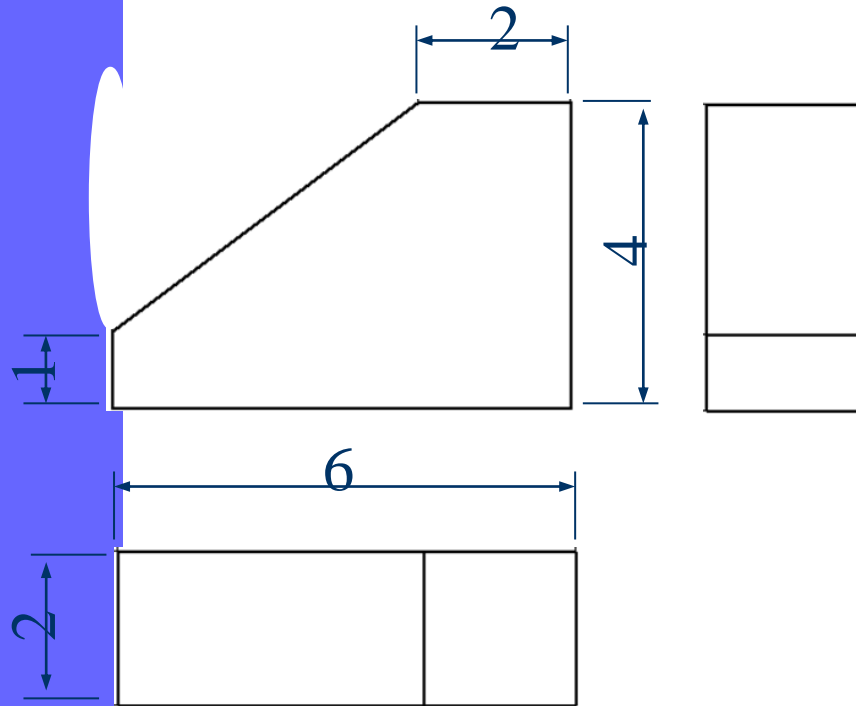
Vistas ortográficas



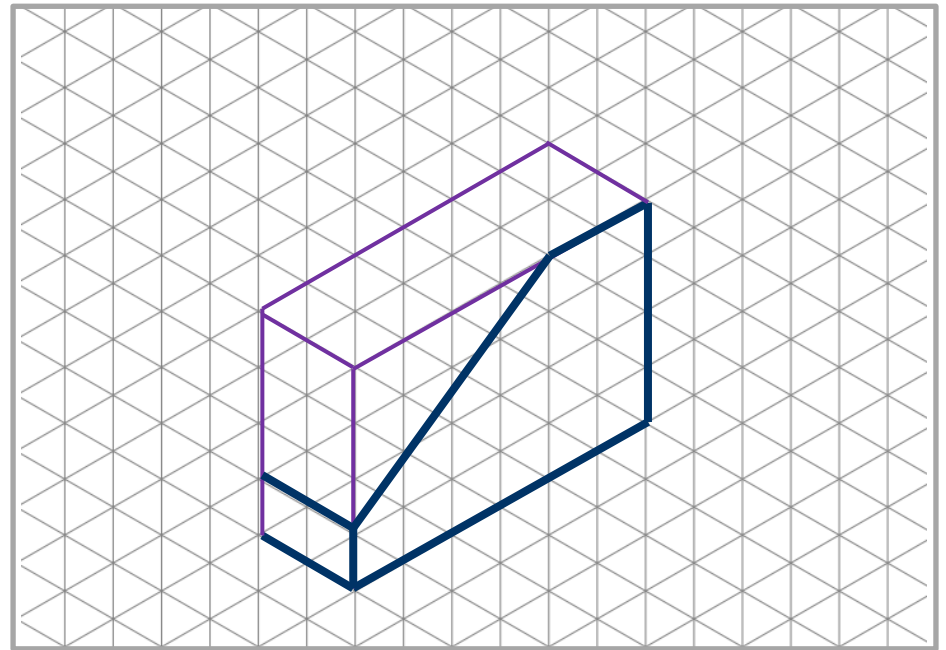
Perspectiva Isométrica - 2



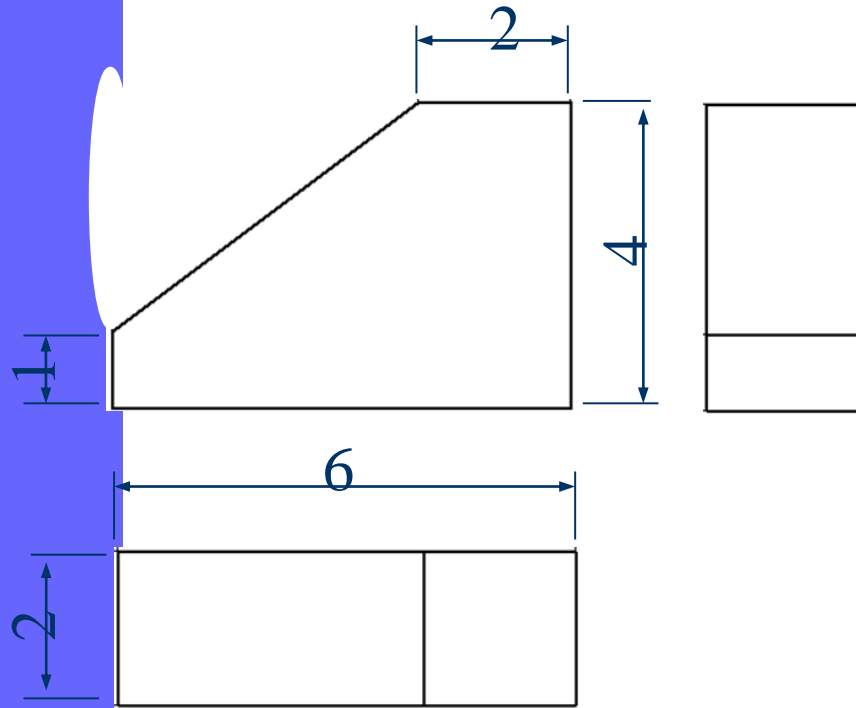
Vistas ortográficas



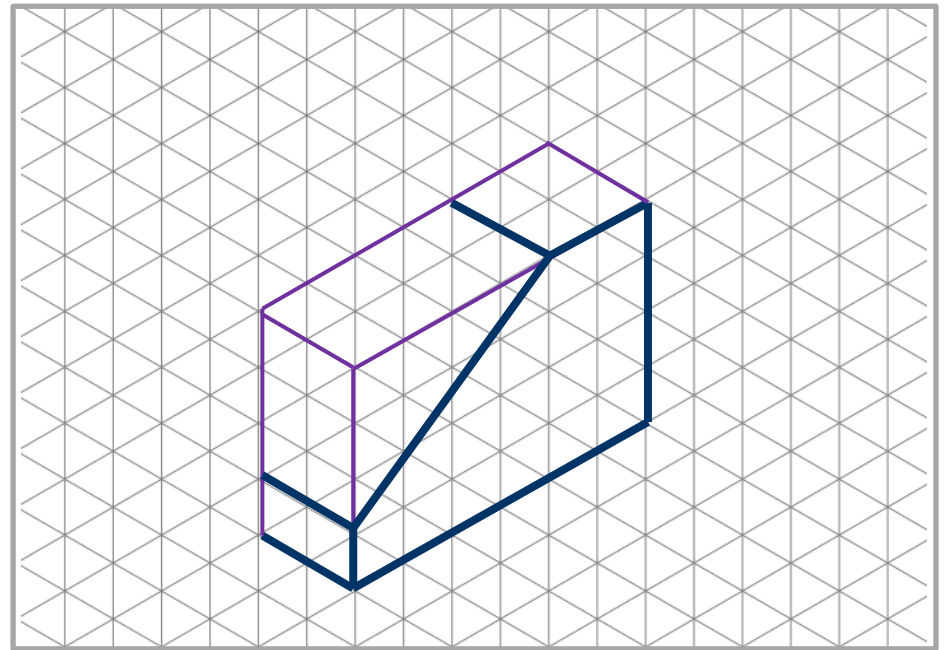
Perspectiva Isométrica - 2



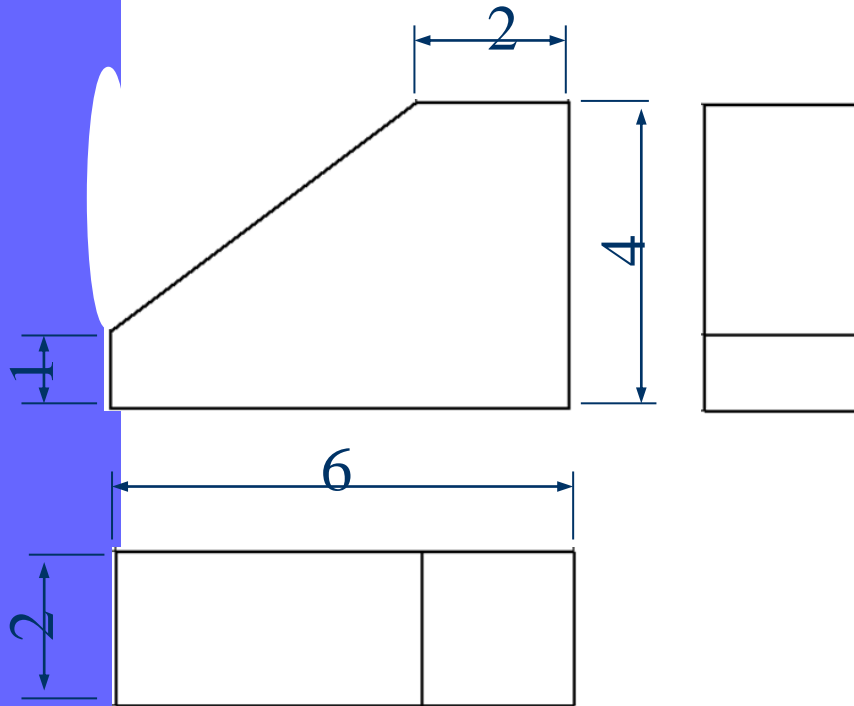
Vistas ortográficas



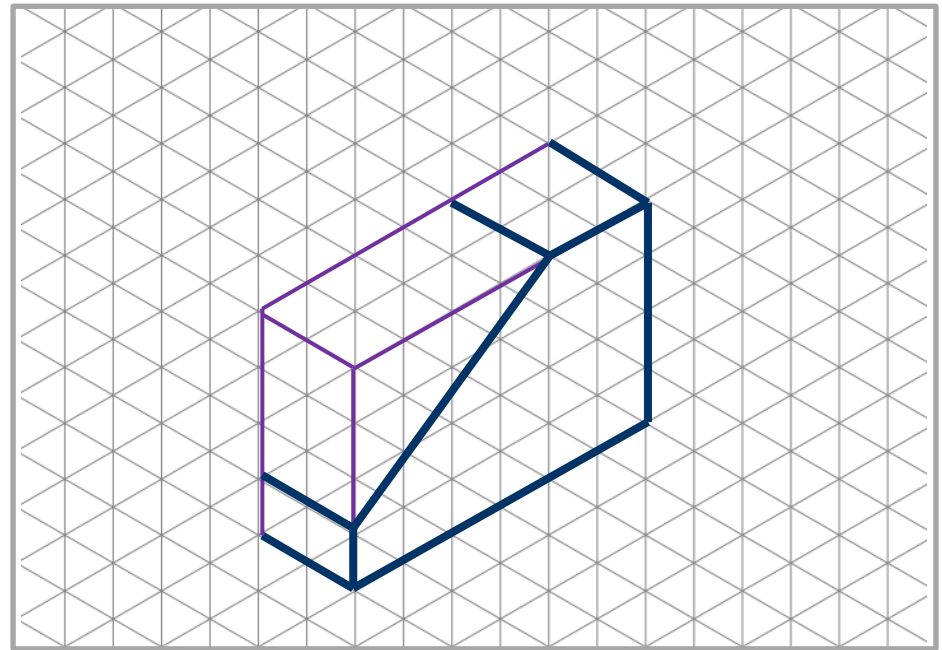
Perspectiva Isométrica - 2



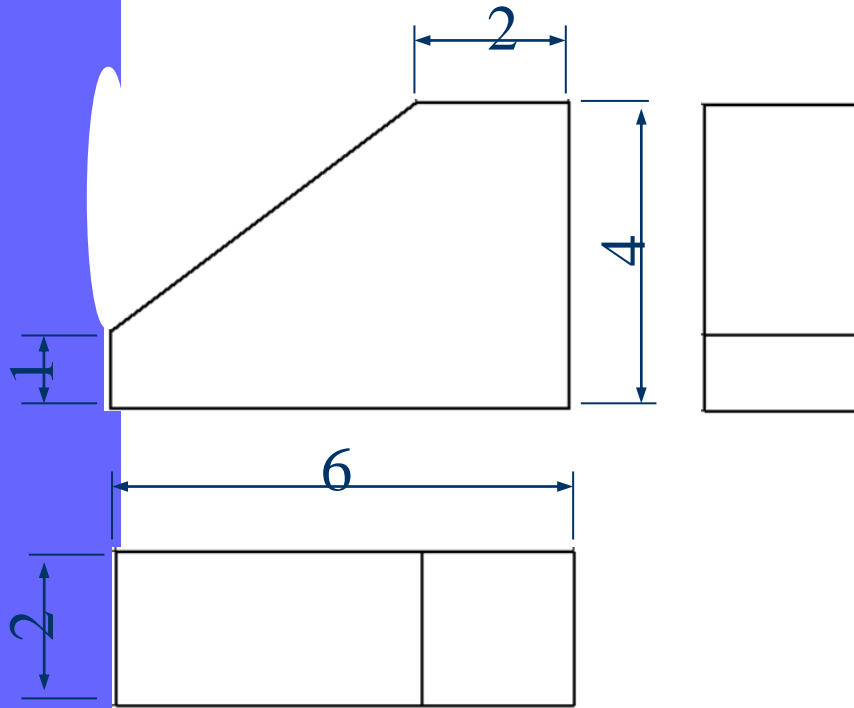
Vistas ortográficas



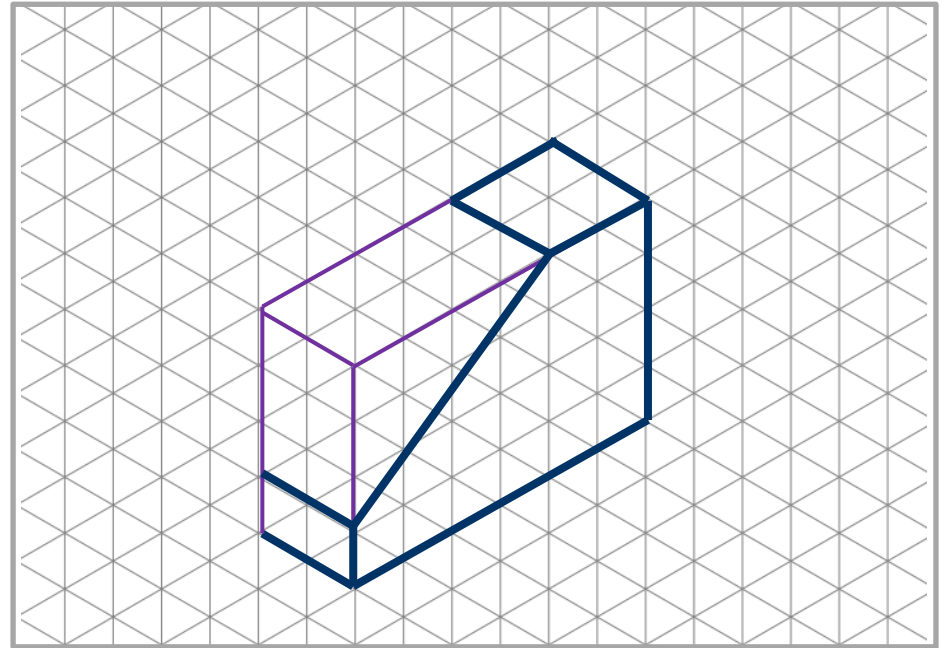
Perspectiva Isométrica - 2



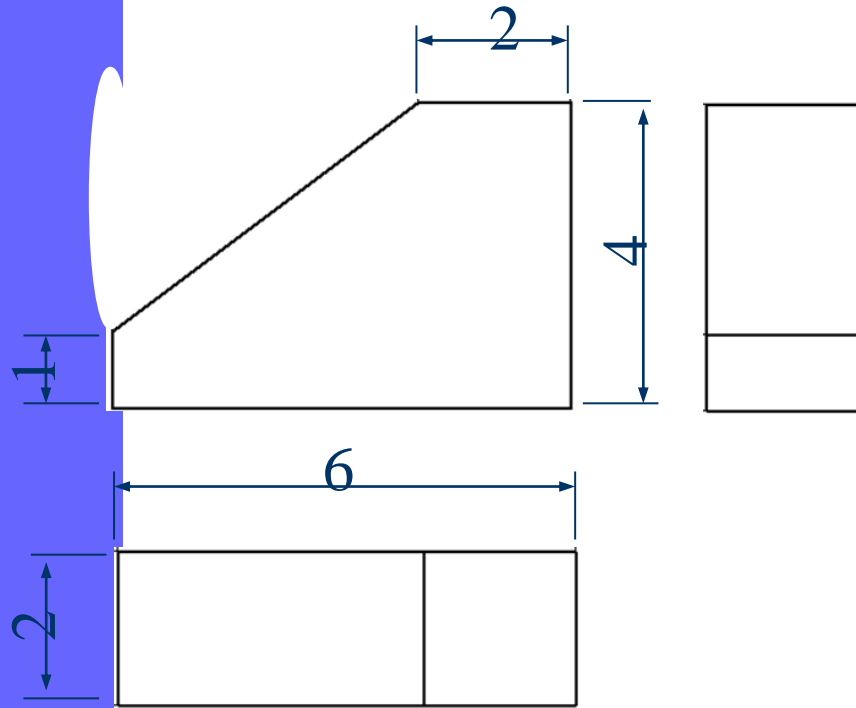
Vistas ortográficas



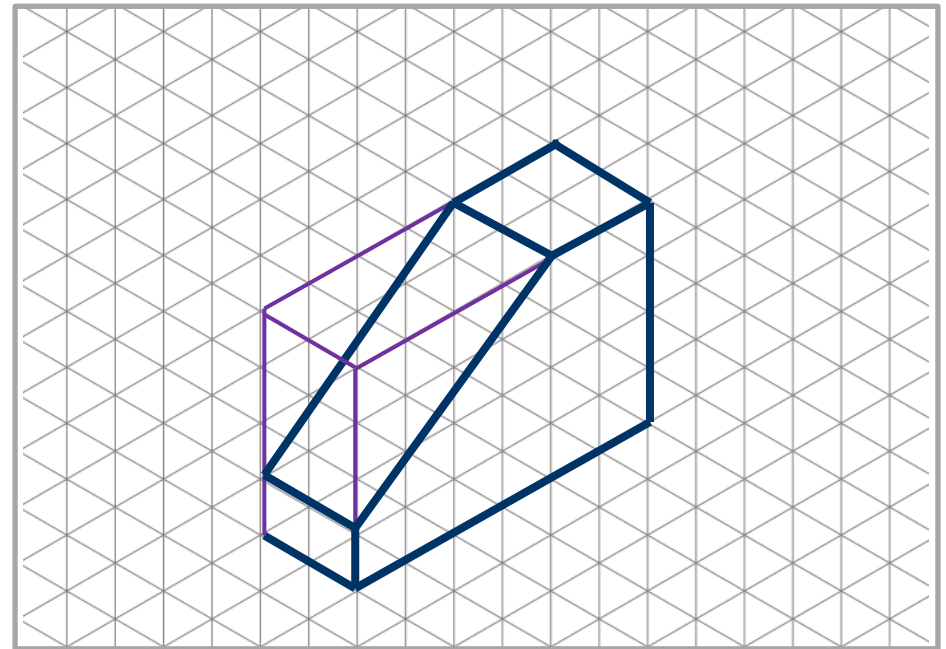
Perspectiva Isométrica - 2



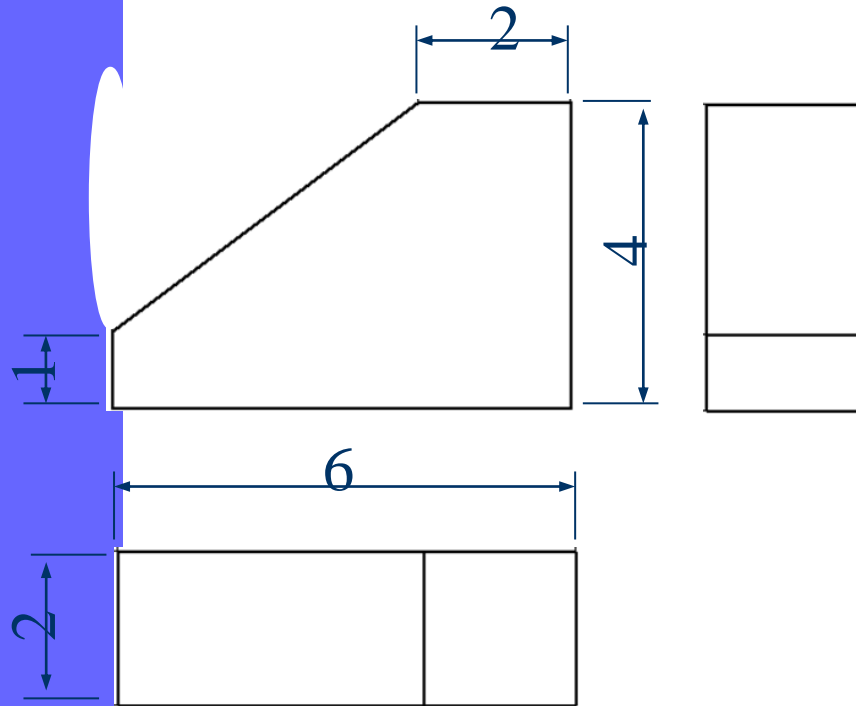
Vistas ortográficas



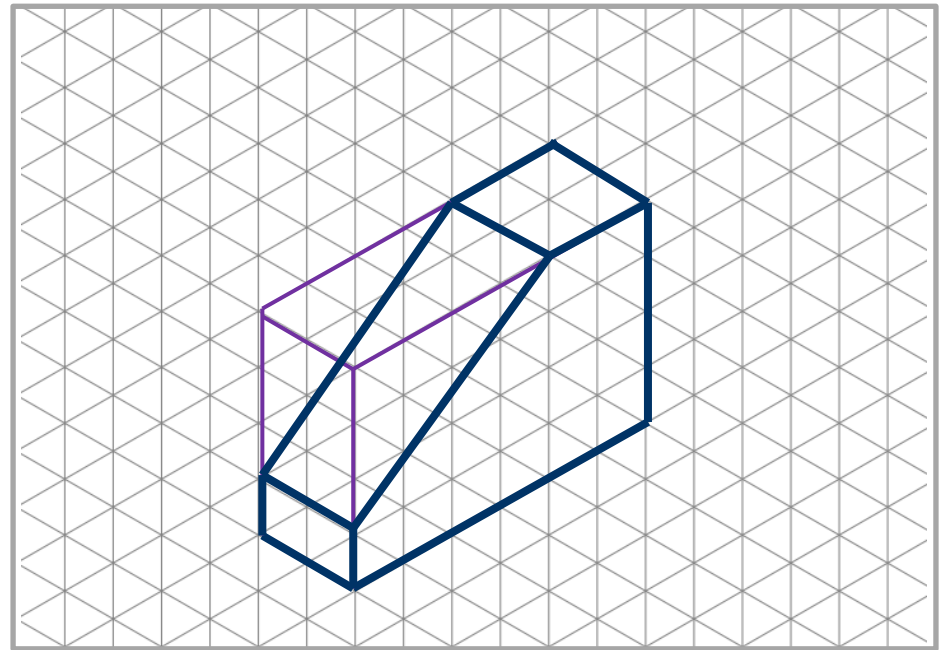
Perspectiva Isométrica - 2



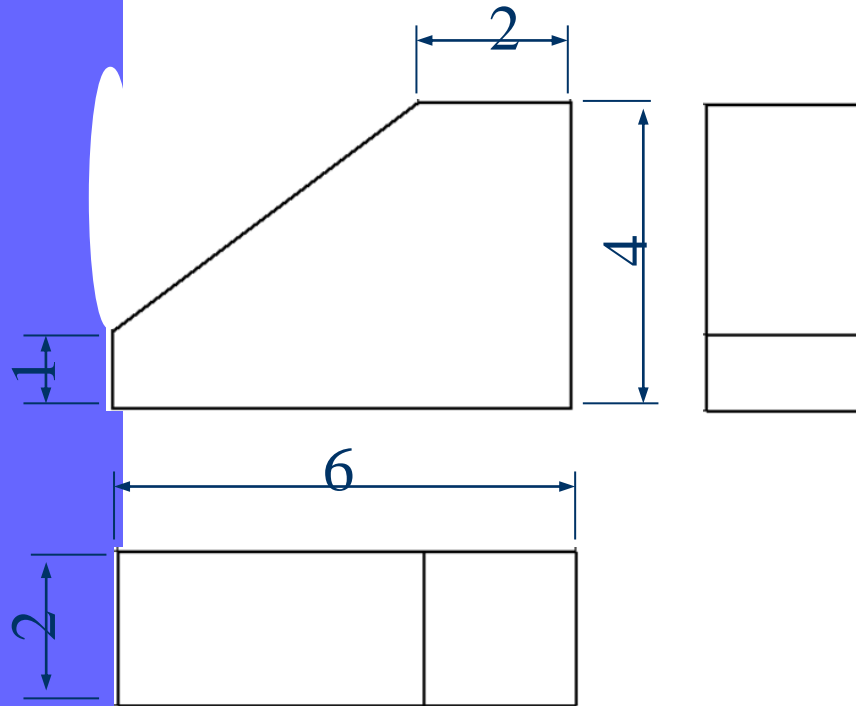
Vistas ortográficas



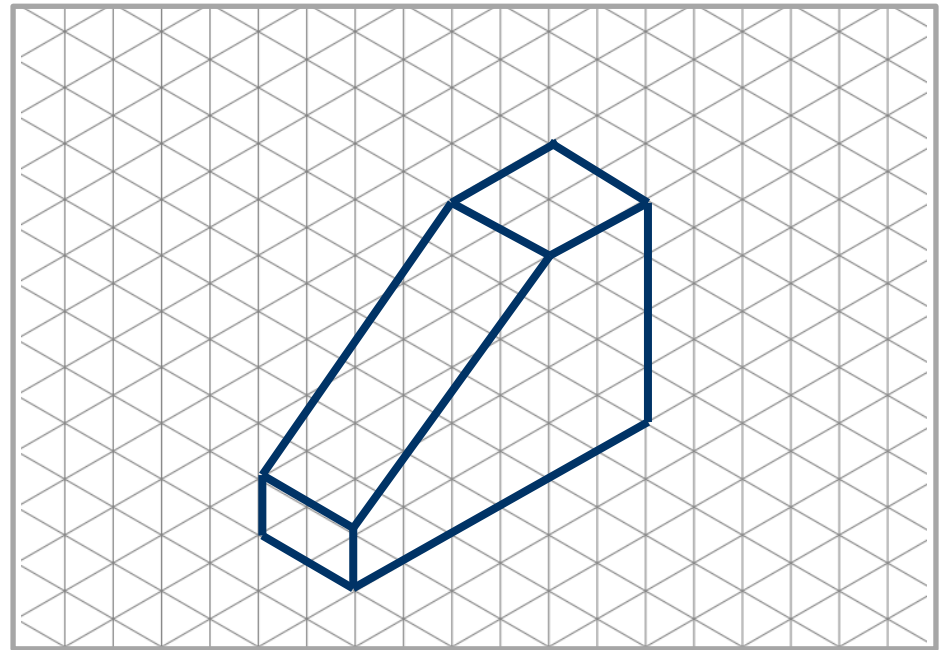
Perspectiva Isométrica - 2



Vistas ortográficas



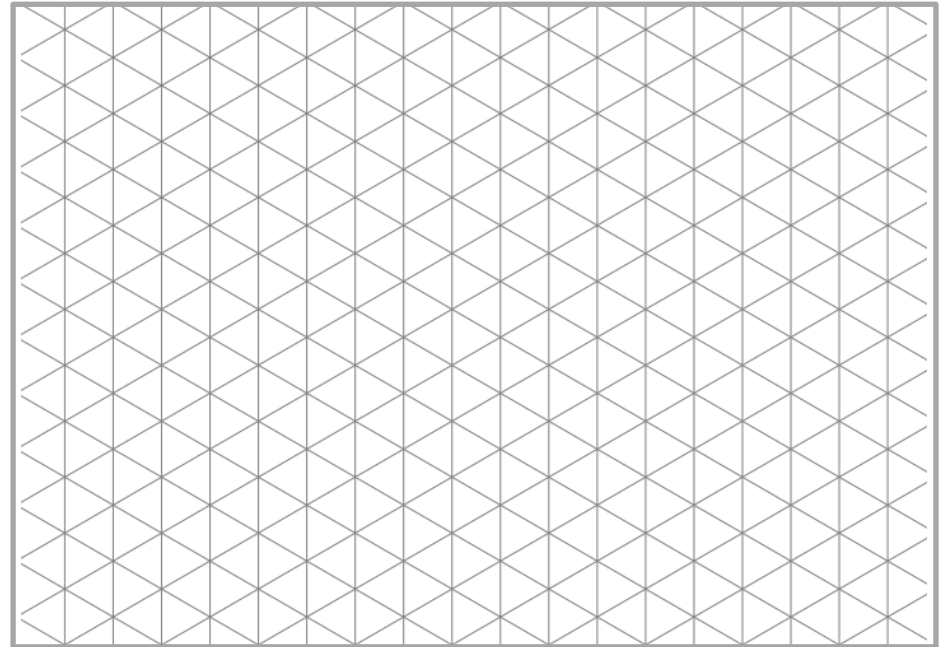
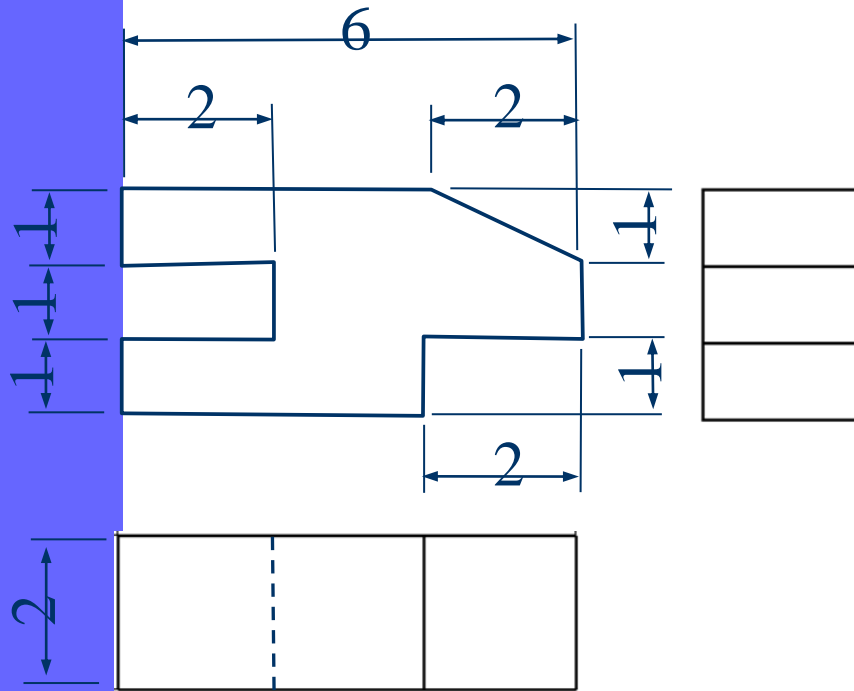
Perspectiva Isométrica - 2



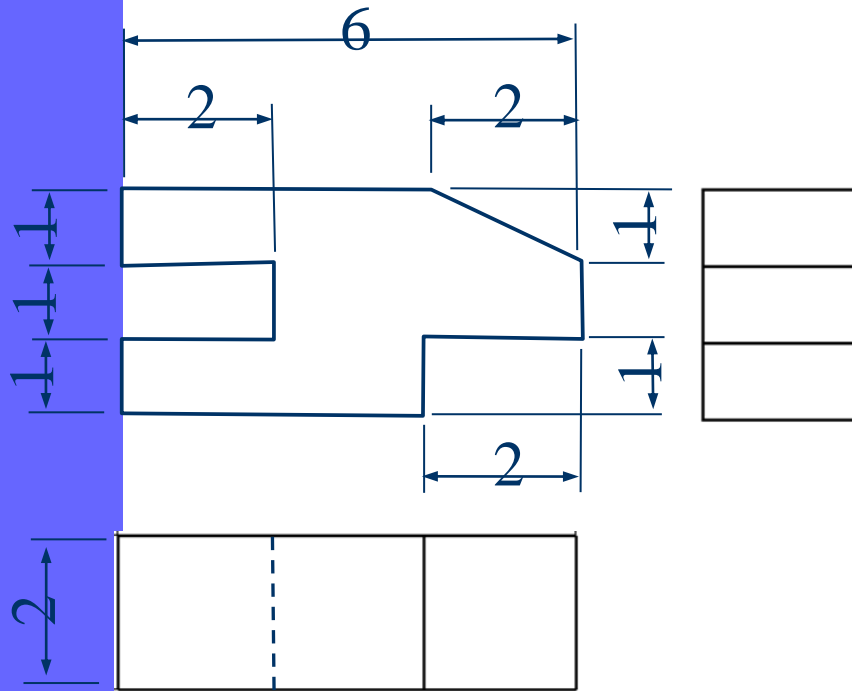
Apagando a caixa auxiliar

Vistas ortográficas

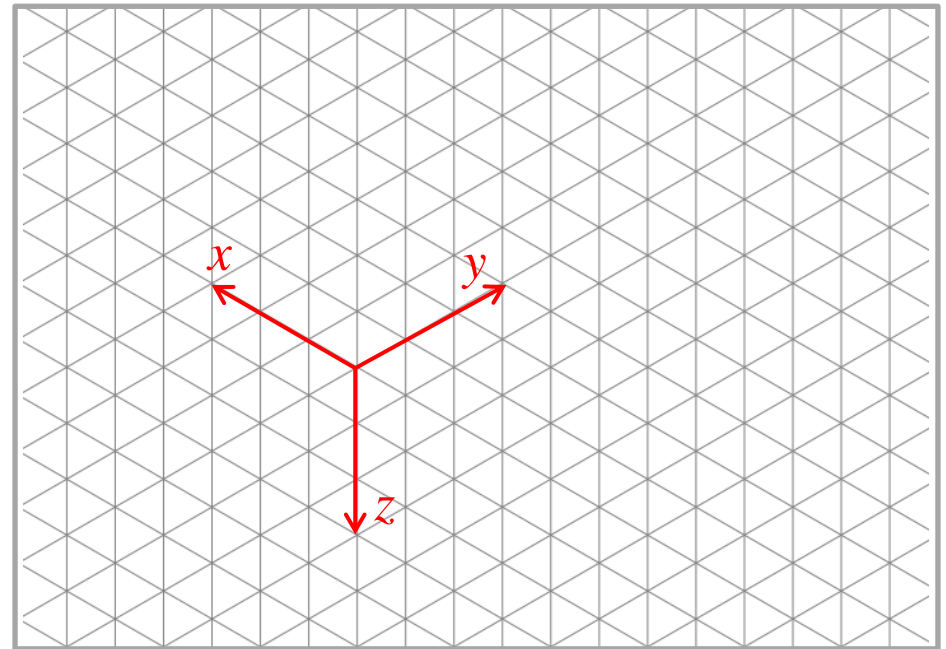
Perspectiva Isométrica - 3



Vistas ortográficas

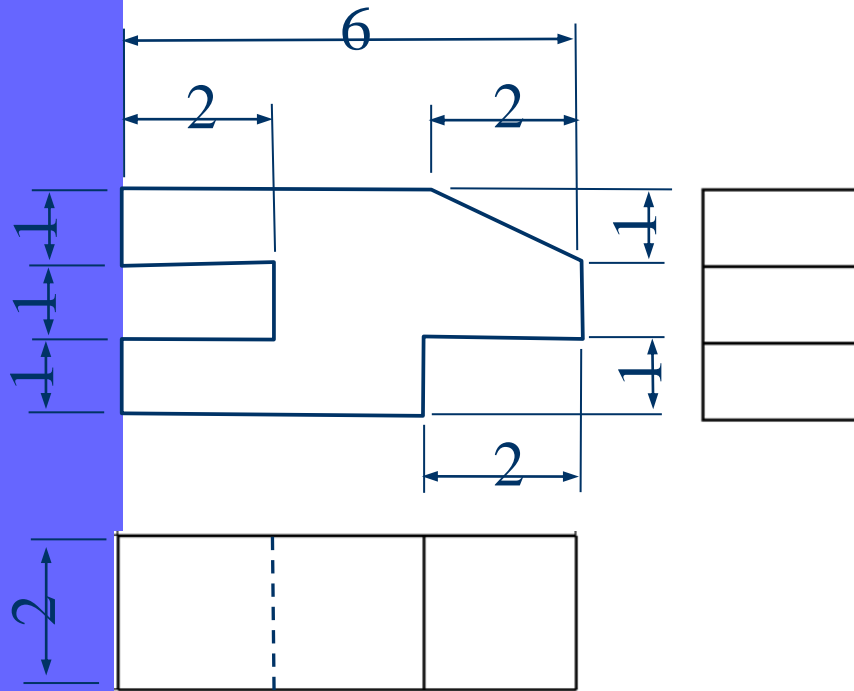


Perspectiva Isométrica - 3

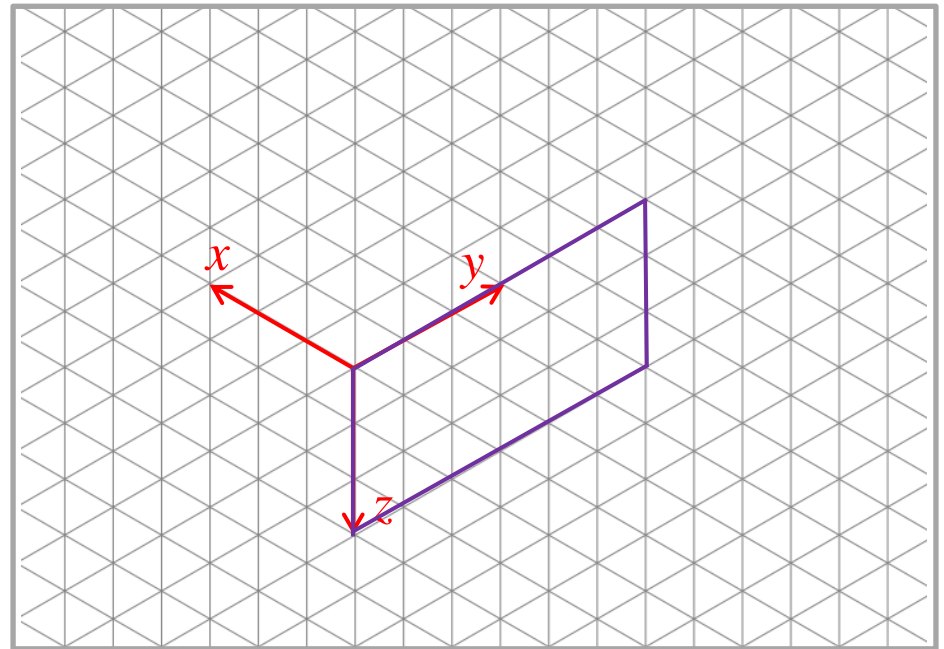


Eixos isométricos

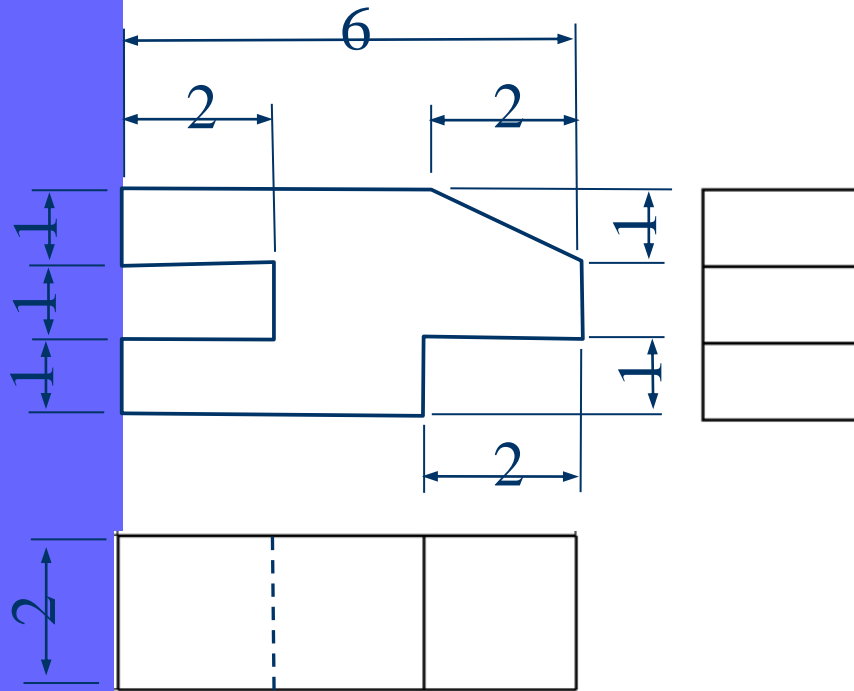
Vistas ortográficas



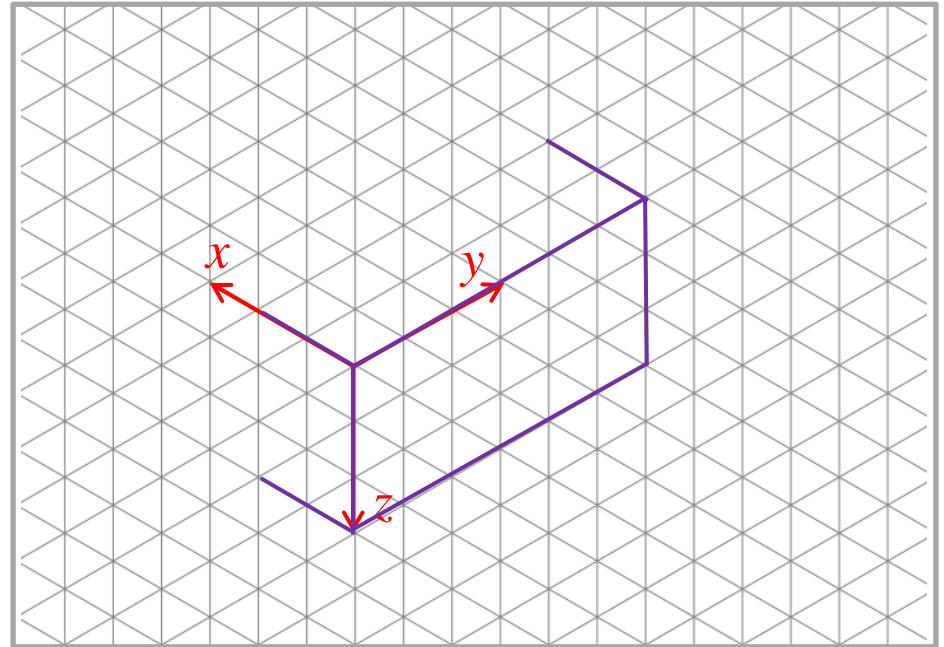
Perspectiva Isométrica - 3



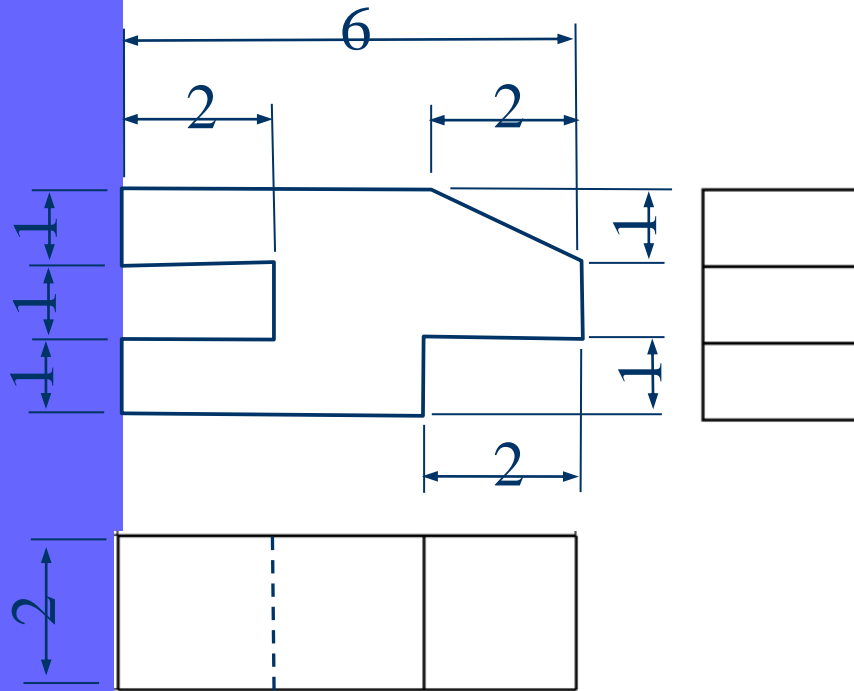
Vistas ortográficas



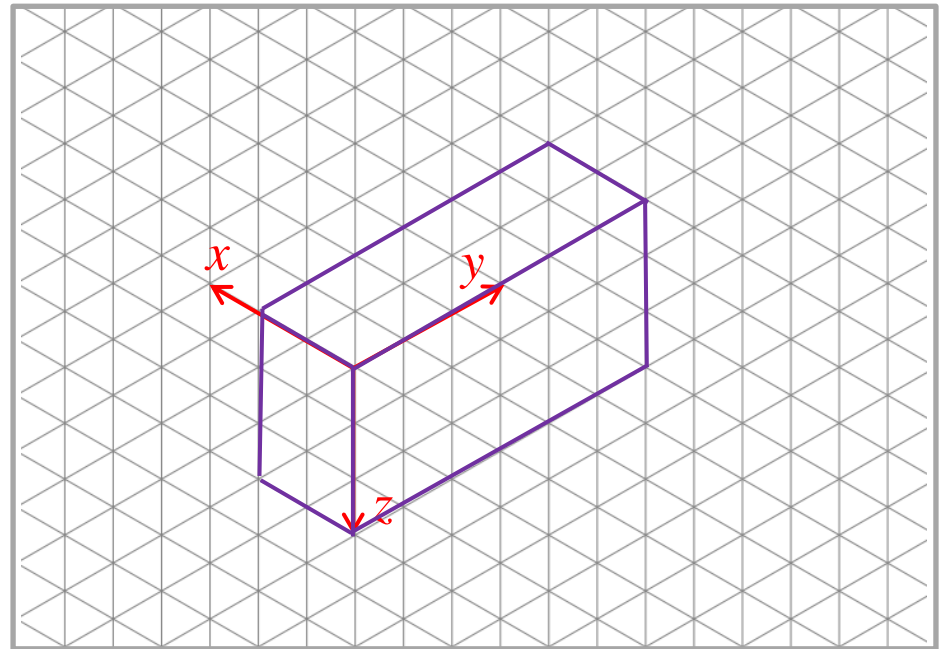
Perspectiva Isométrica - 3



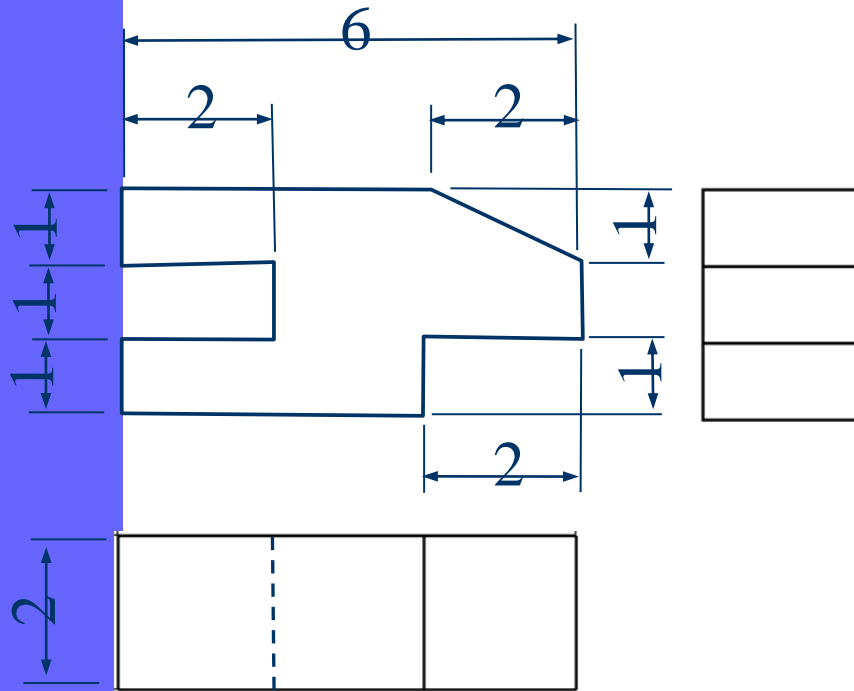
Vistas ortográficas



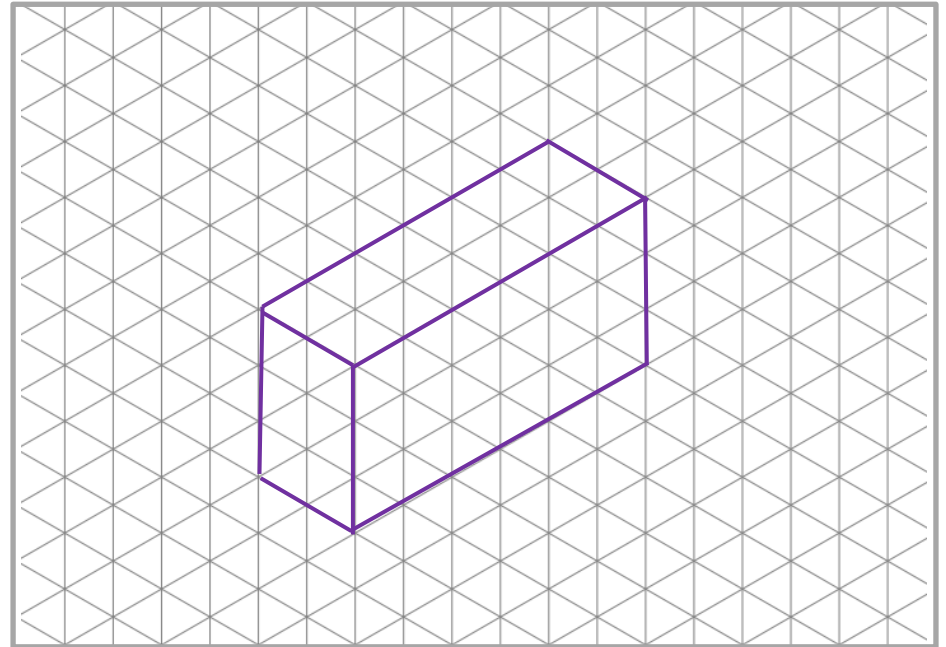
Perspectiva Isométrica - 3



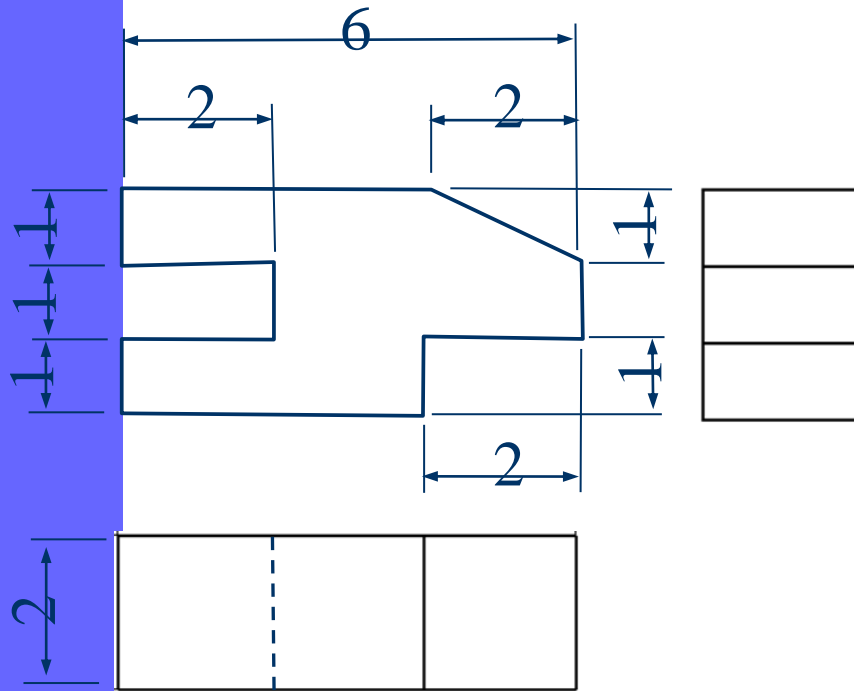
Vistas ortográficas



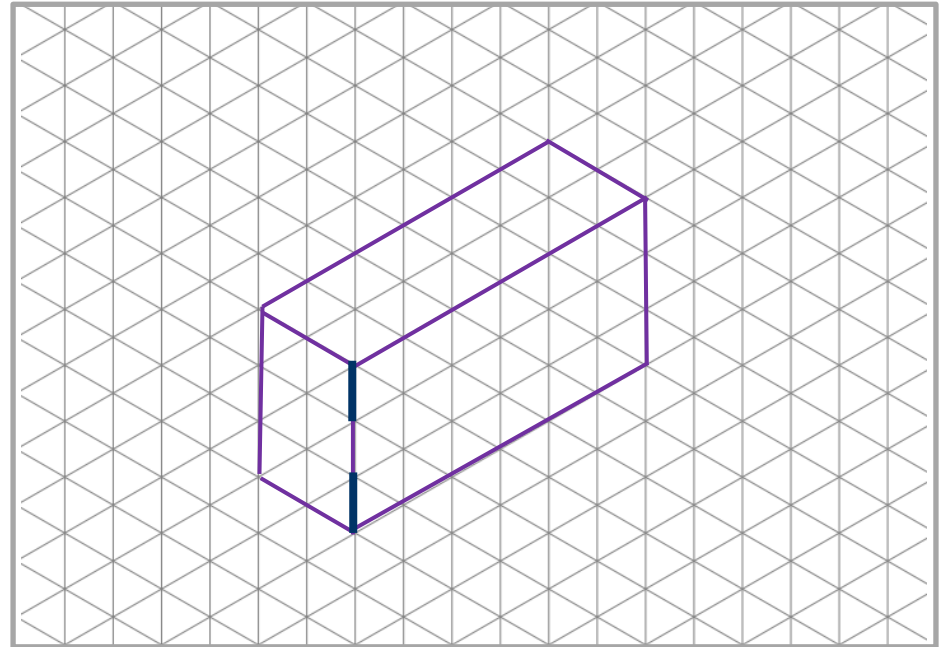
Perspectiva Isométrica - 3



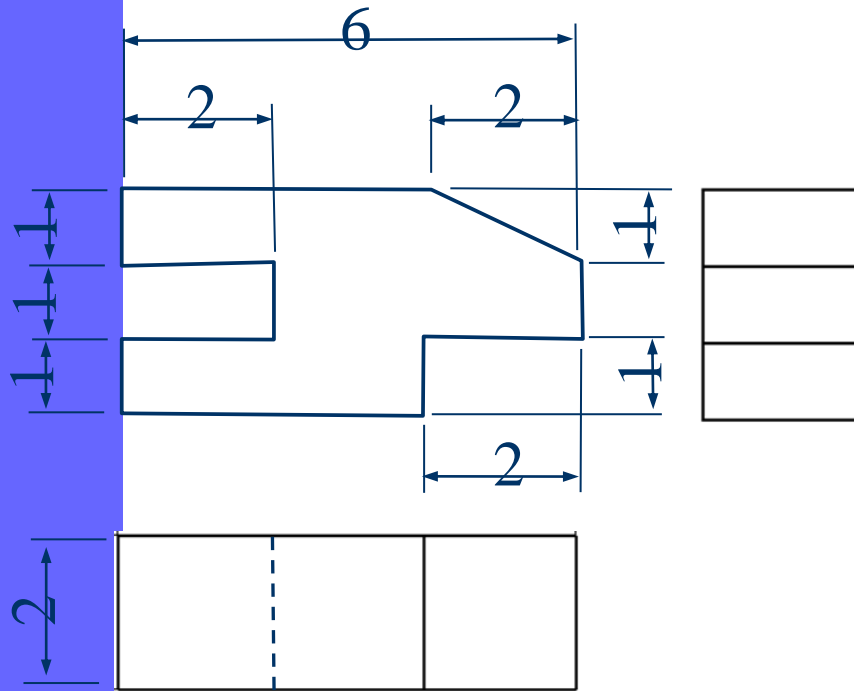
Vistas ortográficas



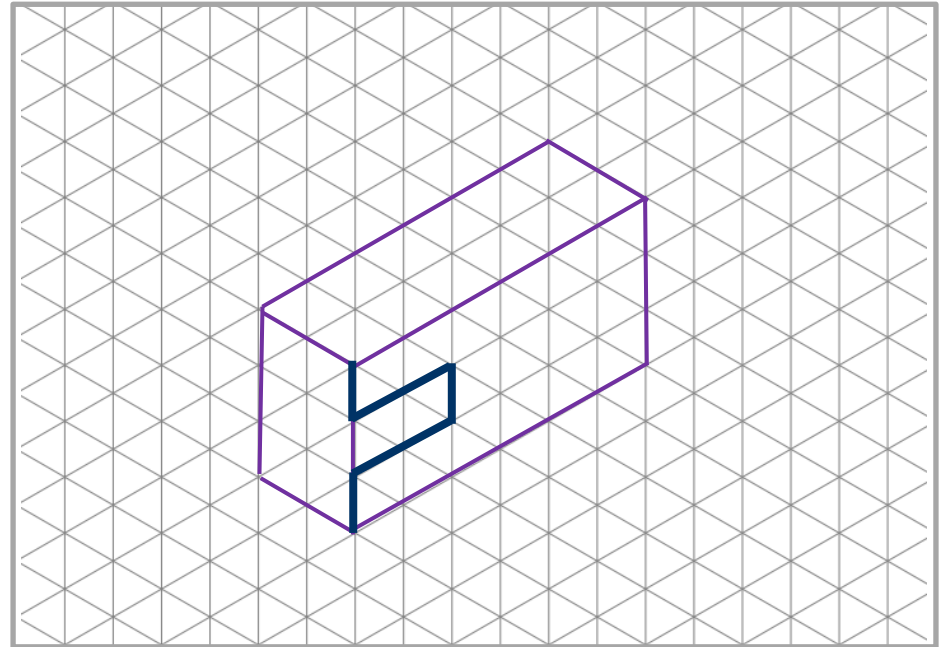
Perspectiva Isométrica - 3



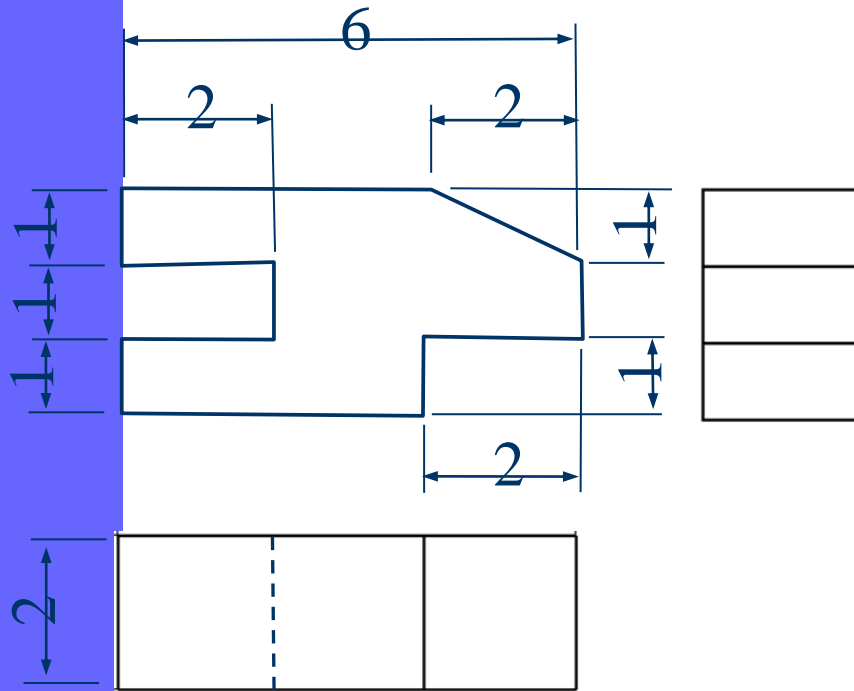
Vistas ortográficas



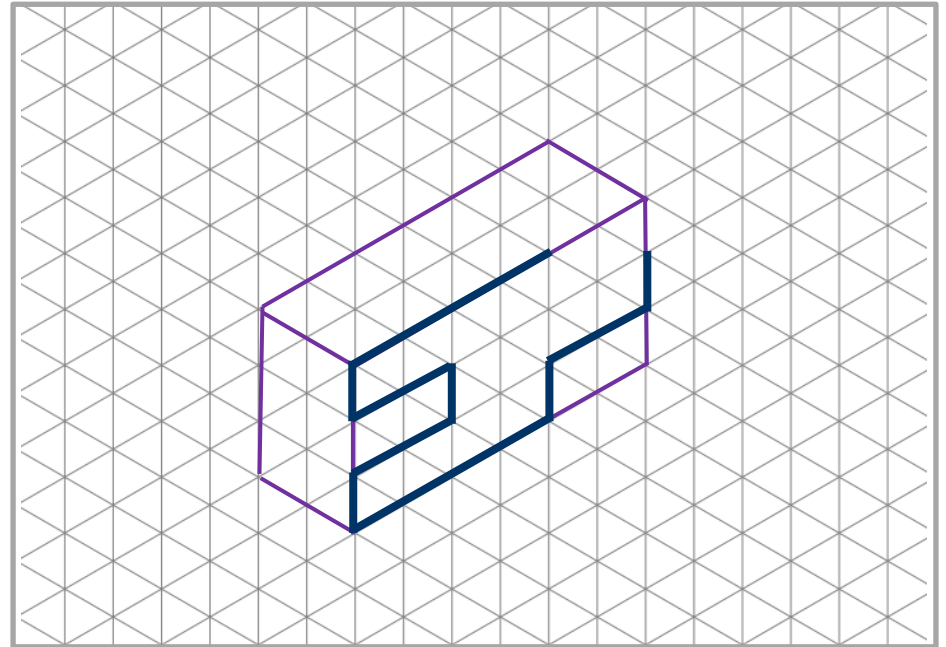
Perspectiva Isométrica - 3



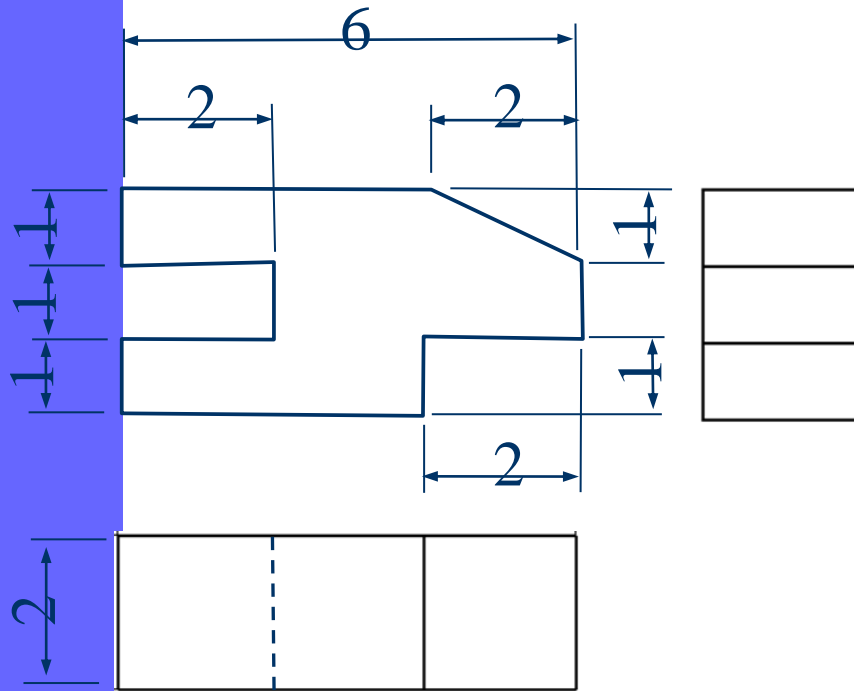
Vistas ortográficas



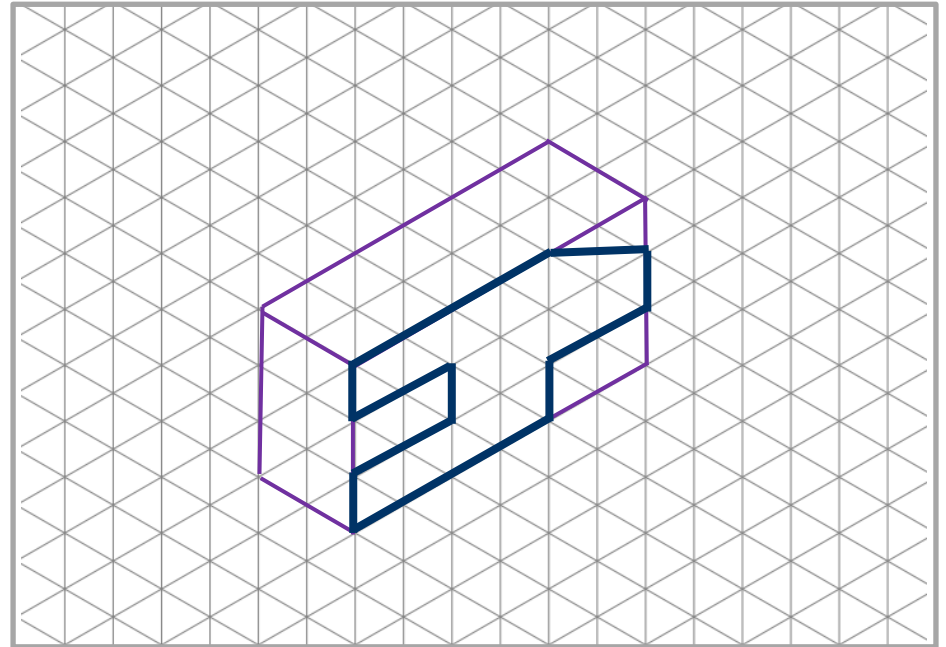
Perspectiva Isométrica - 3



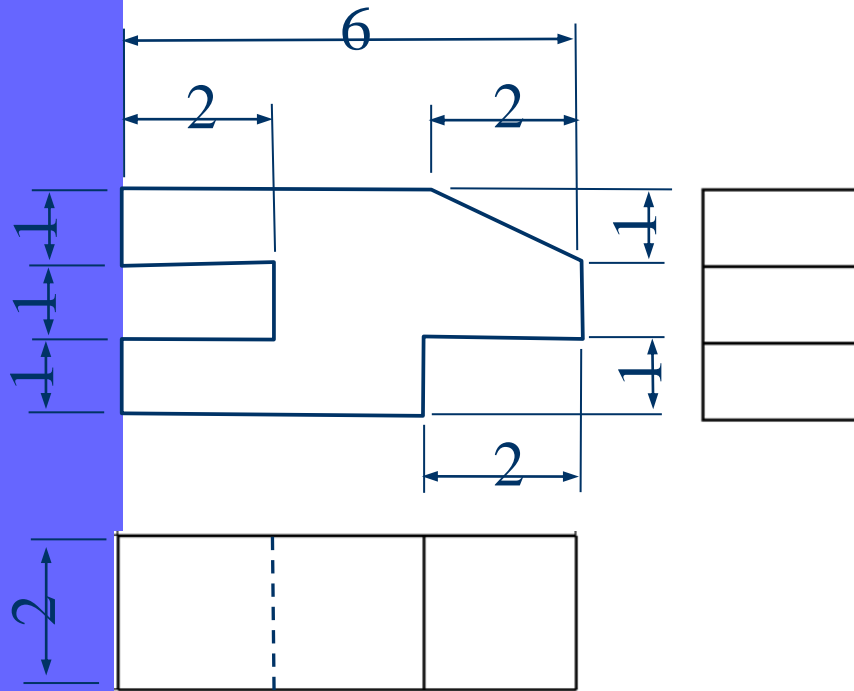
Vistas ortográficas



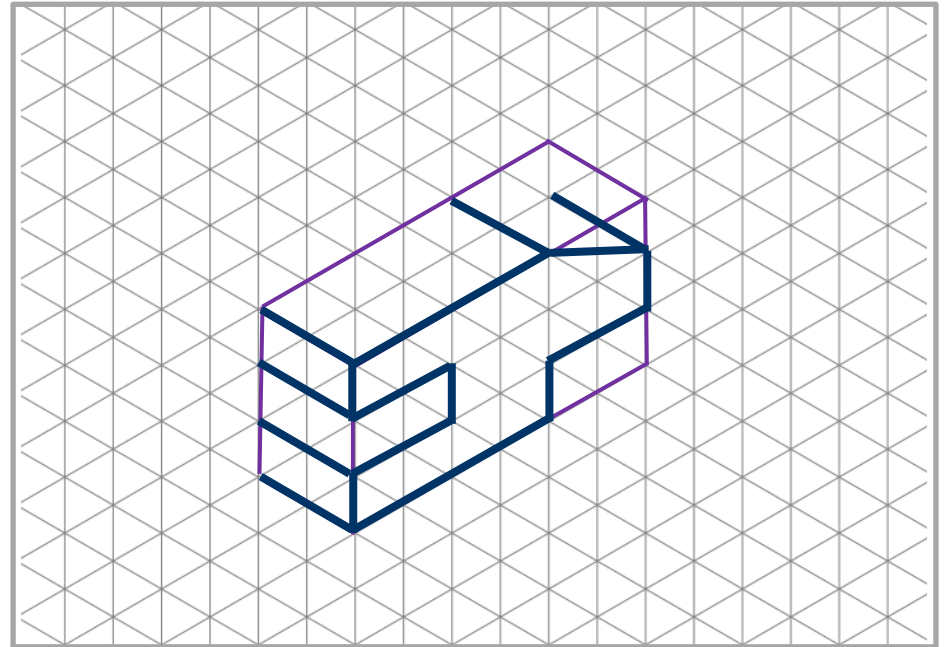
Perspectiva Isométrica - 3



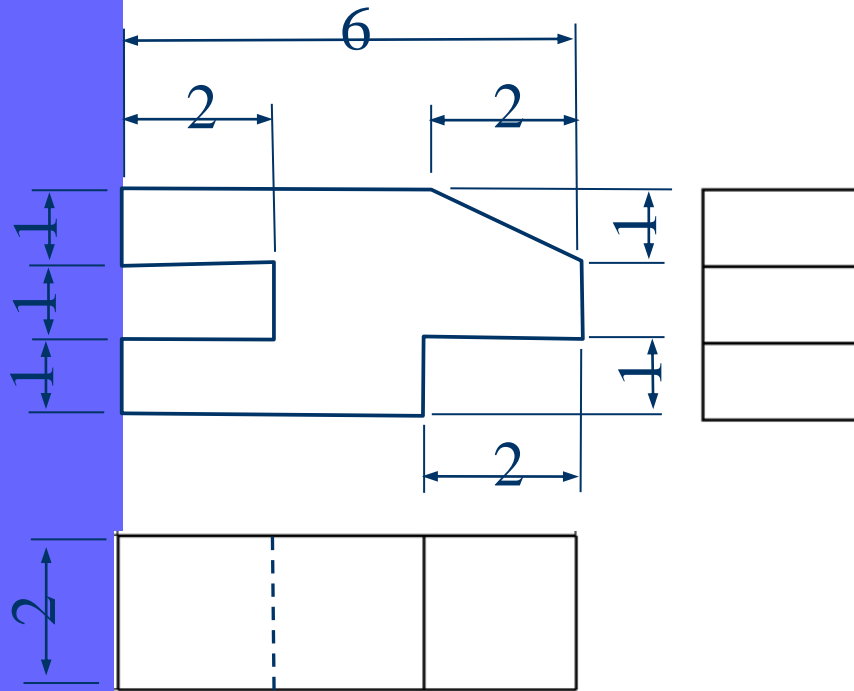
Vistas ortográficas



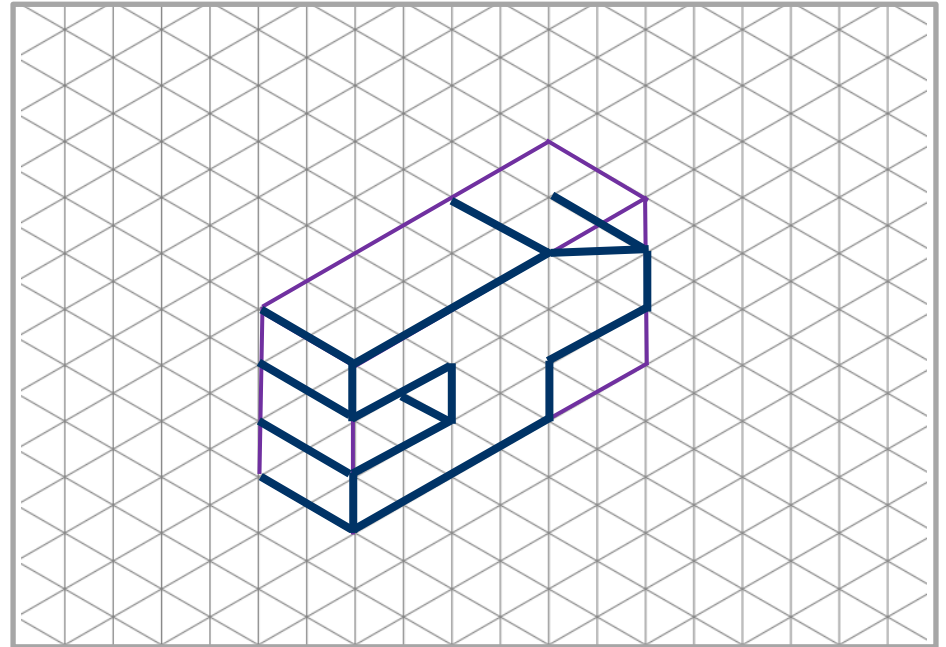
Perspectiva Isométrica - 3



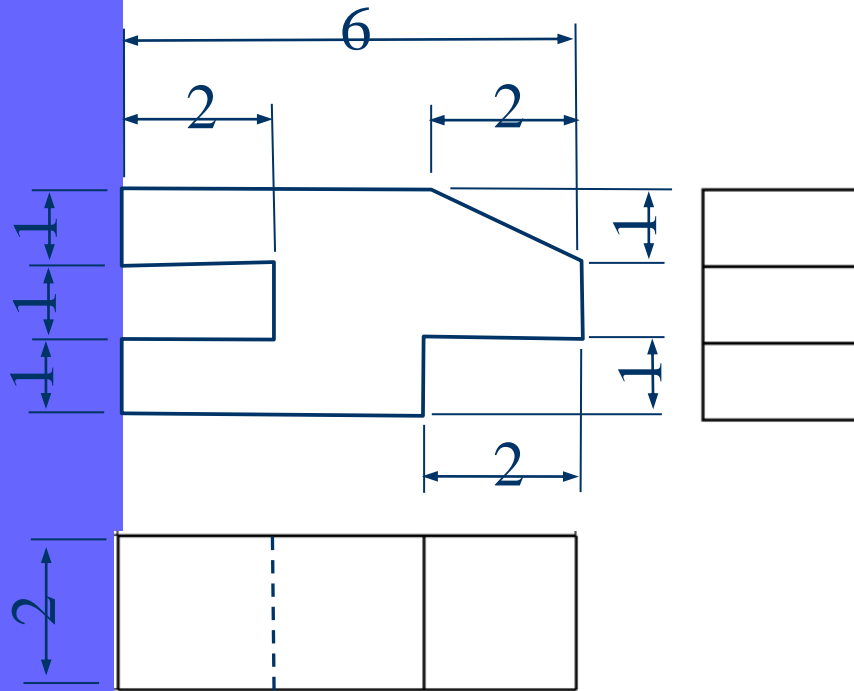
Vistas ortográficas



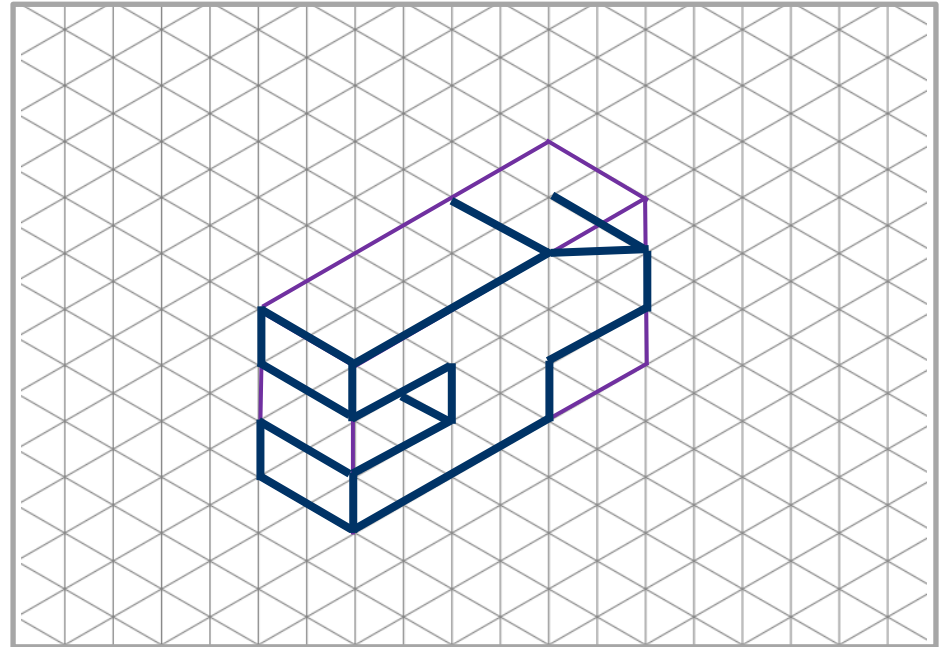
Perspectiva Isométrica - 3



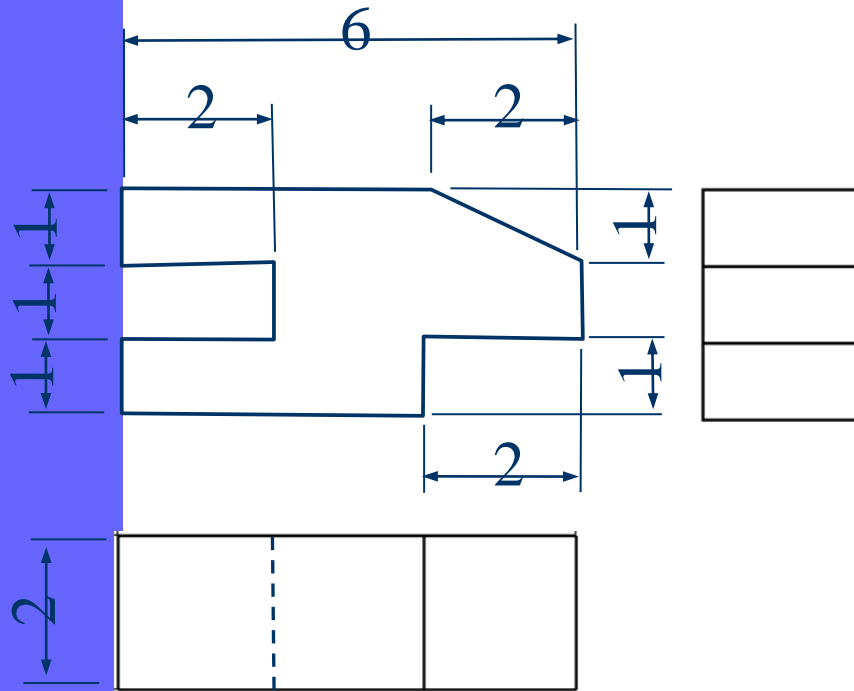
Vistas ortográficas



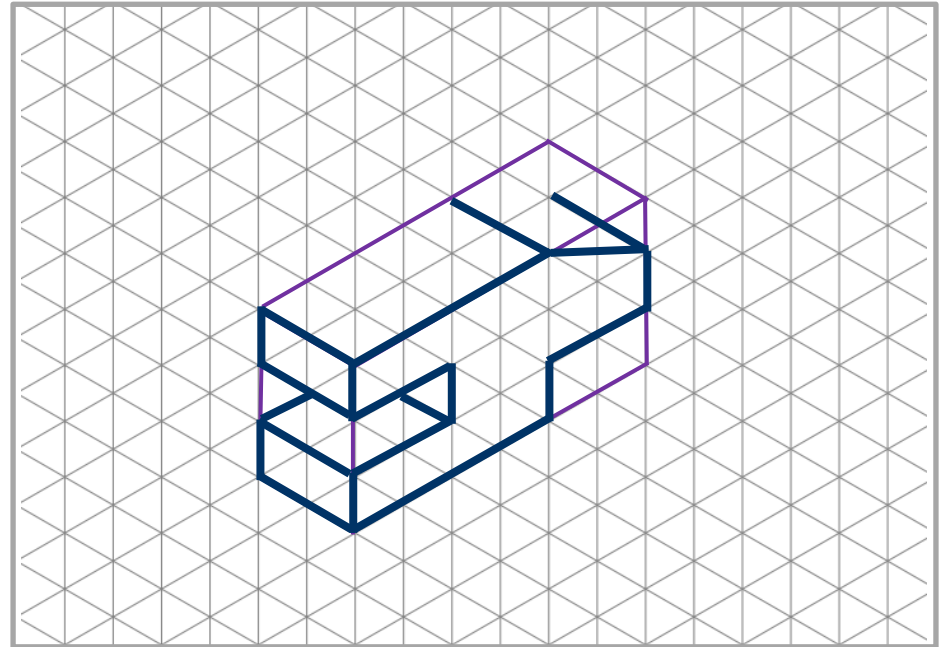
Perspectiva Isométrica - 3



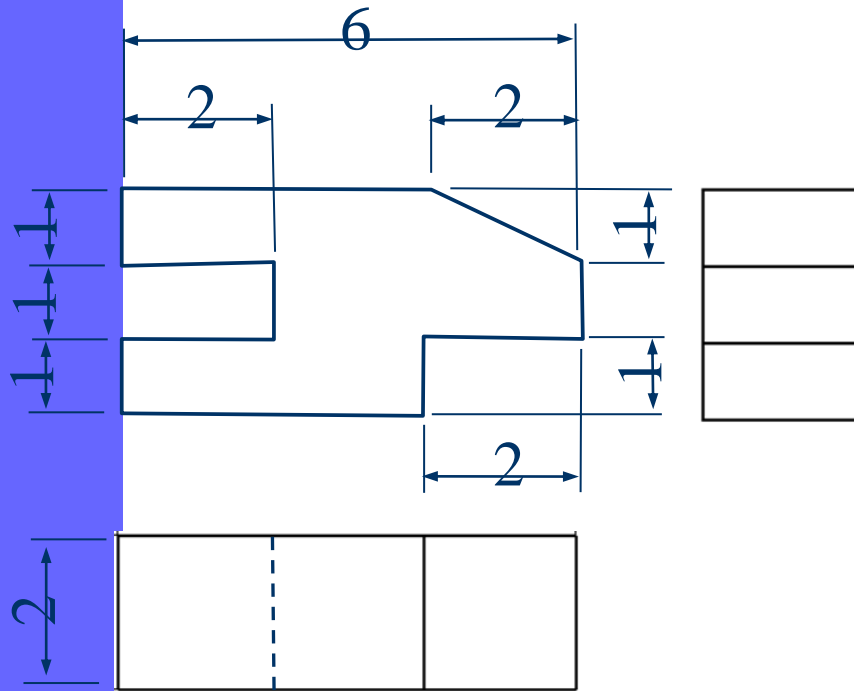
Vistas ortográficas



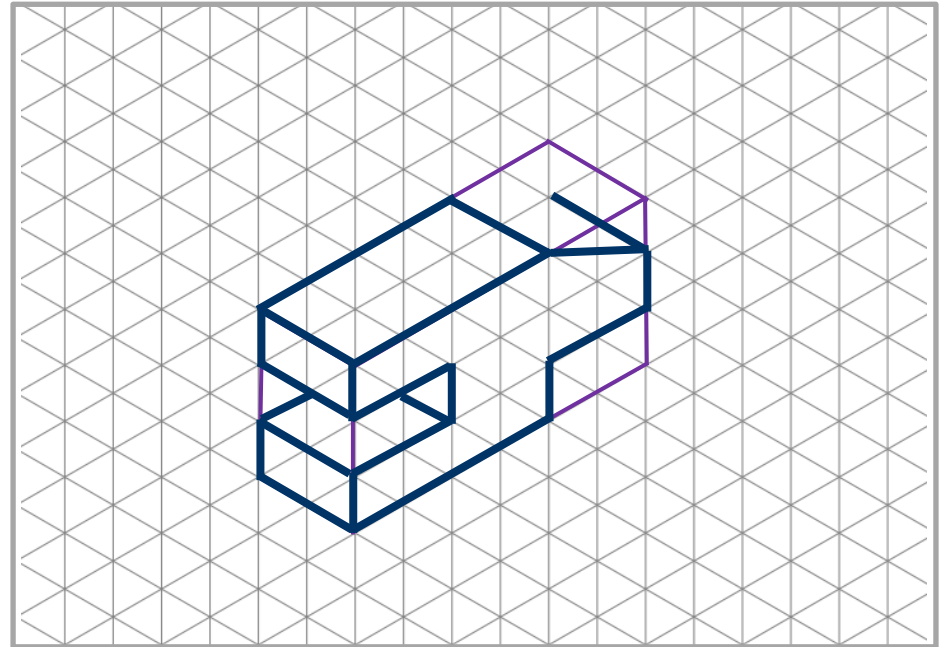
Perspectiva Isométrica - 3



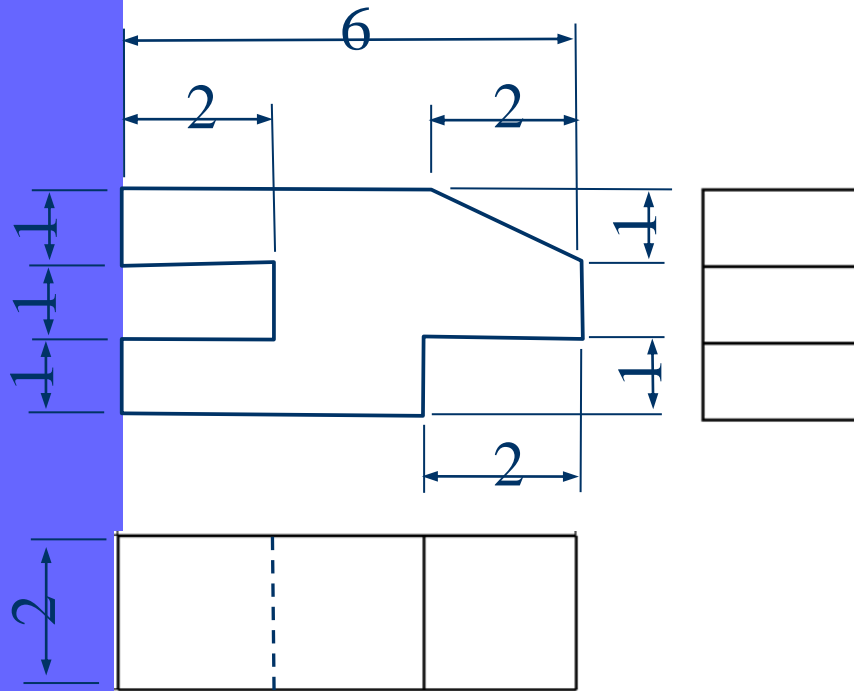
Vistas ortográficas



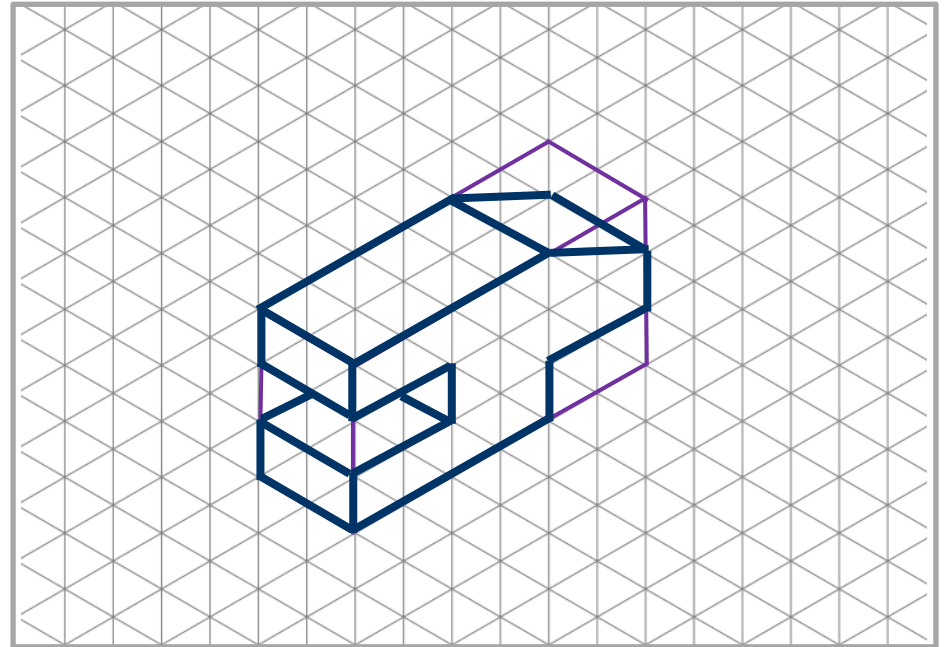
Perspectiva Isométrica - 3



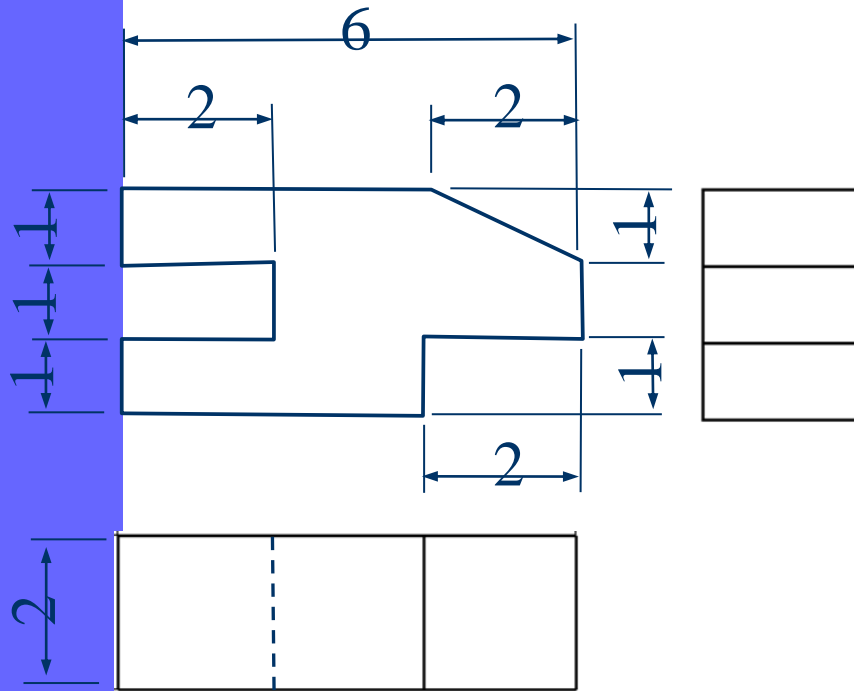
Vistas ortográficas



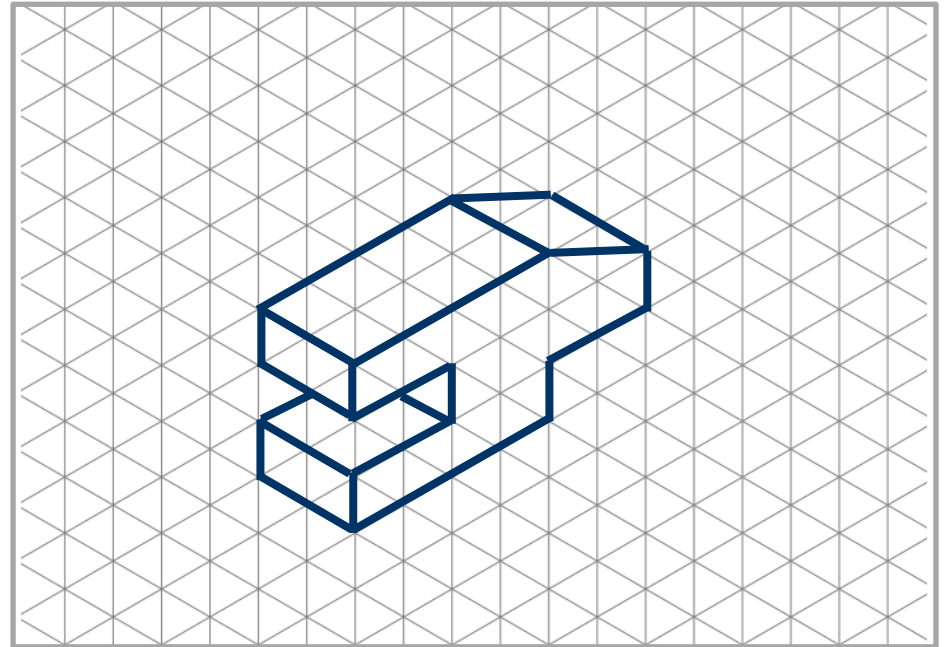
Perspectiva Isométrica - 3



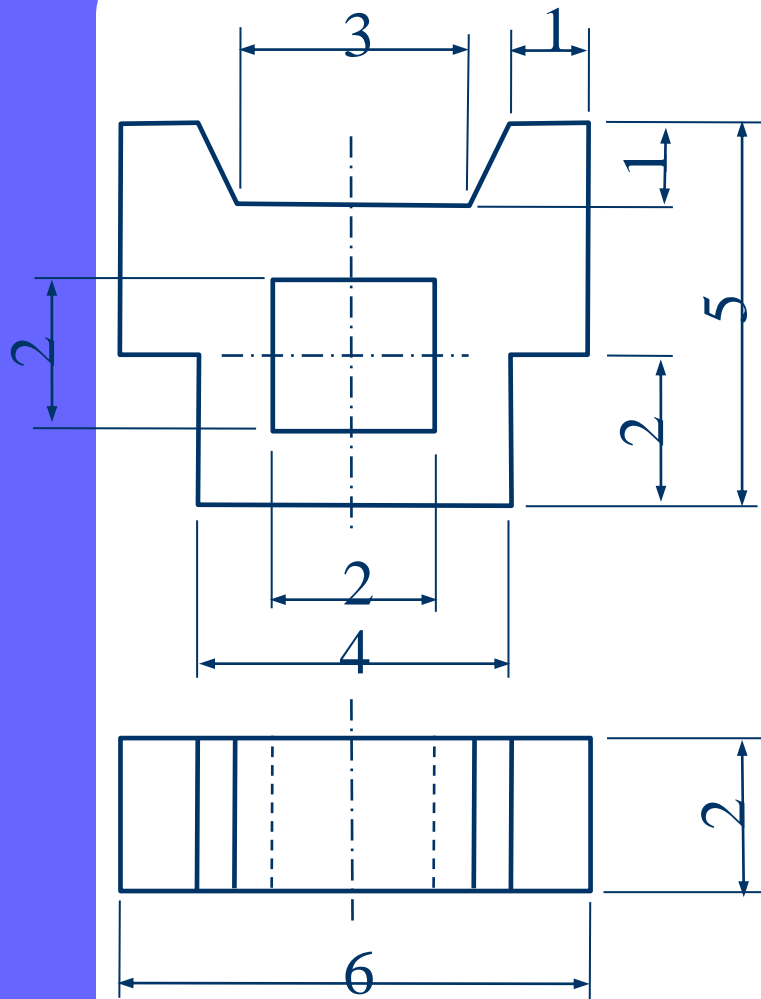
Vistas ortográficas



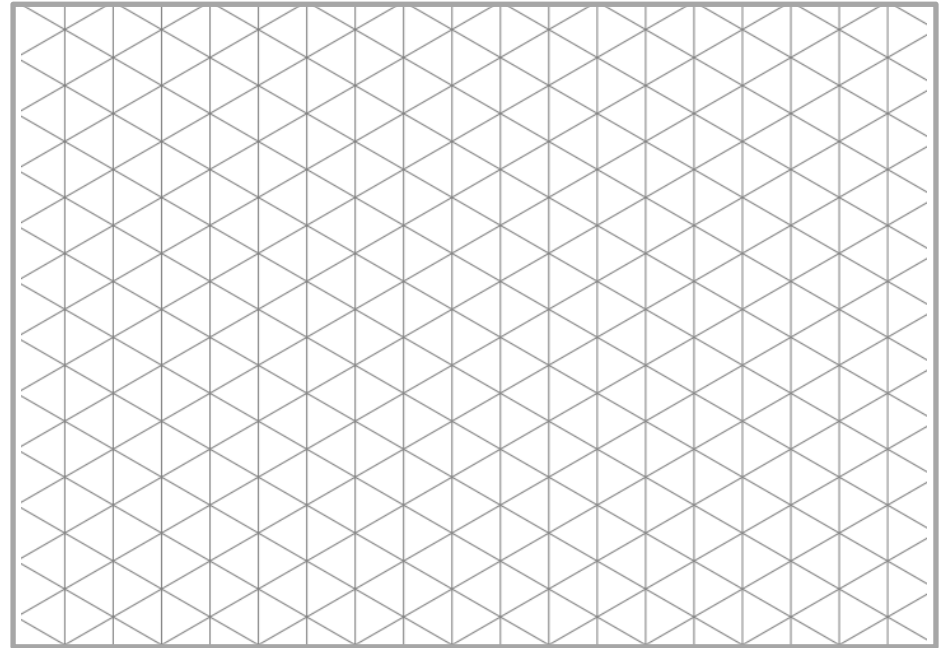
Perspectiva Isométrica - 3



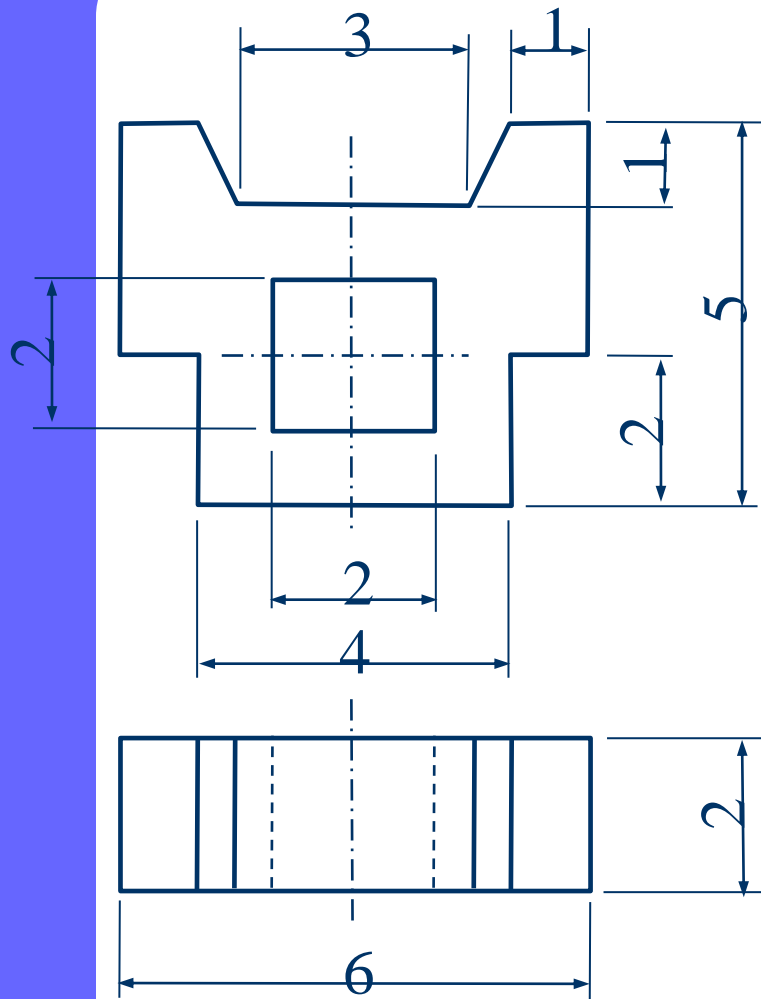
Vistas ortográficas



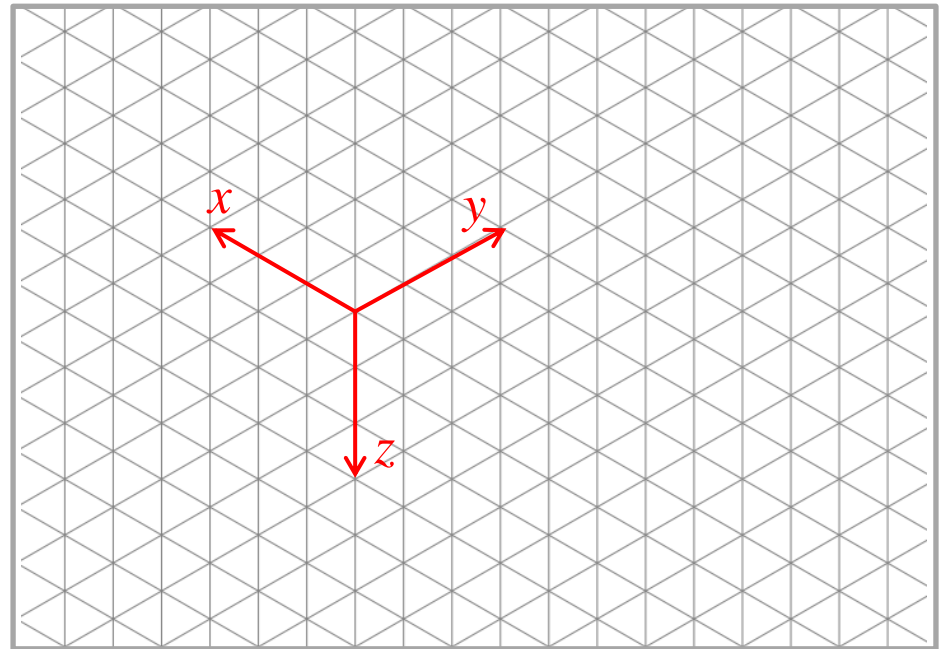
Perspectiva Isométrica - 4



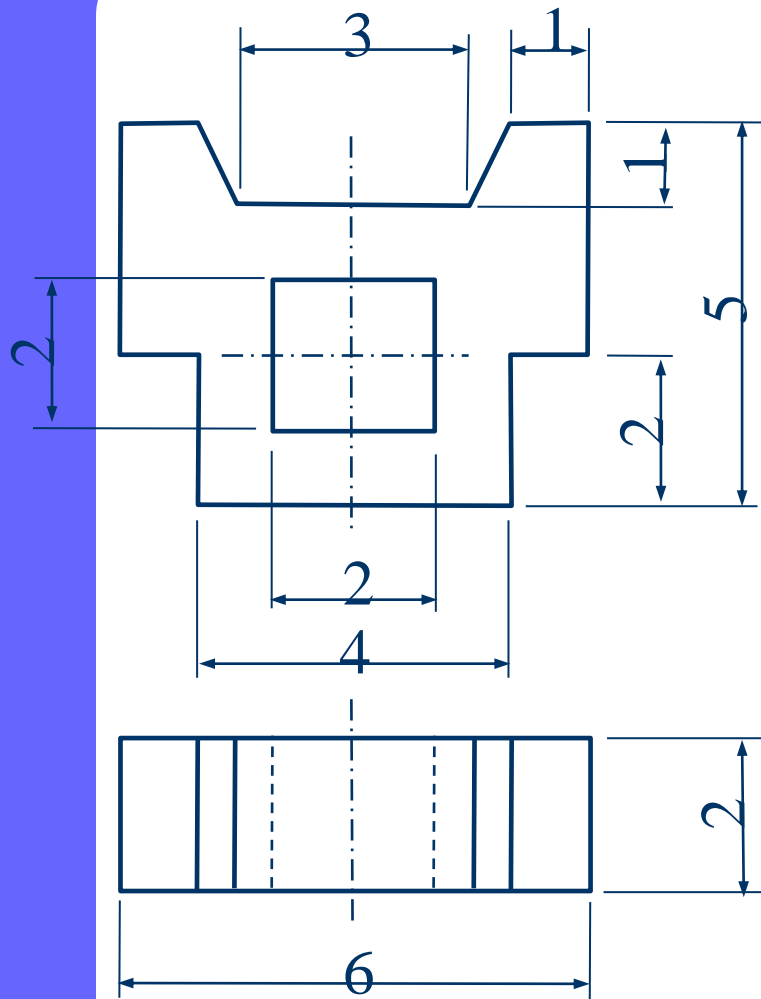
Vistas ortográficas



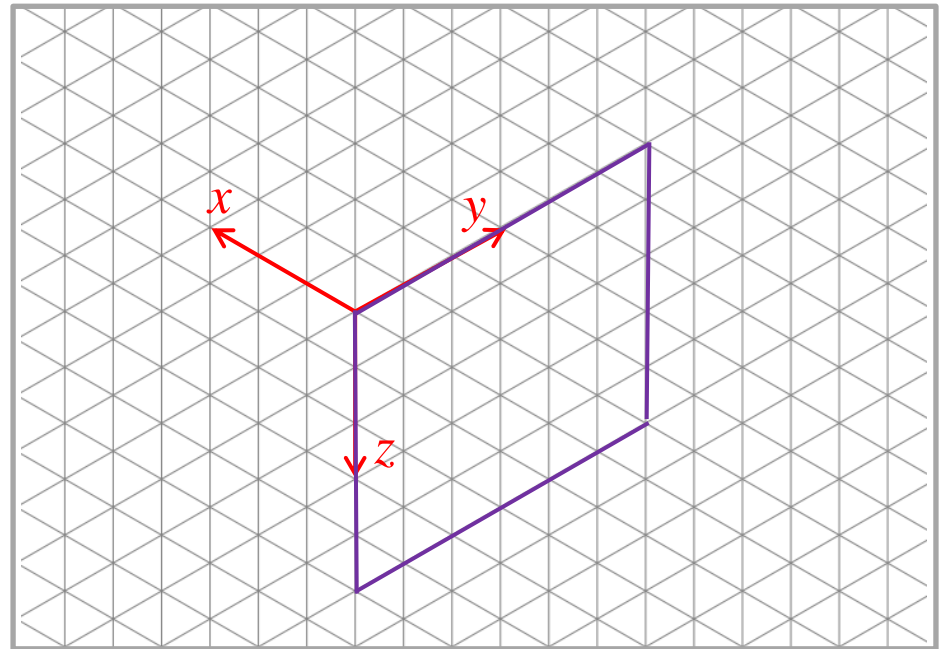
Perspectiva Isométrica - 4



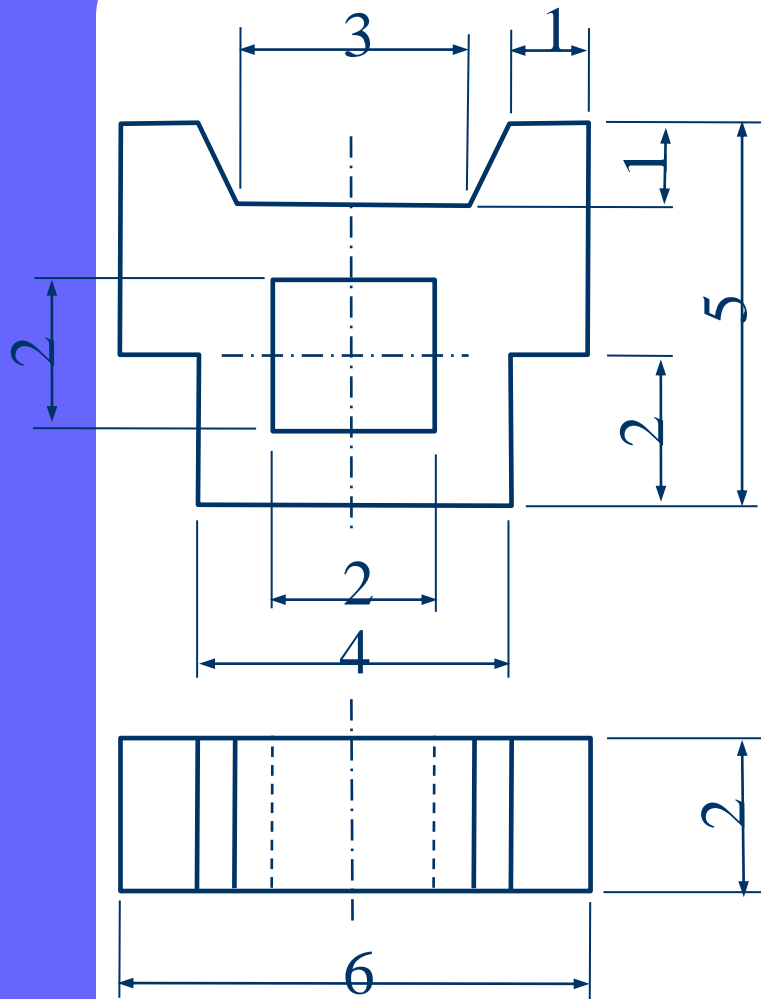
Vistas ortográficas



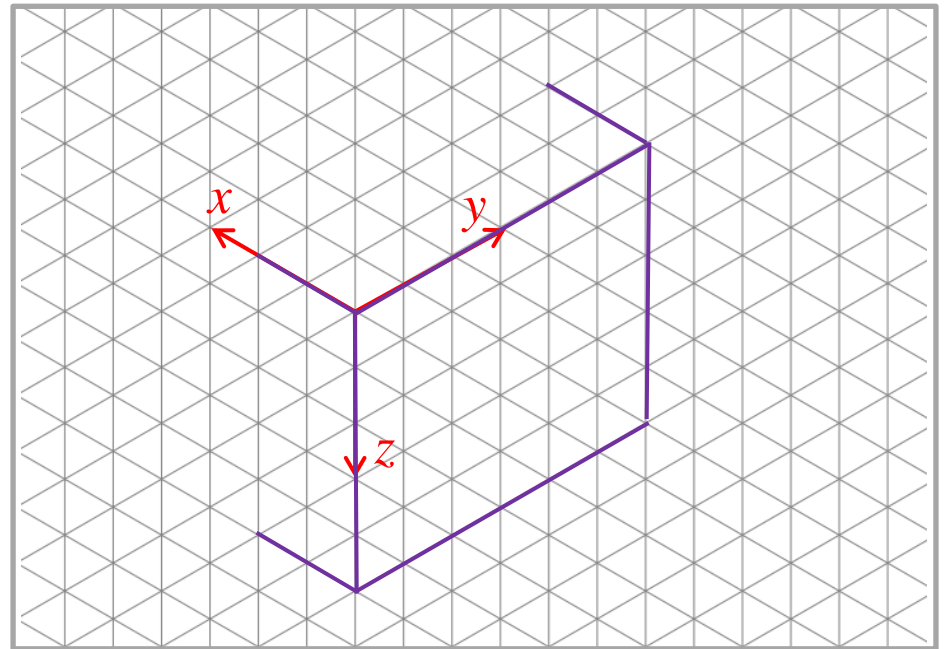
Perspectiva Isométrica - 4



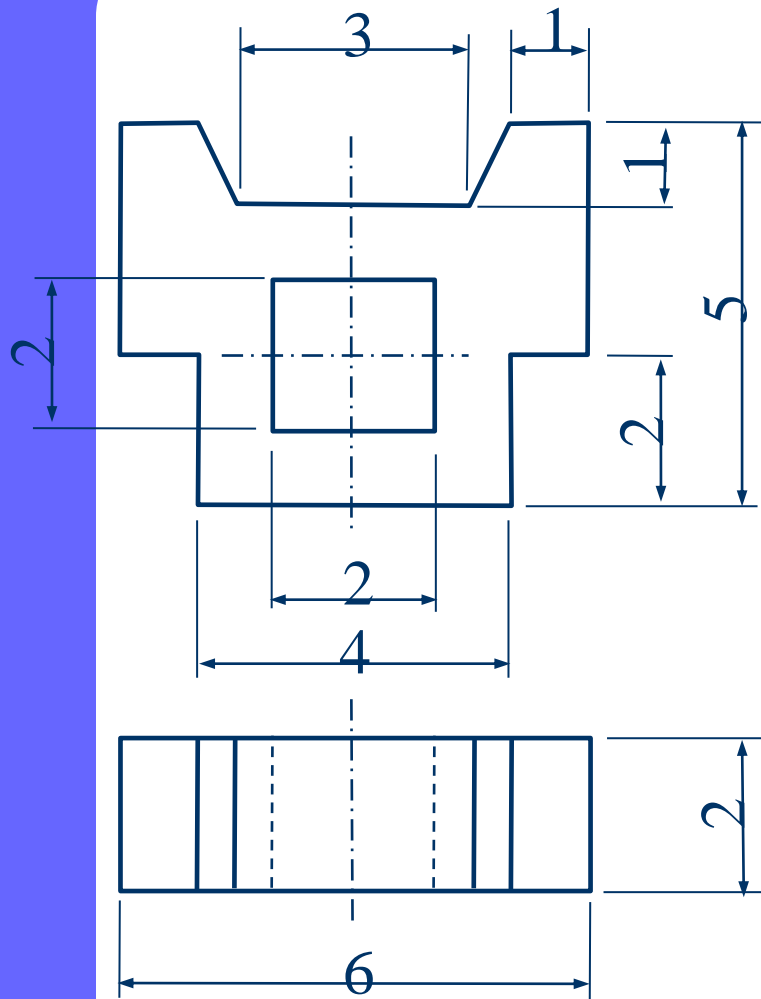
Vistas ortográficas



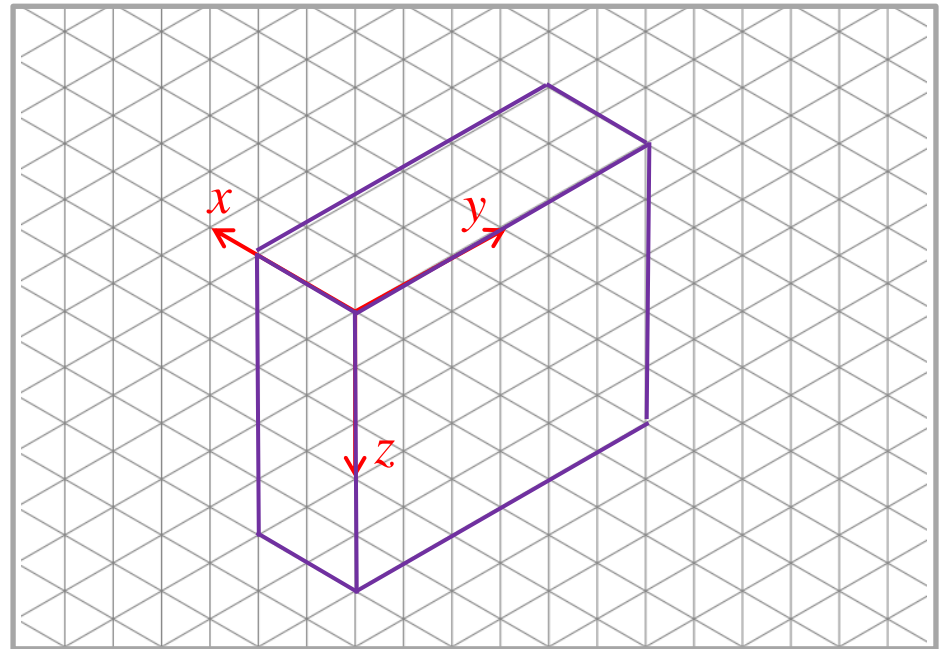
Perspectiva Isométrica - 4



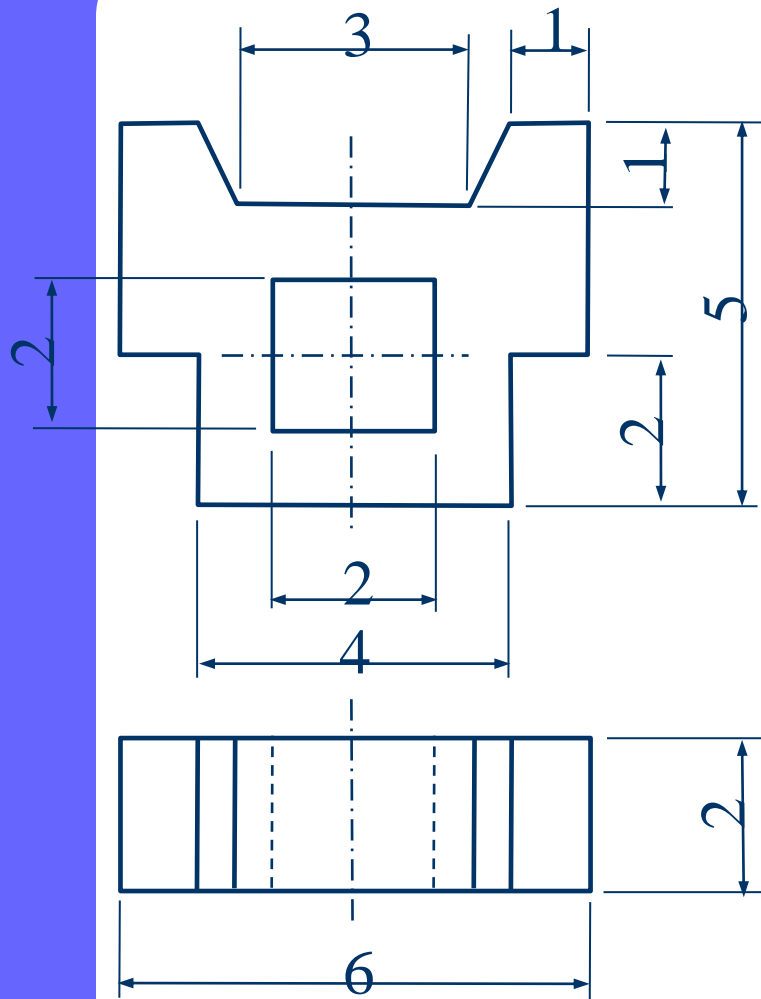
Vistas ortográficas



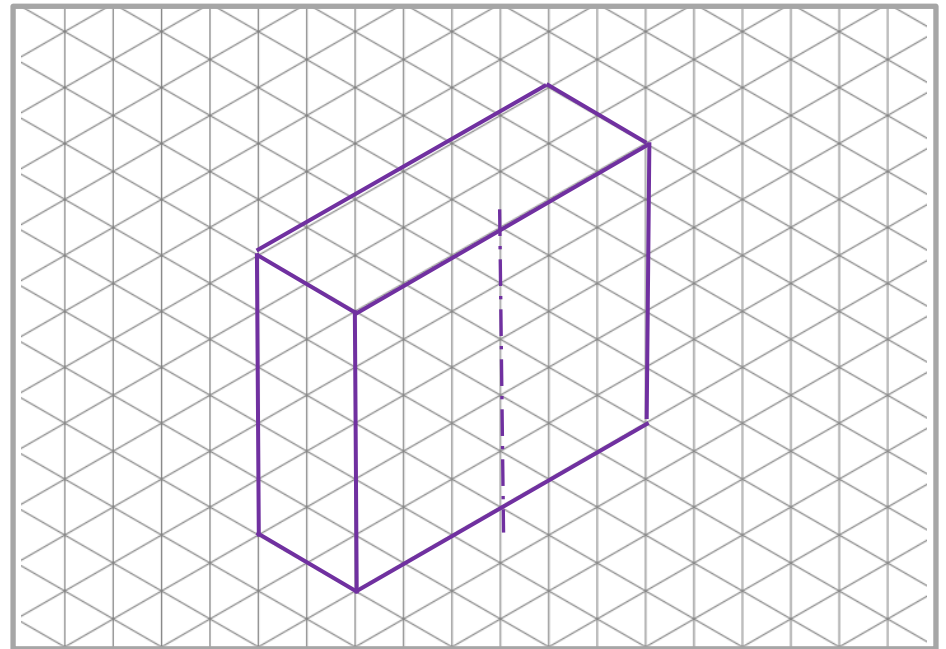
Perspectiva Isométrica - 4



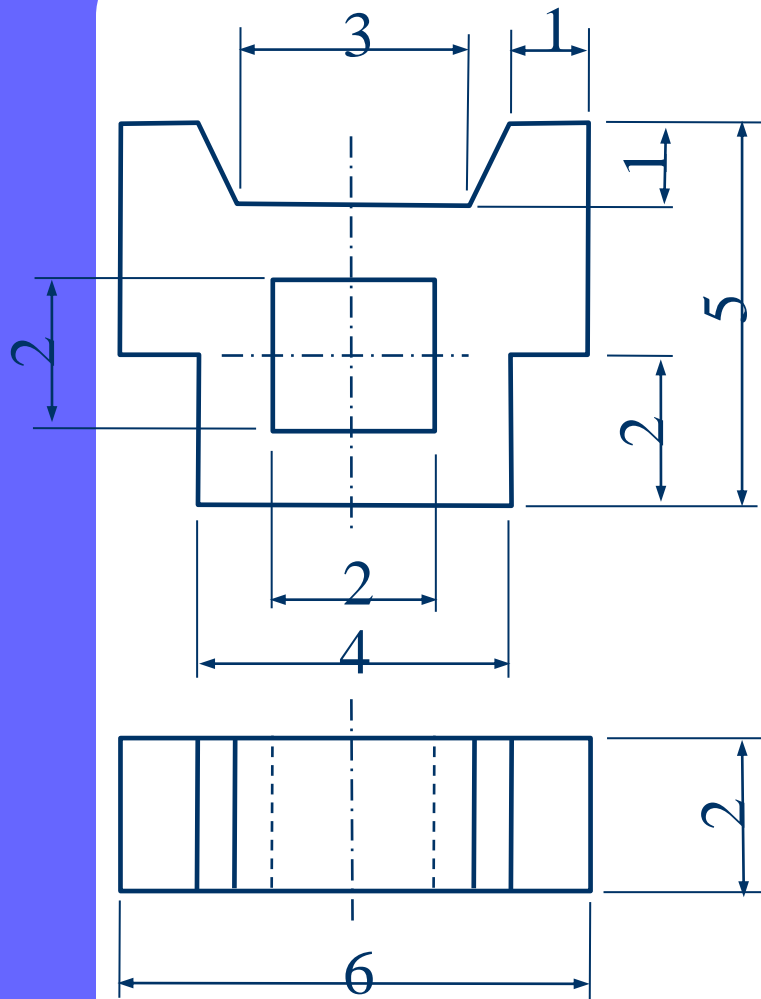
Vistas ortográficas



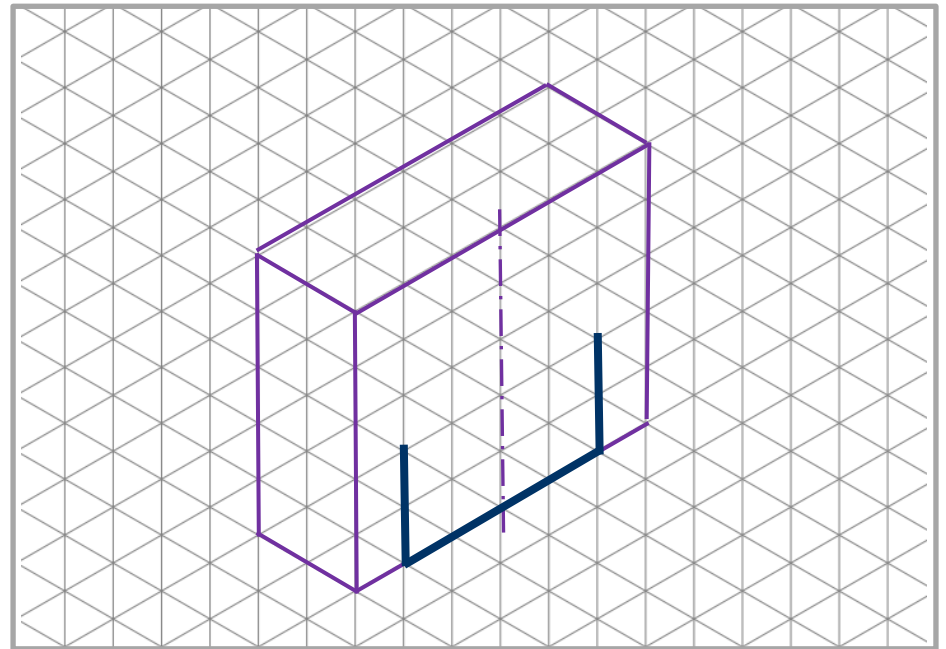
Perspectiva Isométrica - 4



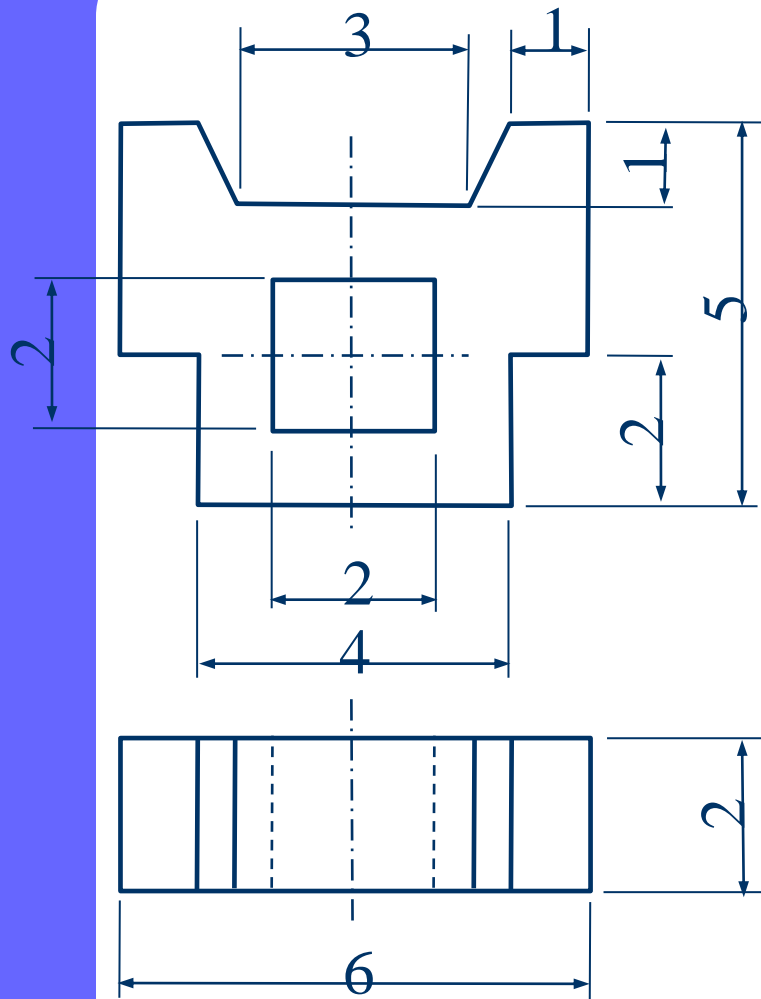
Vistas ortográficas



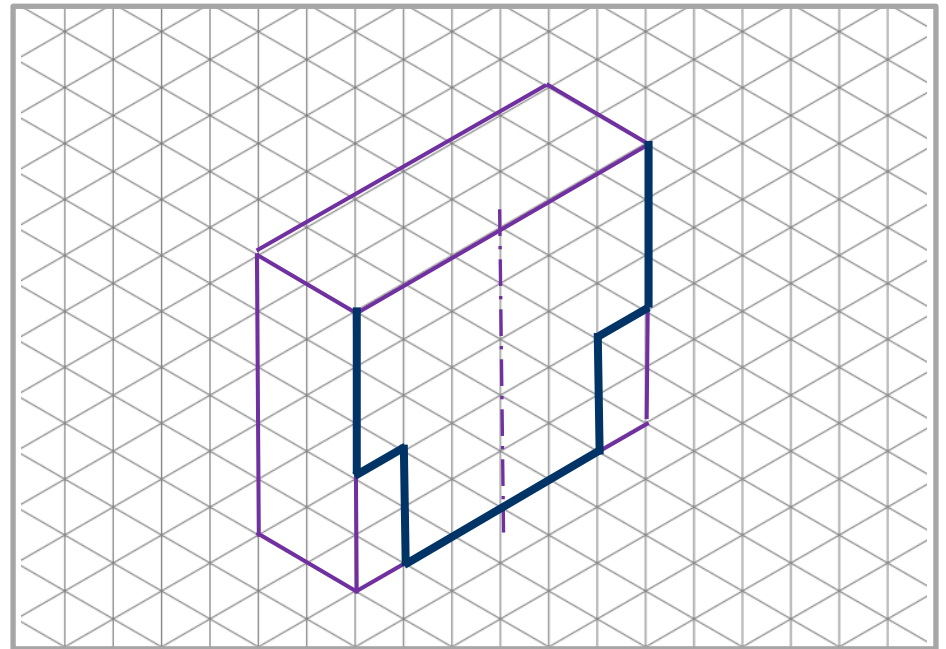
Perspectiva Isométrica - 4



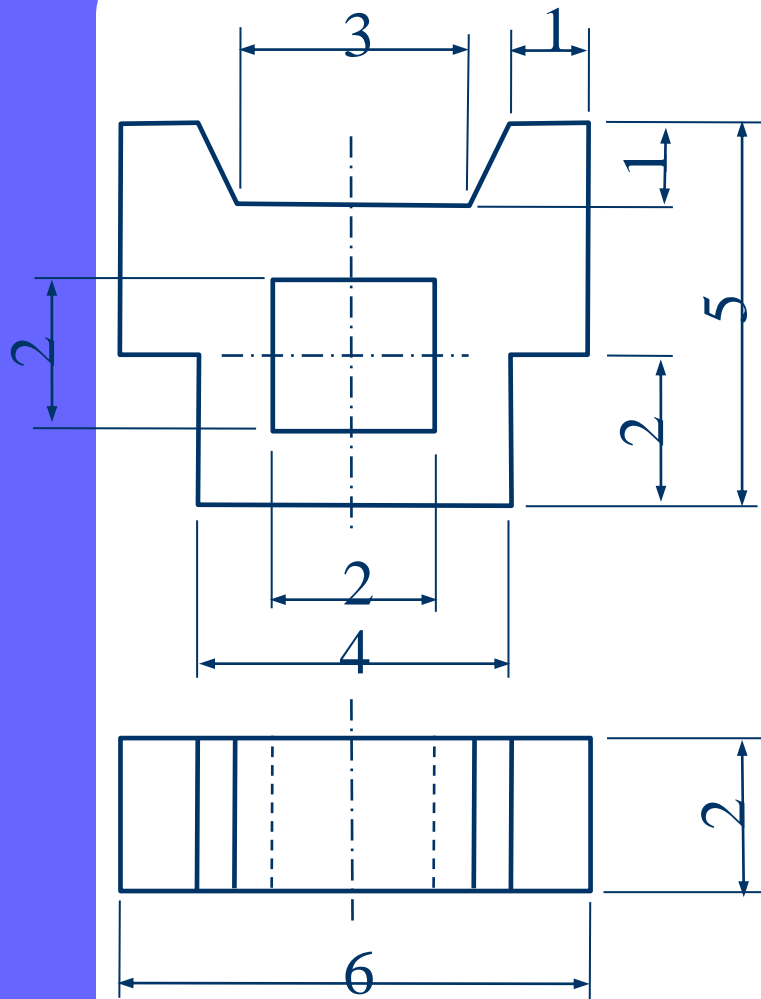
Vistas ortográficas



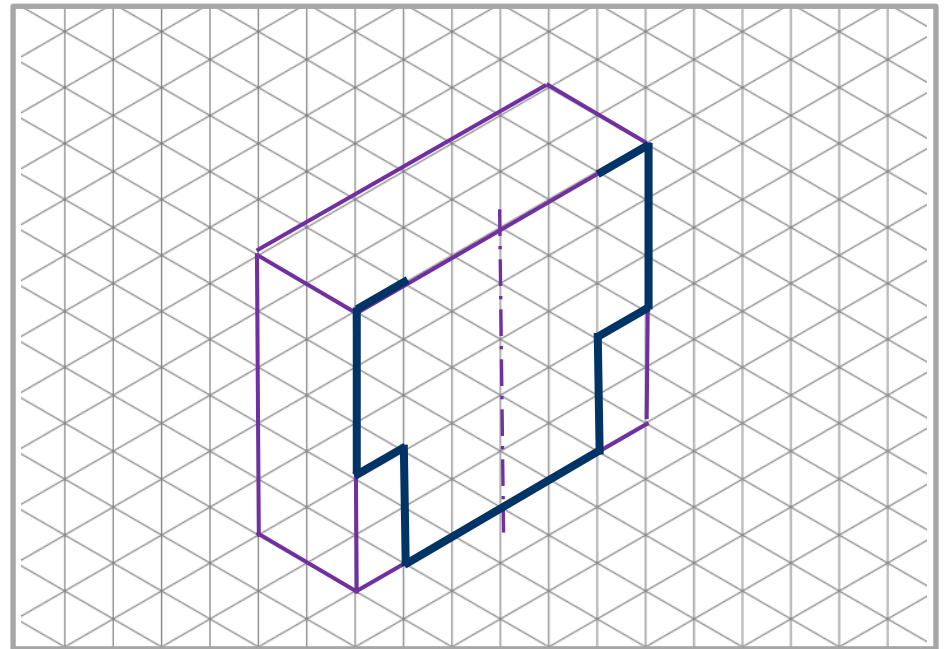
Perspectiva Isométrica - 4



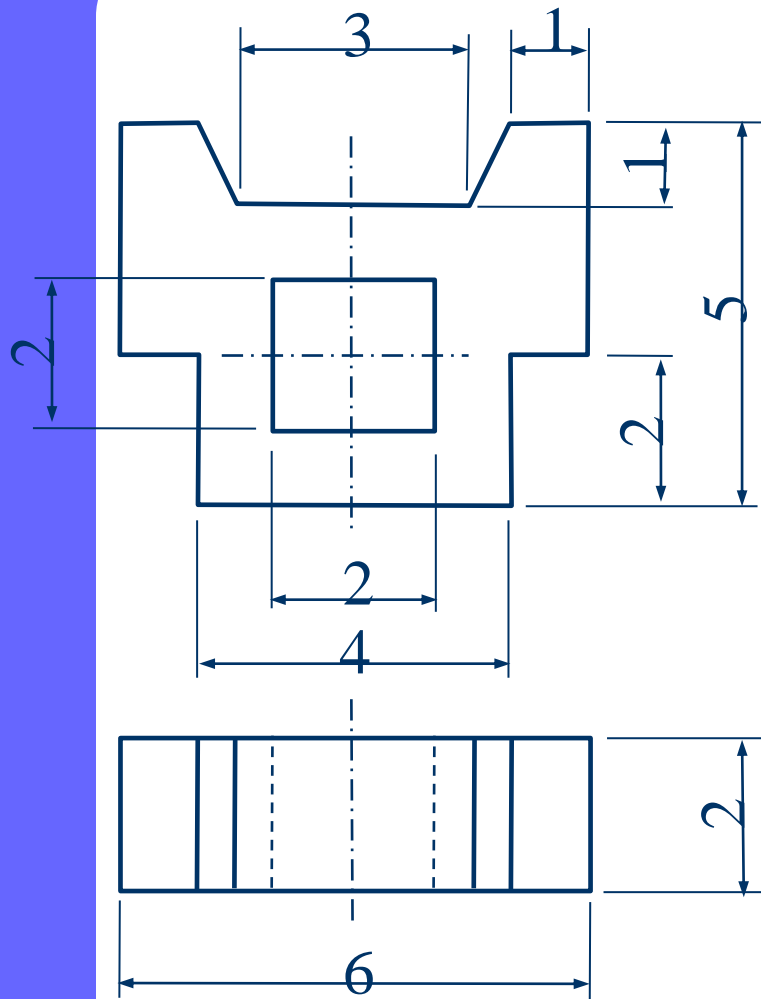
Vistas ortográficas



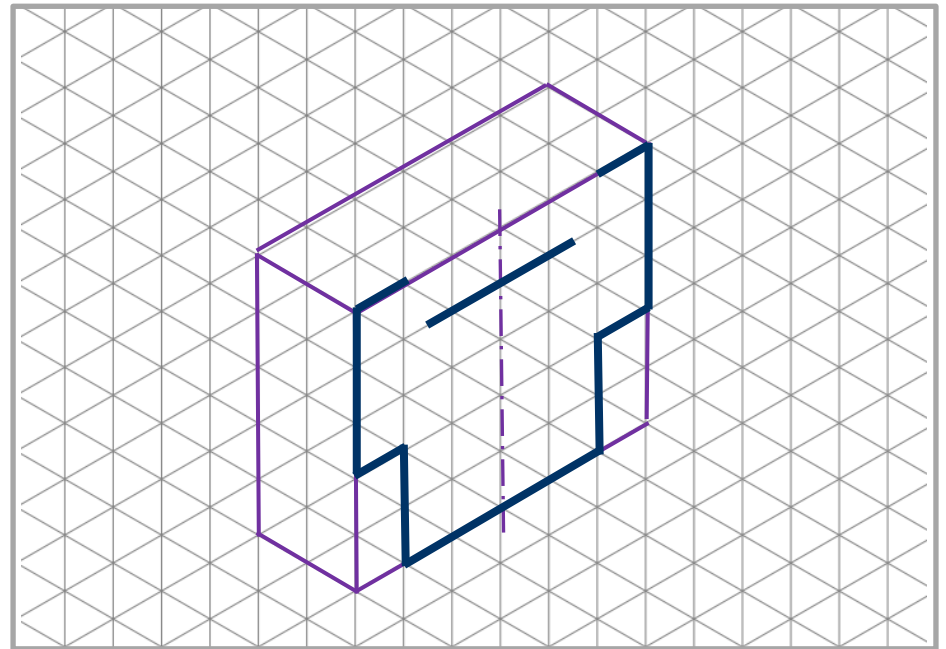
Perspectiva Isométrica - 4



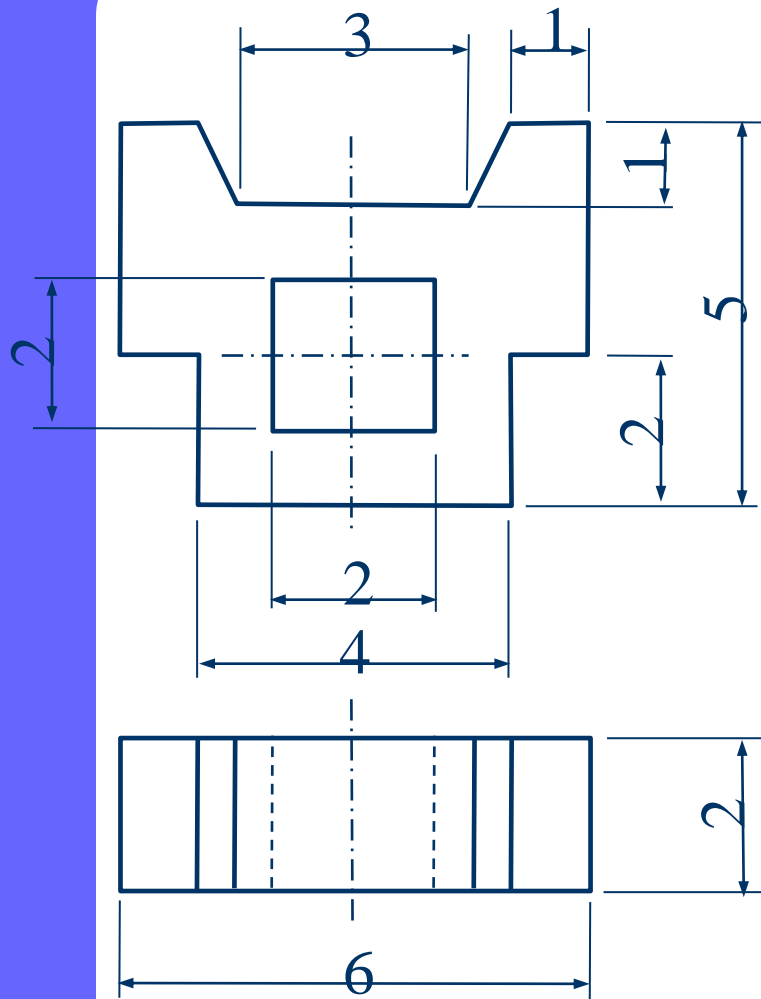
Vistas ortográficas



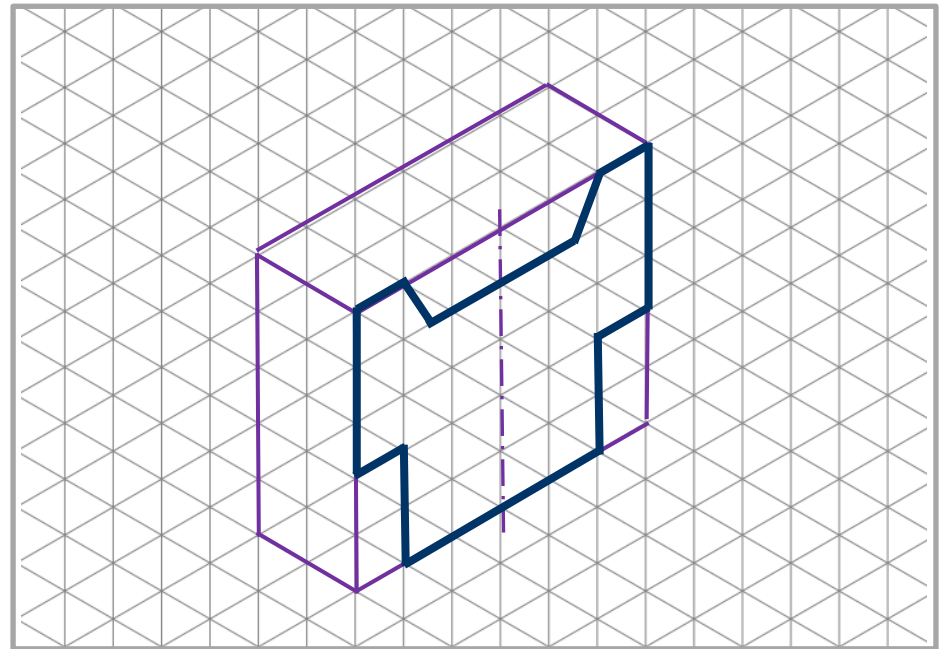
Perspectiva Isométrica - 4



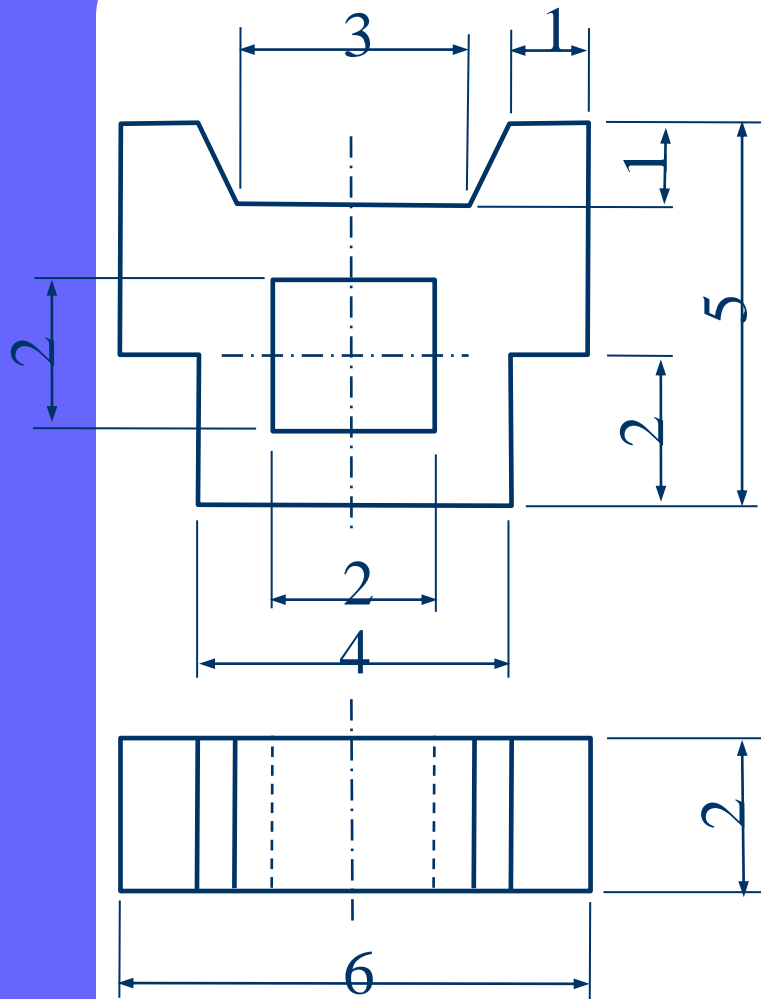
Vistas ortográficas



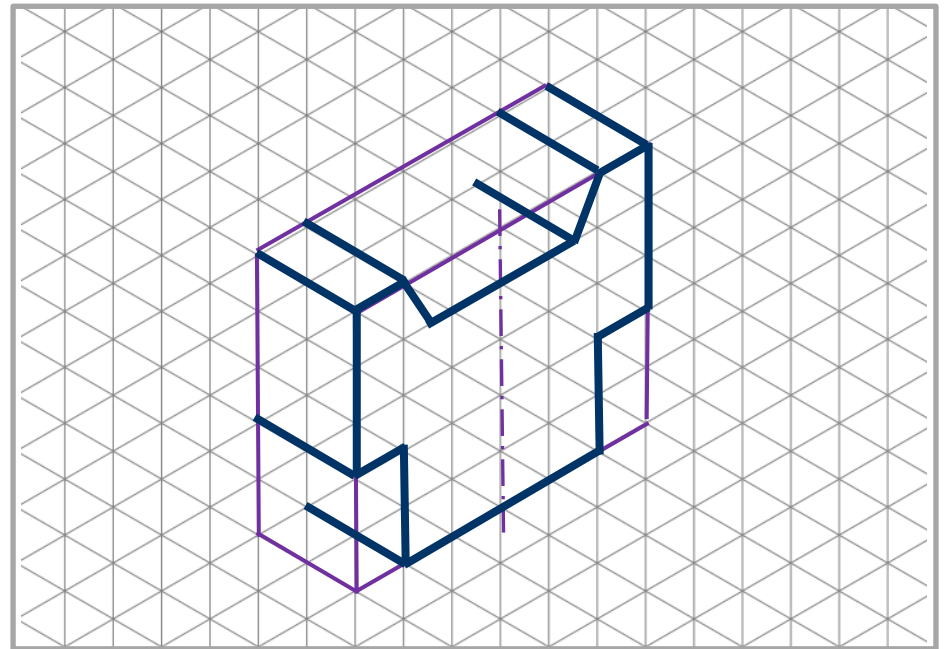
Perspectiva Isométrica - 4



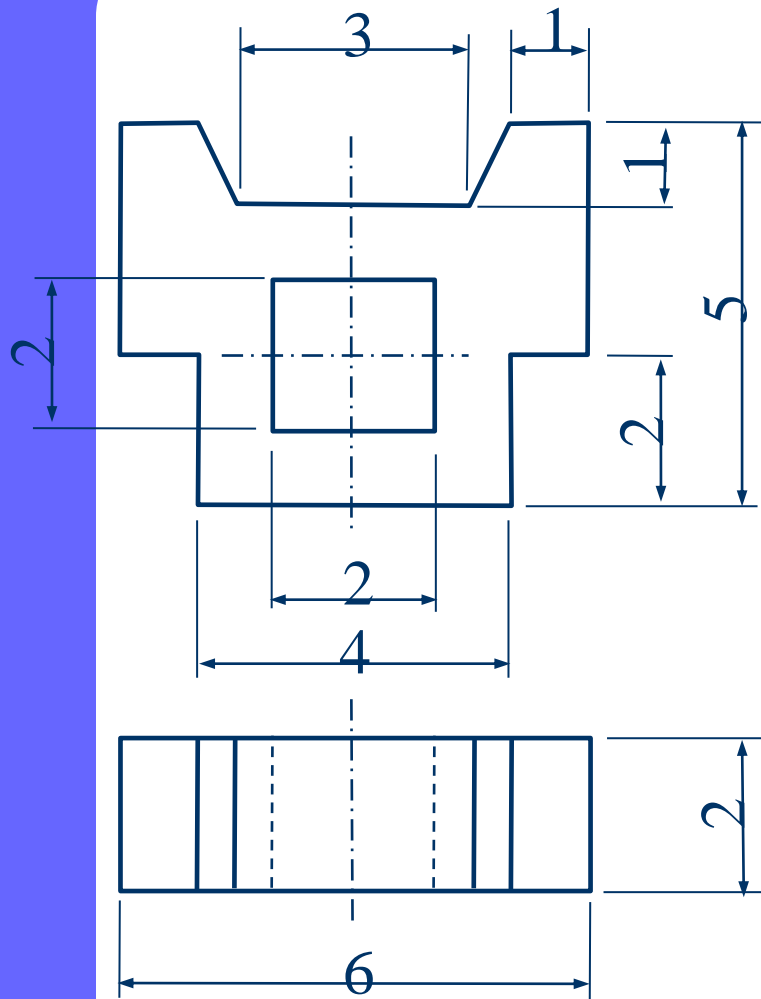
Vistas ortográficas



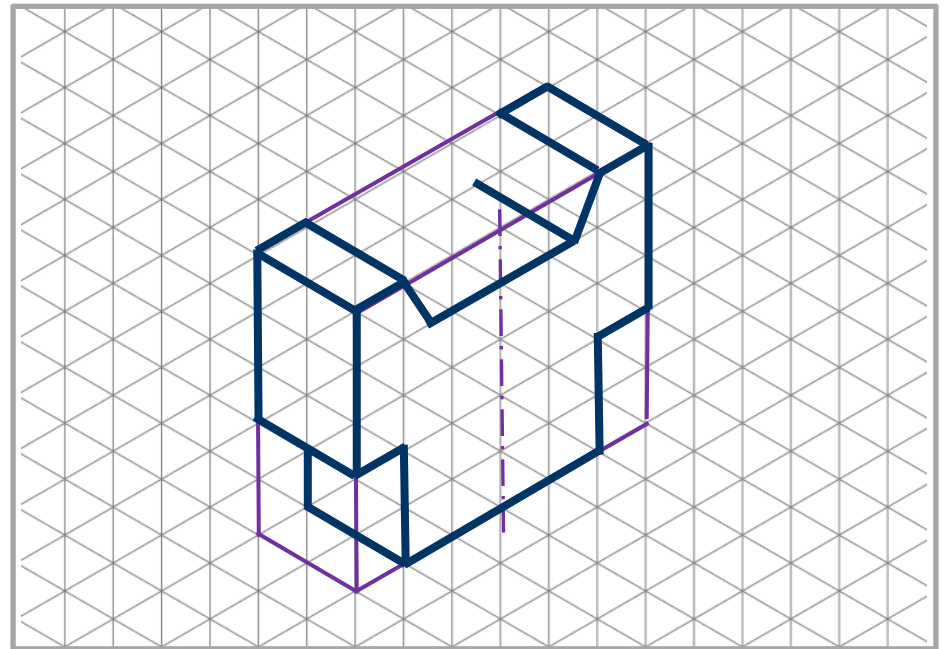
Perspectiva Isométrica - 4



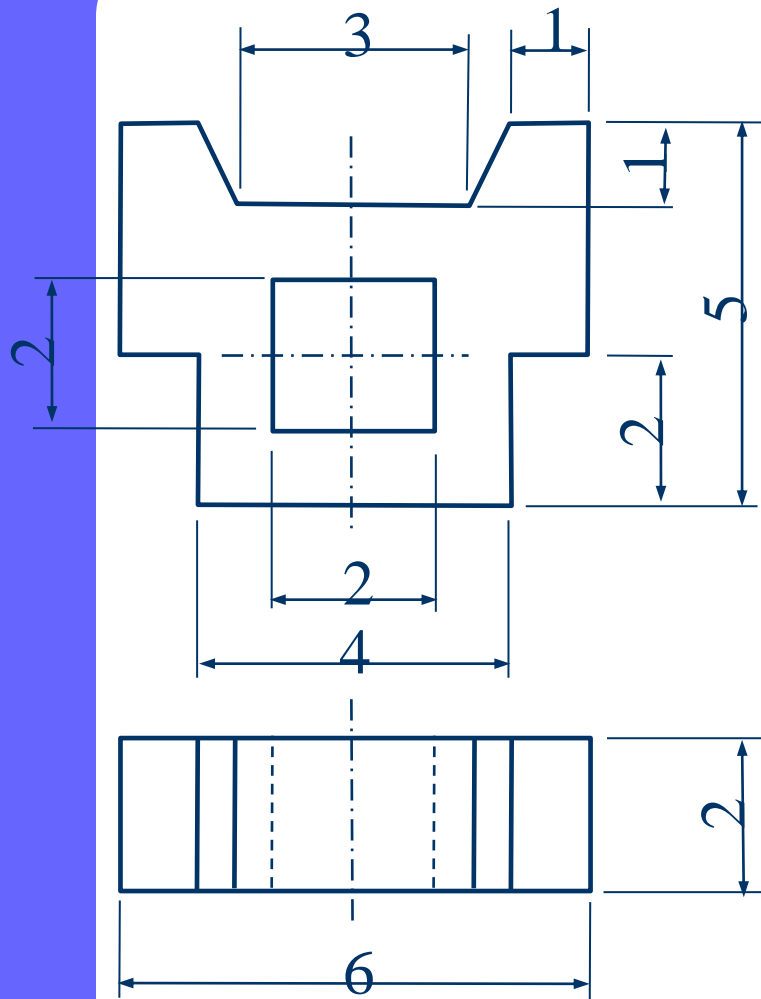
Vistas ortográficas



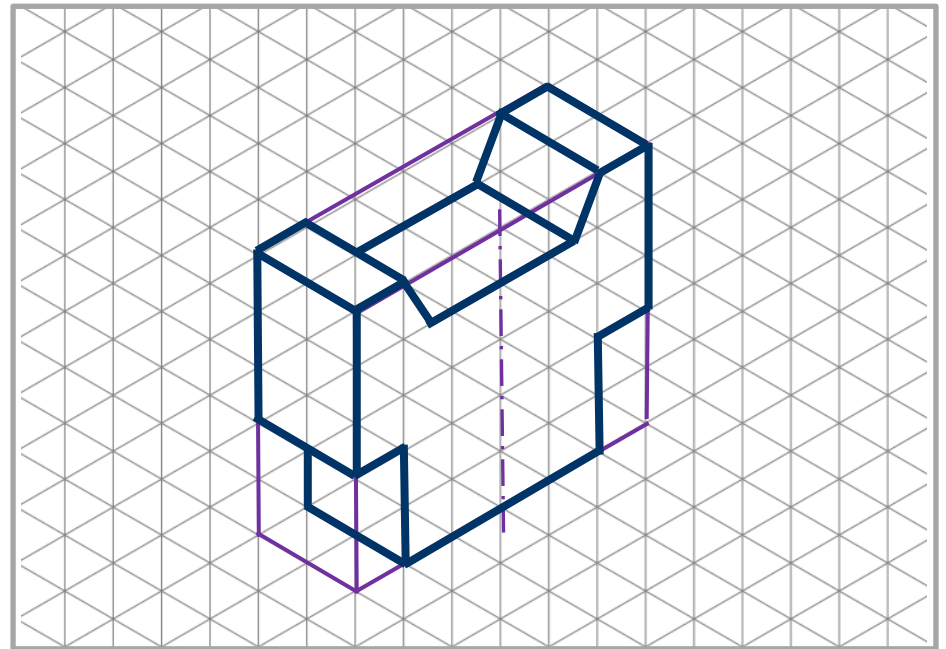
Perspectiva Isométrica - 4



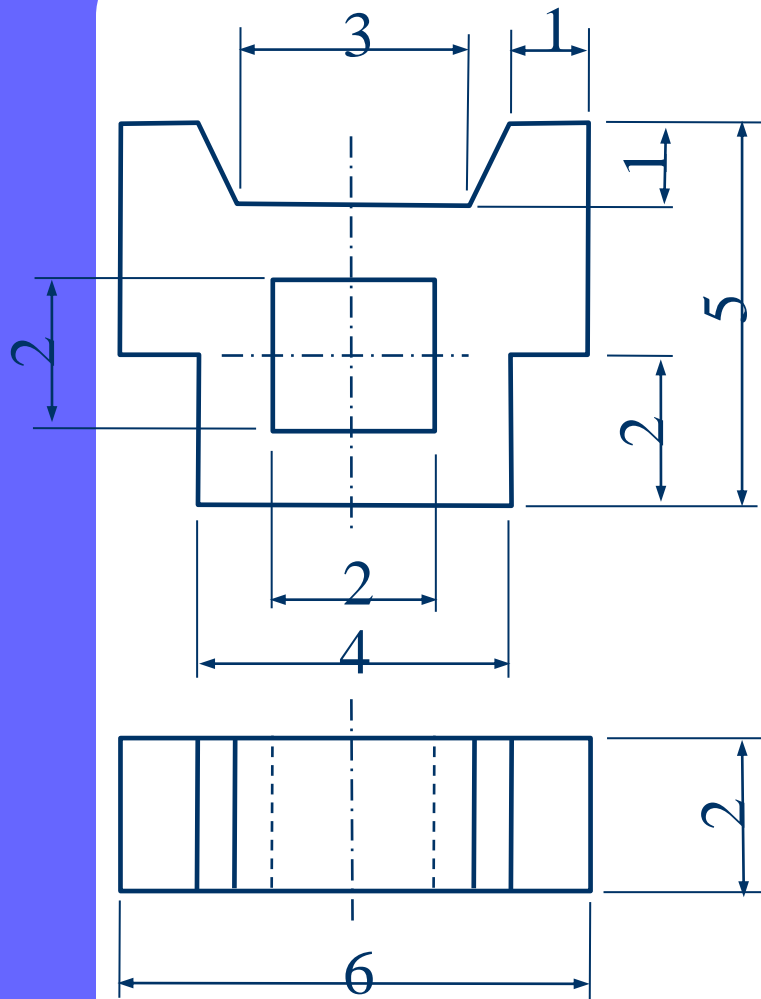
Vistas ortográficas



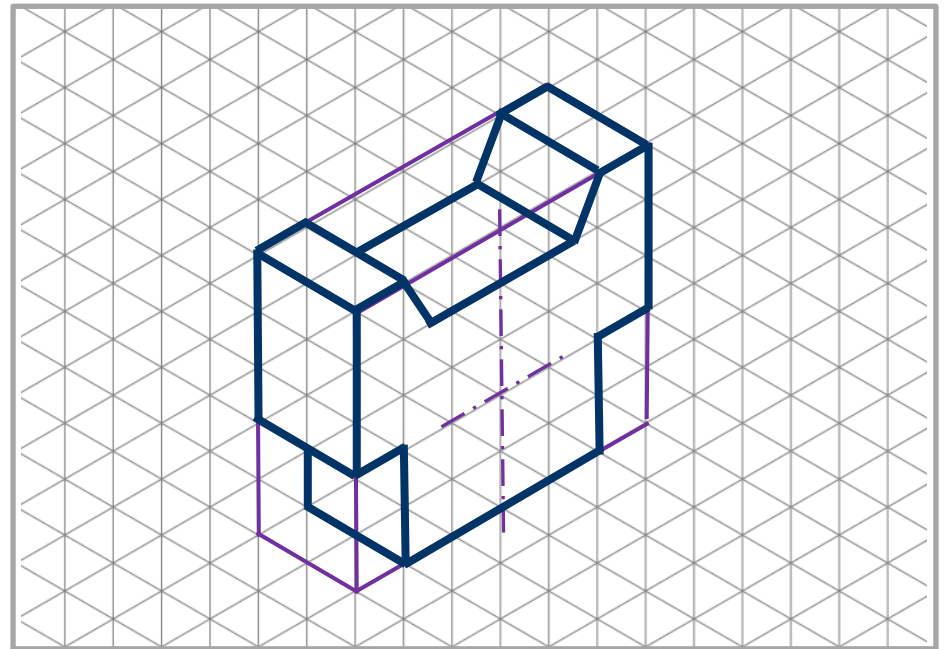
Perspectiva Isométrica - 4



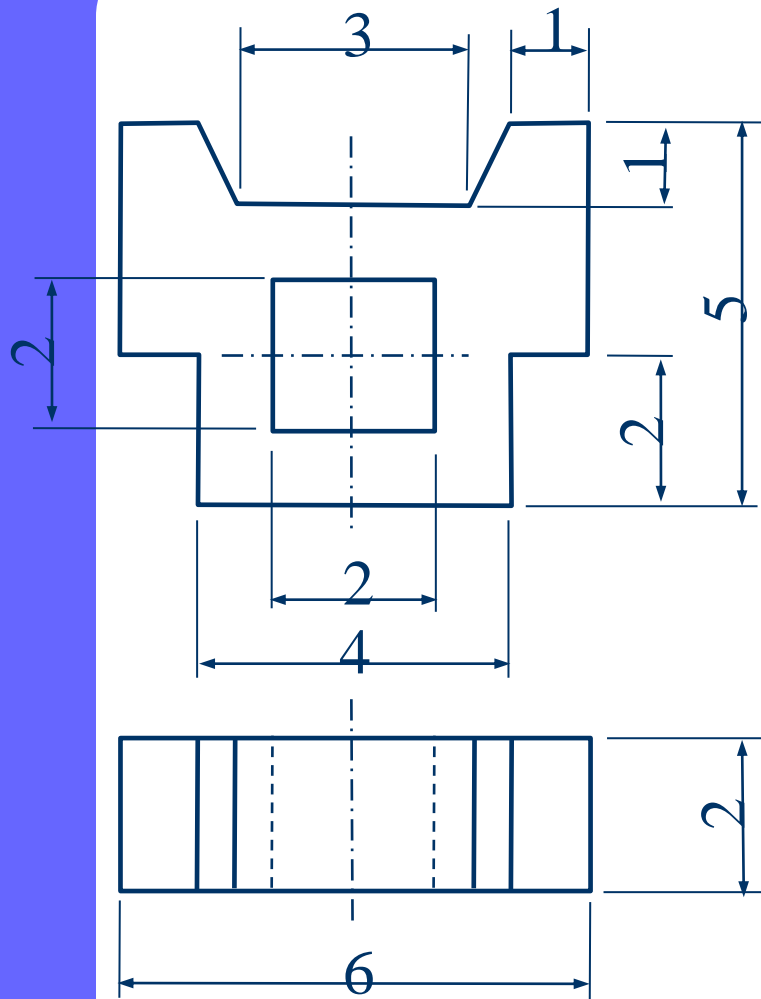
Vistas ortográficas



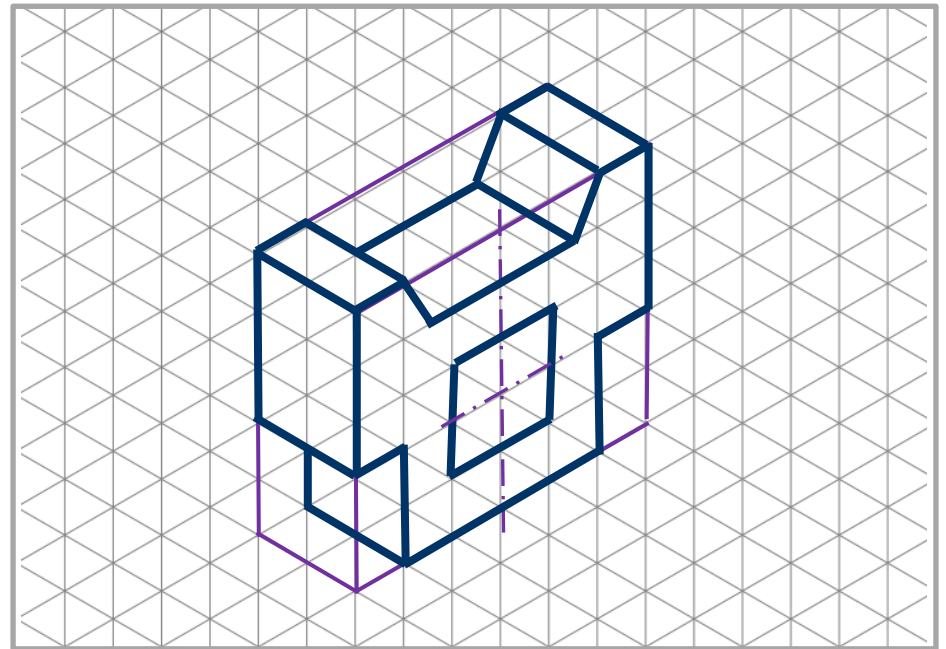
Perspectiva Isométrica - 4



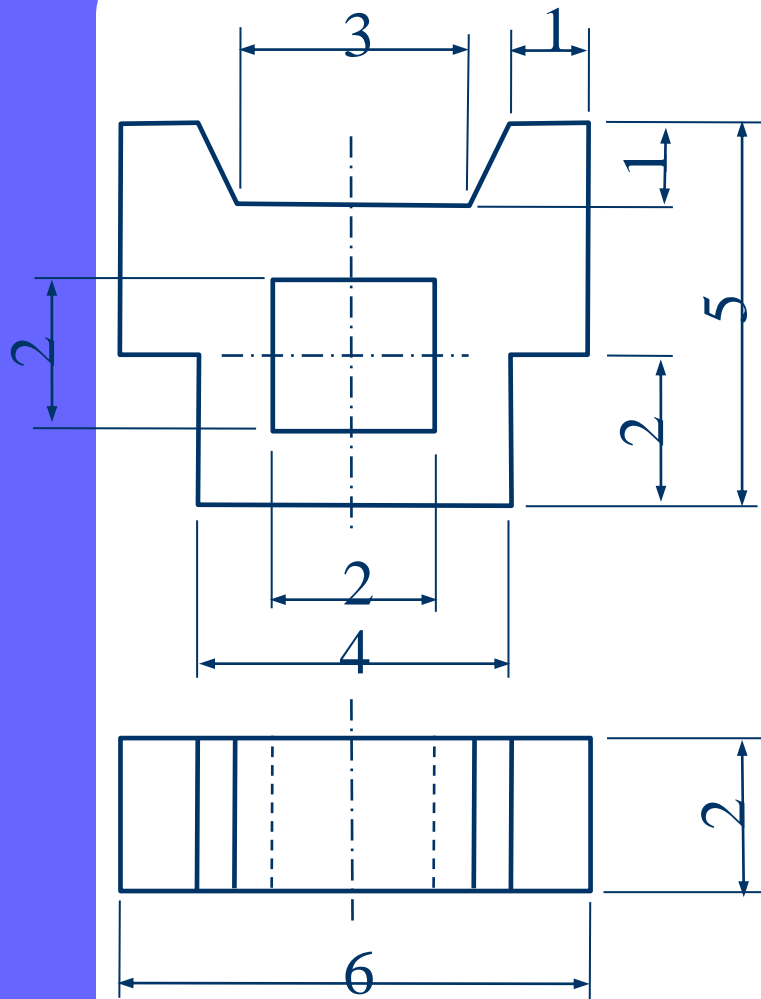
Vistas ortográficas



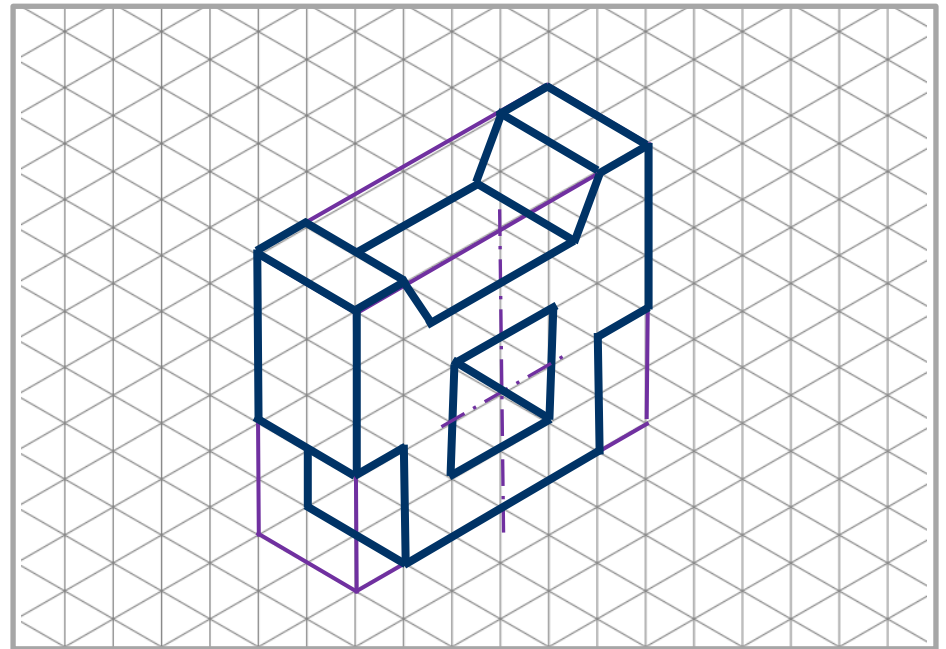
Perspectiva Isométrica - 4



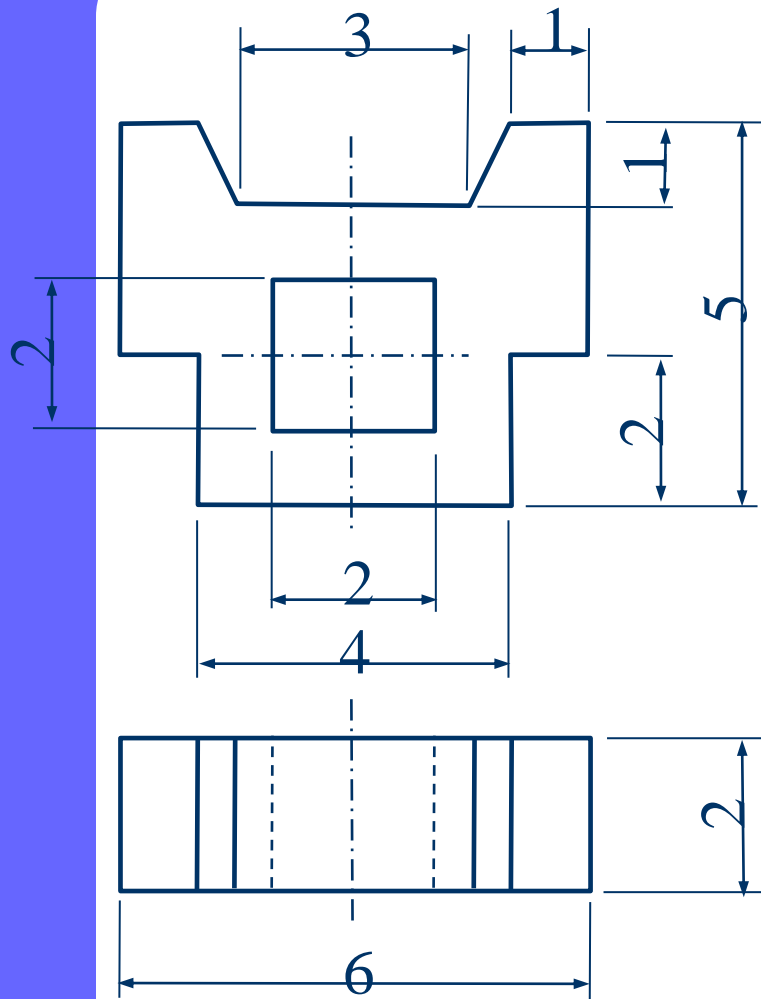
Vistas ortográficas



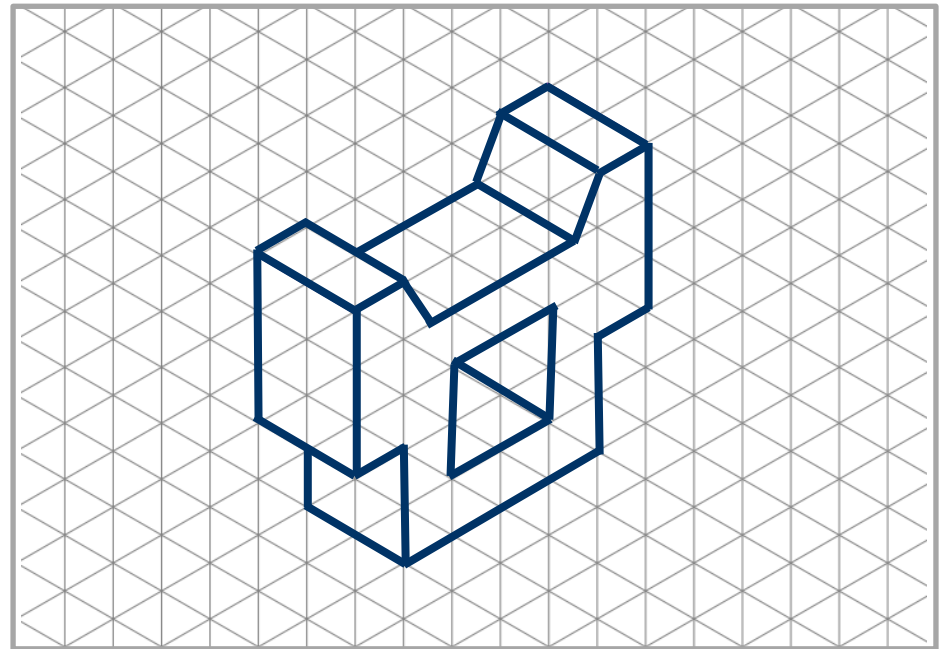
Perspectiva Isométrica - 4



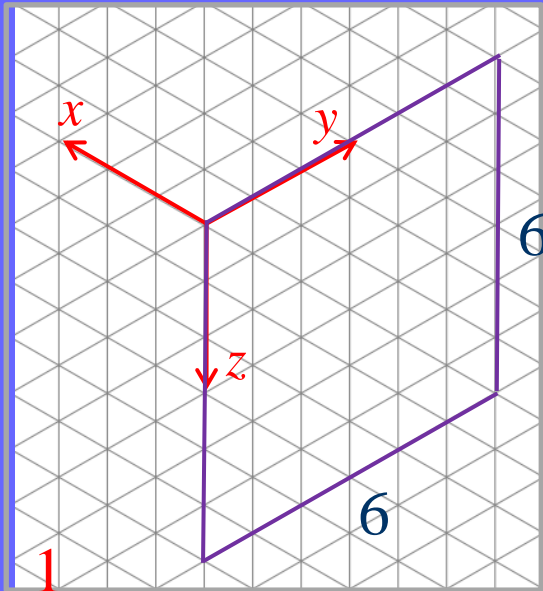
Vistas ortográficas



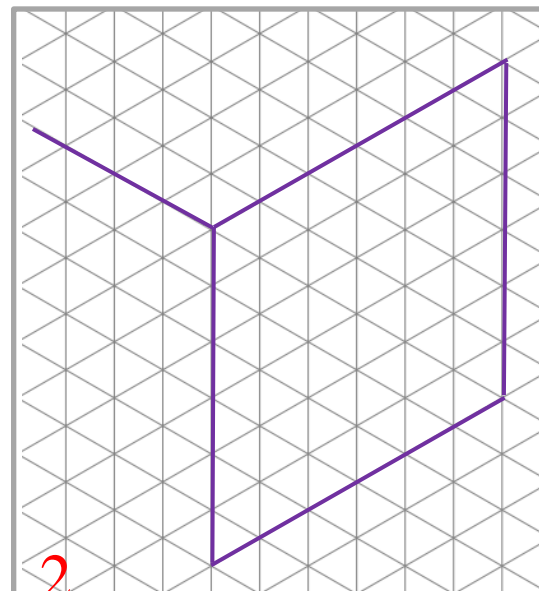
Perspectiva Isométrica - 4



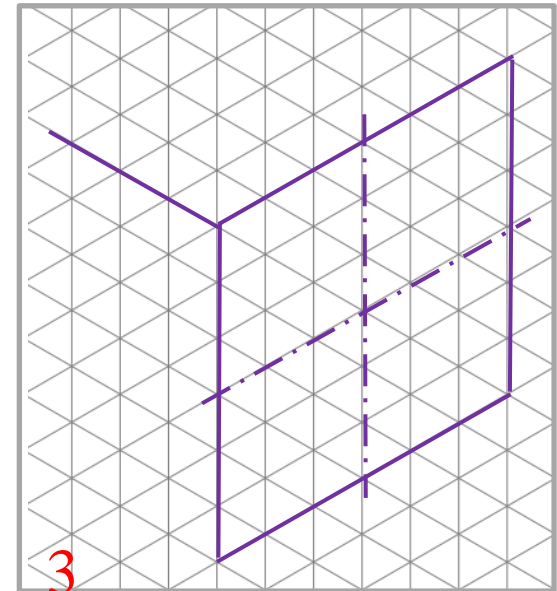
Perspectiva Isométrica de círculo (diâmetro 6 unidades)



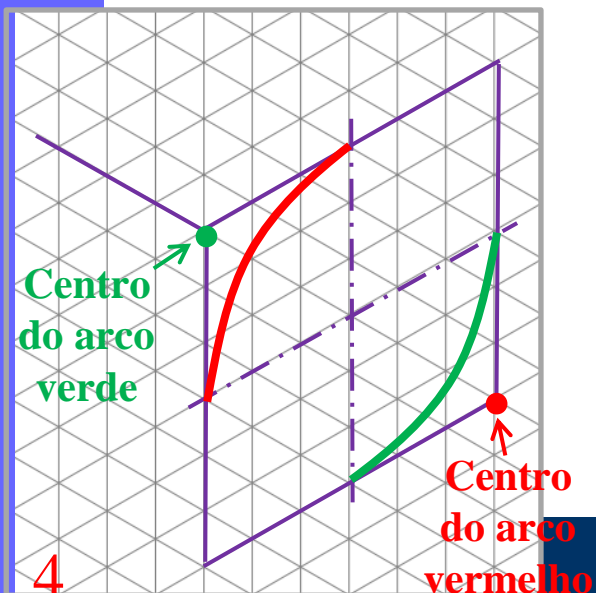
1 Desenhar entre os eixos y e z



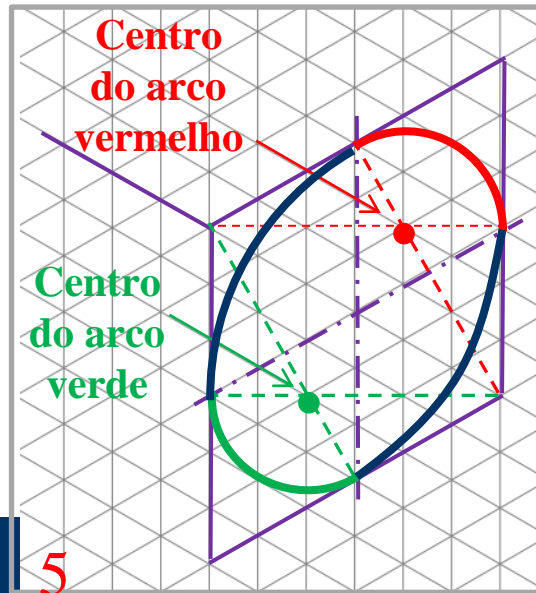
2 Desenhar losange 6 x 6



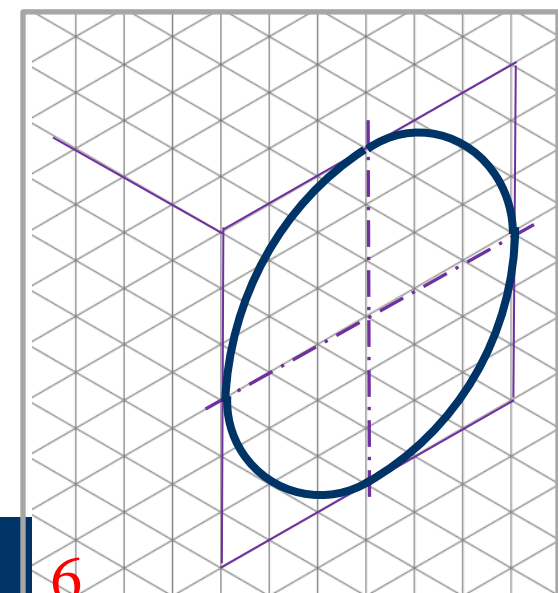
3 Desenhar linhas de centro



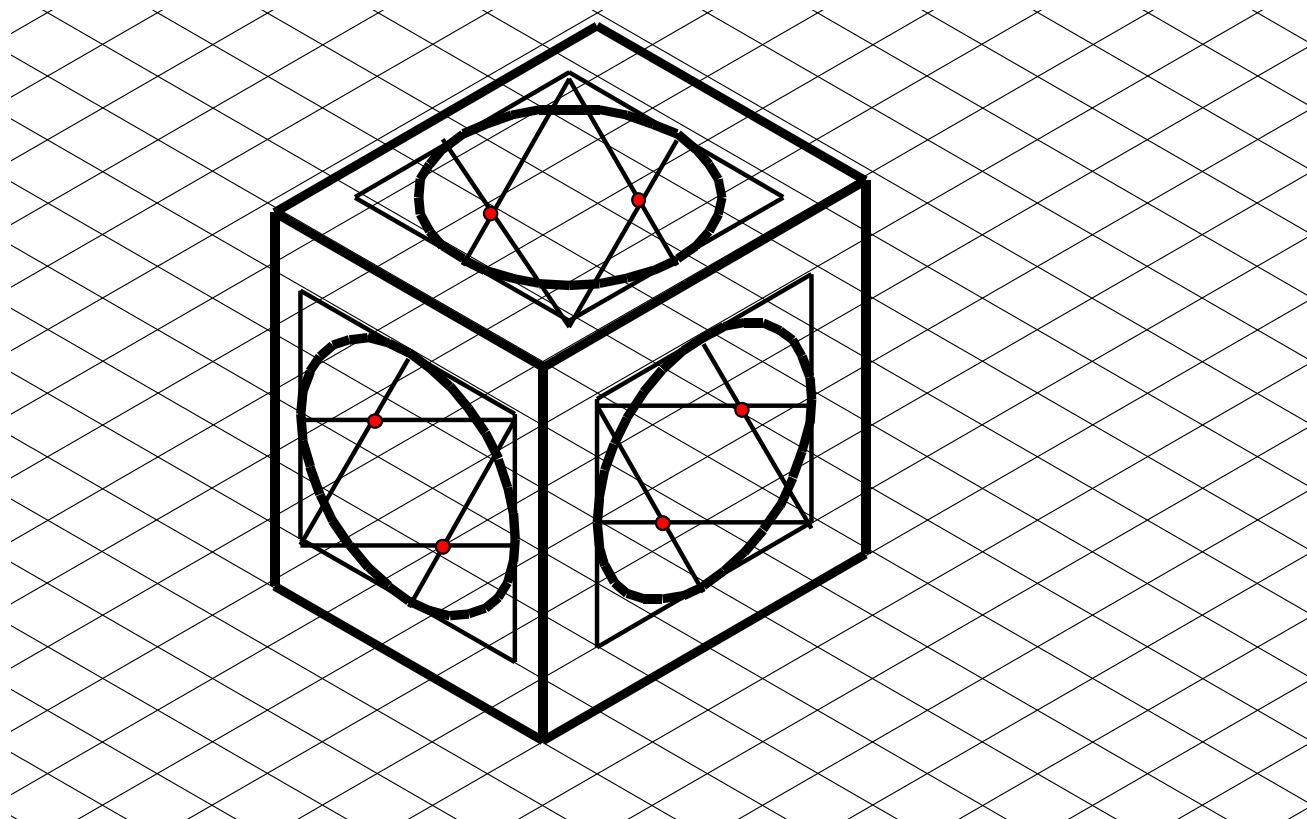
4 Desenhar arcos maiores



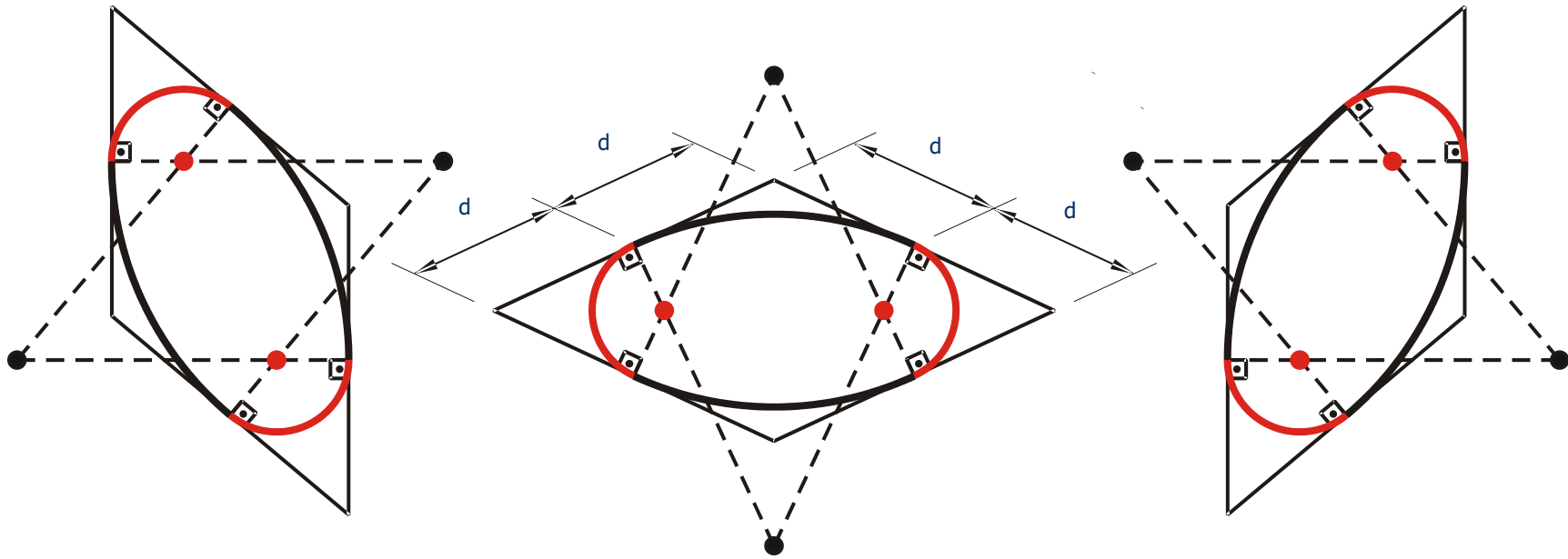
5 Desenhar arcos menores



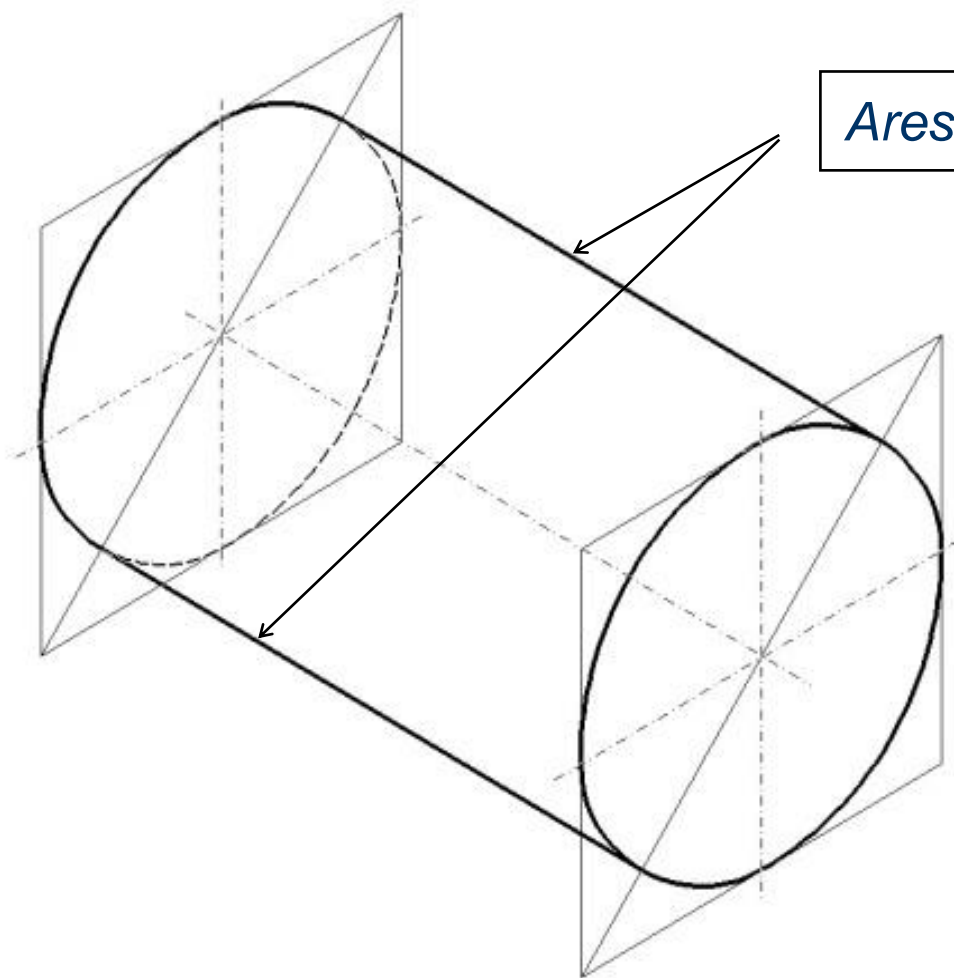
6 Apagar linhas auxiliares



CIRCUNFERÊNCIAS ISOMÉTRICAS EM VÁRIOS PLANOS



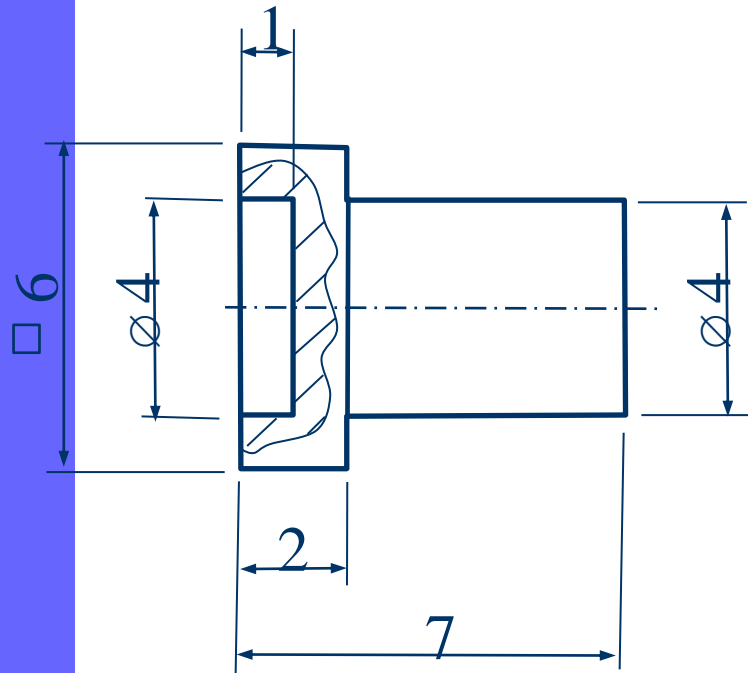
FALSA ELIPSE PARA ÂNGULO MAIOR QUE 30°



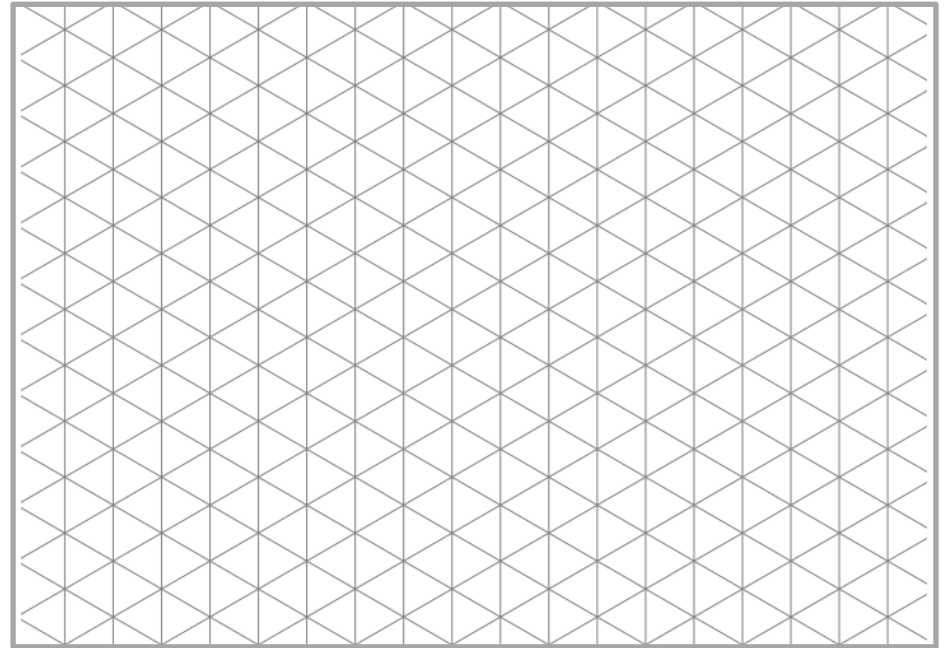
Arestas de silueta

TRAÇADO DE CILINDROS (ARESTAS DE SILUETA)

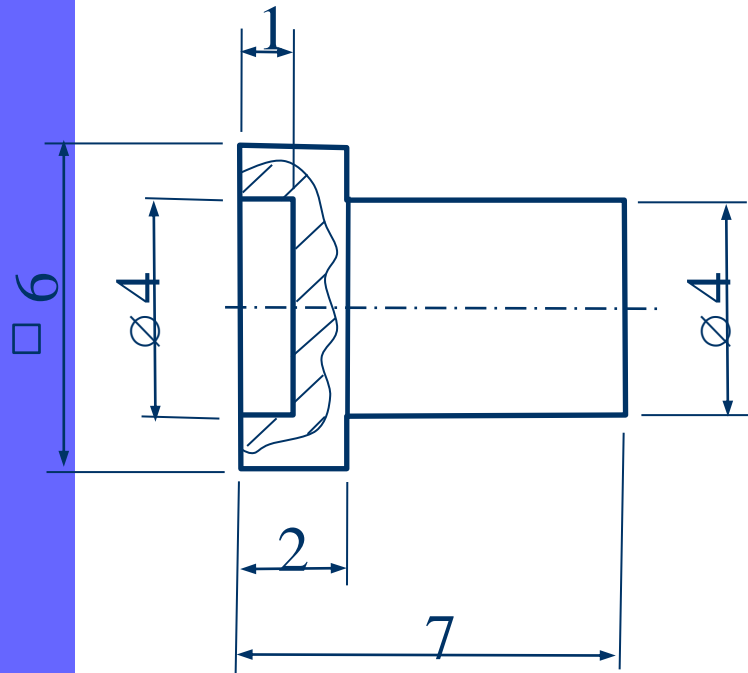
Vistas ortográficas



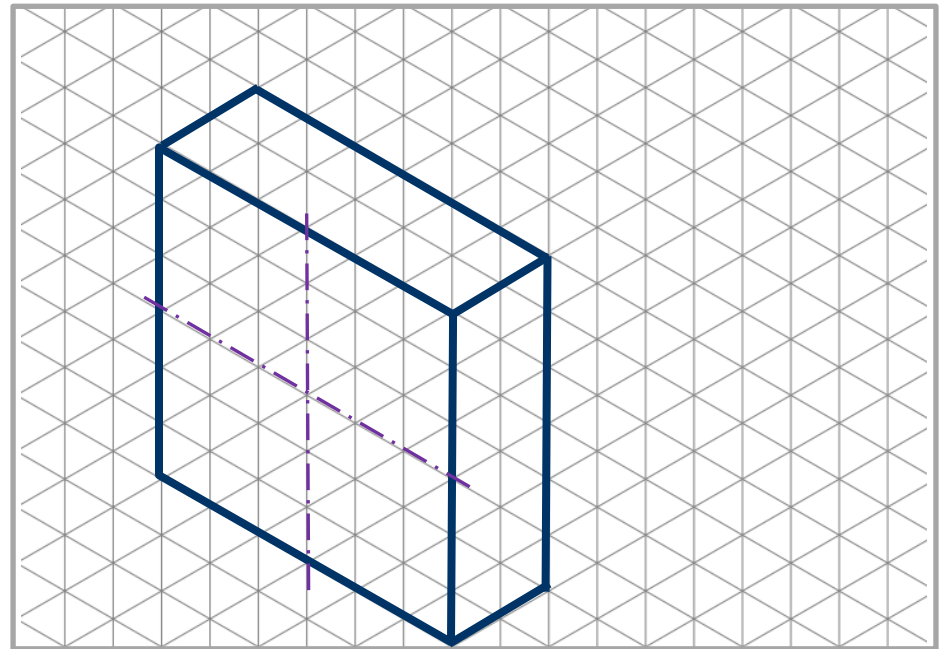
Perspectiva Isométrica - 5



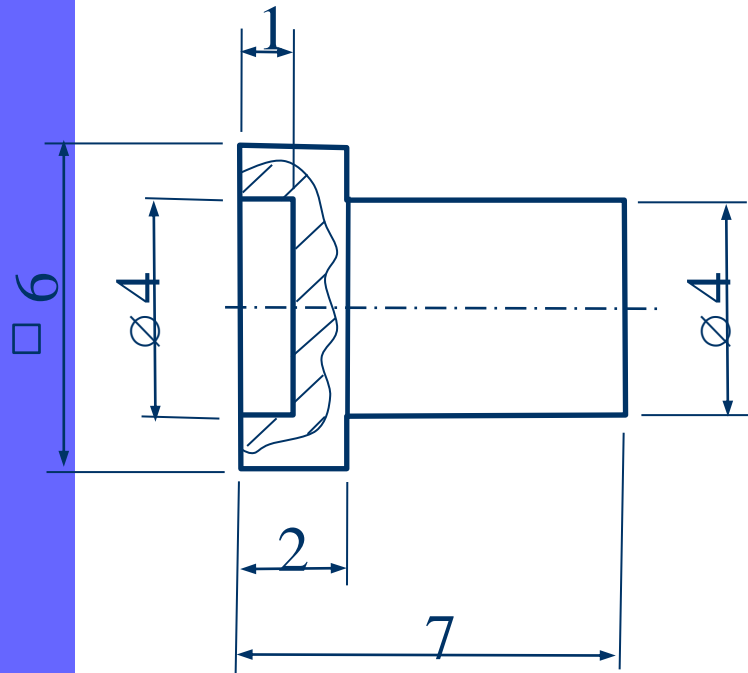
Vistas ortográficas



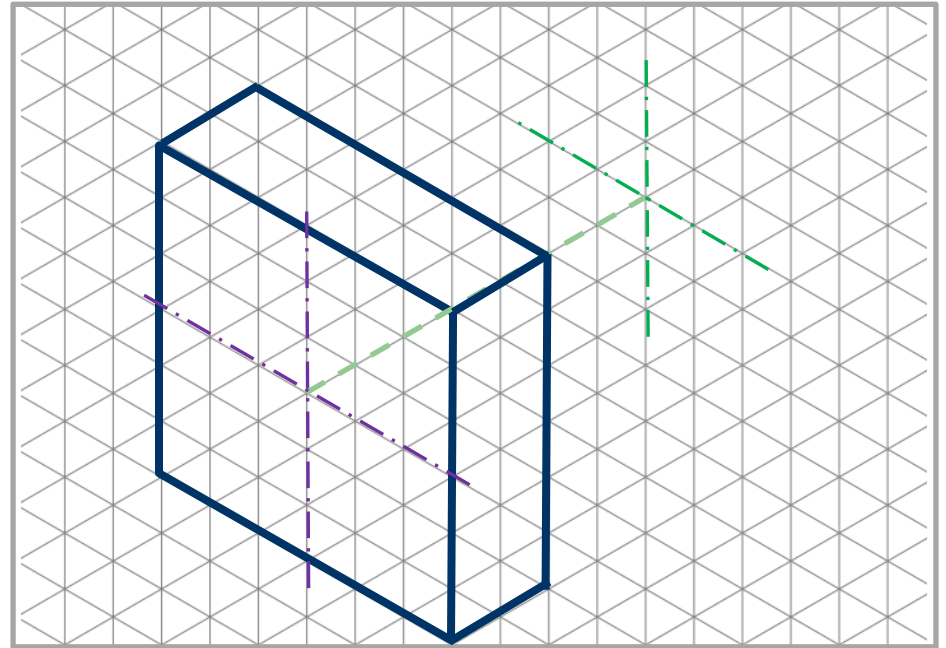
Perspectiva Isométrica - 5



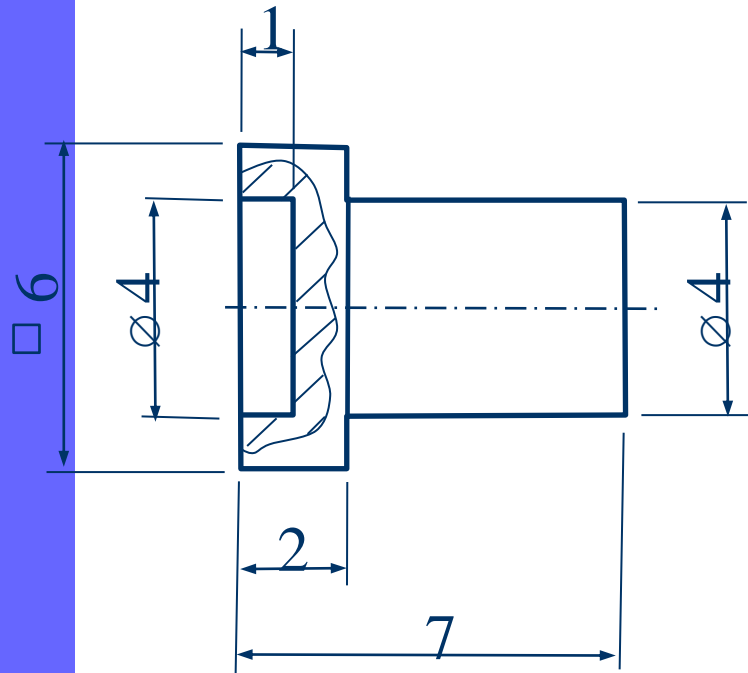
Vistas ortográficas



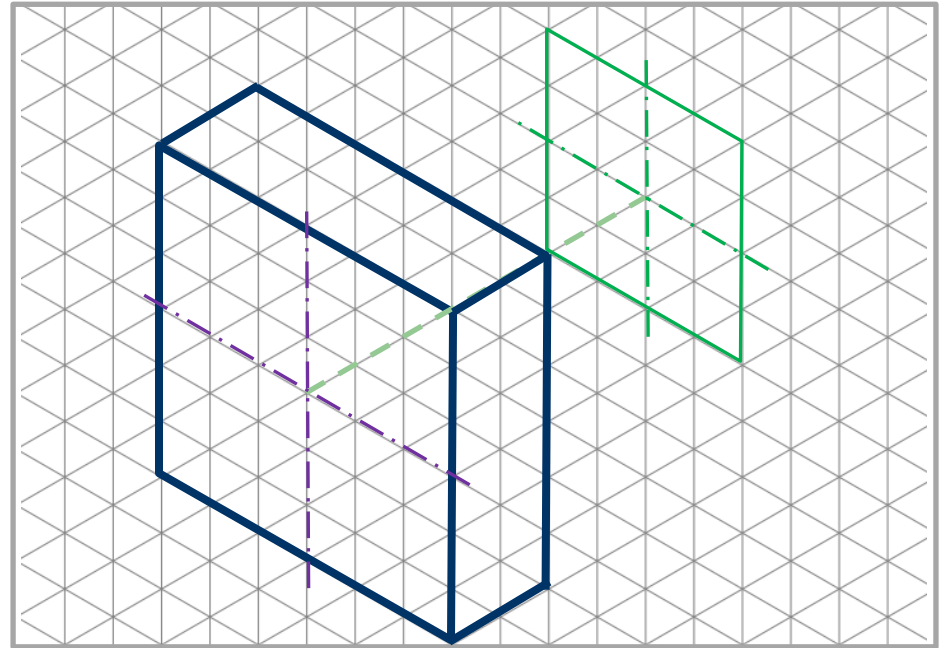
Perspectiva Isométrica - 5



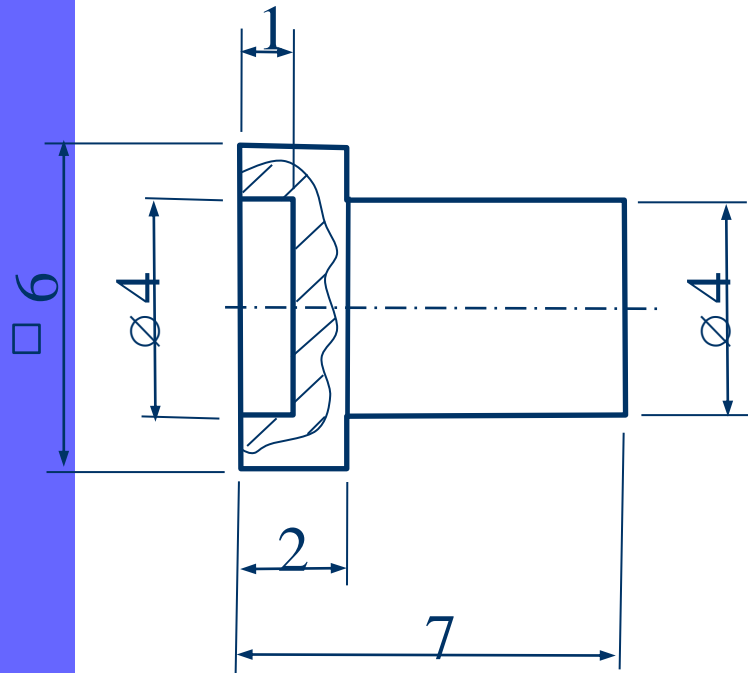
Vistas ortográficas



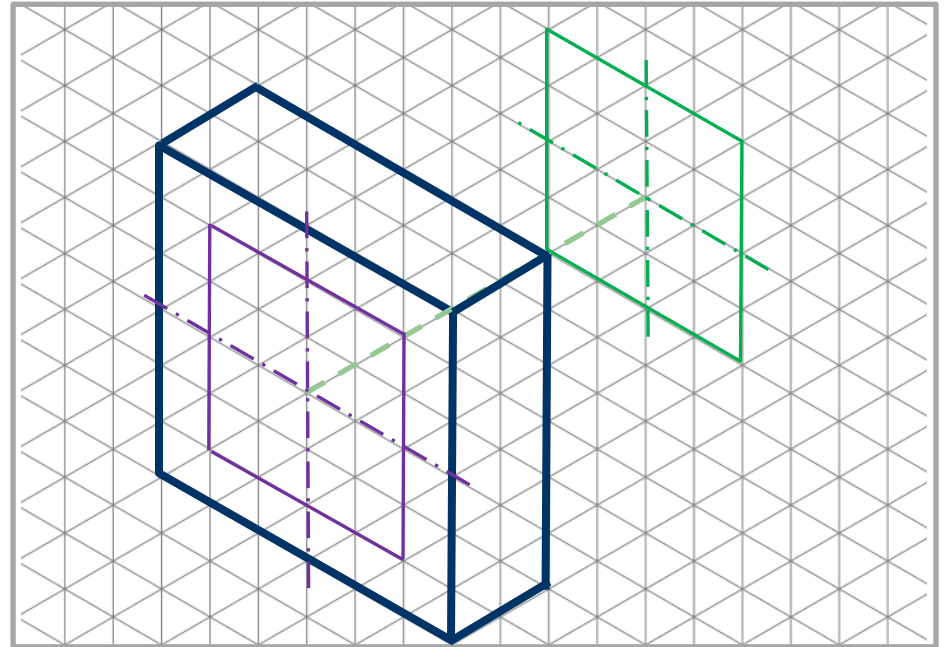
Perspectiva Isométrica - 5



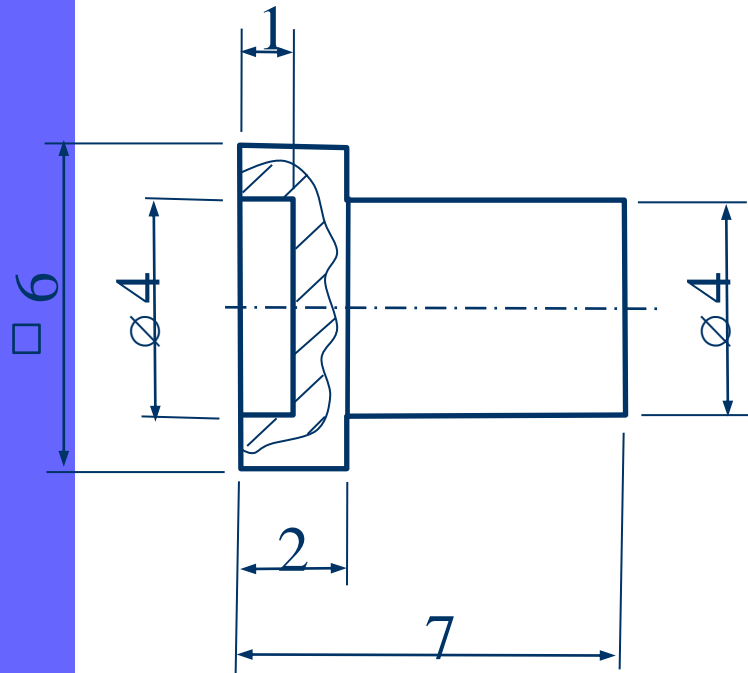
Vistas ortográficas



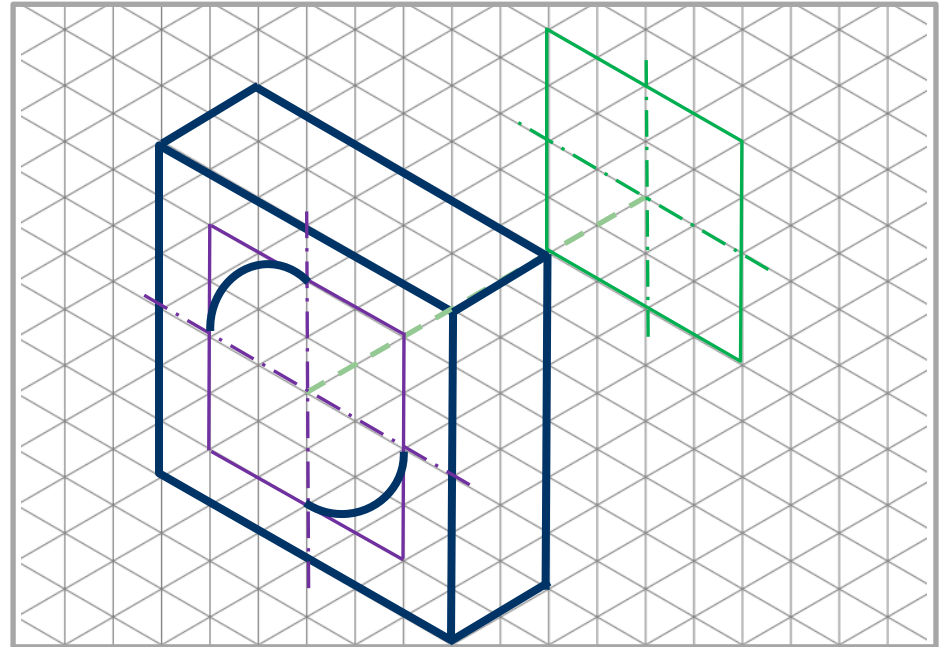
Perspectiva Isométrica - 5



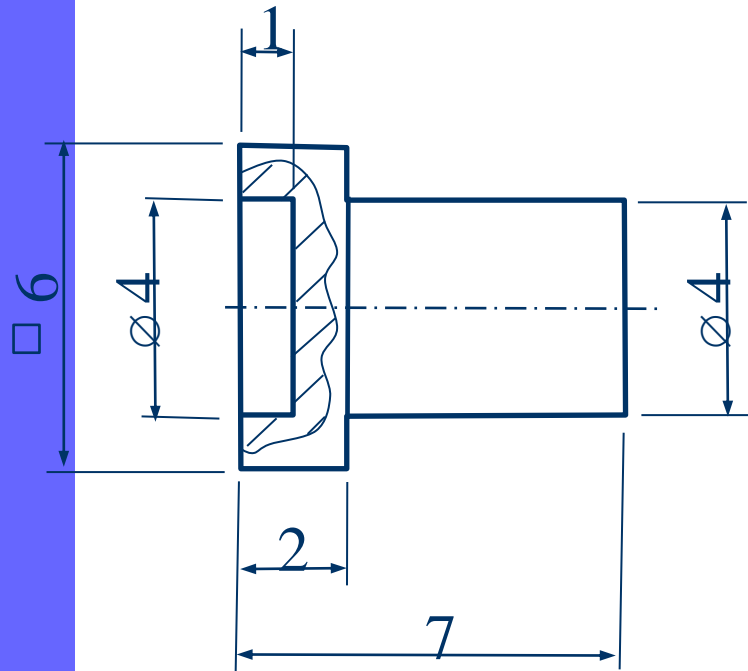
Vistas ortográficas



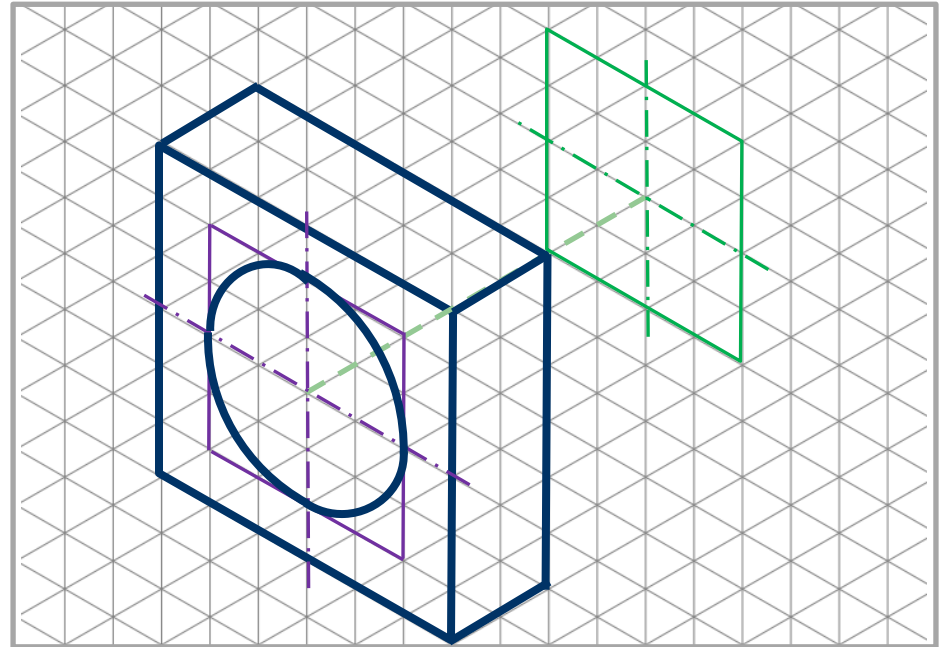
Perspectiva Isométrica - 5



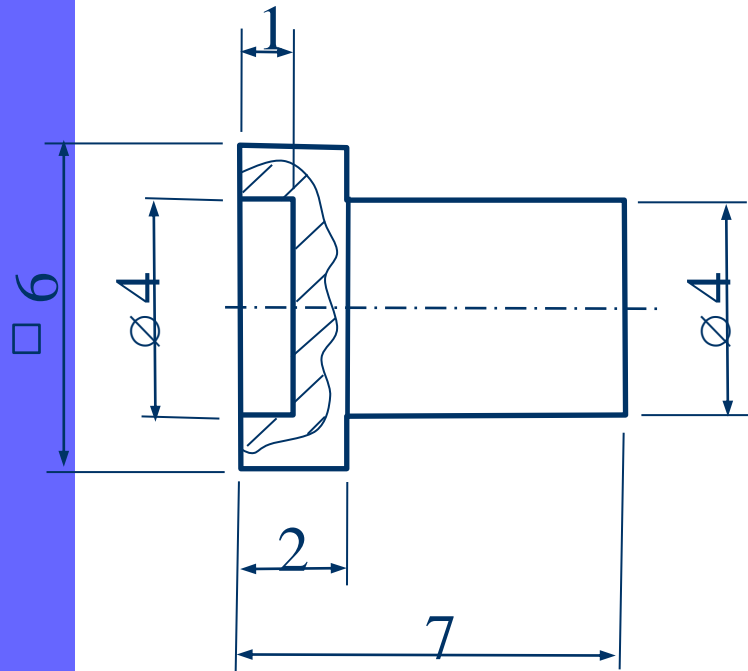
Vistas ortográficas



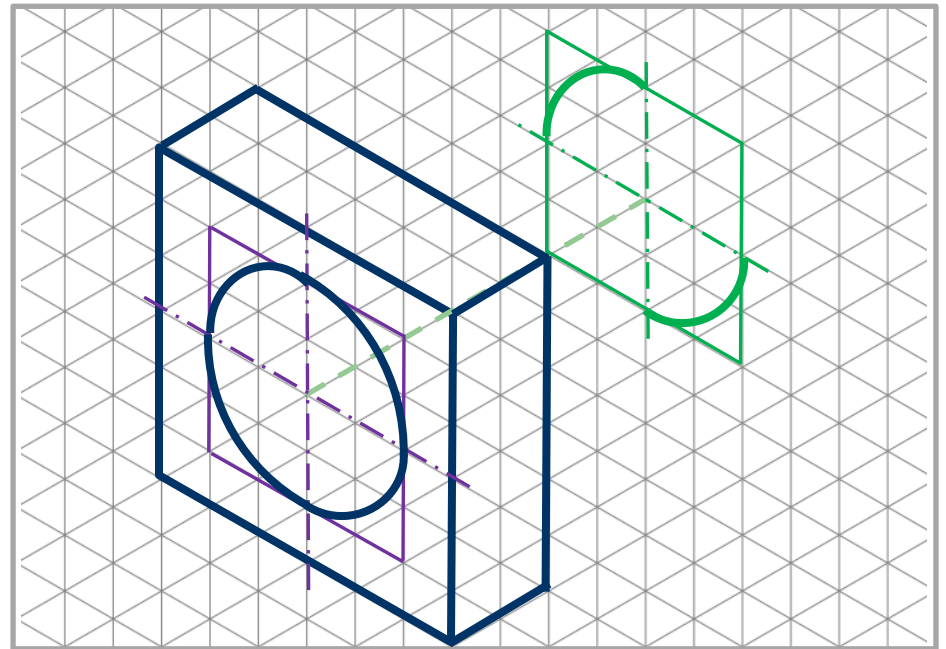
Perspectiva Isométrica - 5



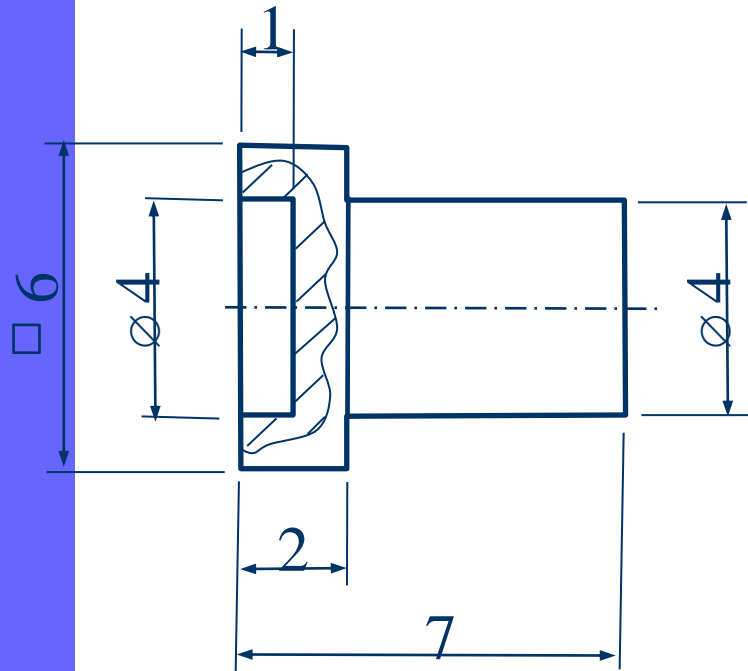
Vistas ortográficas



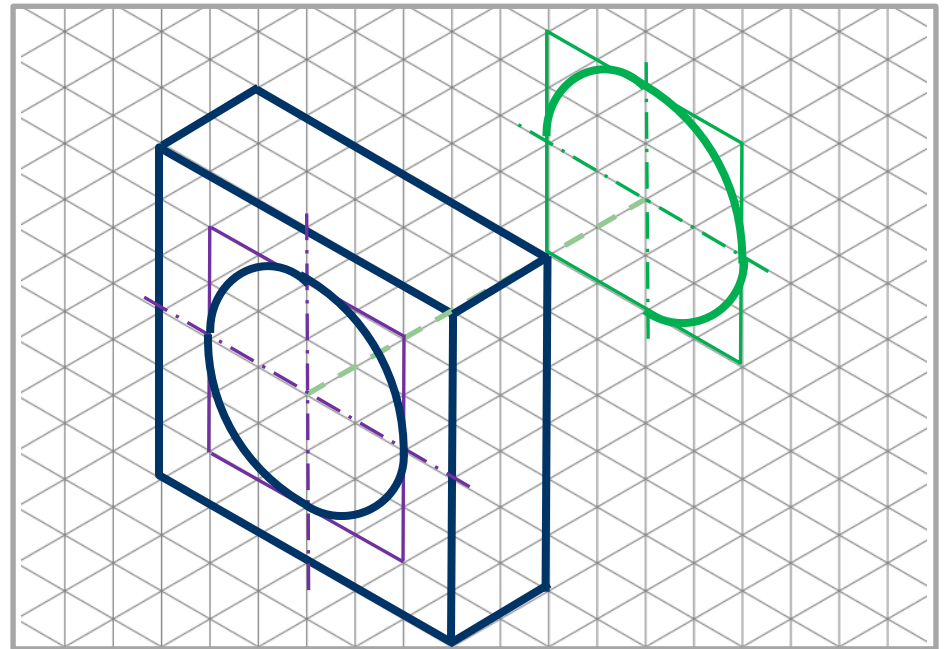
Perspectiva Isométrica - 5



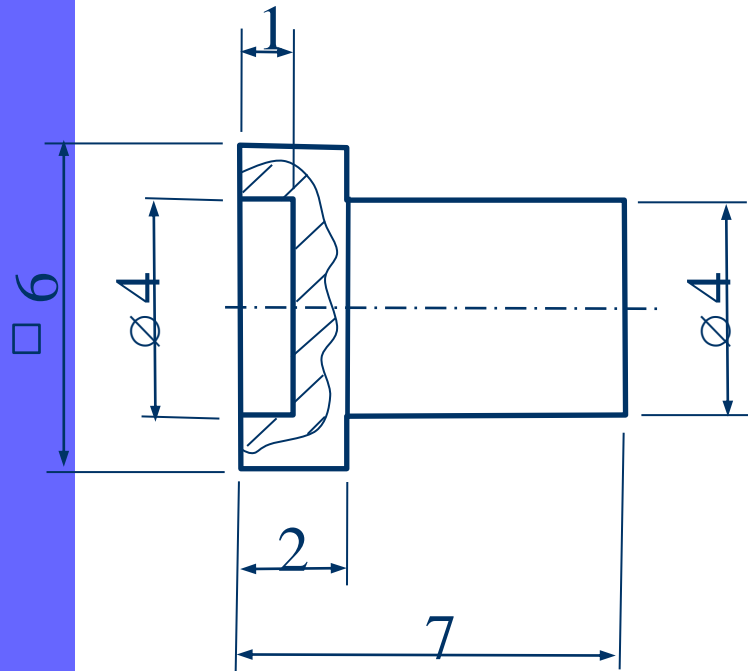
Vistas ortográficas



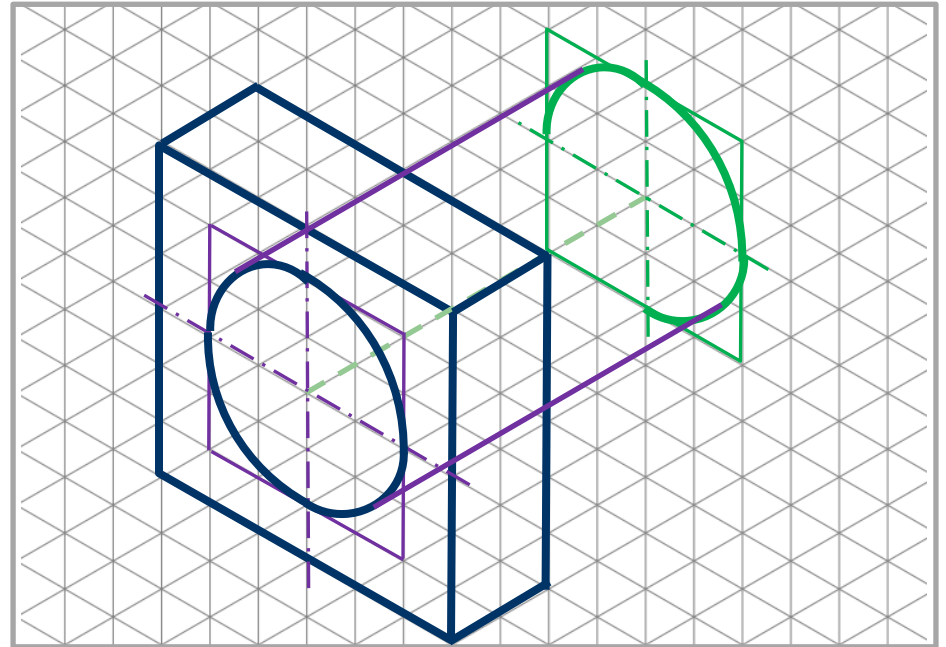
Perspectiva Isométrica - 5



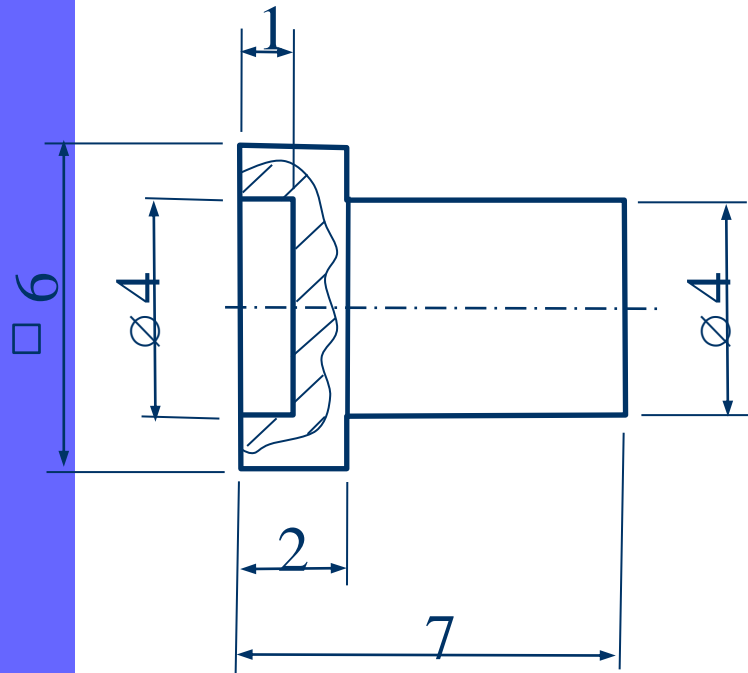
Vistas ortográficas



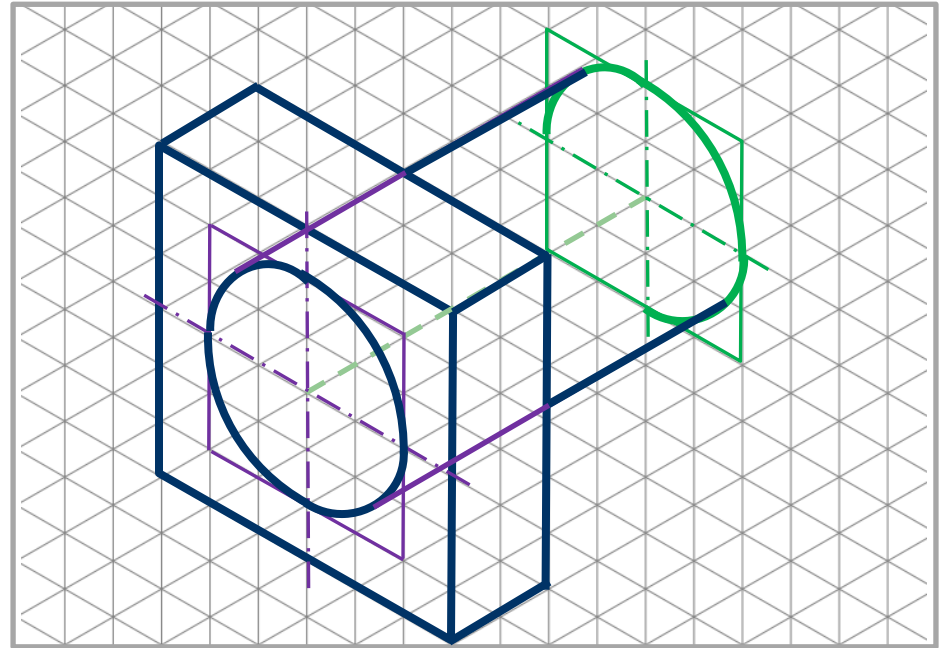
Perspectiva Isométrica - 5



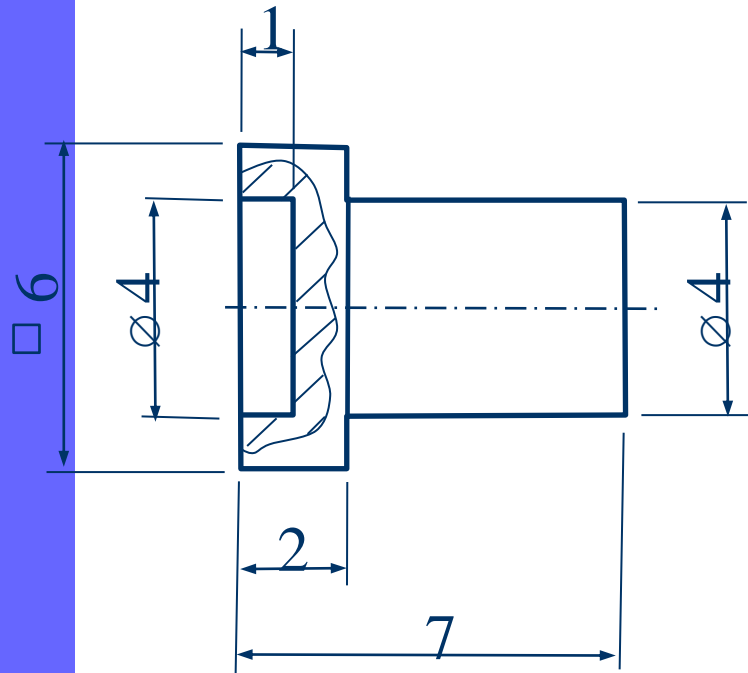
Vistas ortográficas



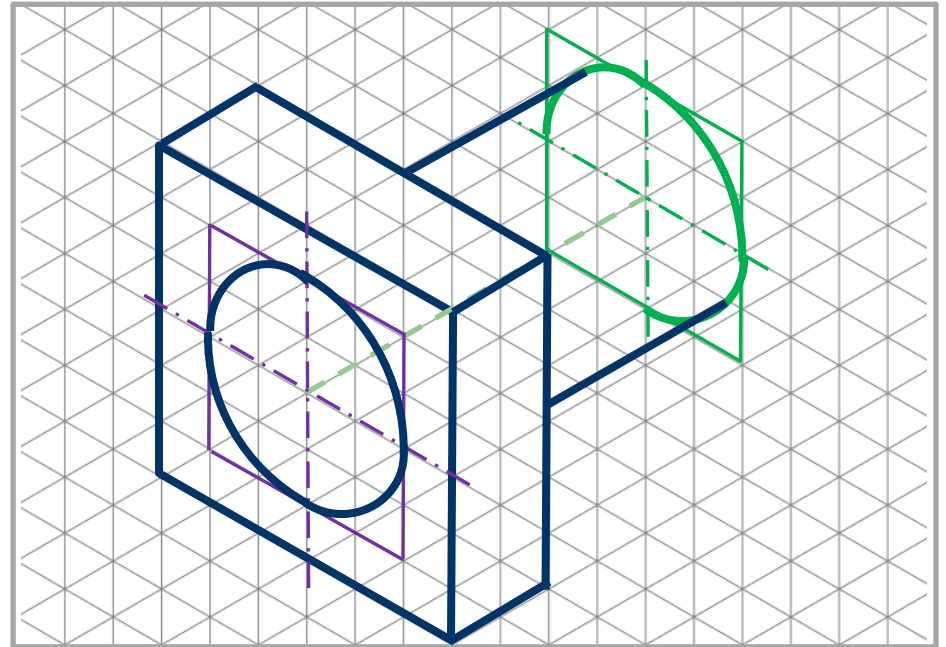
Perspectiva Isométrica - 5



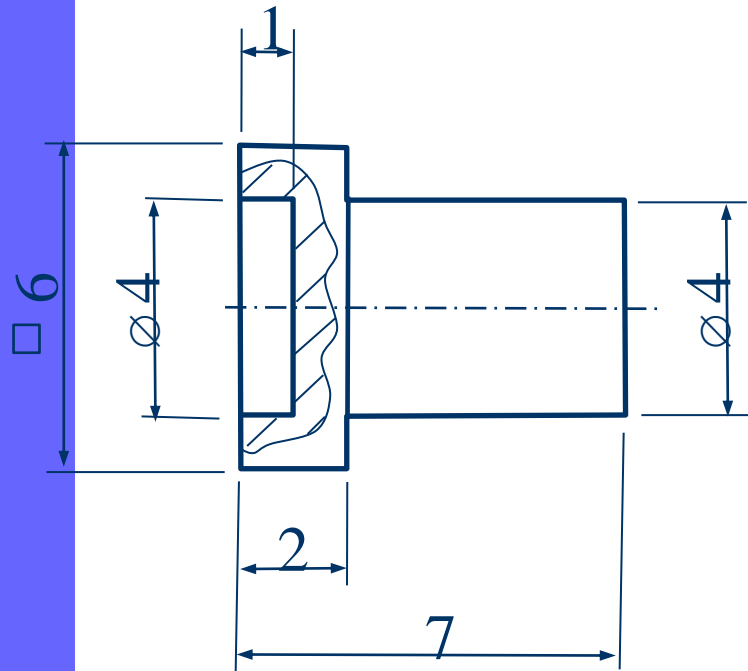
Vistas ortográficas



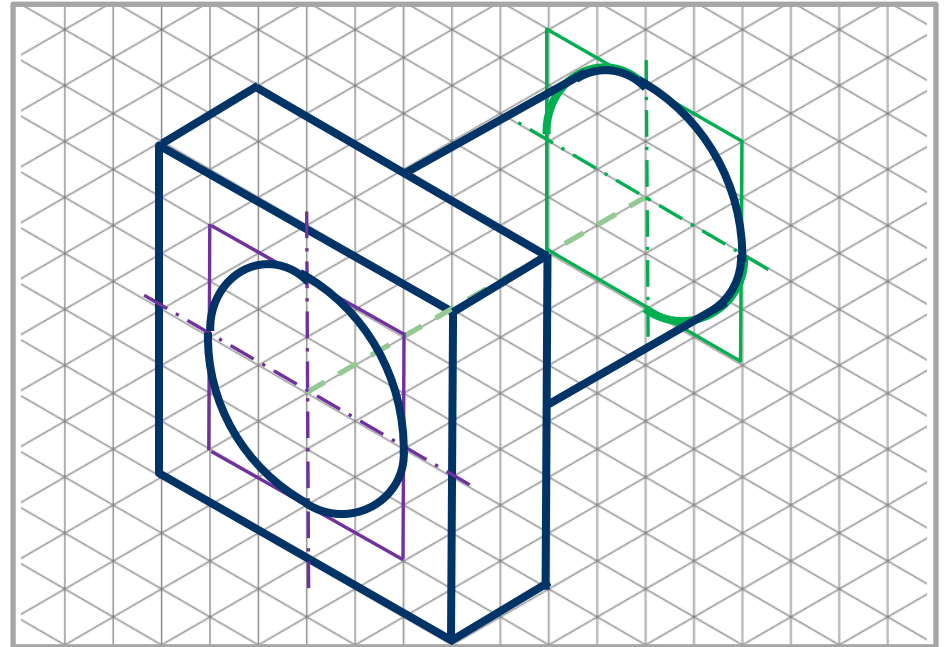
Perspectiva Isométrica - 5



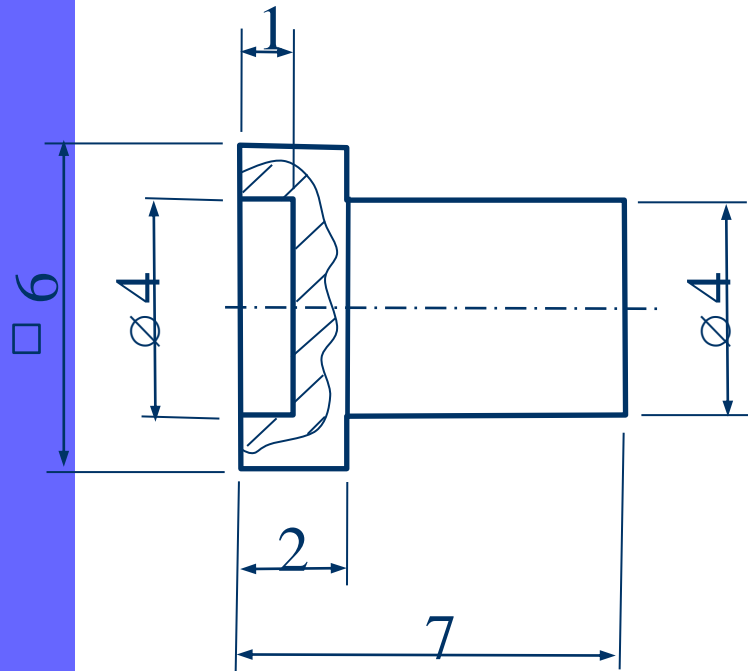
Vistas ortográficas



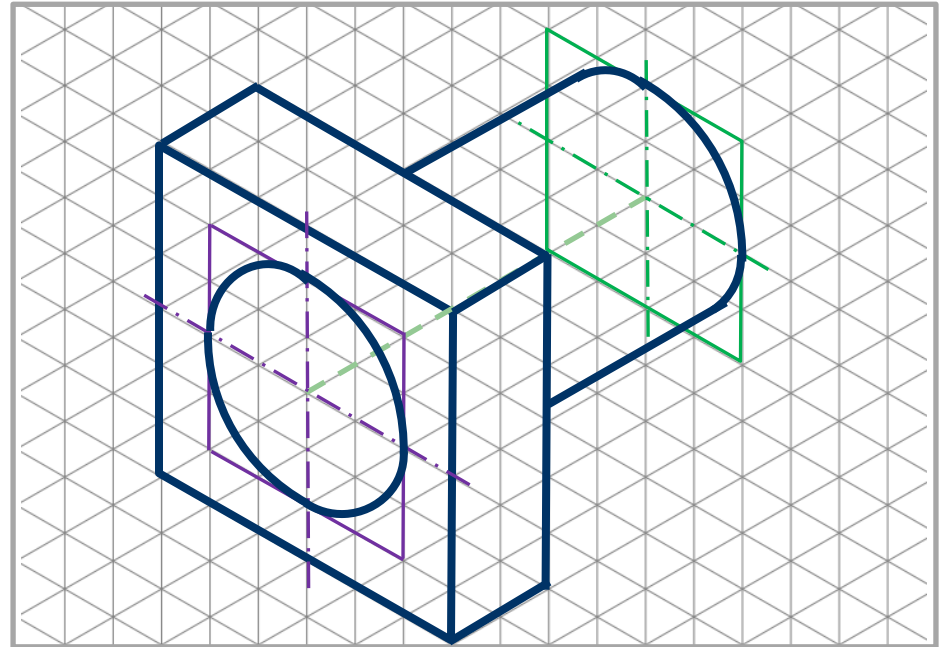
Perspectiva Isométrica - 5



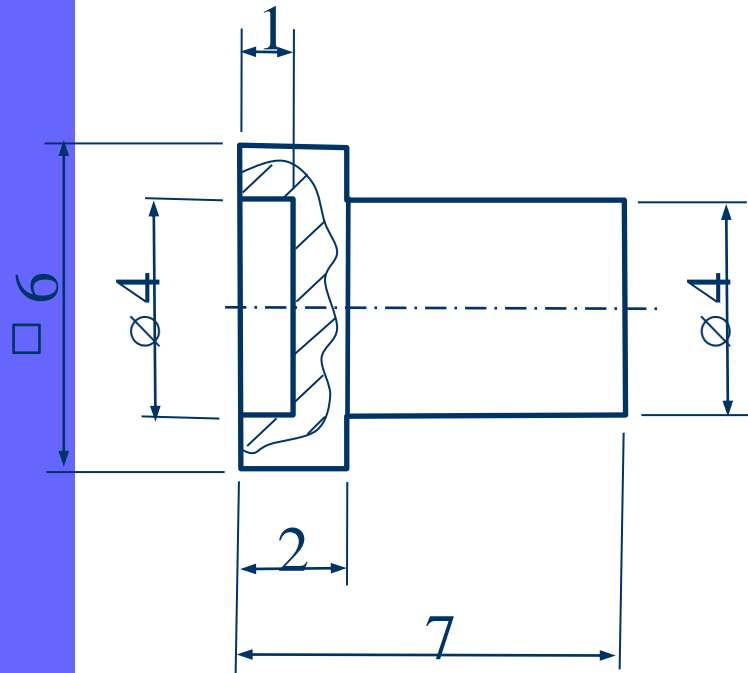
Vistas ortográficas



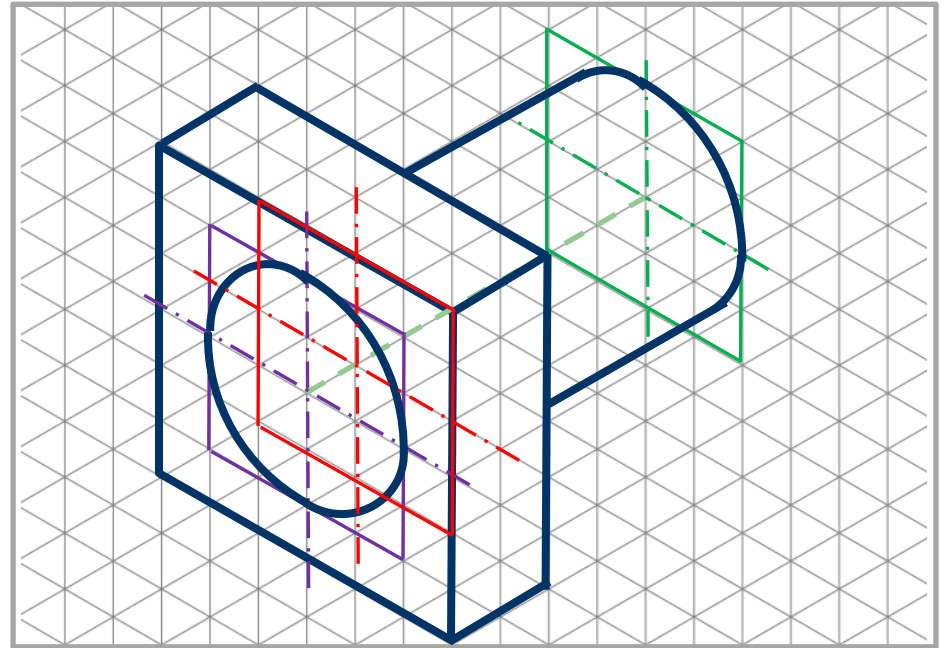
Perspectiva Isométrica - 5



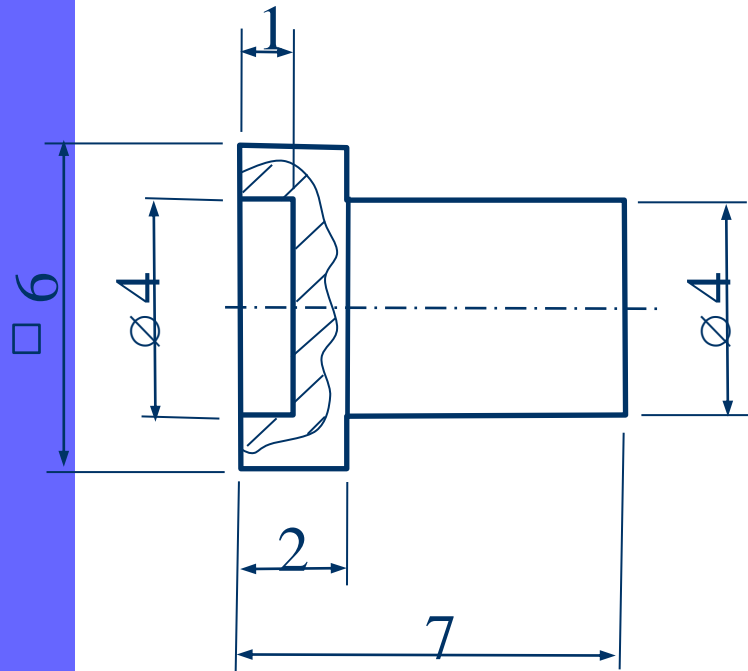
Vistas ortográficas



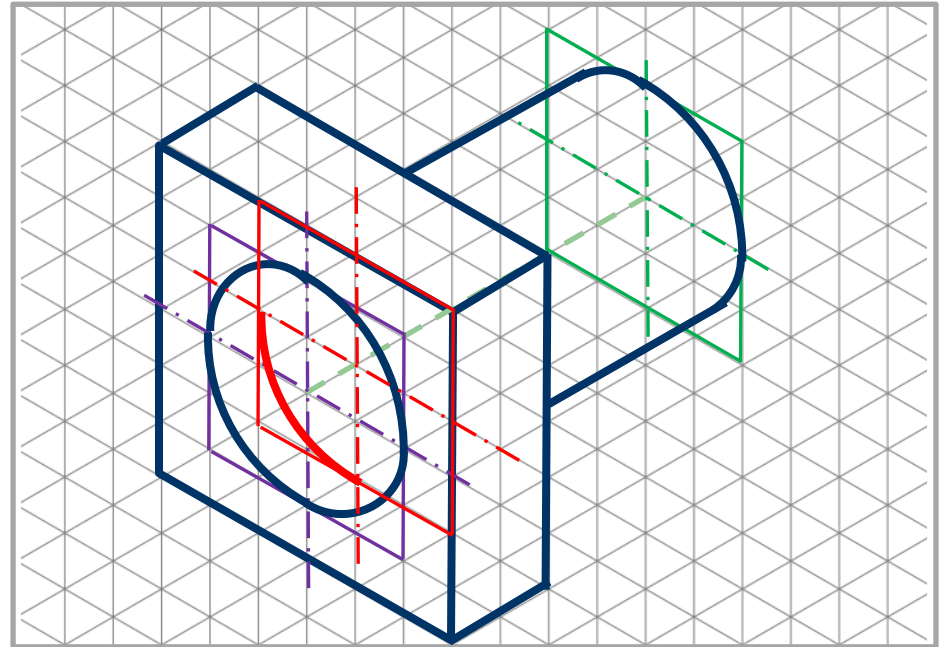
Perspectiva Isométrica - 5



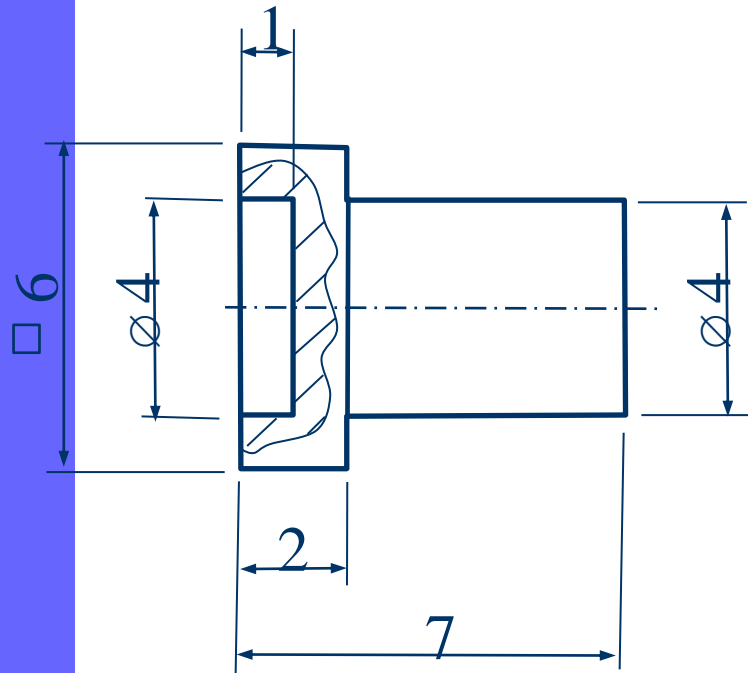
Vistas ortográficas



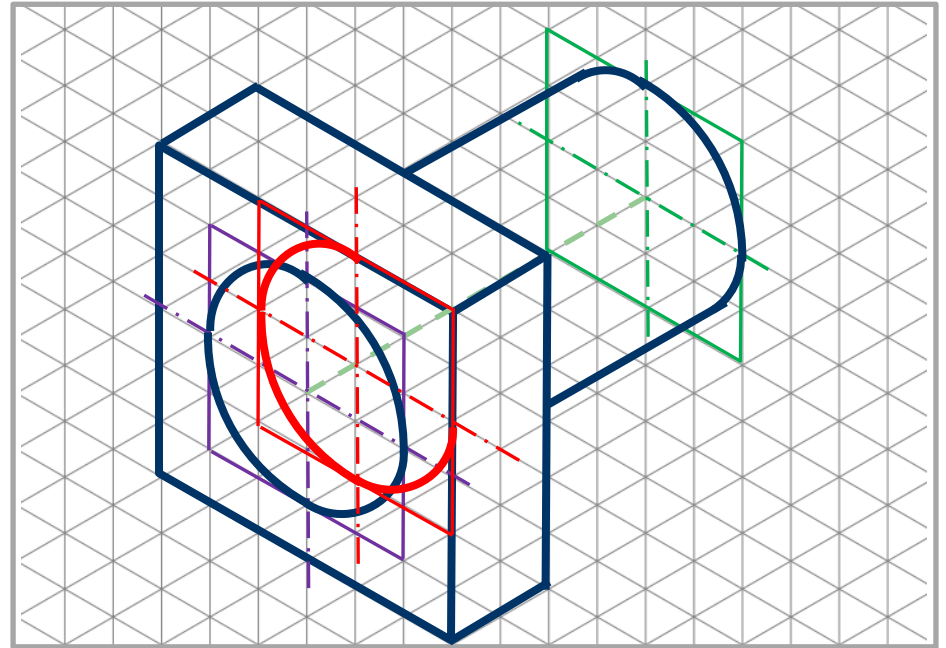
Perspectiva Isométrica - 5



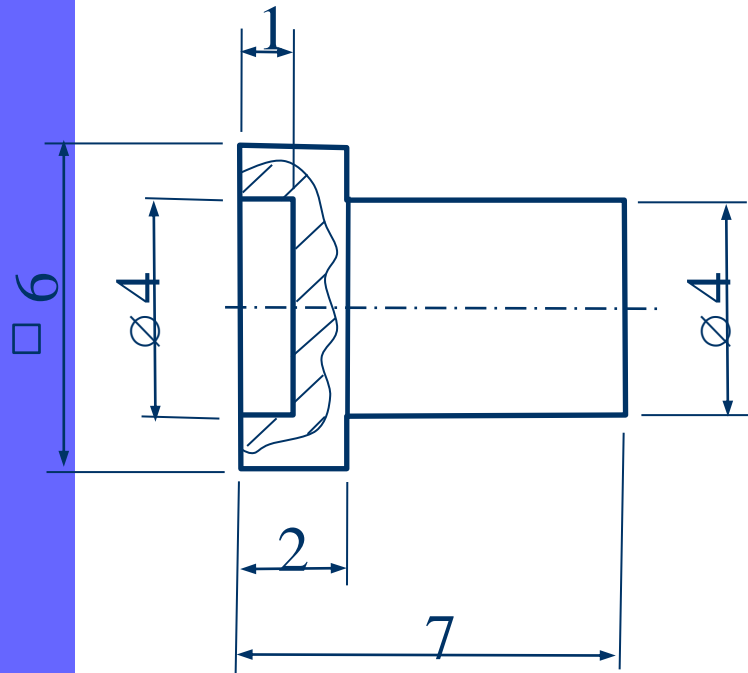
Vistas ortográficas



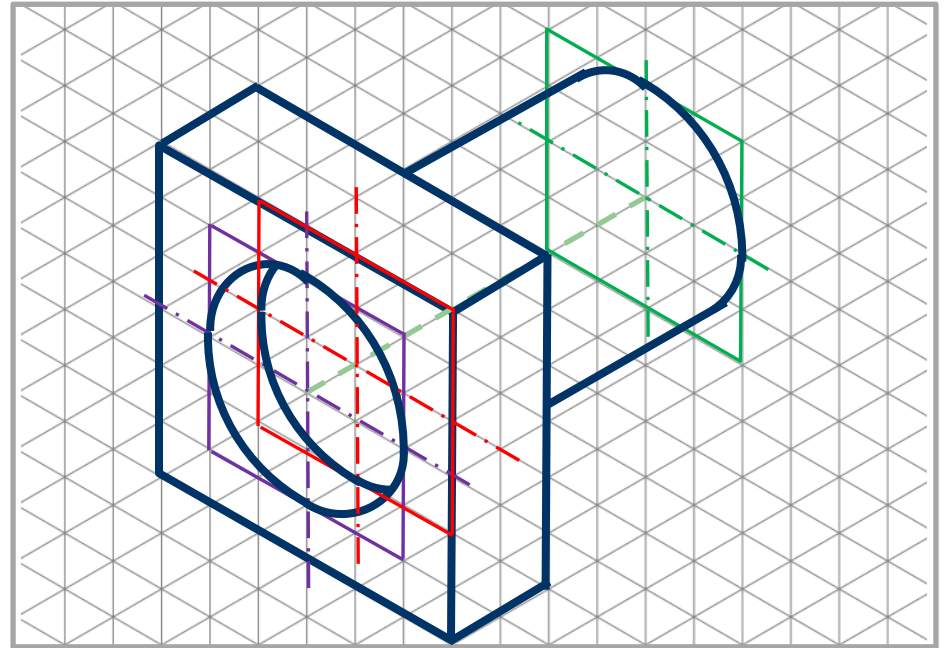
Perspectiva Isométrica - 5



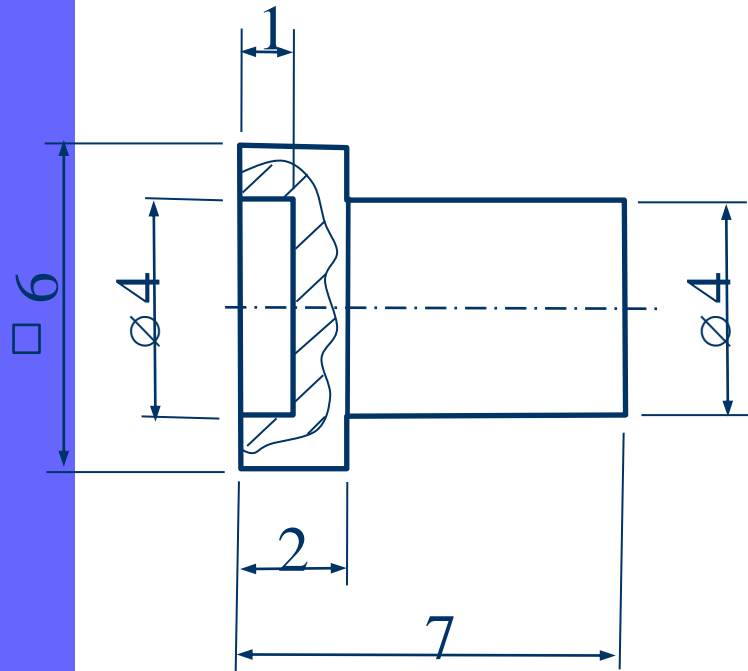
Vistas ortográficas



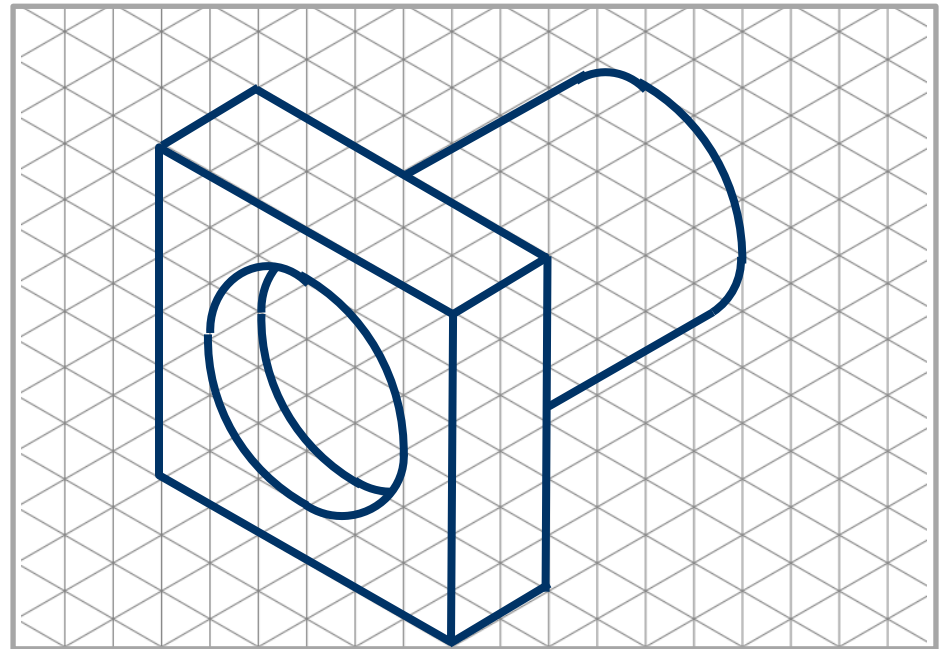
Perspectiva Isométrica - 5



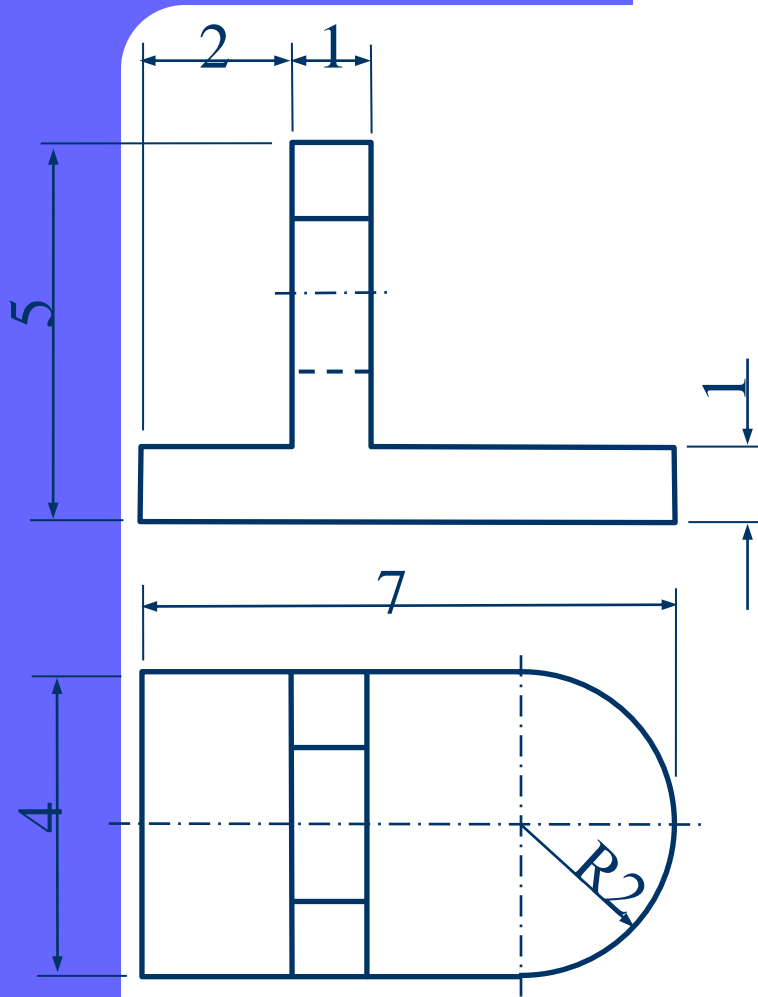
Vistas ortográficas



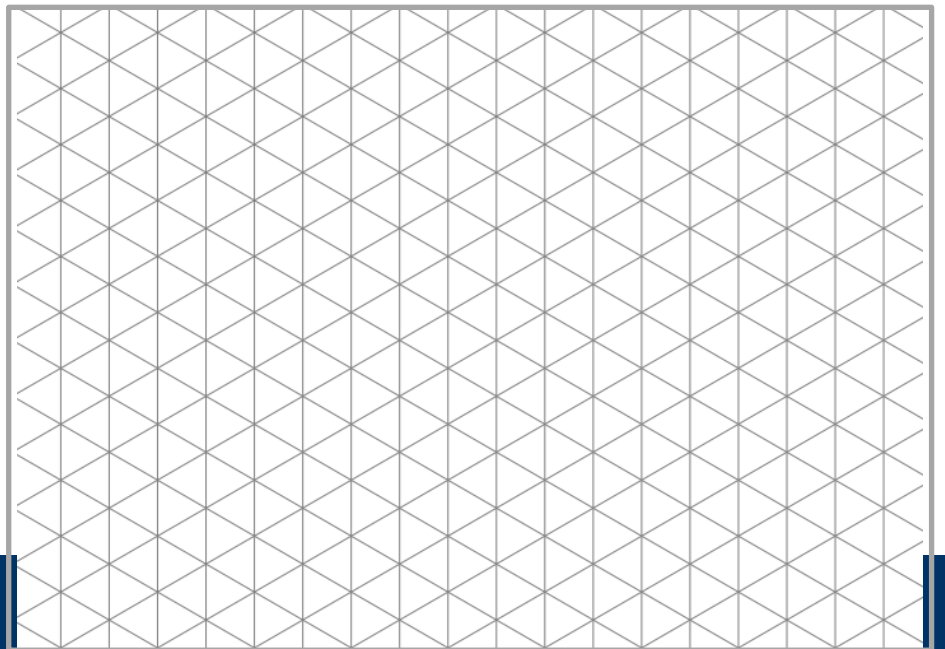
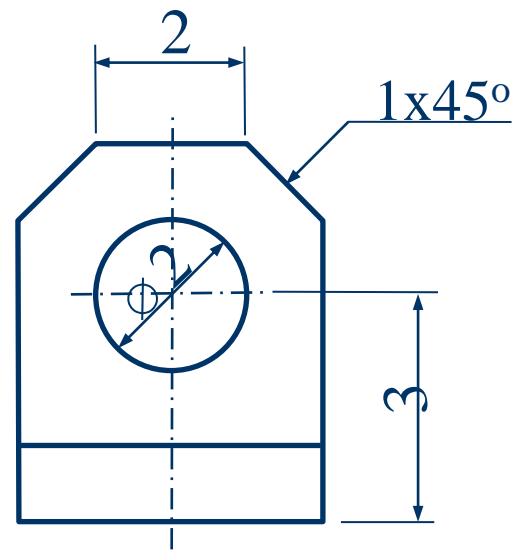
Perspectiva Isométrica - 5



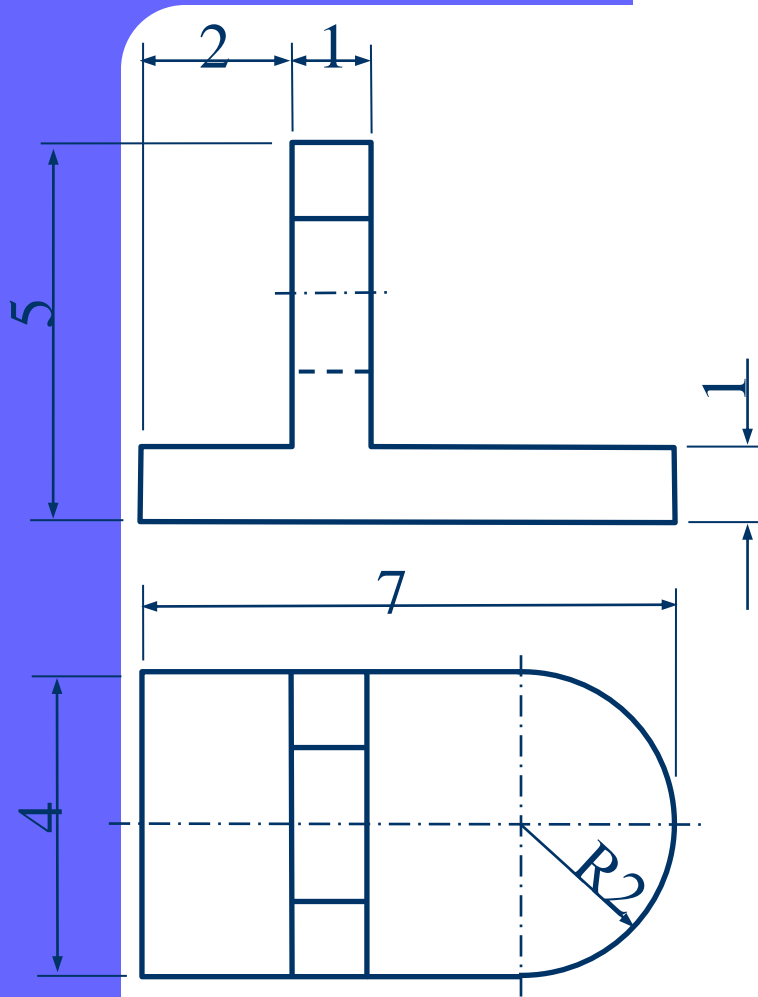
Vistas ortográficas



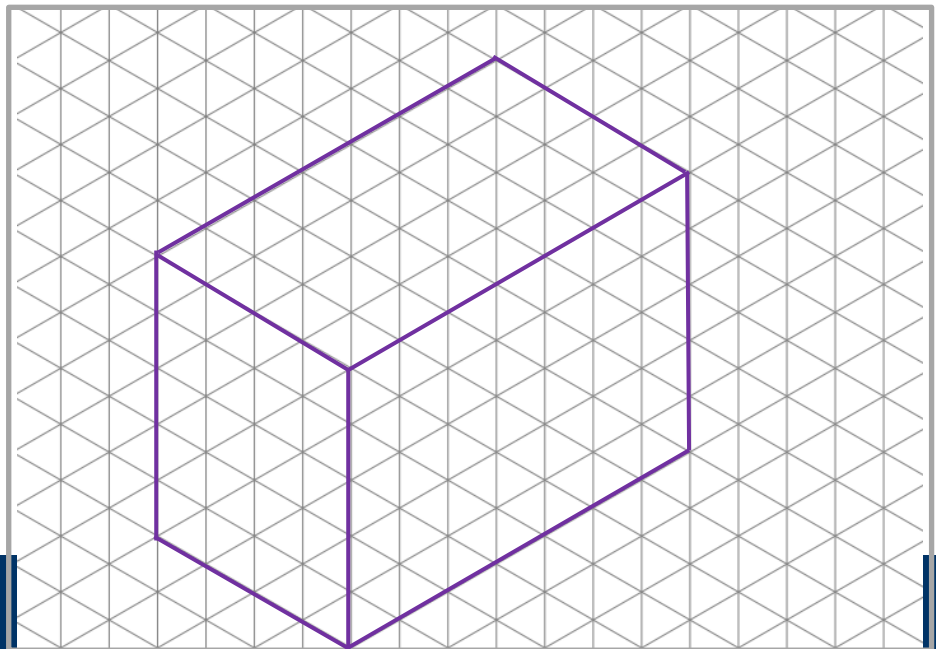
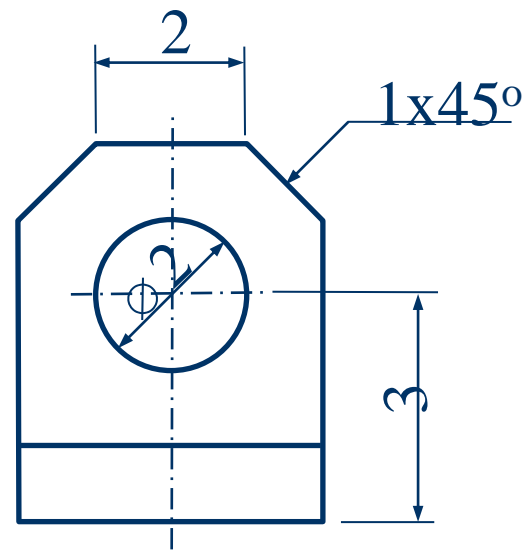
Perspectiva Isométrica - 6



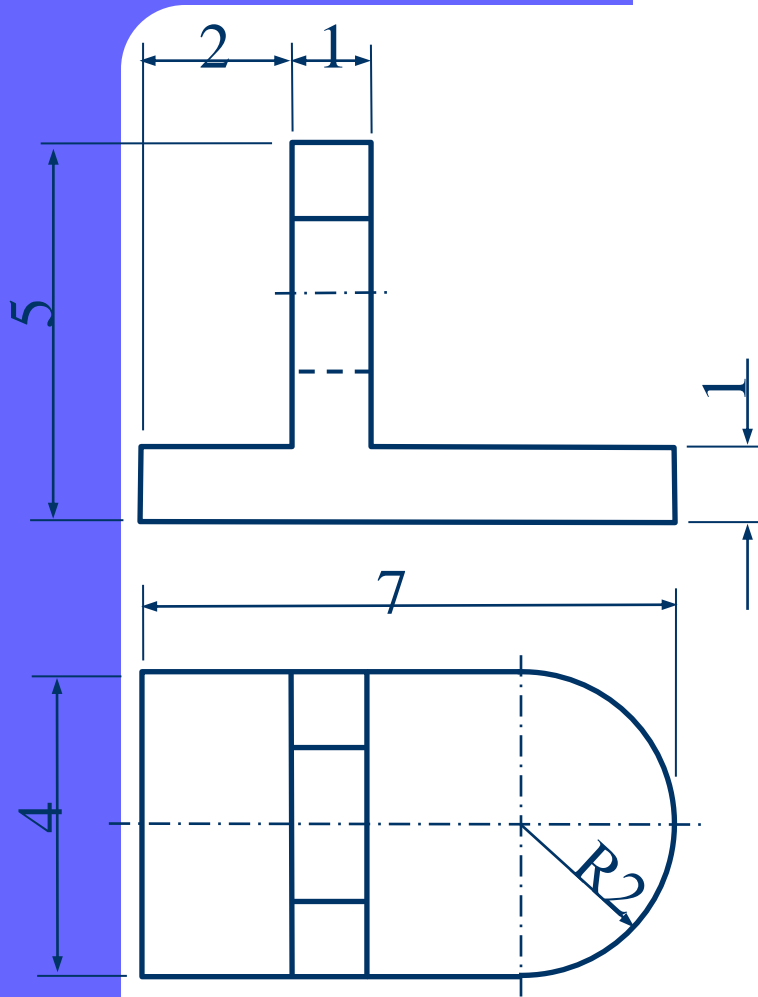
Vistas ortográficas



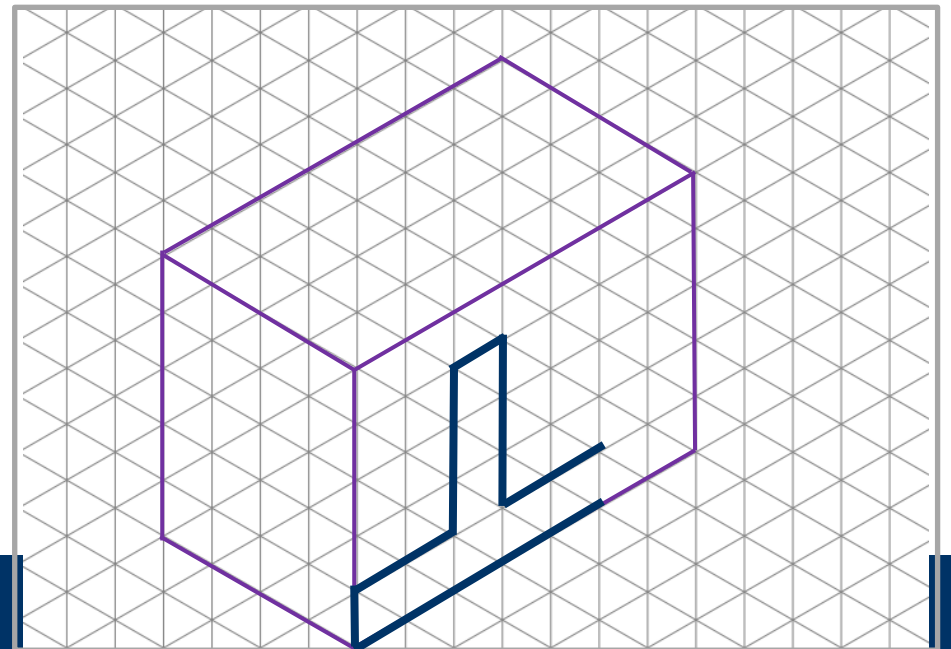
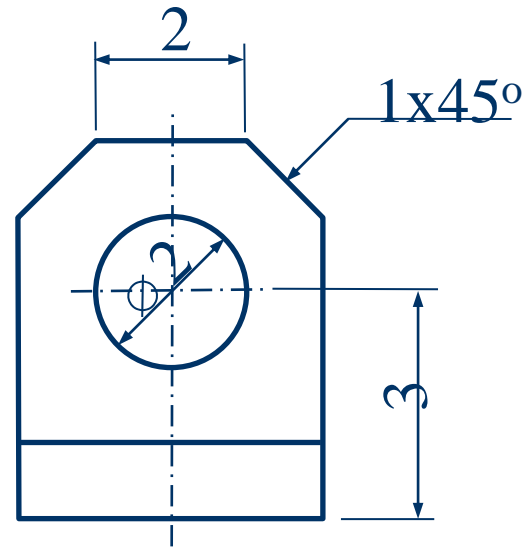
Perspectiva Isométrica - 6



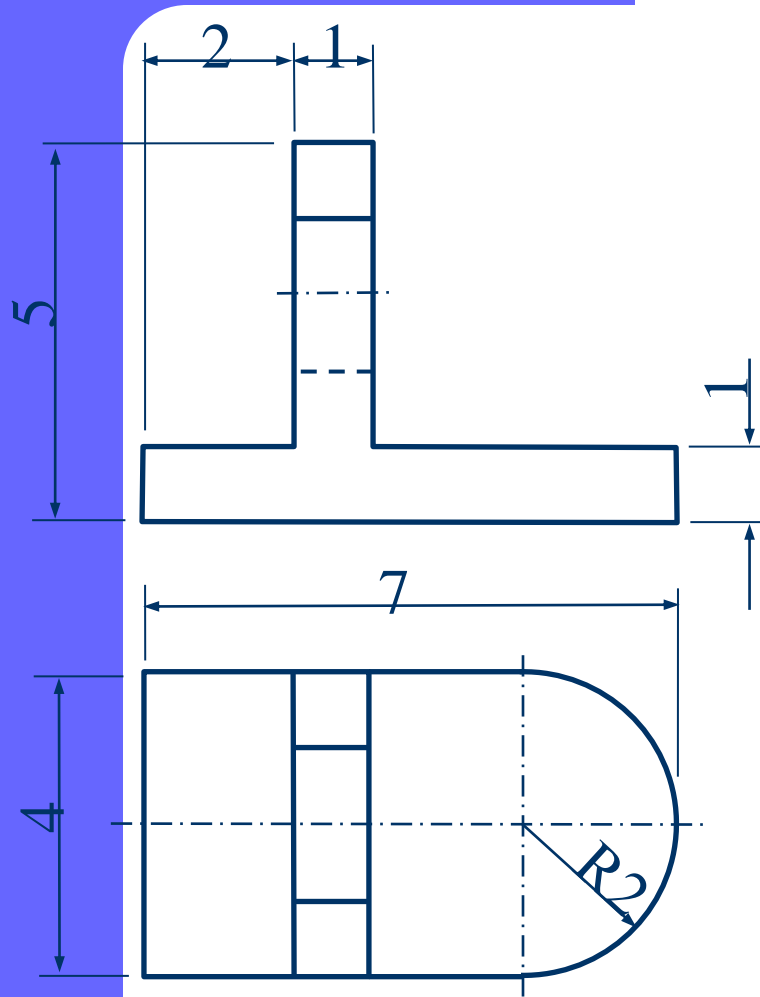
Vistas ortográficas



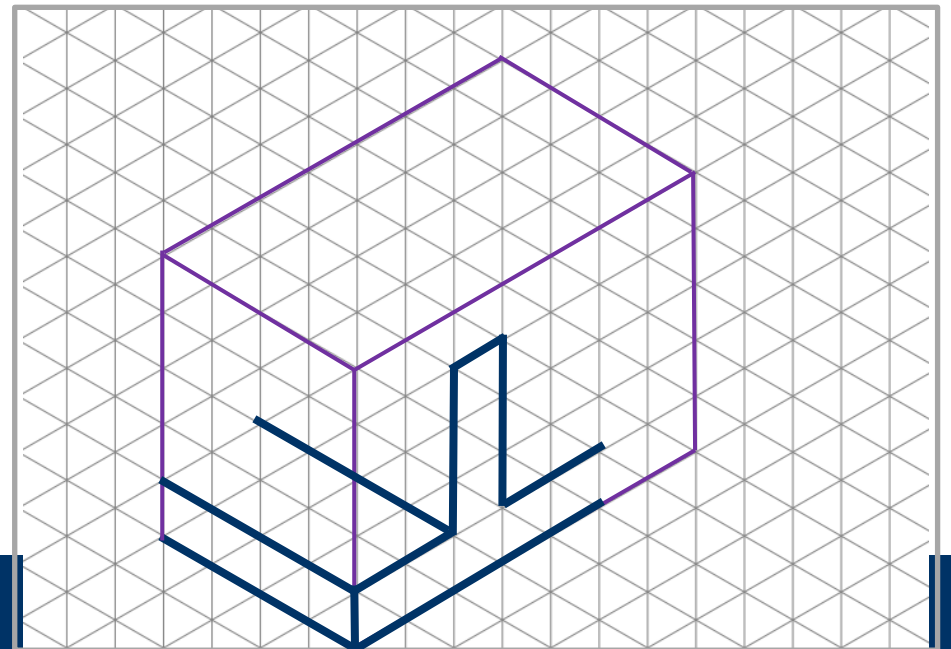
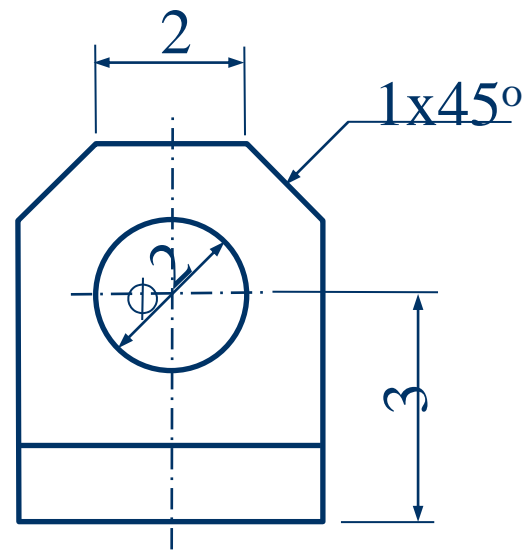
Perspectiva Isométrica - 6



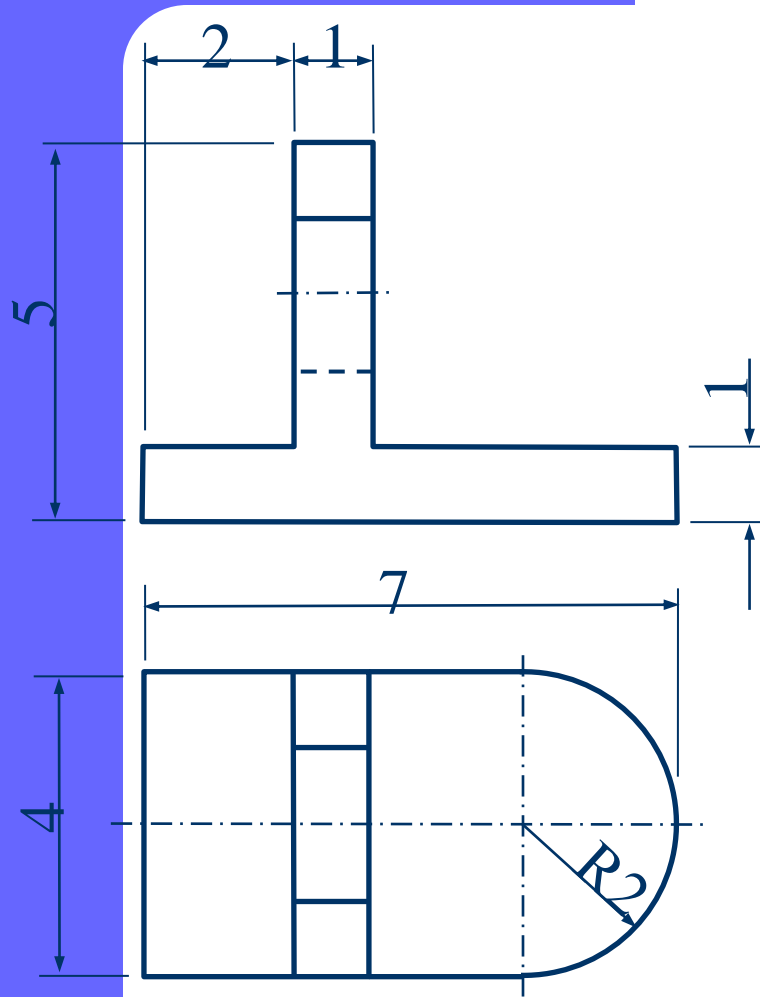
Vistas ortográficas



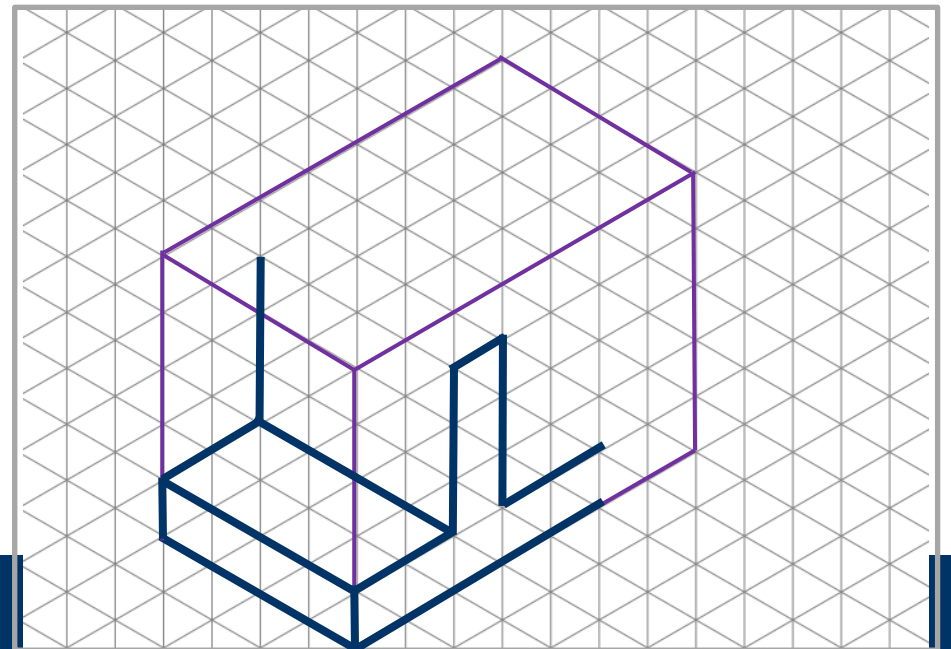
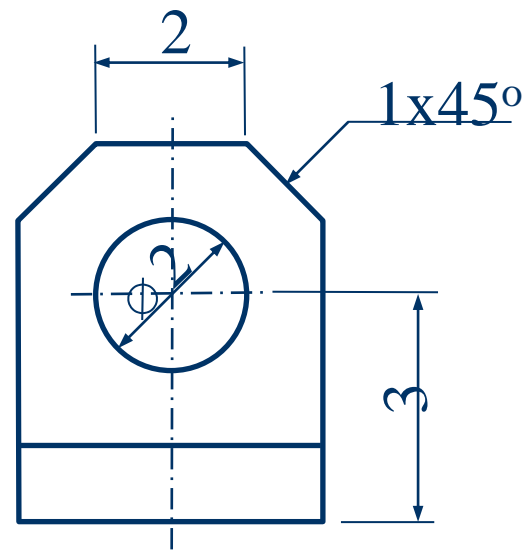
Perspectiva Isométrica - 6



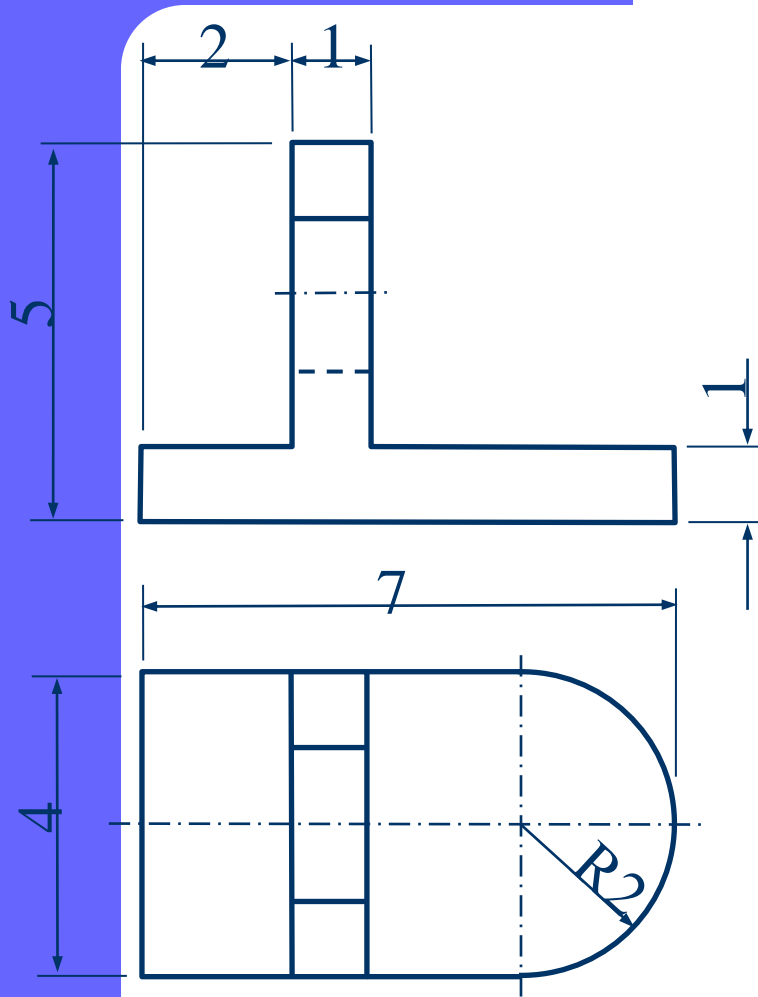
Vistas ortográficas



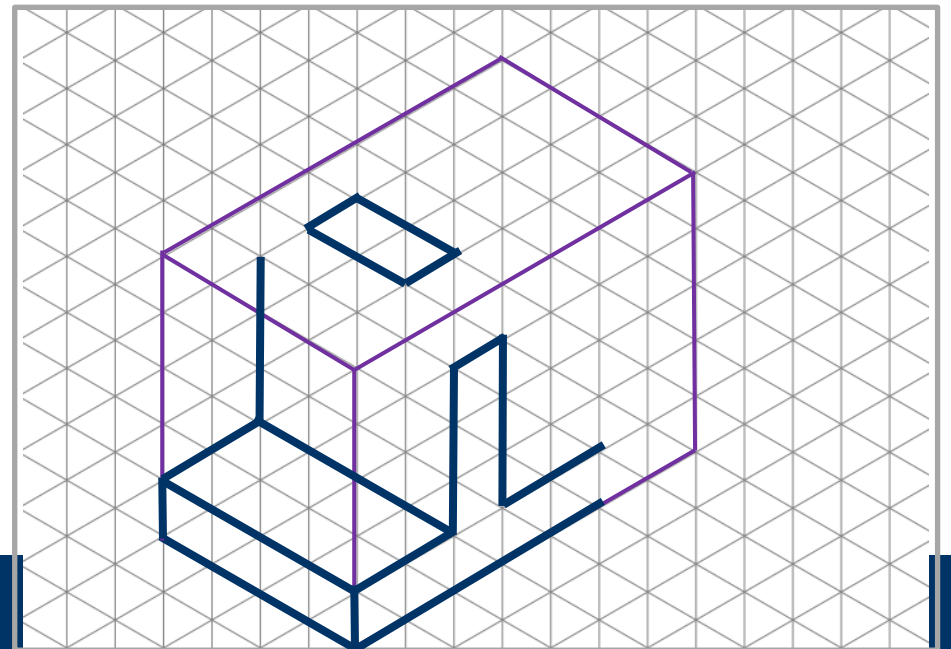
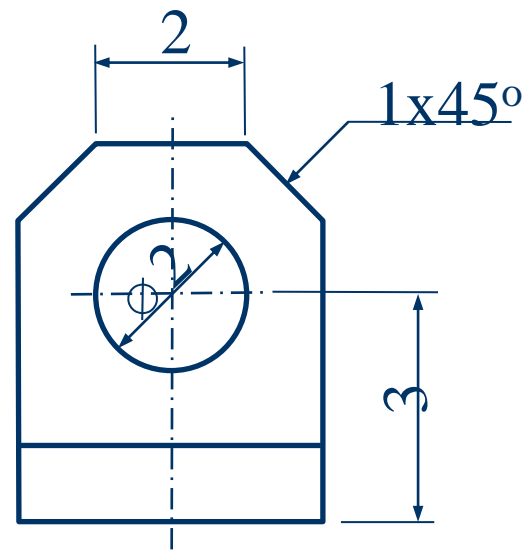
Perspectiva Isométrica - 6



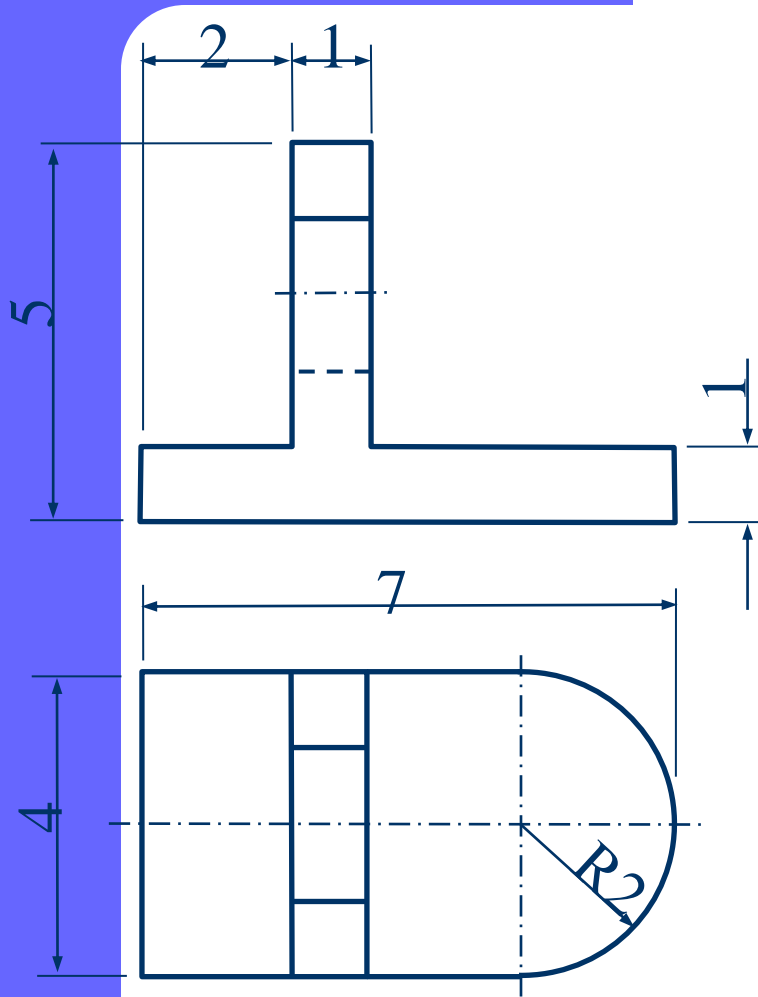
Vistas ortográficas



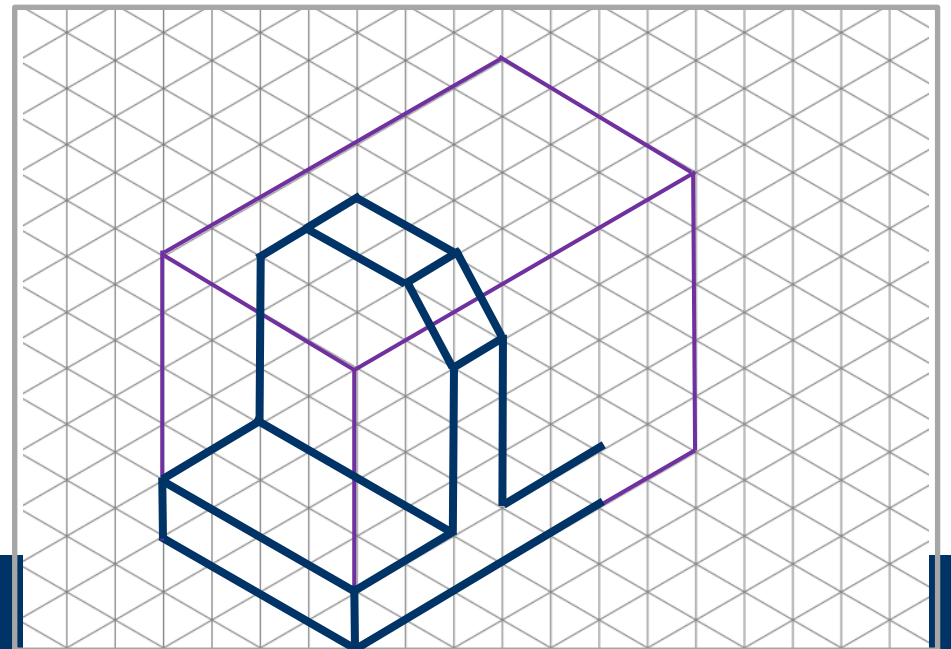
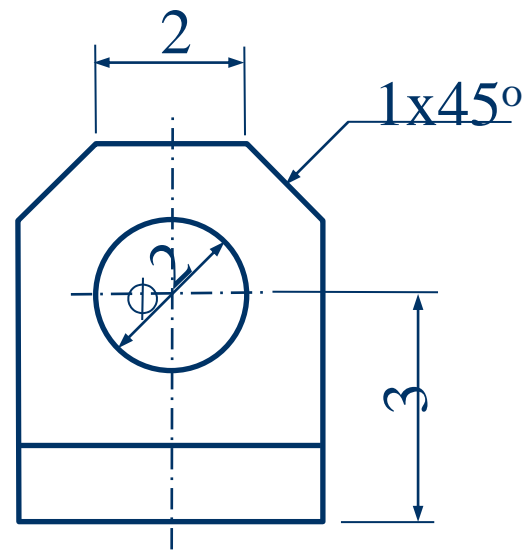
Perspectiva Isométrica - 6



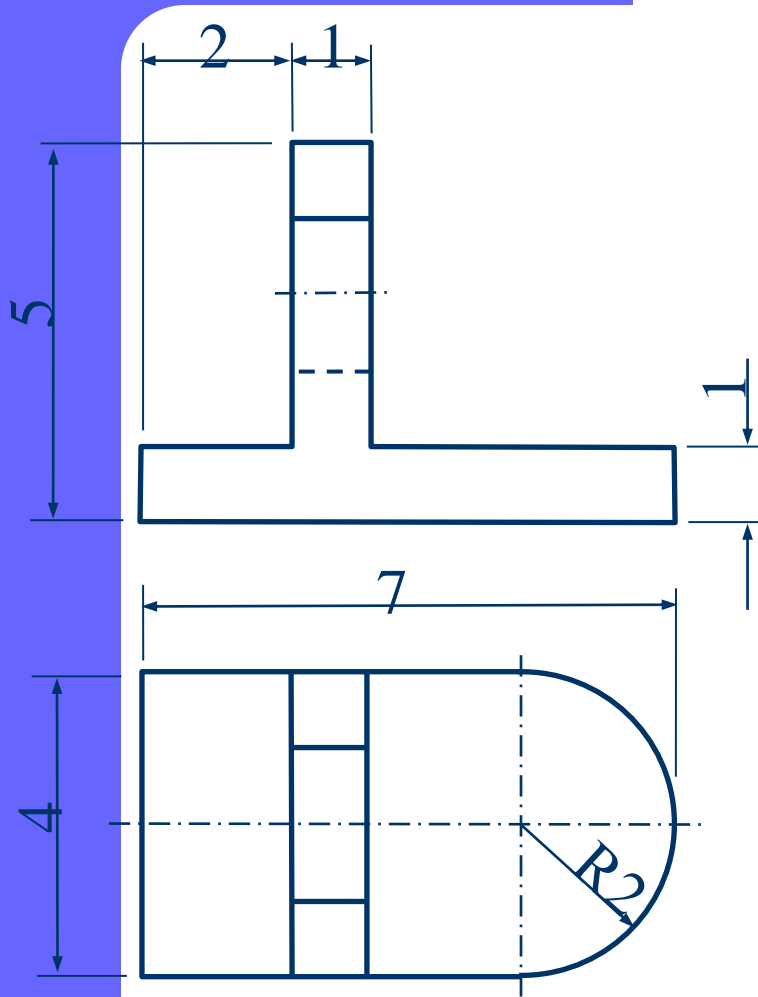
Vistas ortográficas



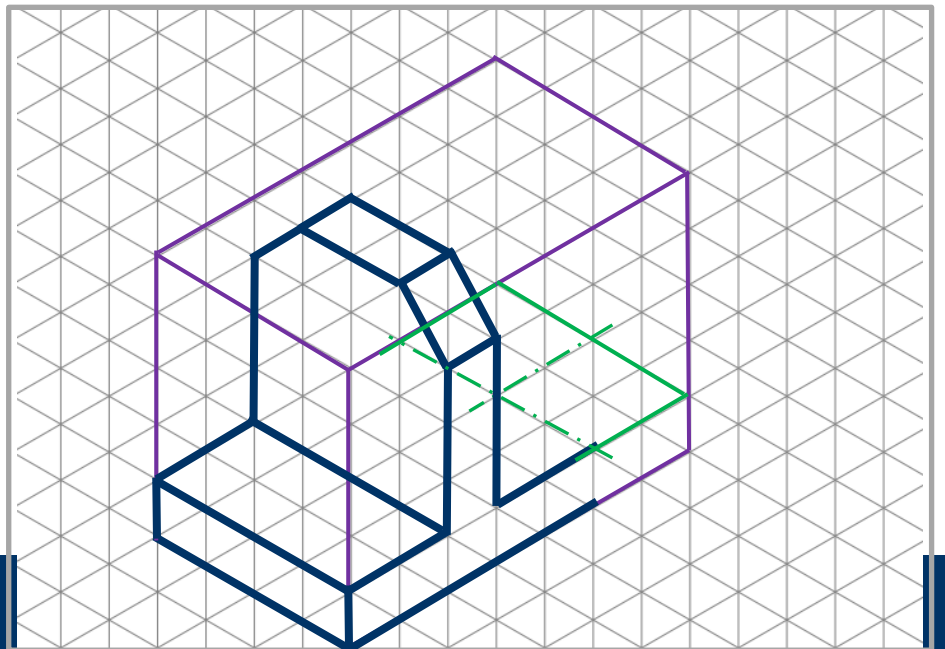
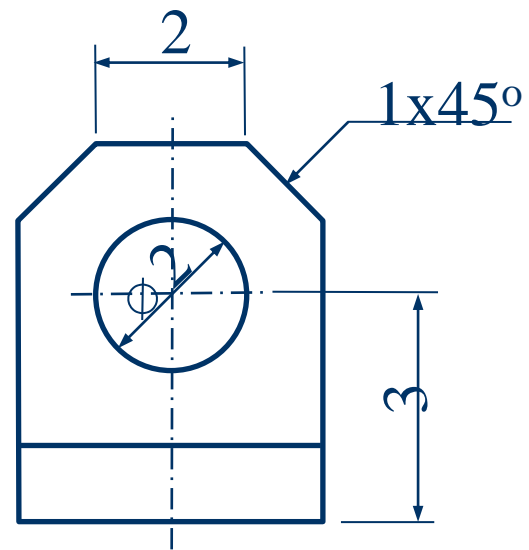
Perspectiva Isométrica - 6



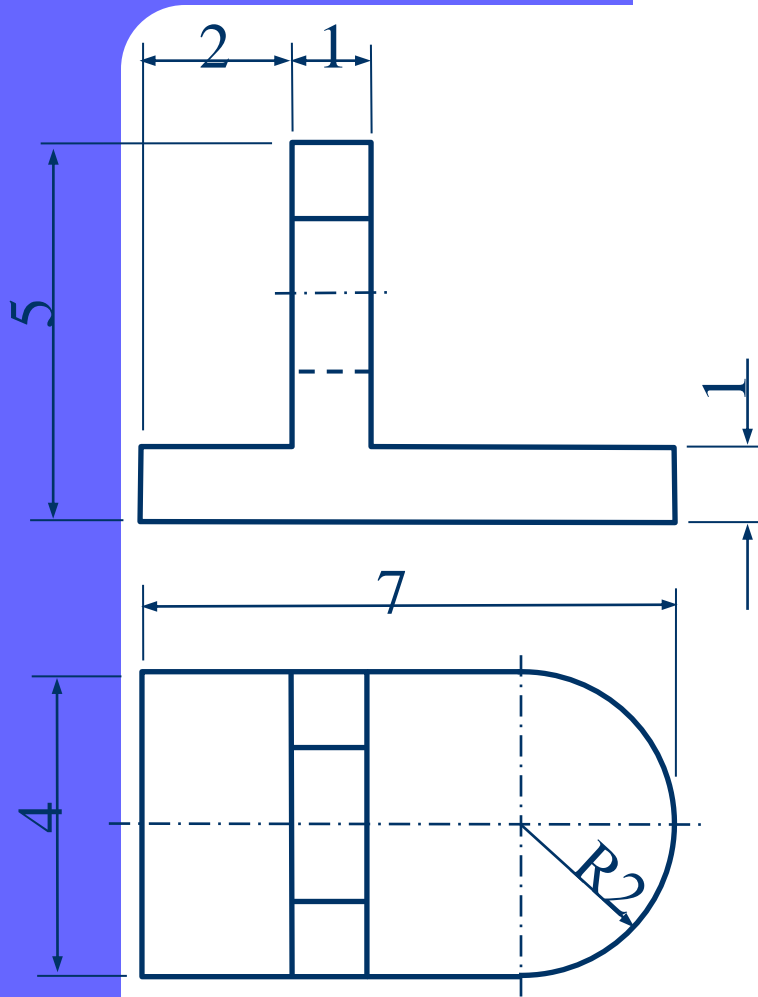
Vistas ortográficas



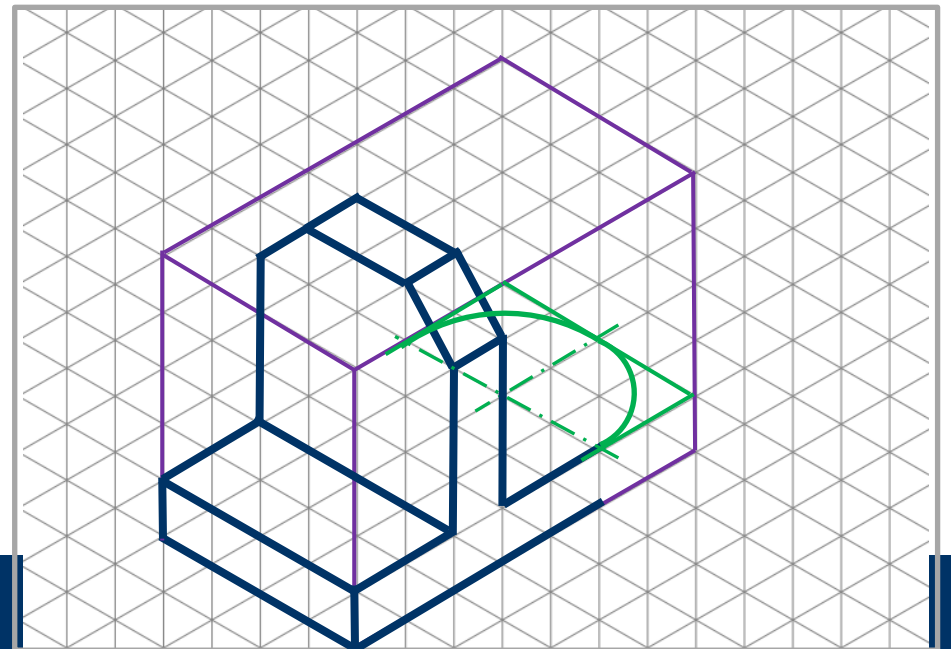
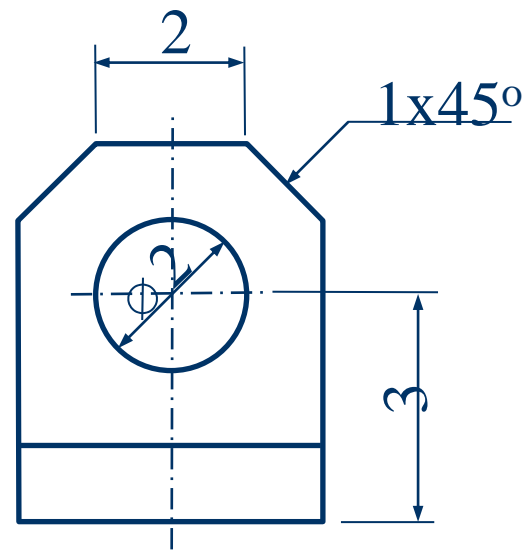
Perspectiva Isométrica - 6



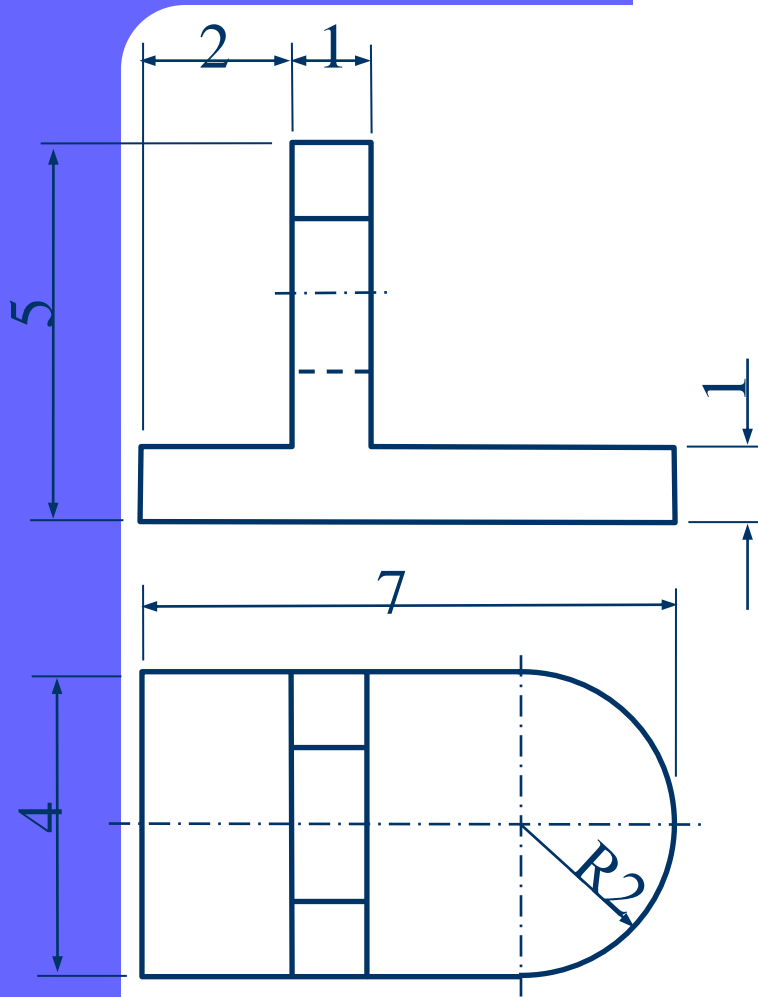
Vistas ortográficas



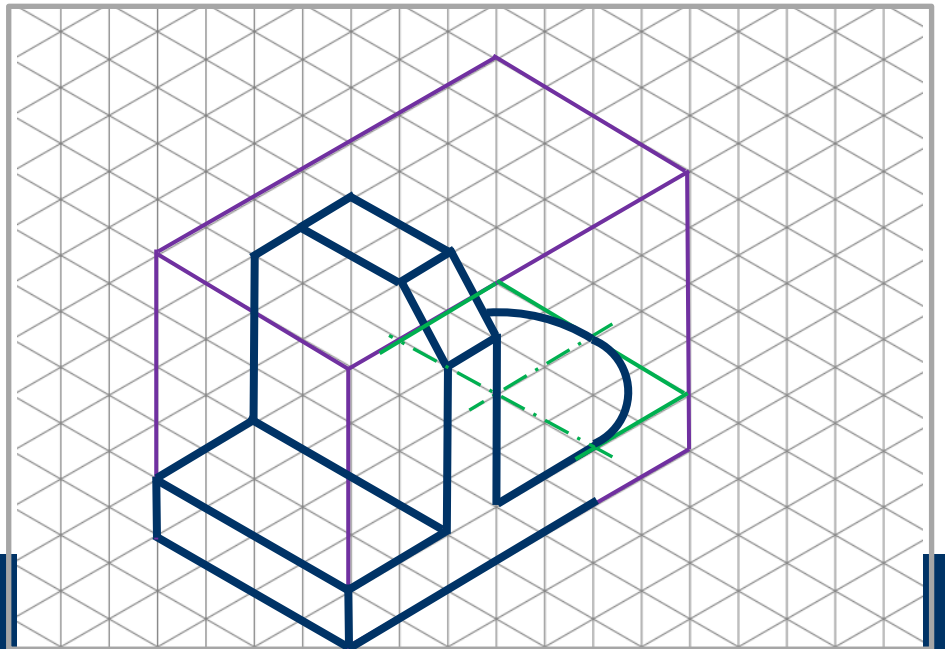
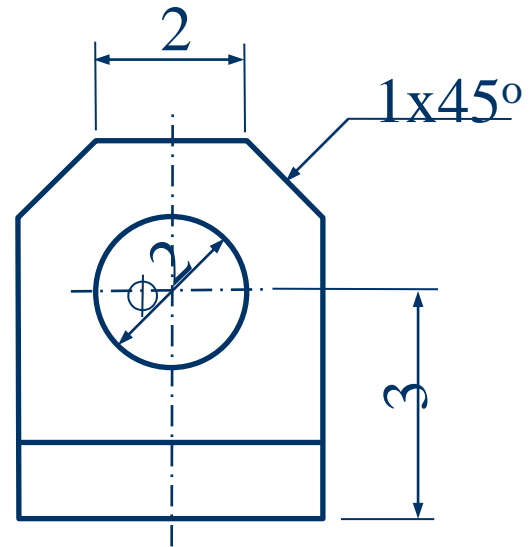
Perspectiva Isométrica - 6



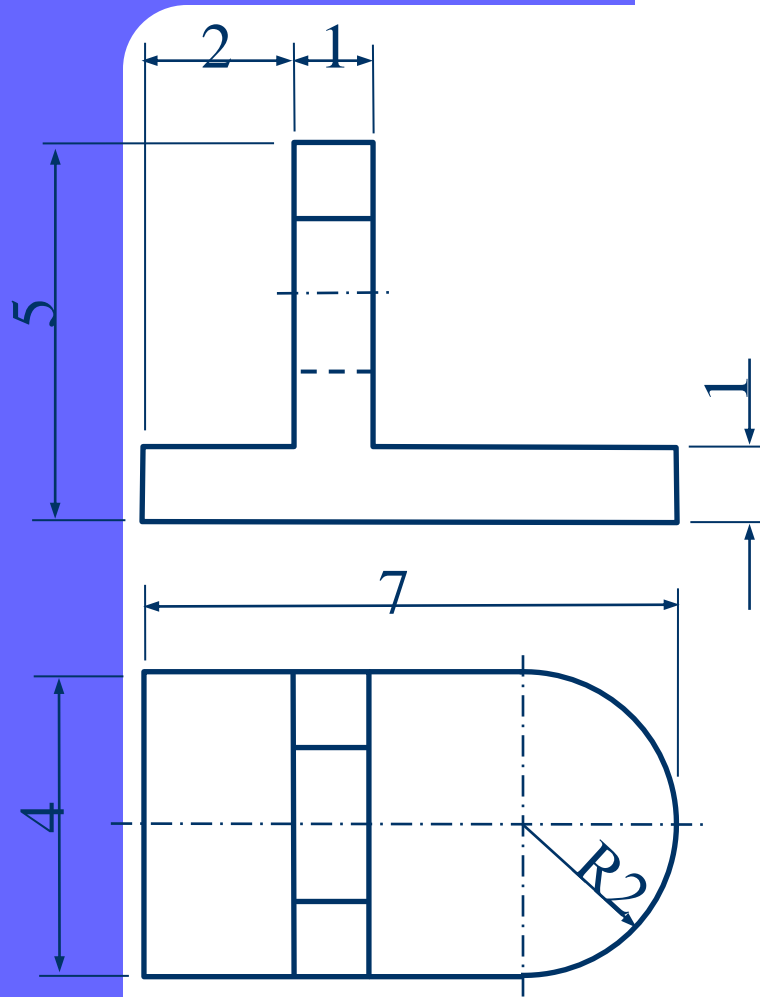
Vistas ortográficas



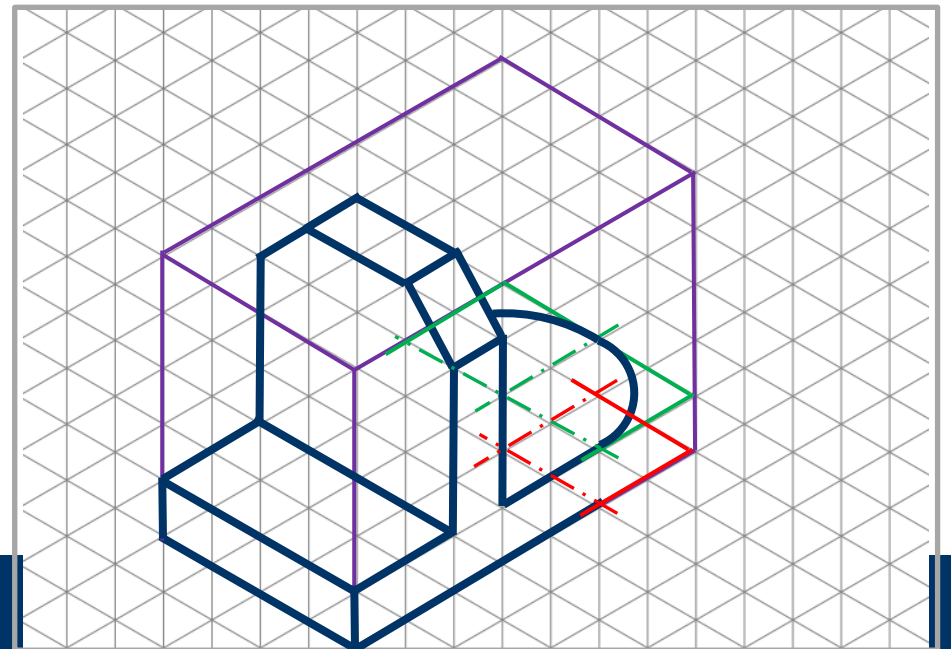
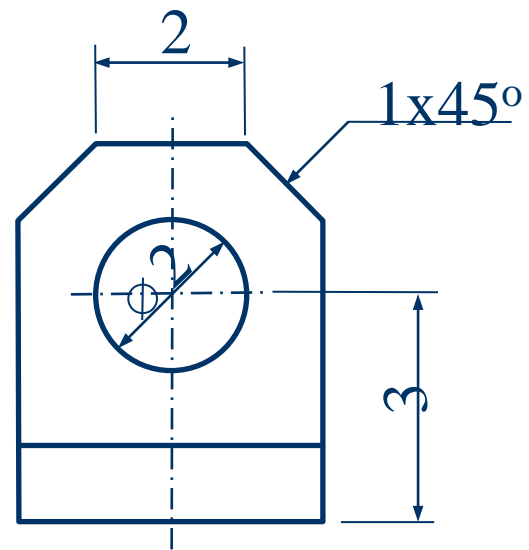
Perspectiva Isométrica - 6



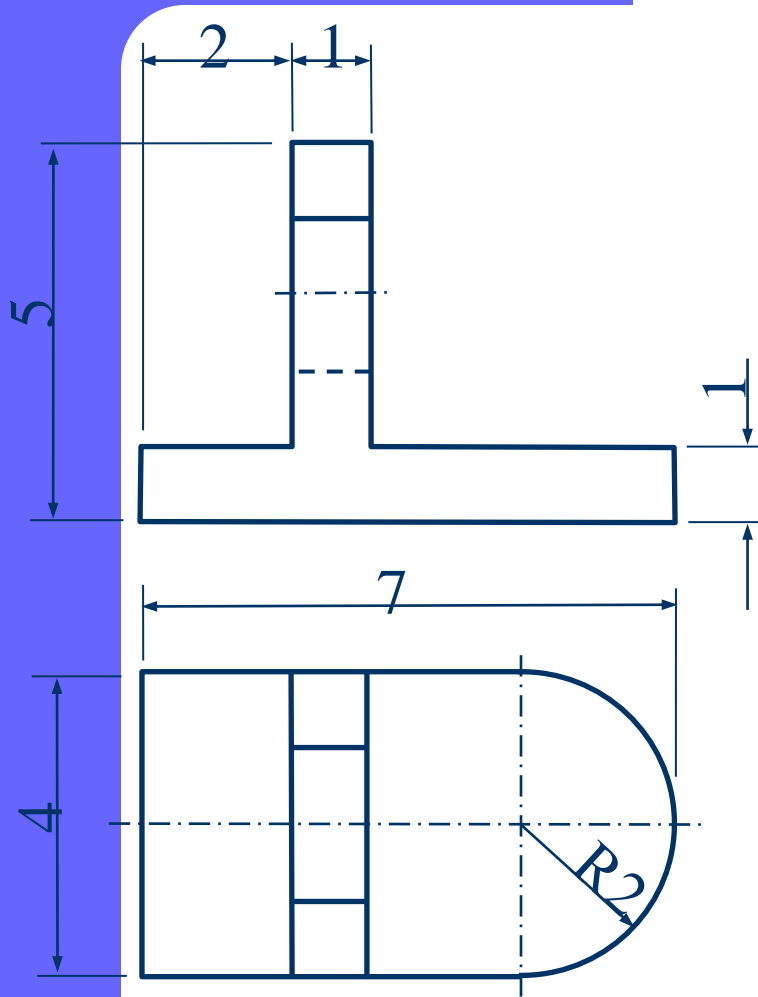
Vistas ortográficas



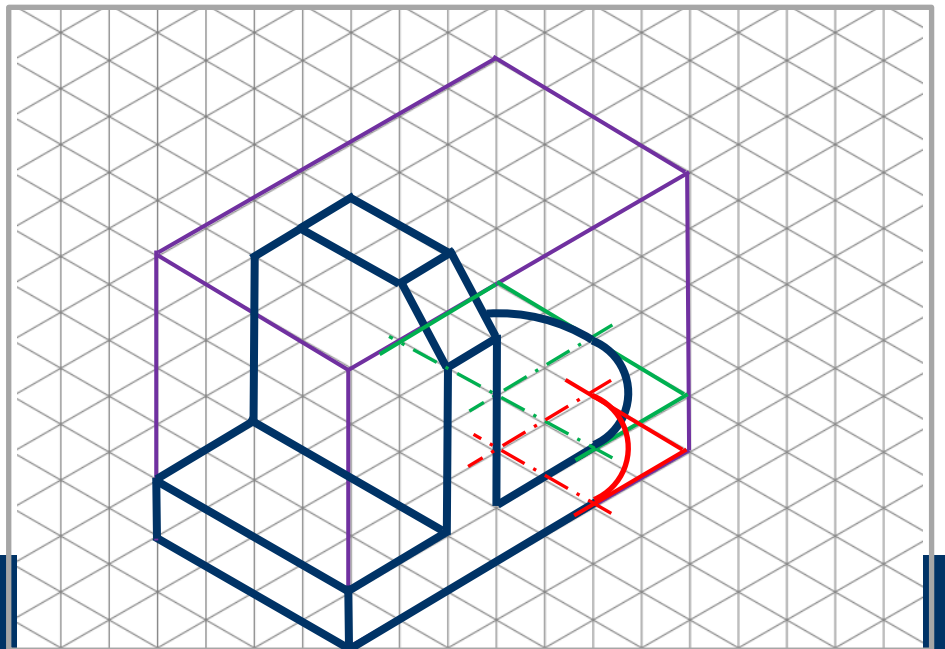
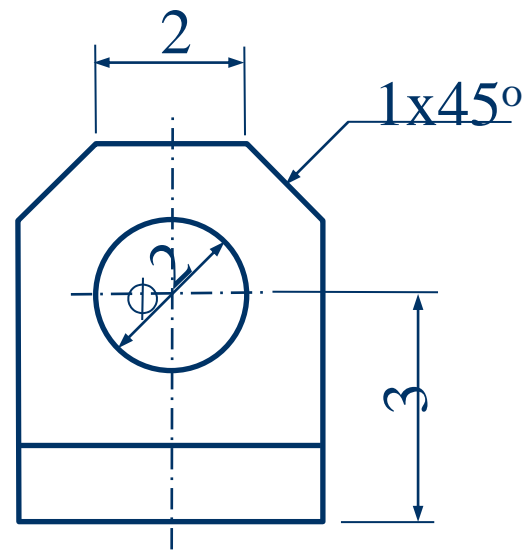
Perspectiva Isométrica - 6



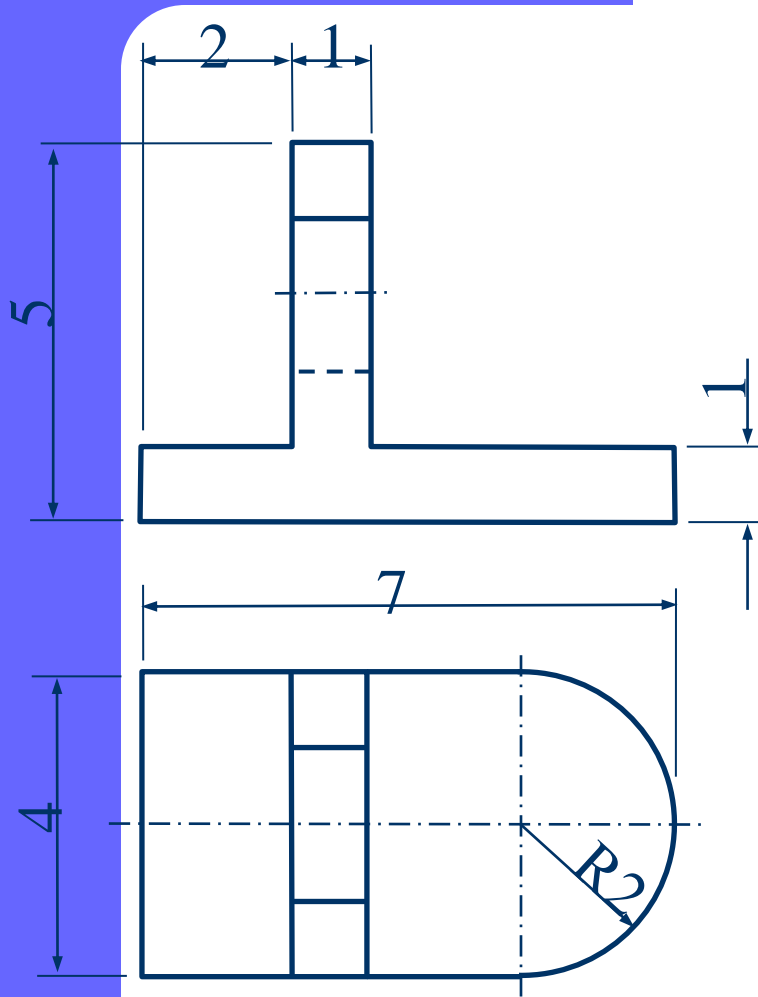
Vistas ortográficas



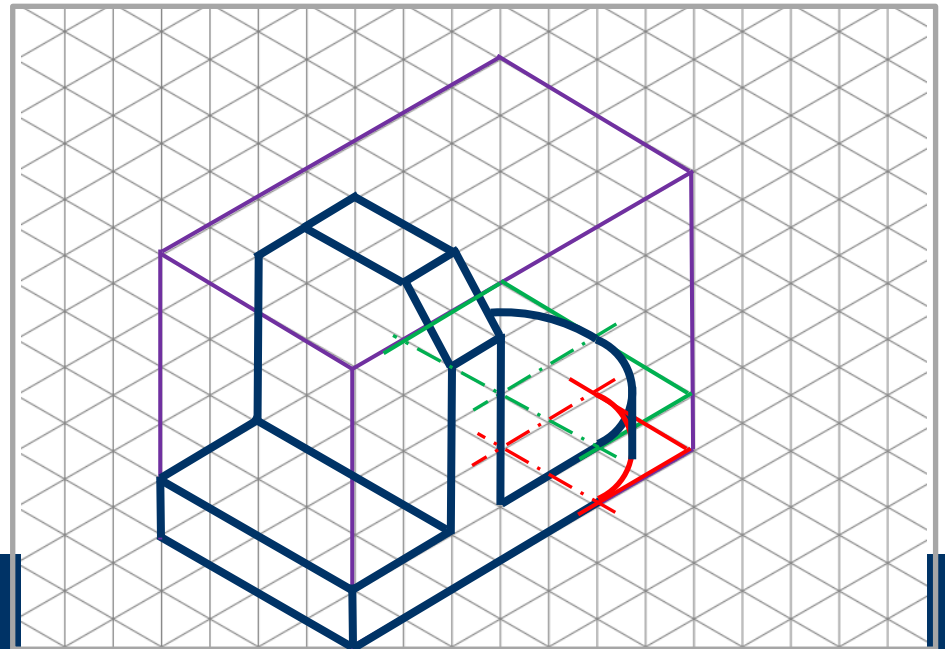
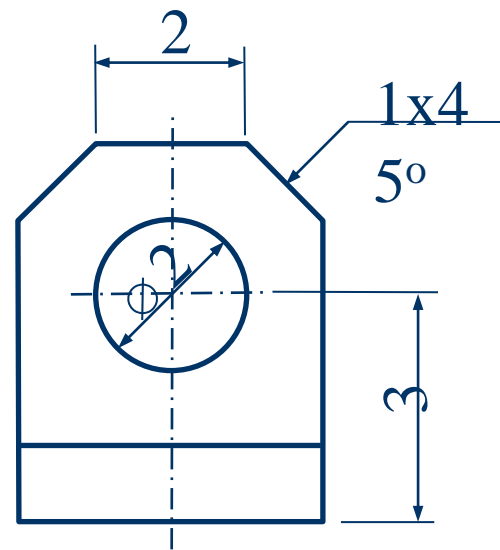
Perspectiva Isométrica - 6



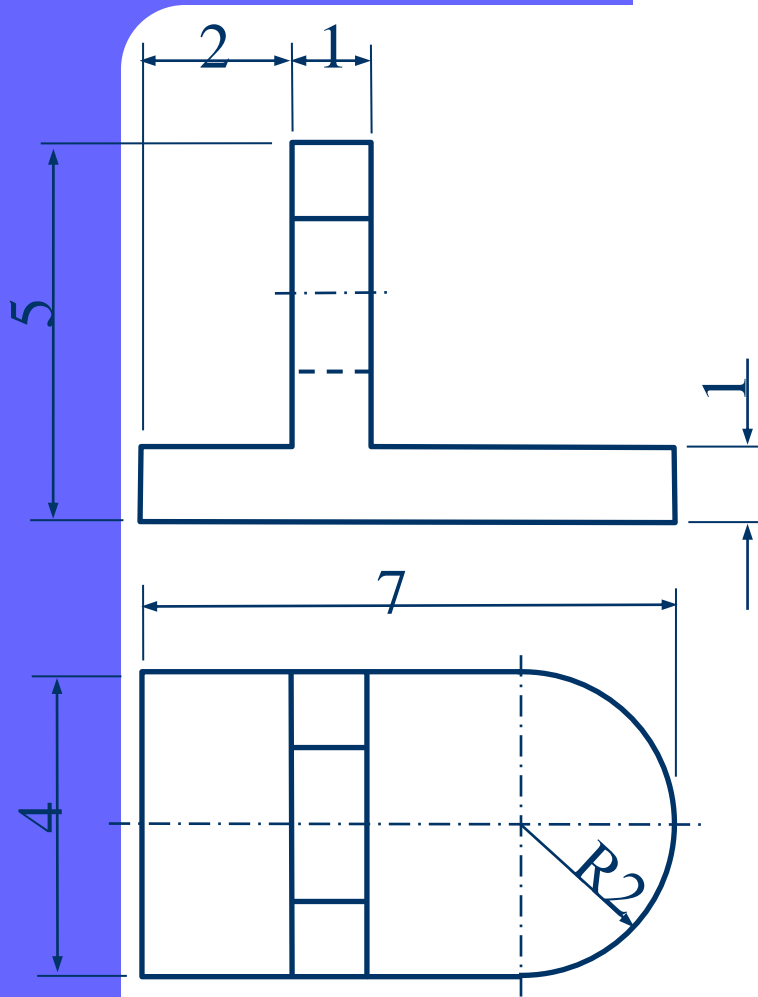
Vistas ortográficas



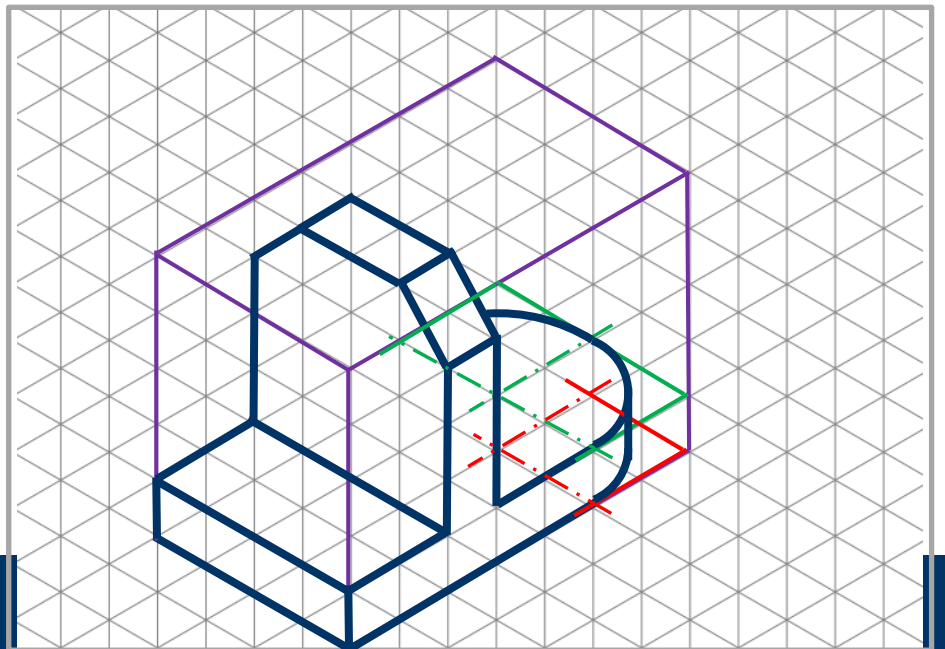
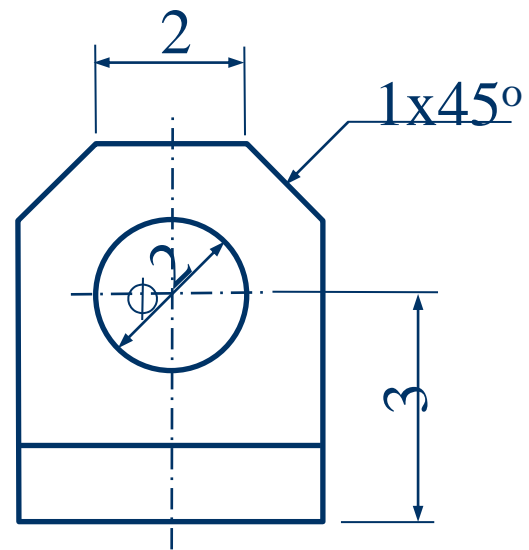
Perspectiva Isométrica - 6



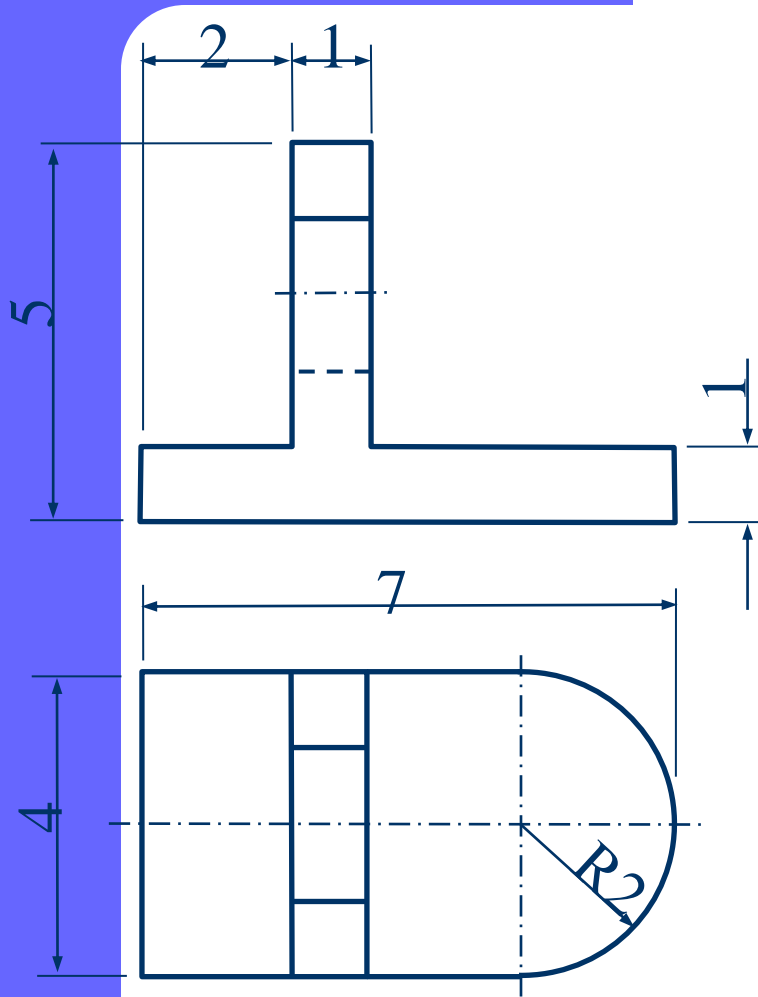
Vistas ortográficas



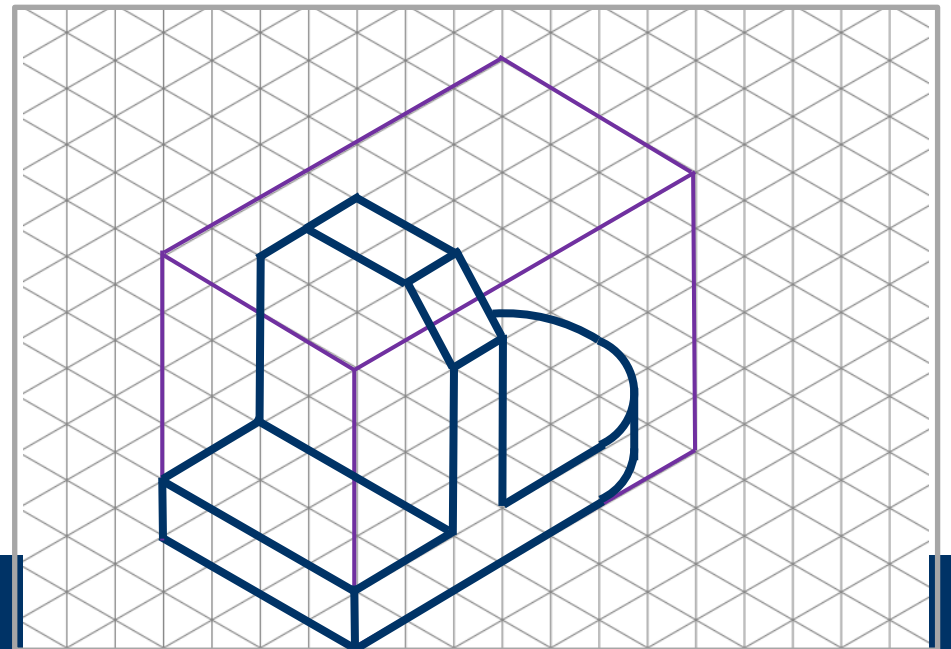
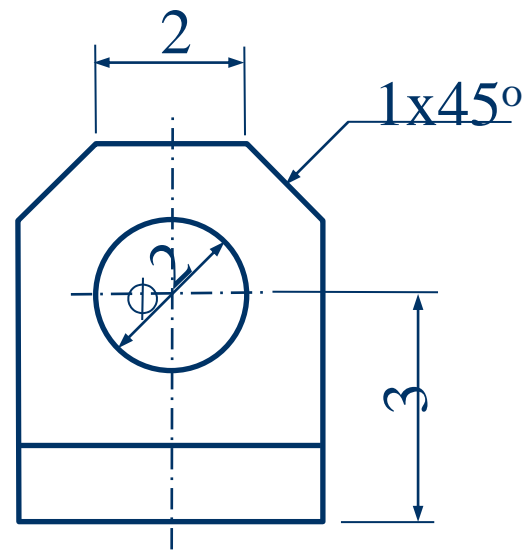
Perspectiva Isométrica - 6



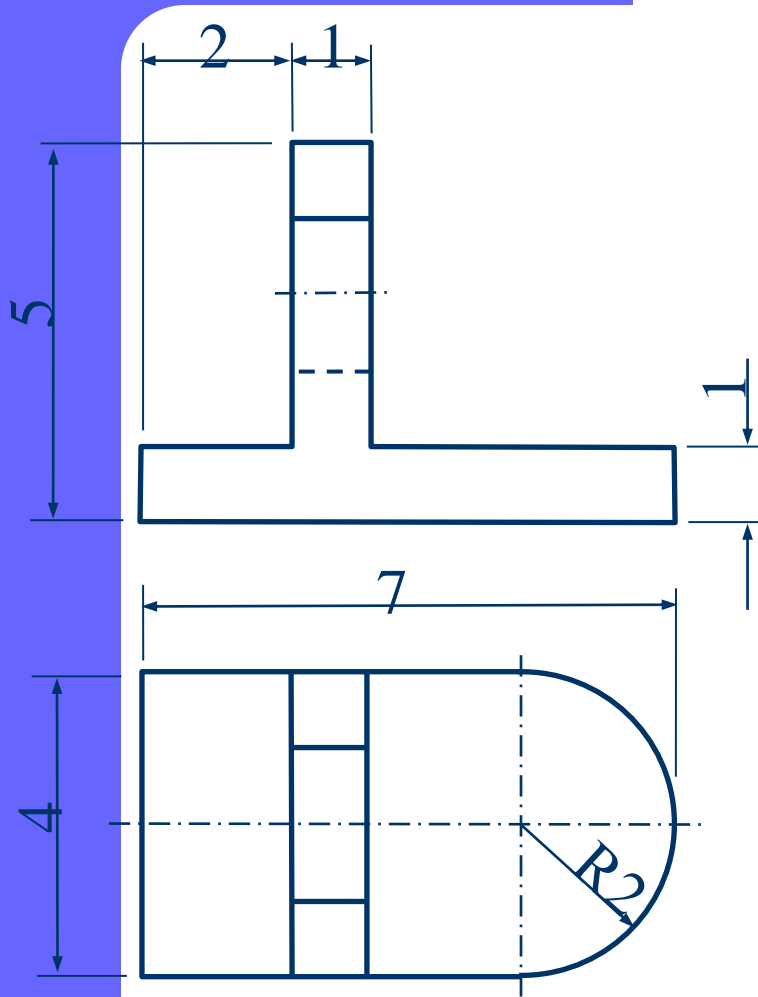
Vistas ortográficas



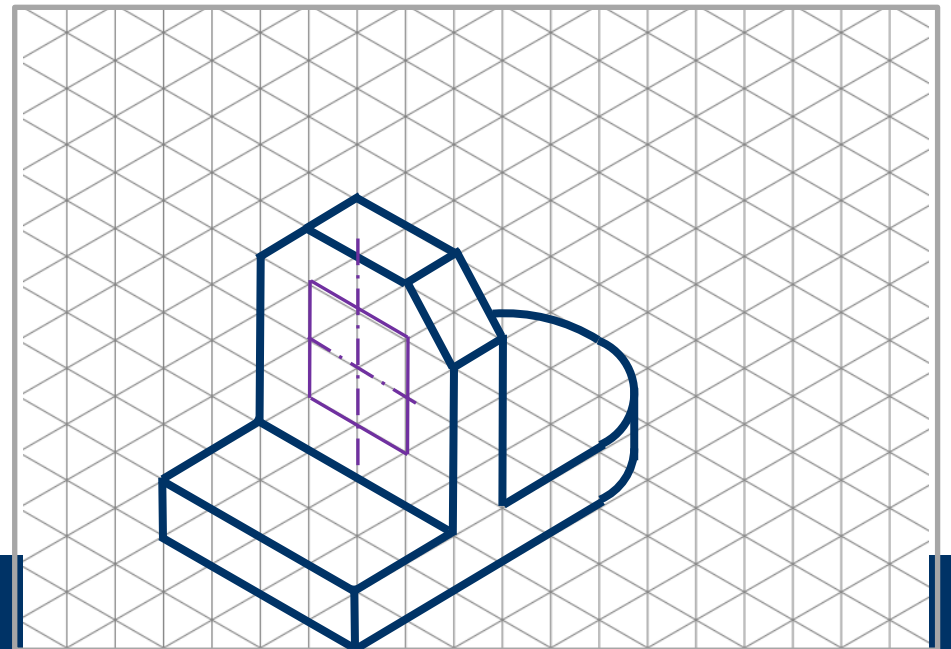
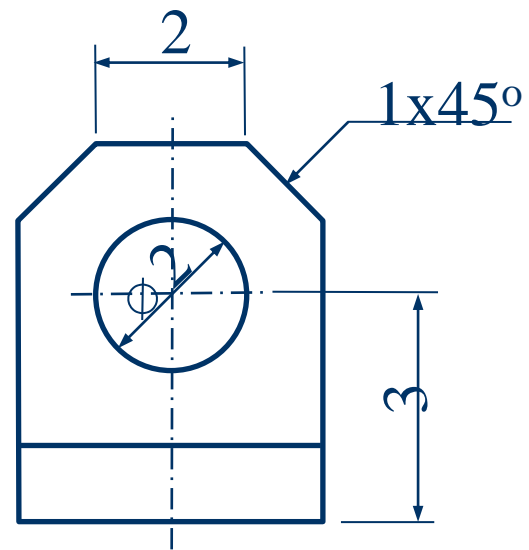
Perspectiva Isométrica - 6



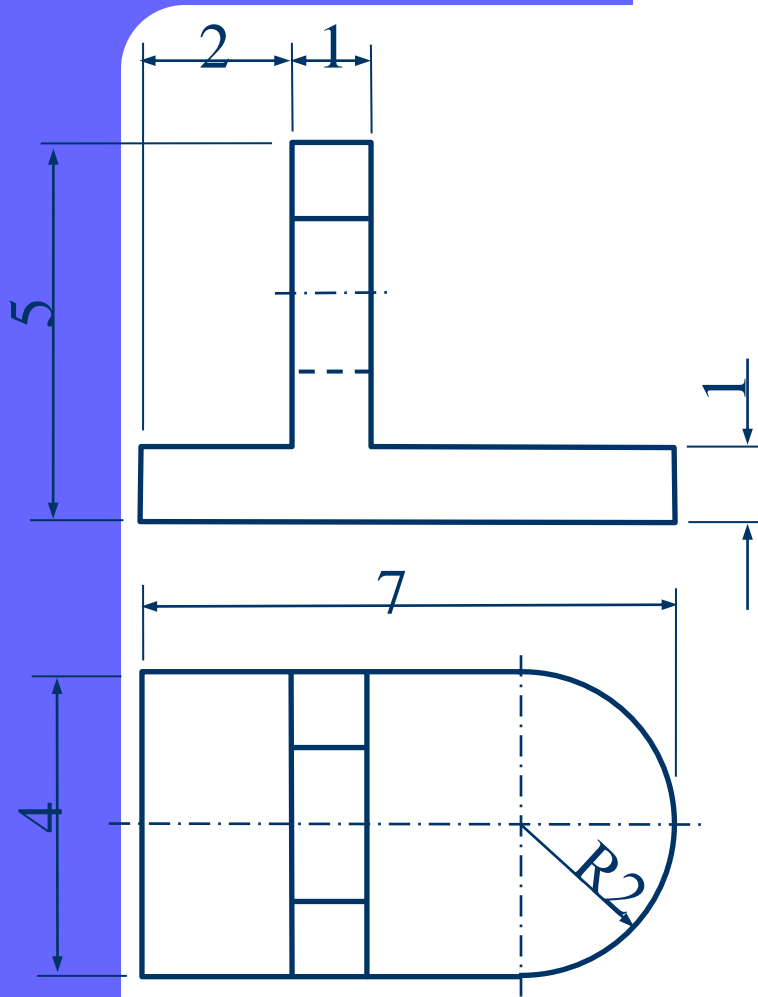
Vistas ortográficas



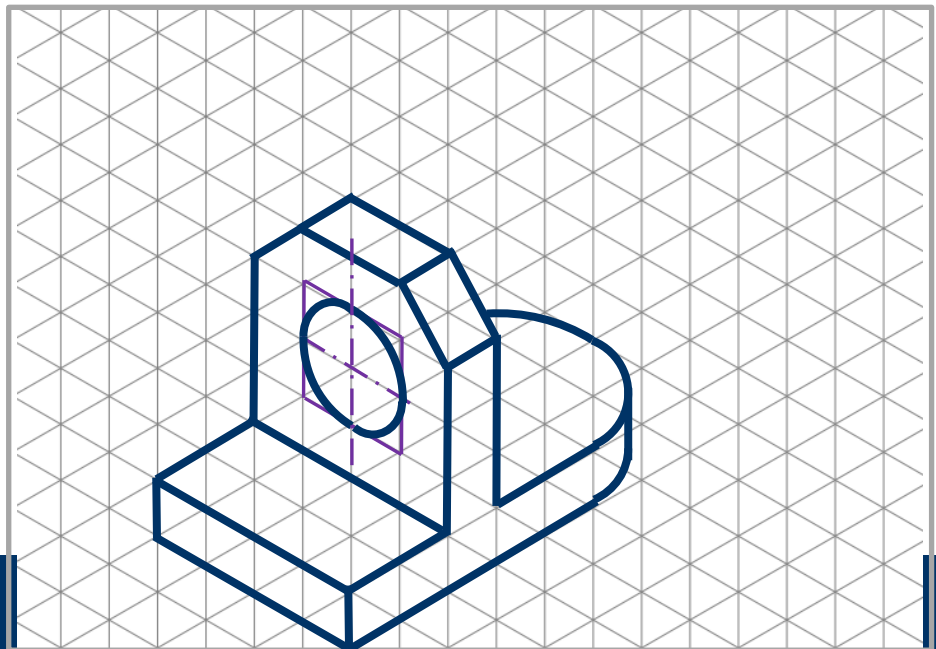
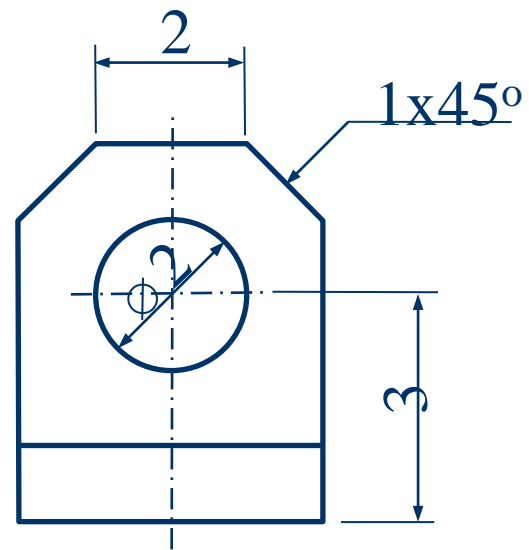
Perspectiva Isométrica - 6



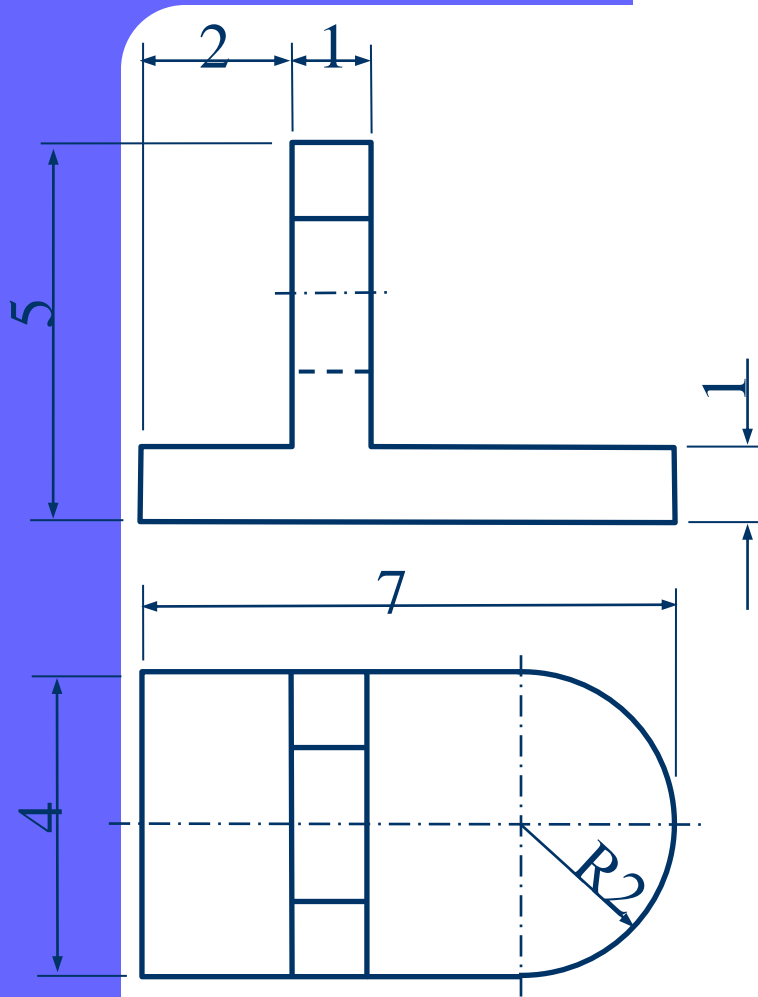
Vistas ortográficas



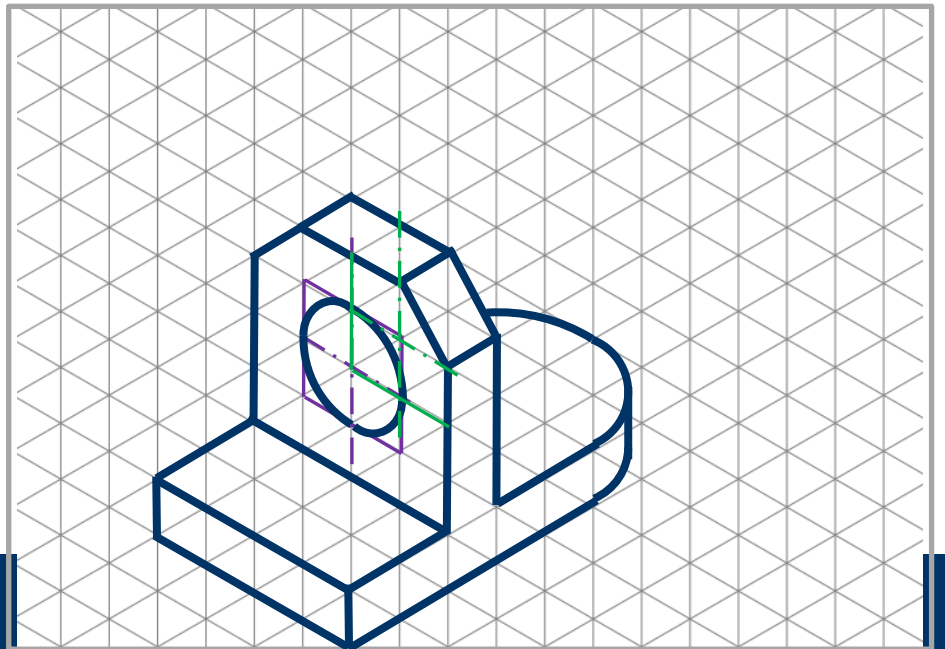
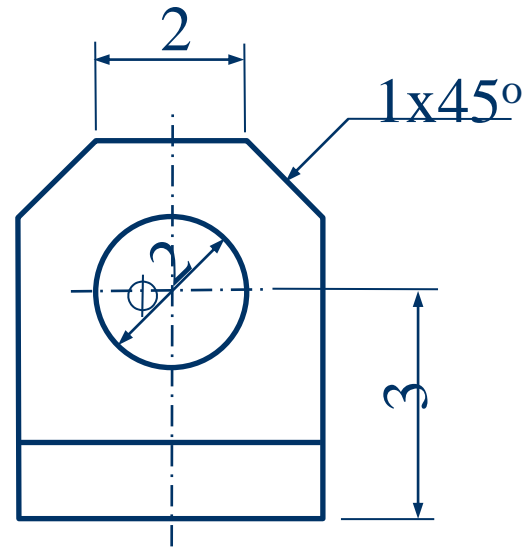
Perspectiva Isométrica - 6



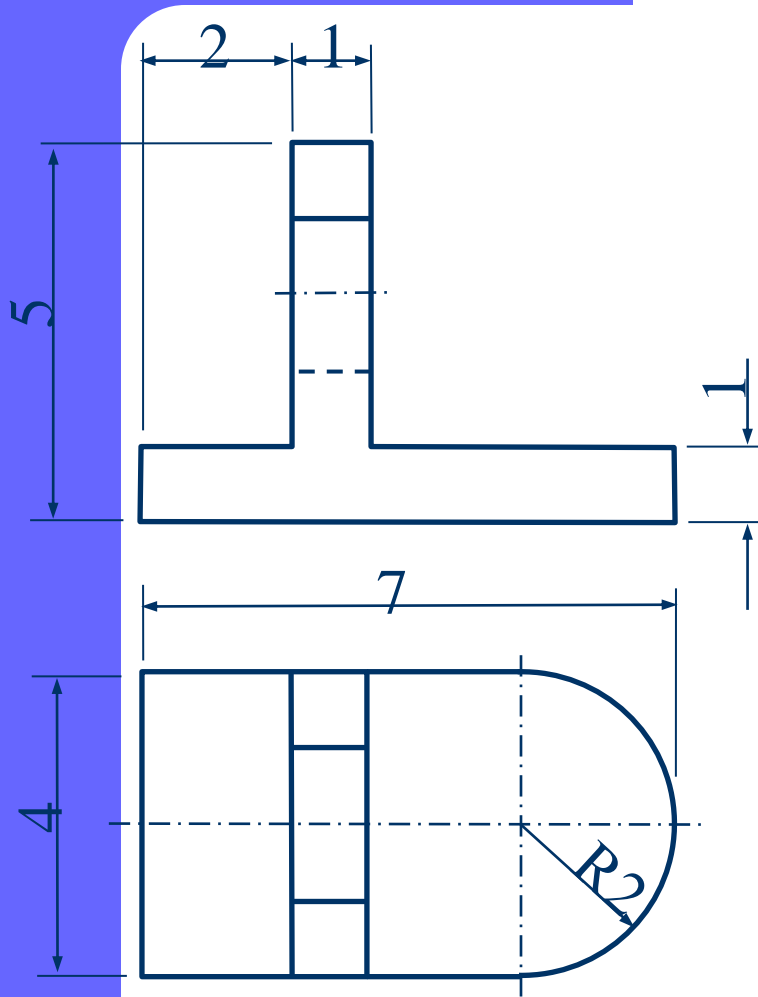
Vistas ortográficas



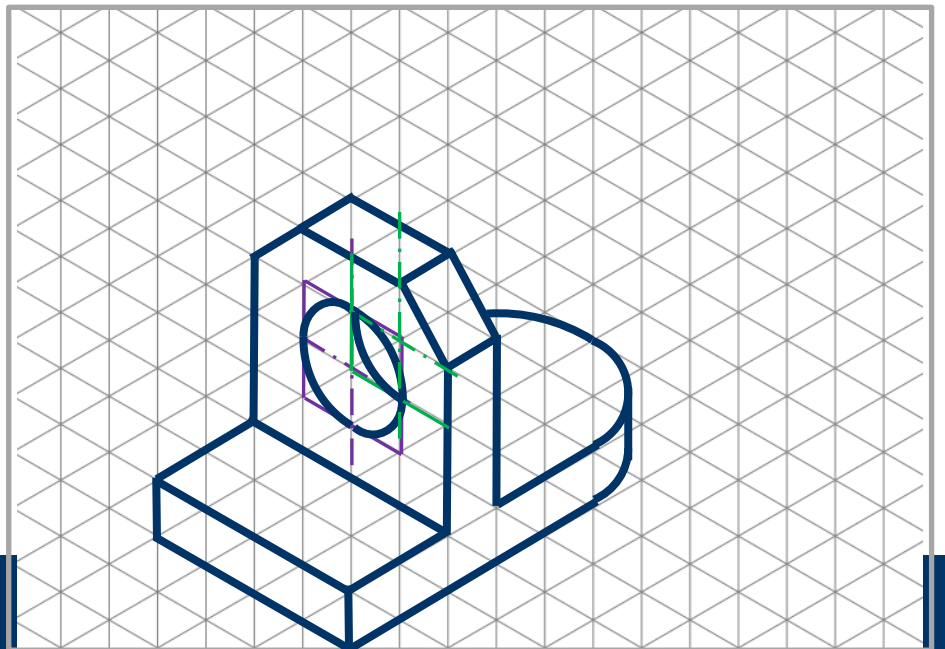
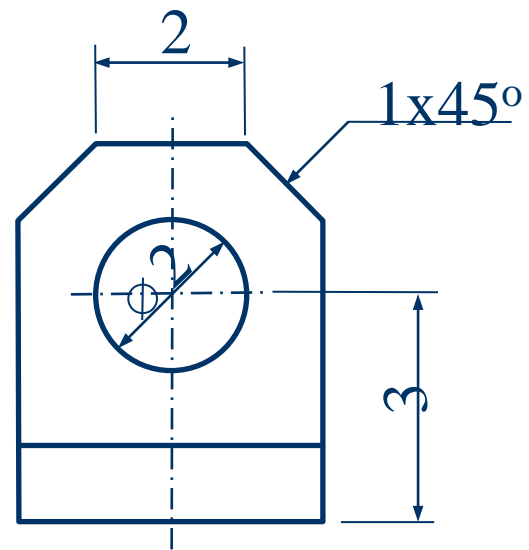
Perspectiva Isométrica - 6



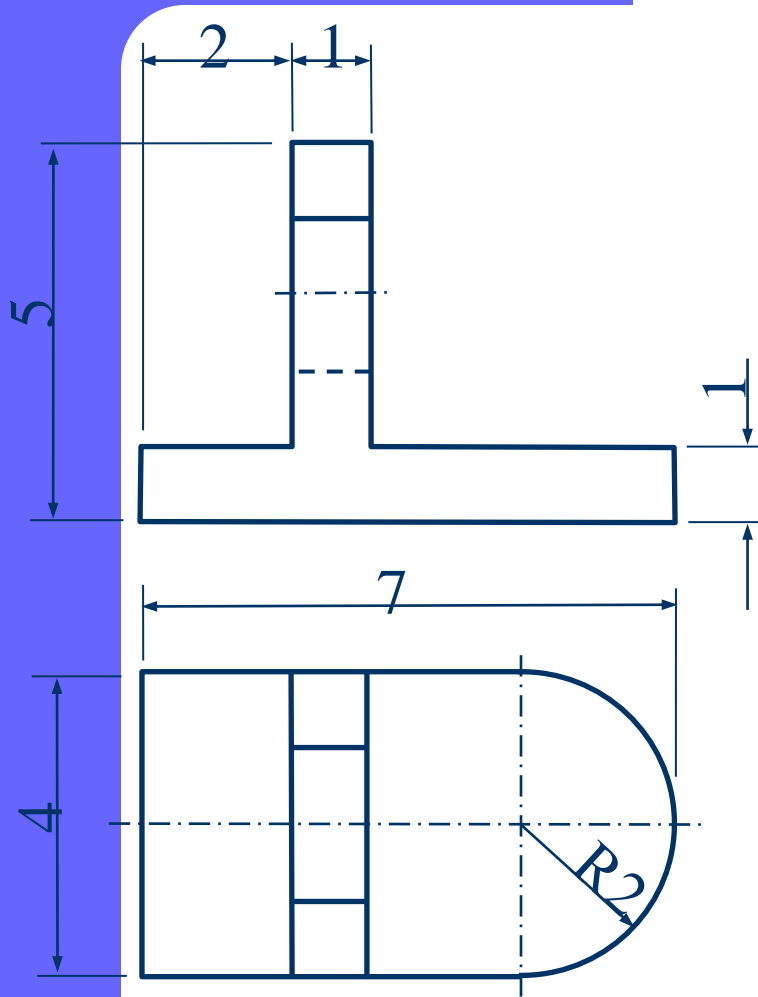
Vistas ortográficas



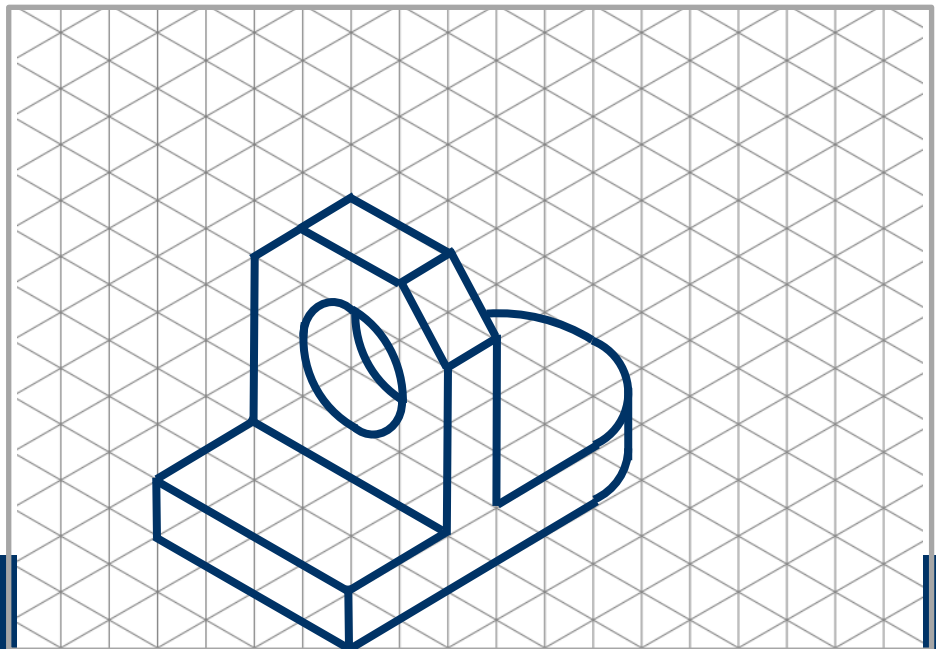
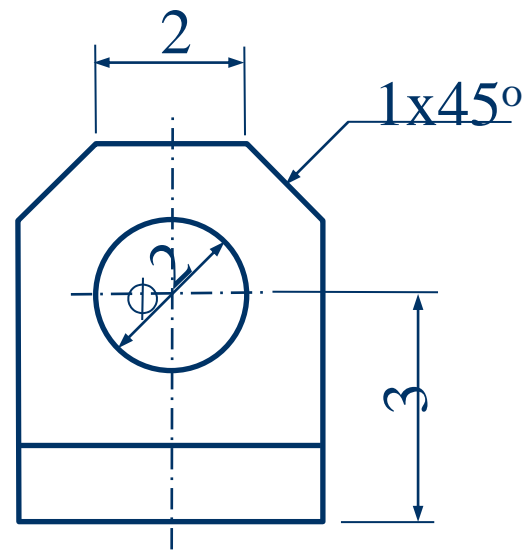
Perspectiva Isométrica - 6



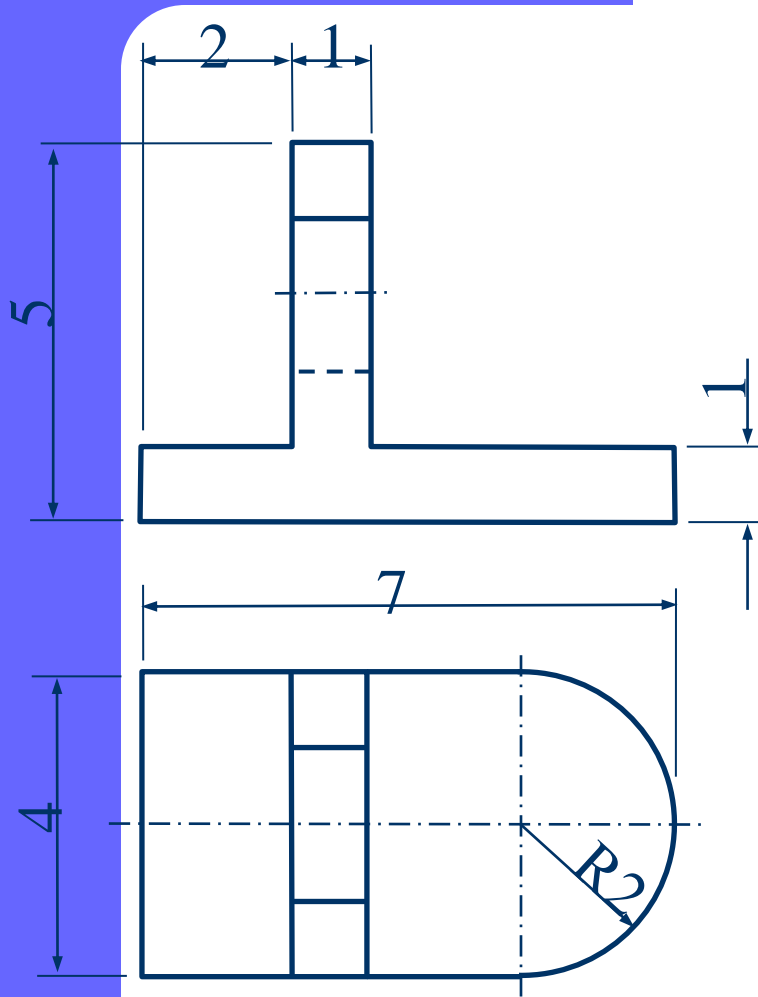
Vistas ortográficas



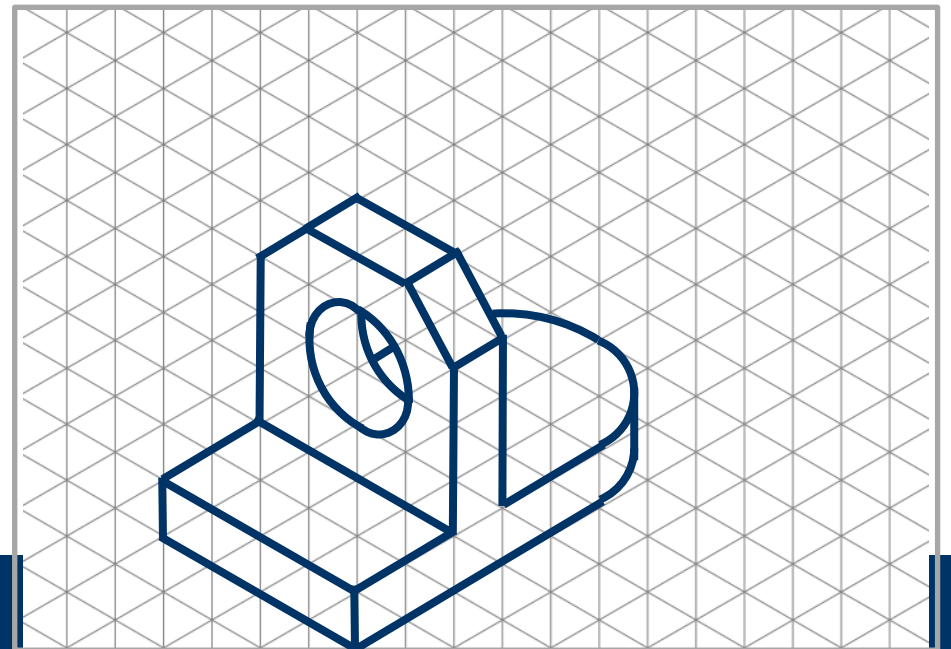
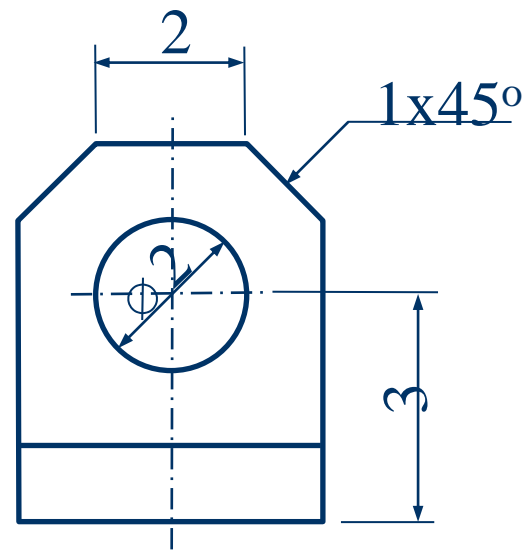
Perspectiva Isométrica - 6



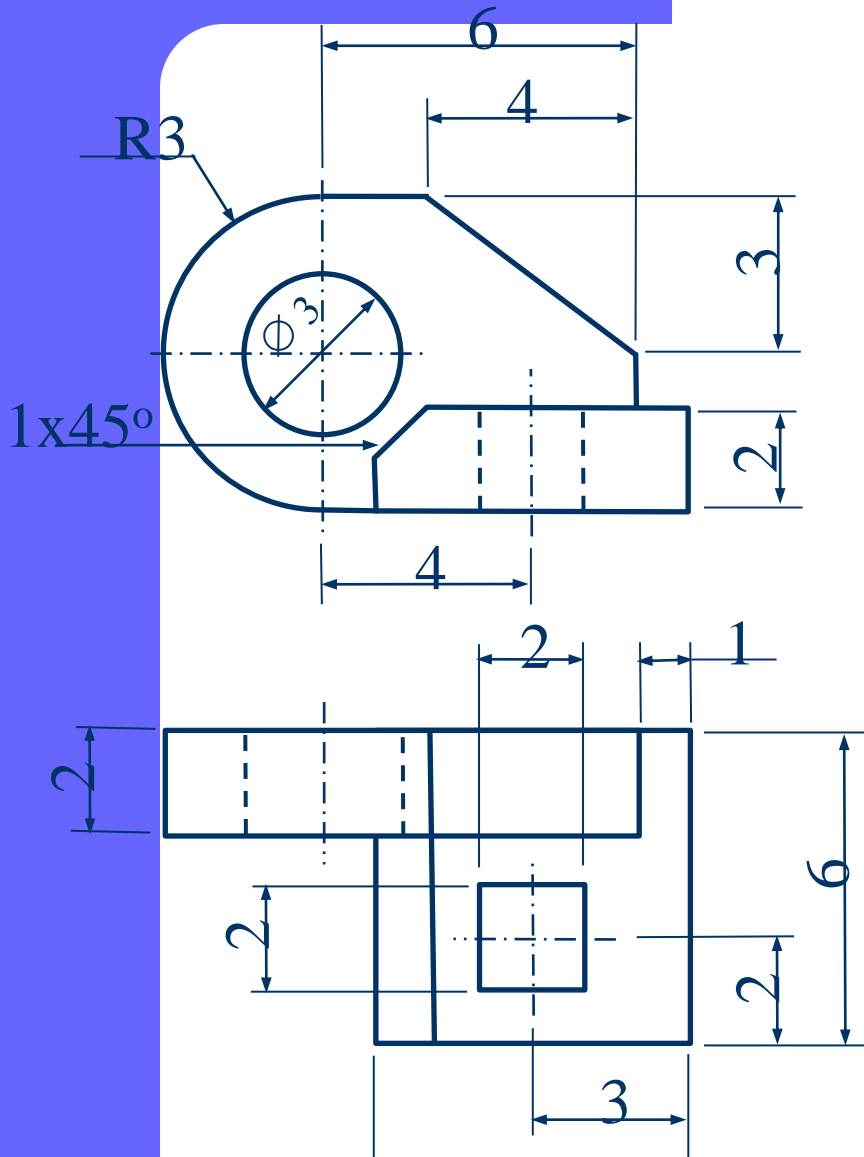
Vistas ortográficas



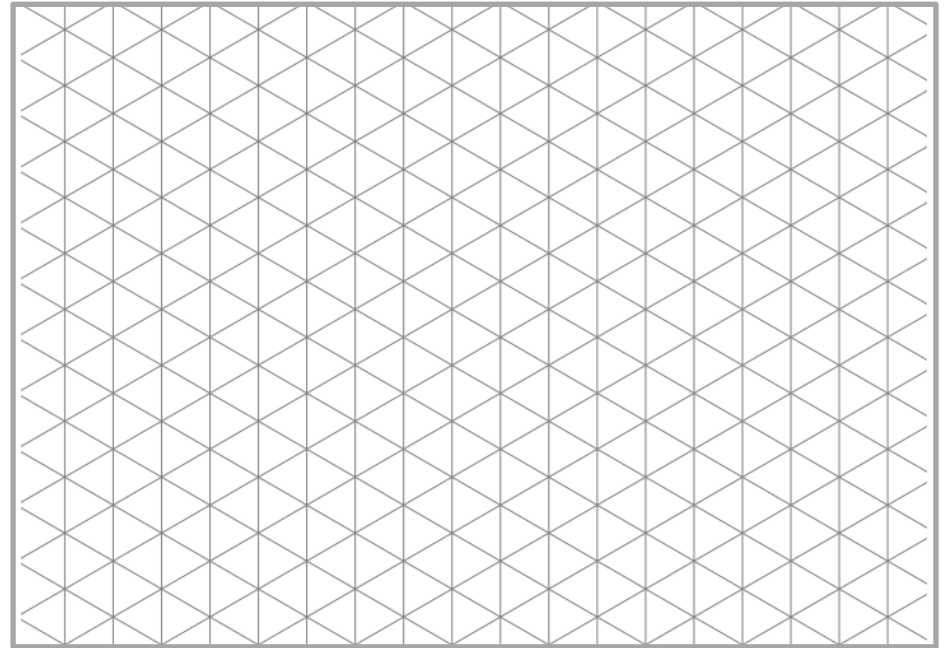
Perspectiva Isométrica - 6



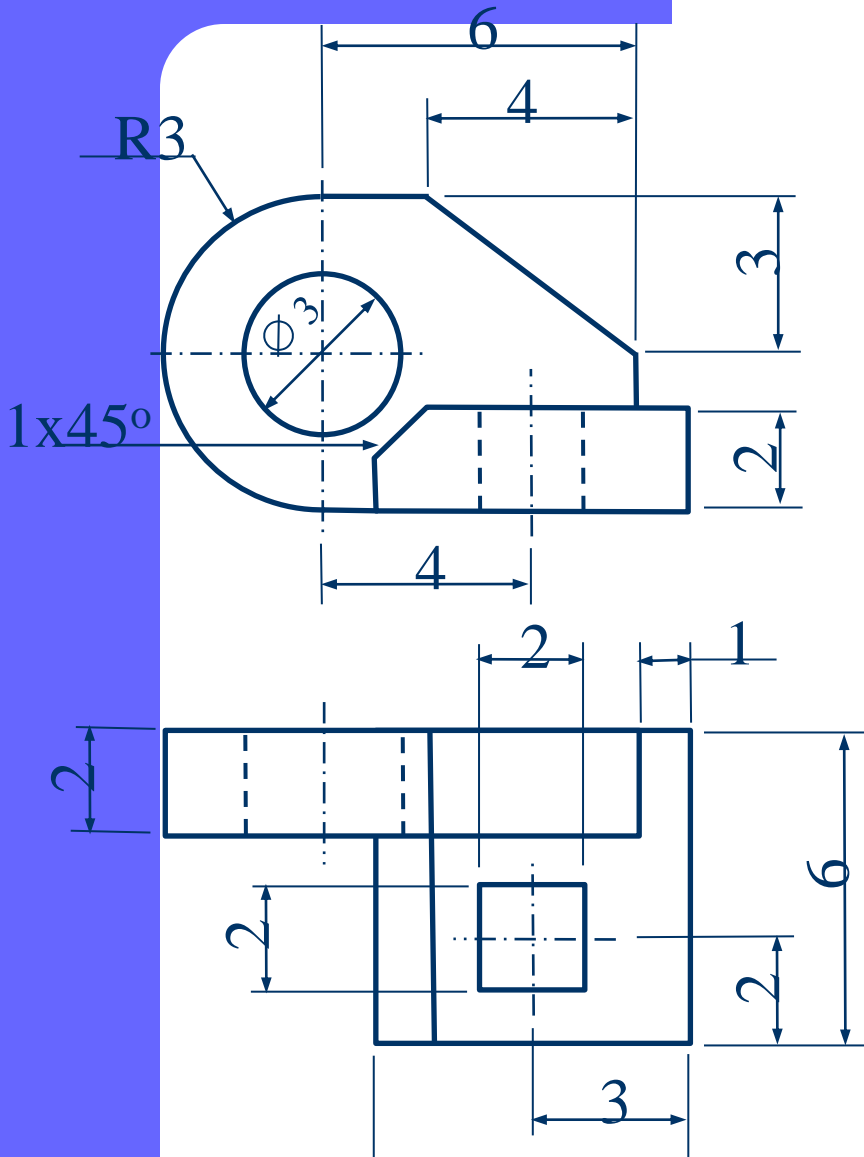
Vistas ortográficas



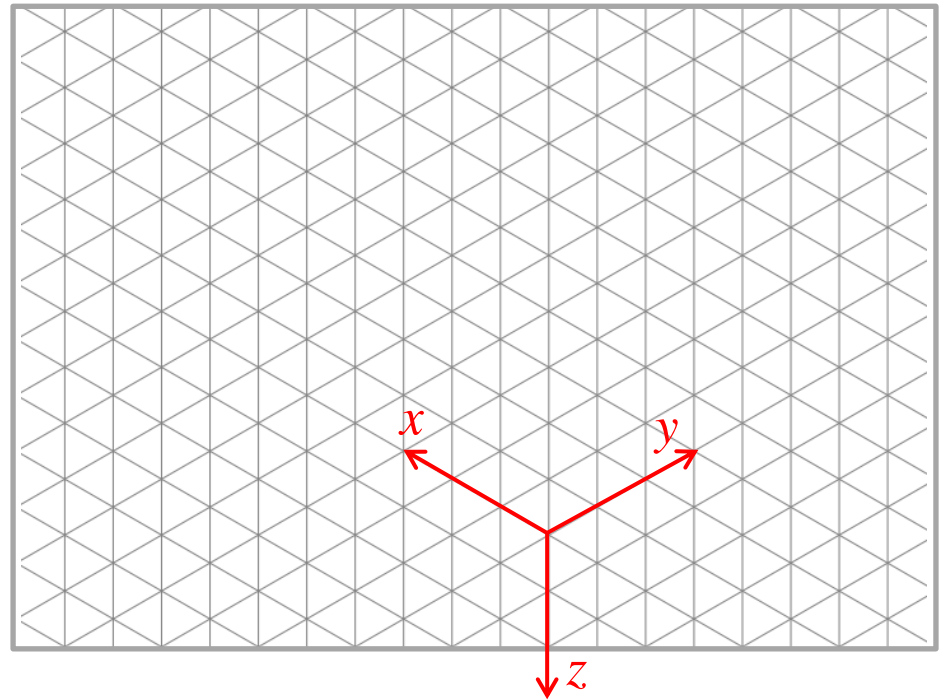
Perspectiva Isométrica - 7



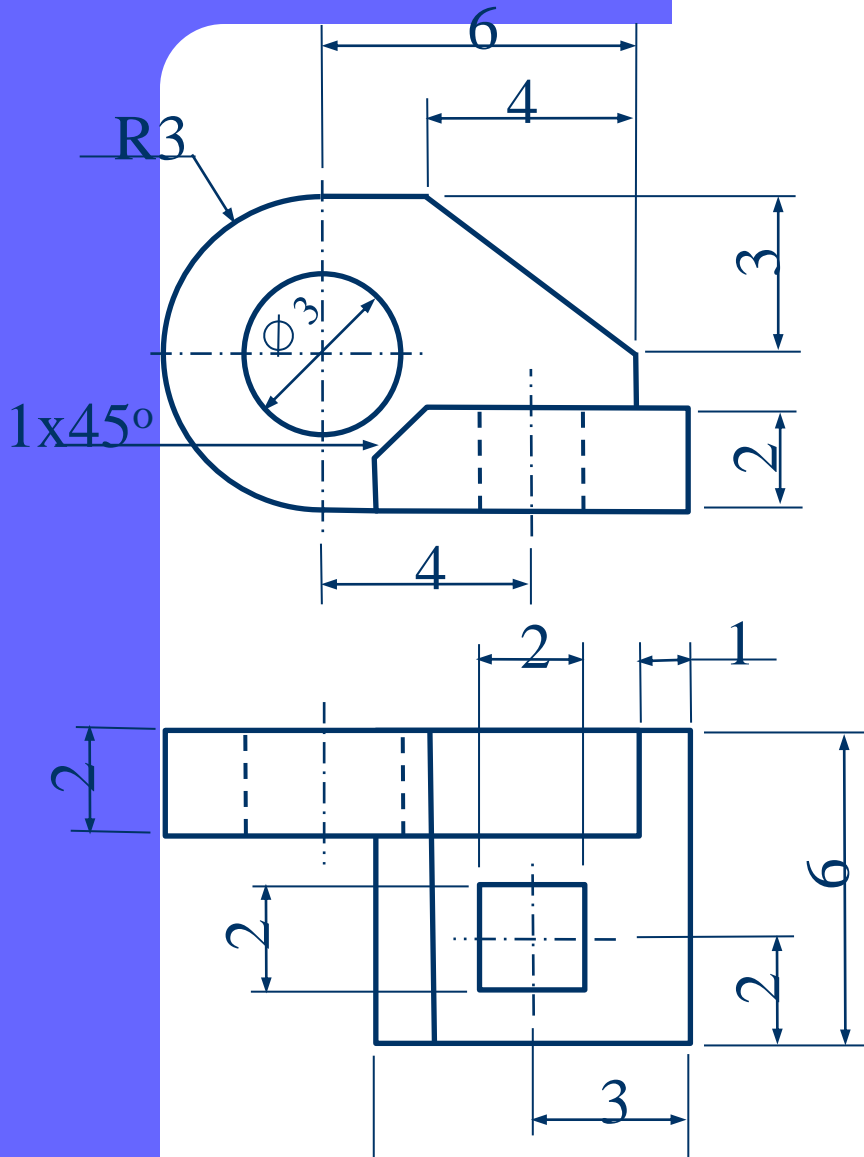
Vistas ortográficas



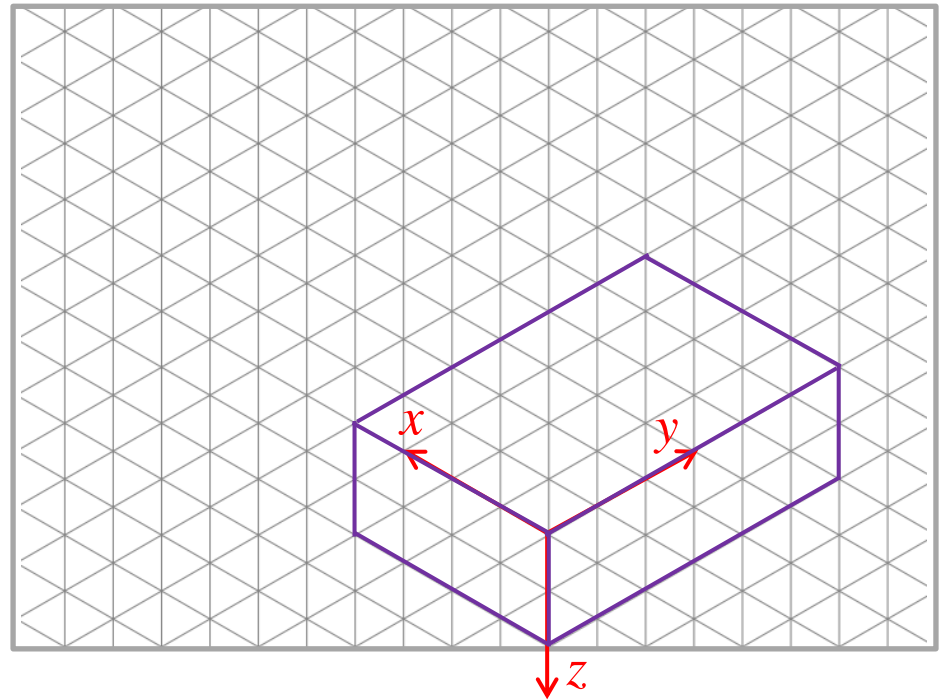
Perspectiva Isométrica - 7



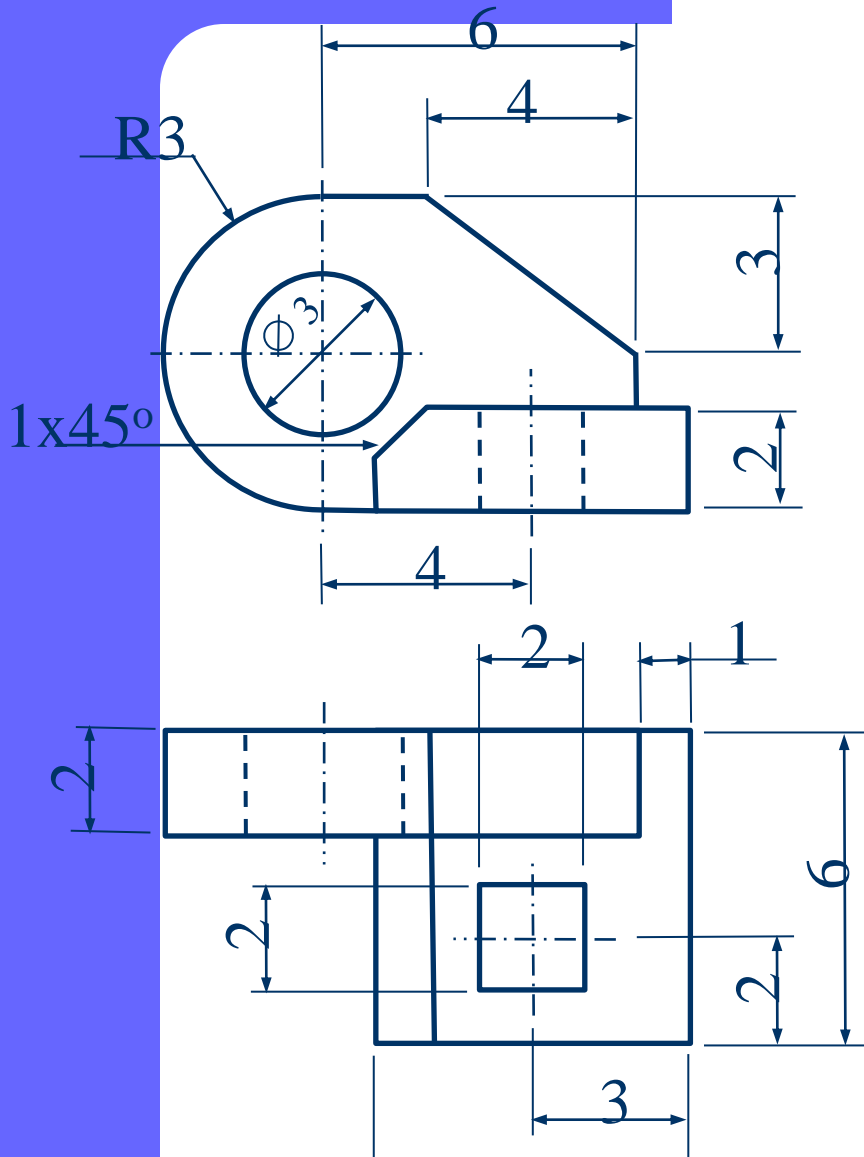
Vistas ortográficas



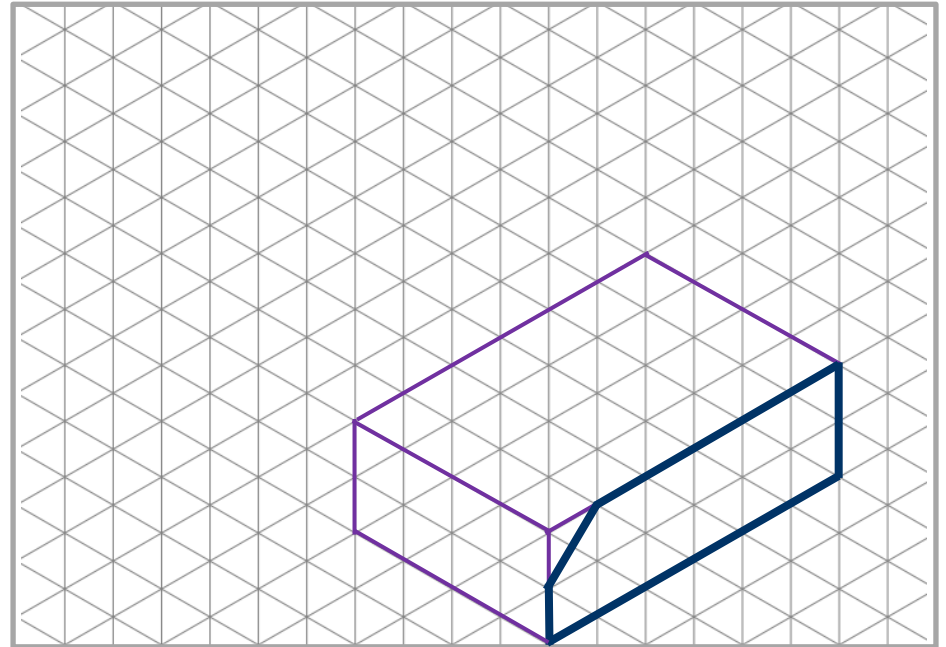
Perspectiva Isométrica - 7



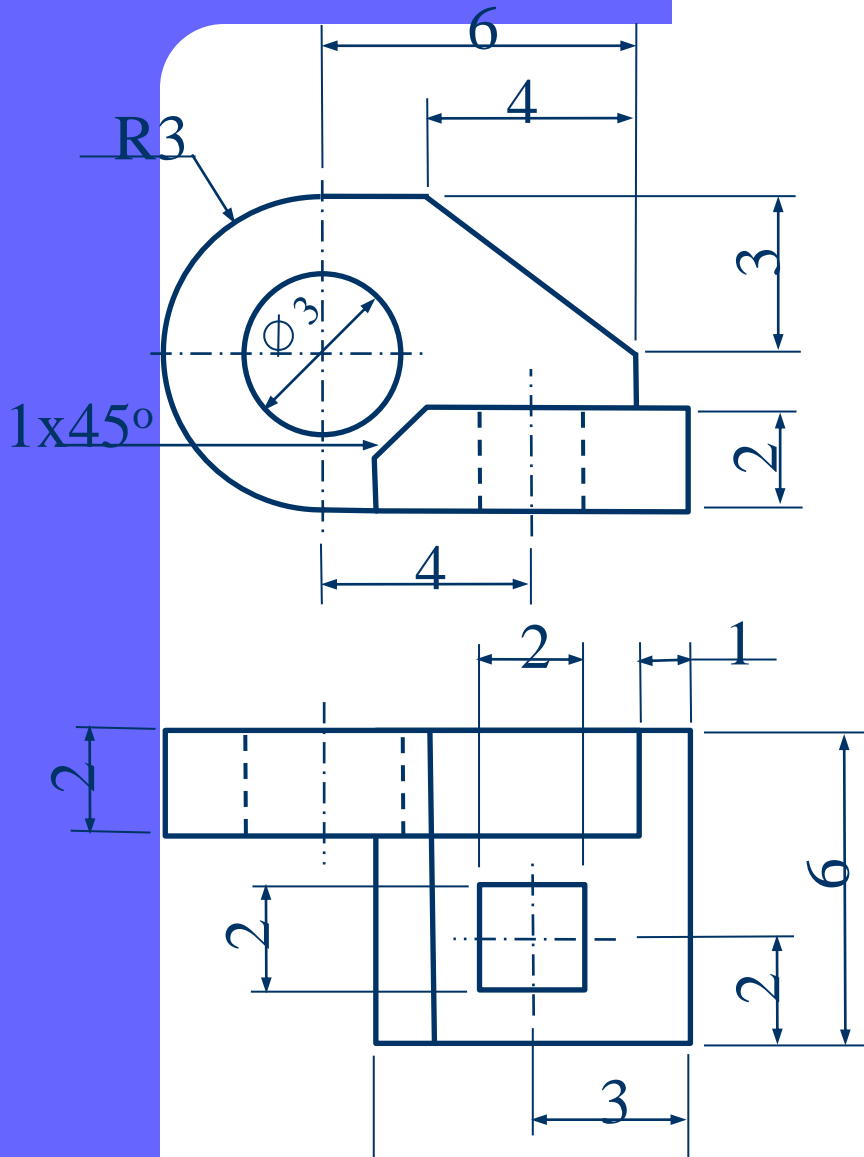
Vistas ortográficas



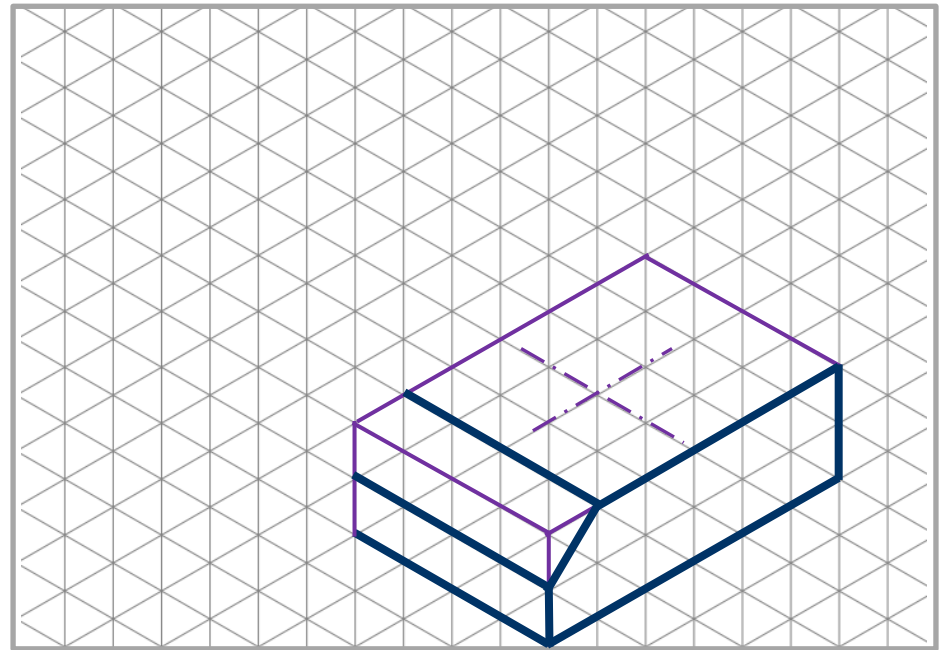
Perspectiva Isométrica - 7



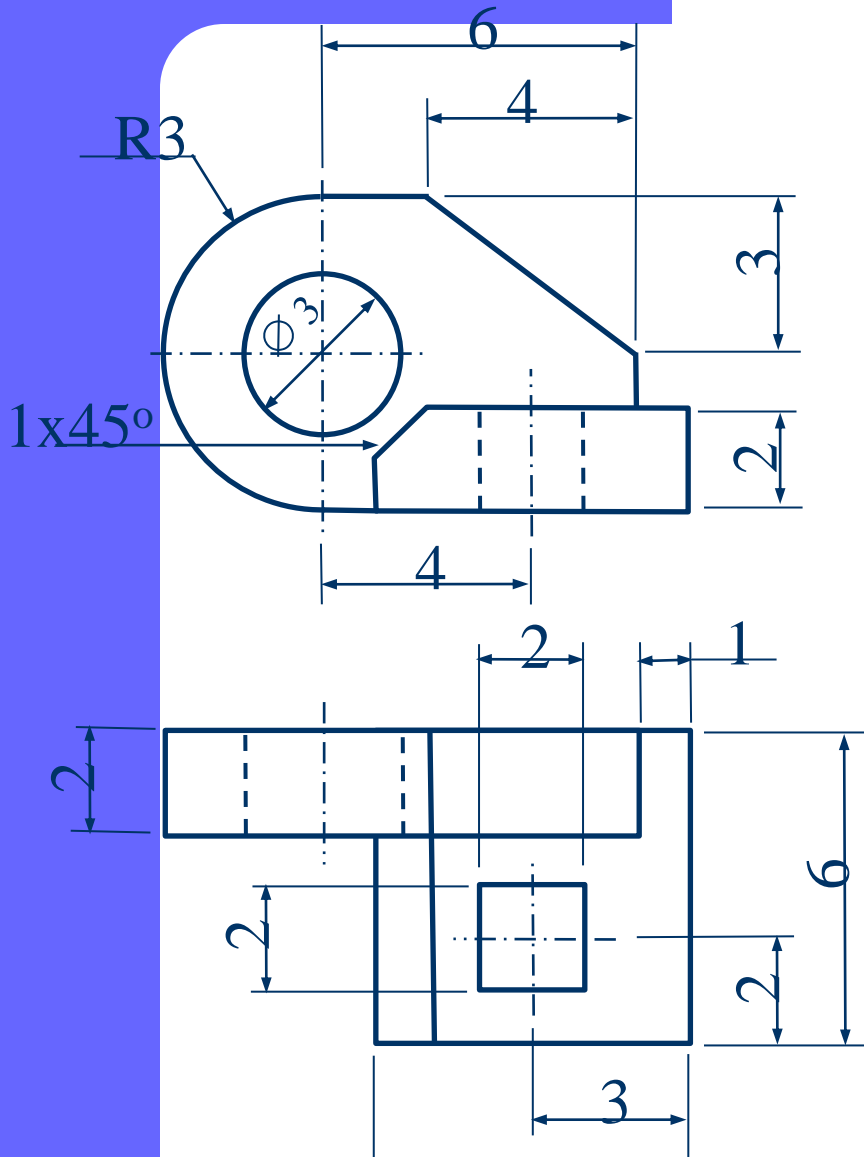
Vistas ortográficas



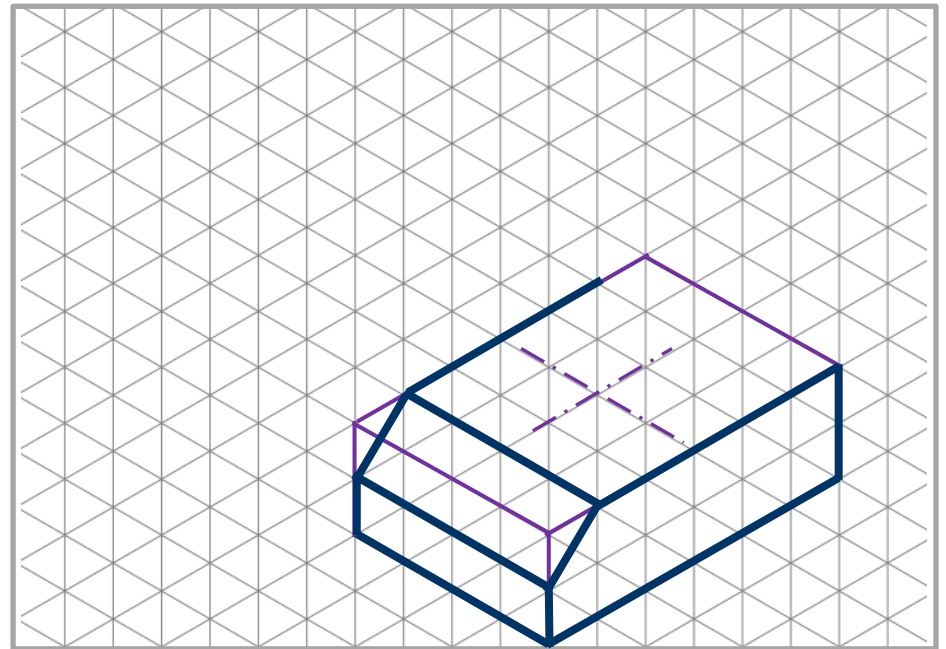
Perspectiva Isométrica - 7



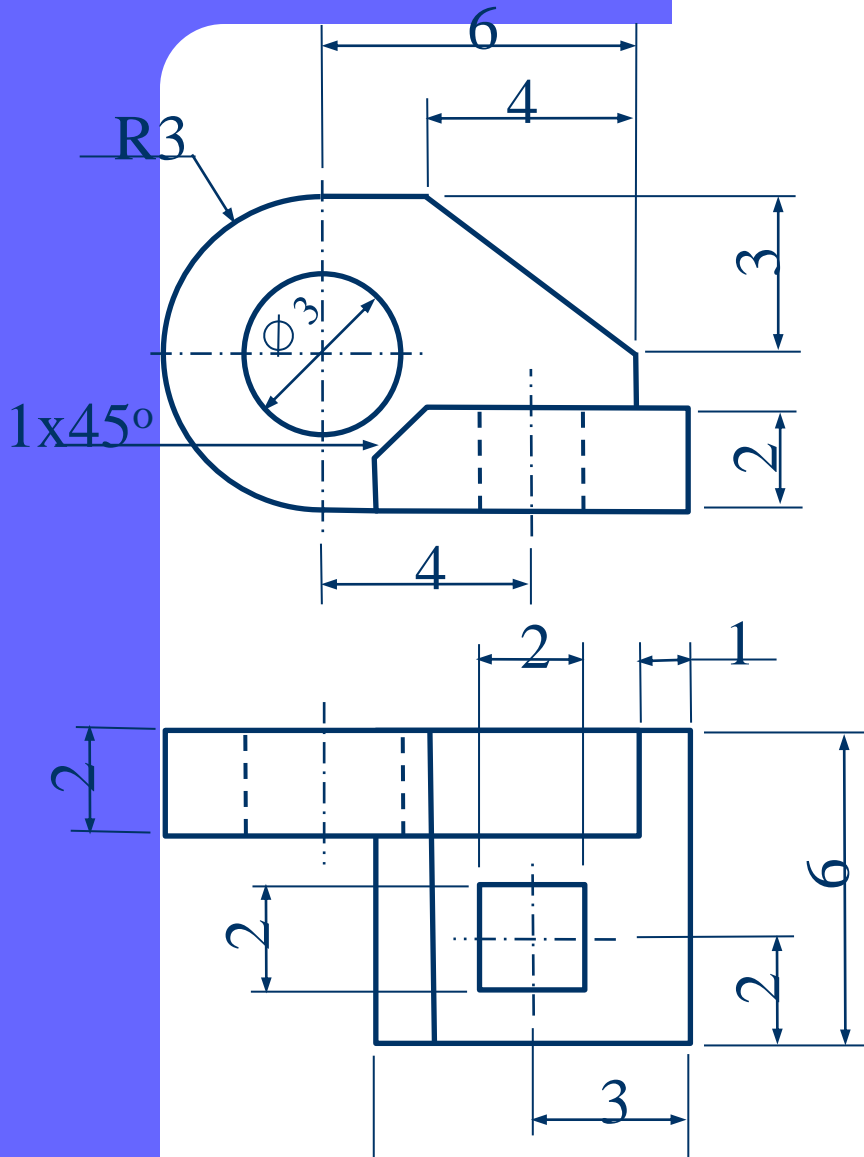
Vistas ortográficas



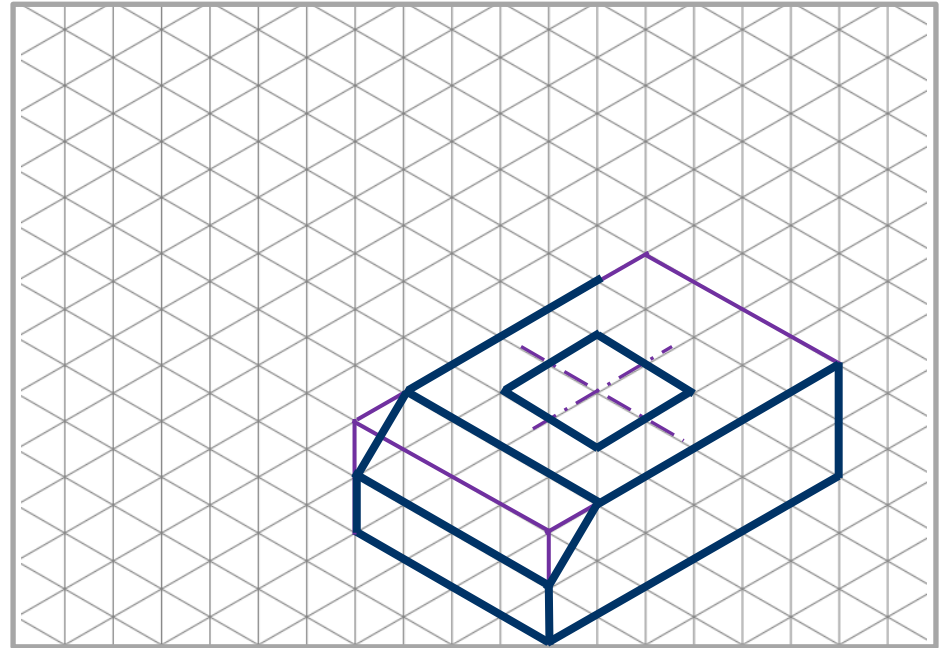
Perspectiva Isométrica - 7



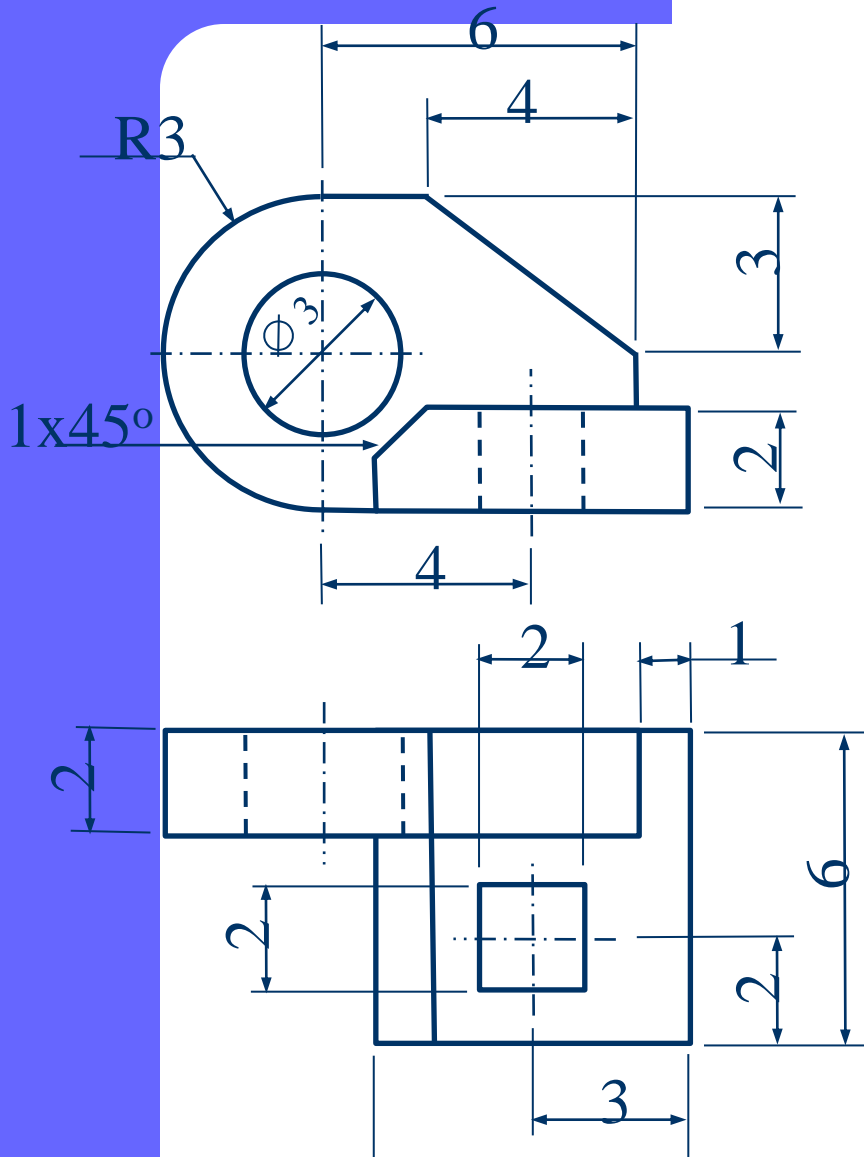
Vistas ortográficas



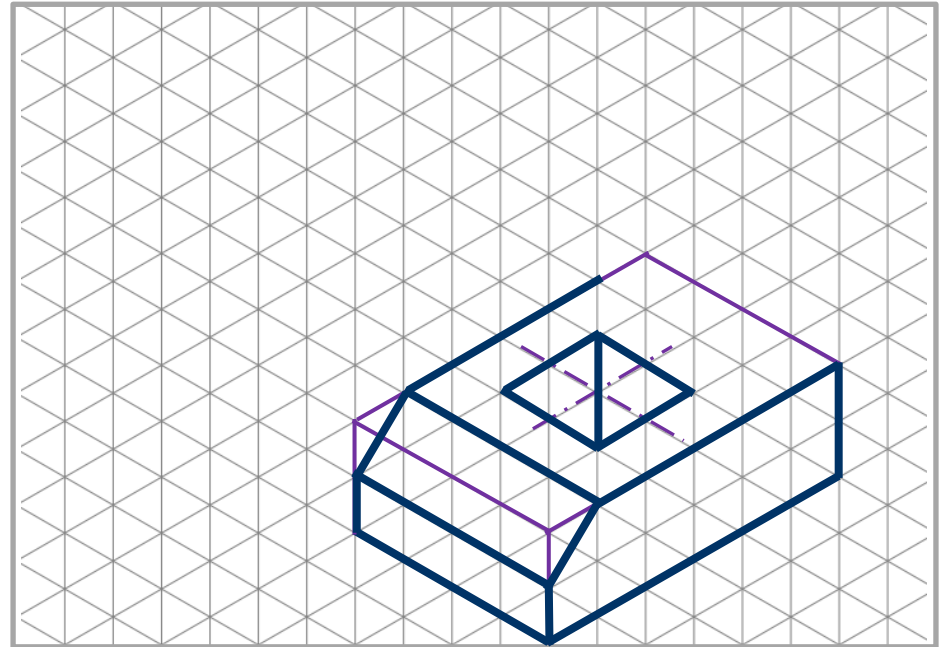
Perspectiva Isométrica - 7



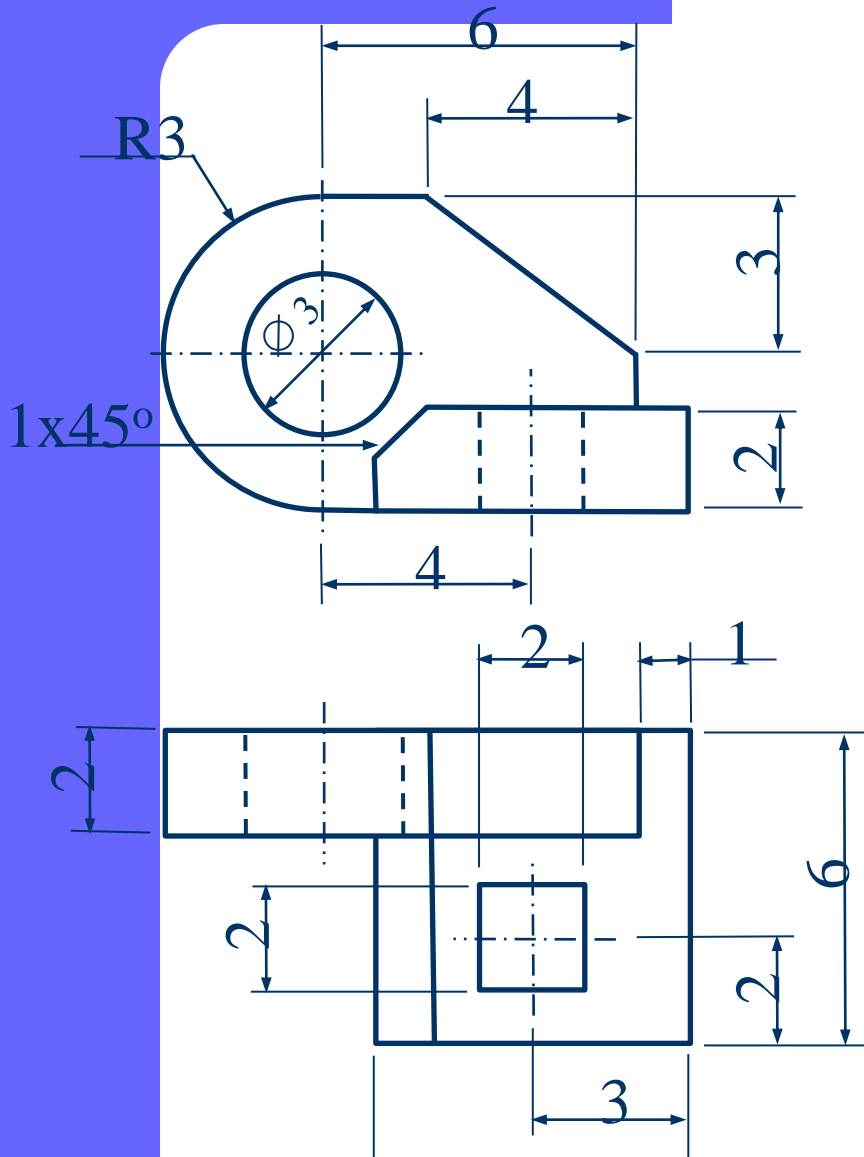
Vistas ortográficas



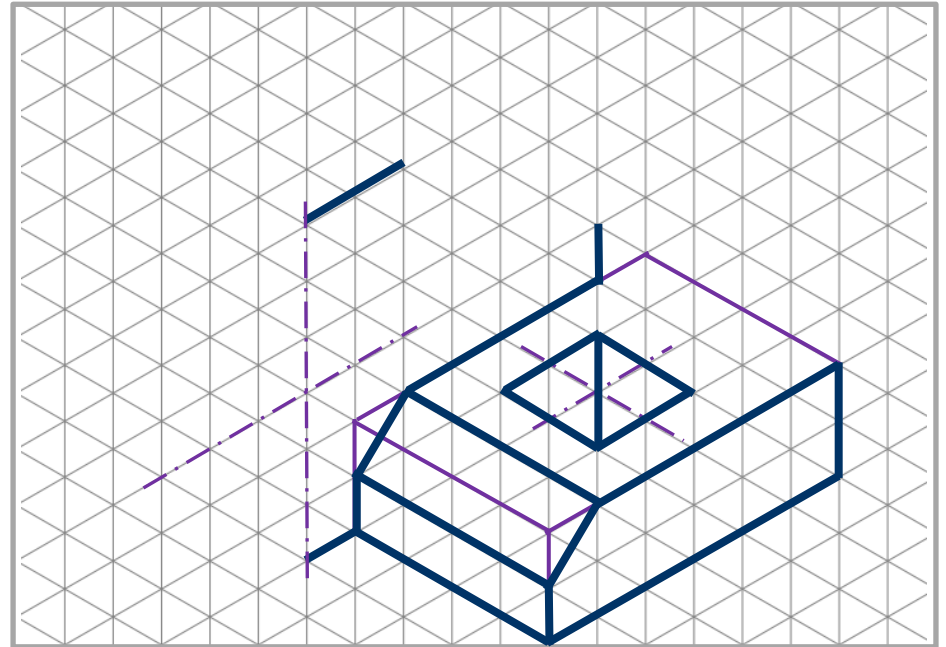
Perspectiva Isométrica - 7



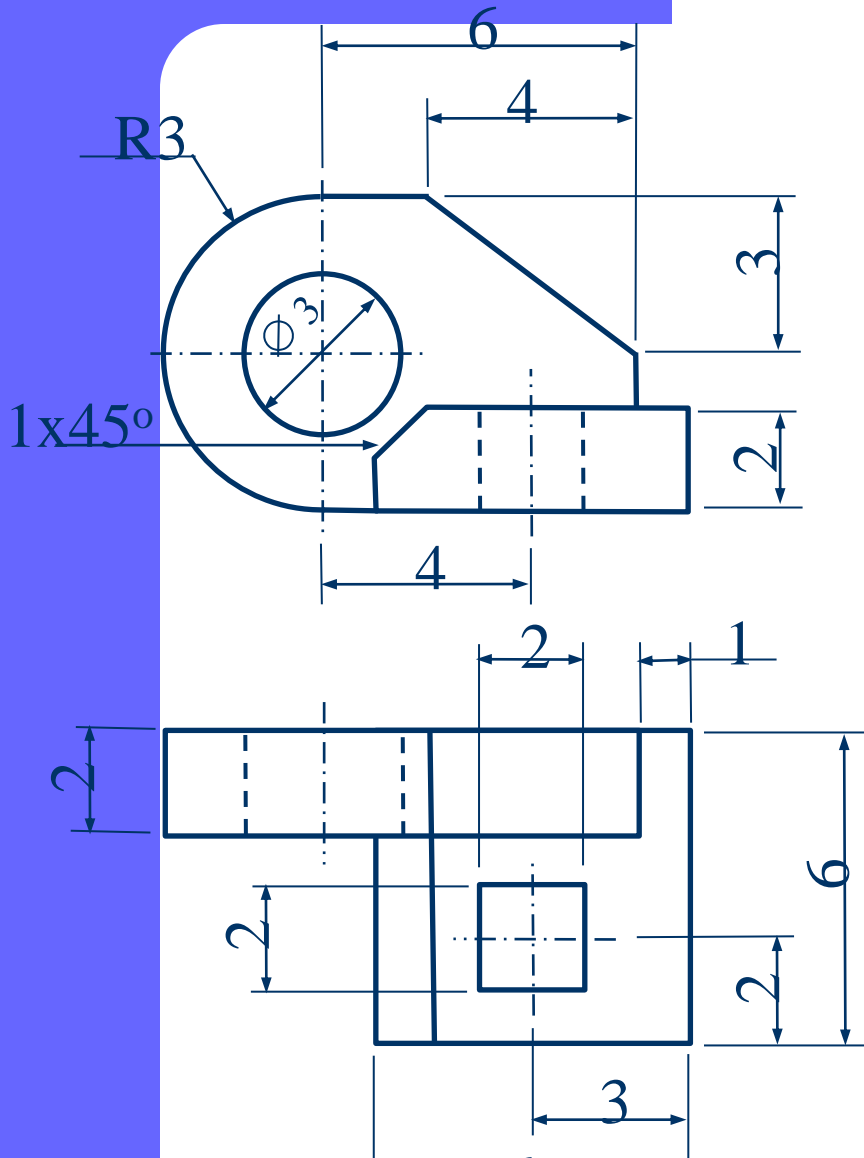
Vistas ortográficas



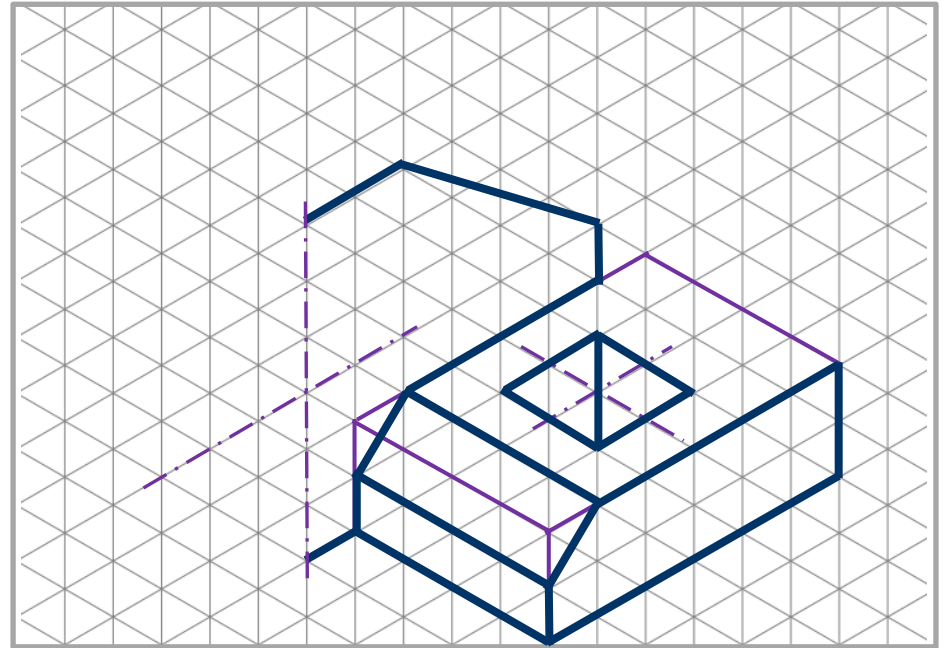
Perspectiva Isométrica - 7



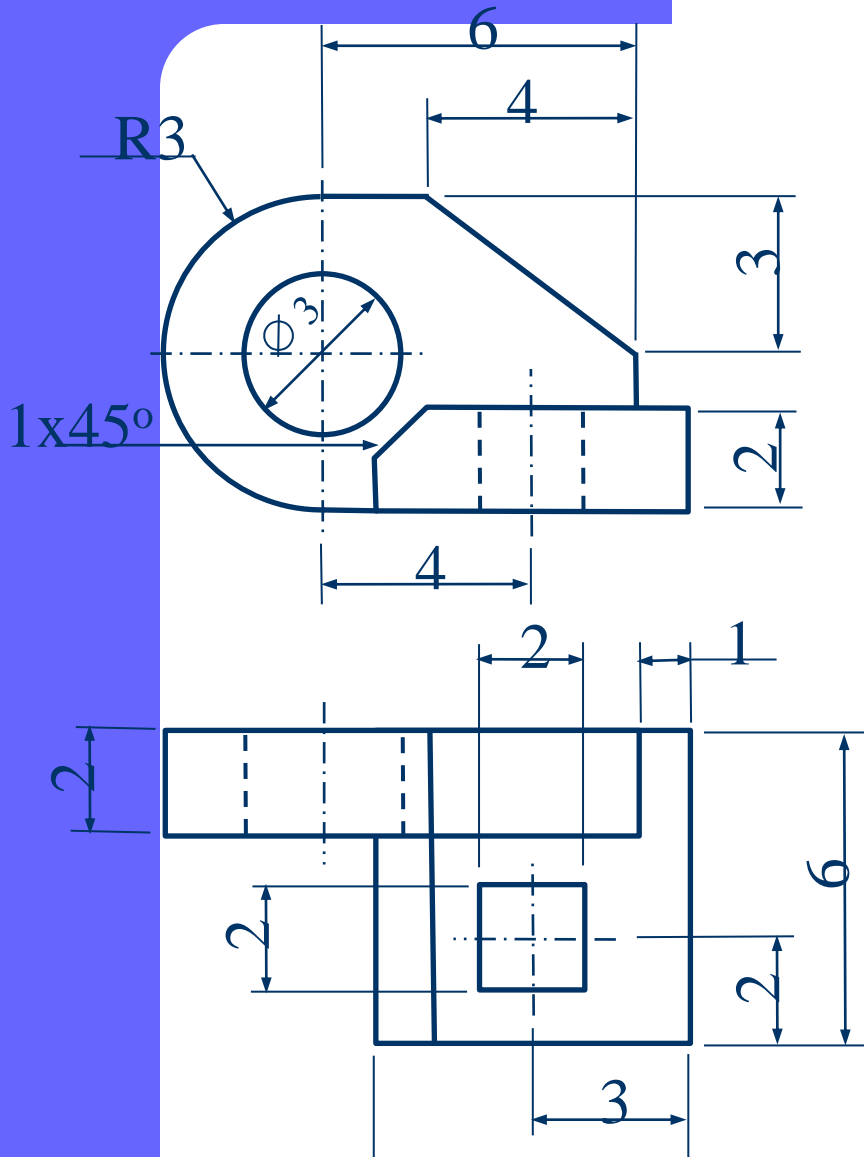
Vistas ortográficas



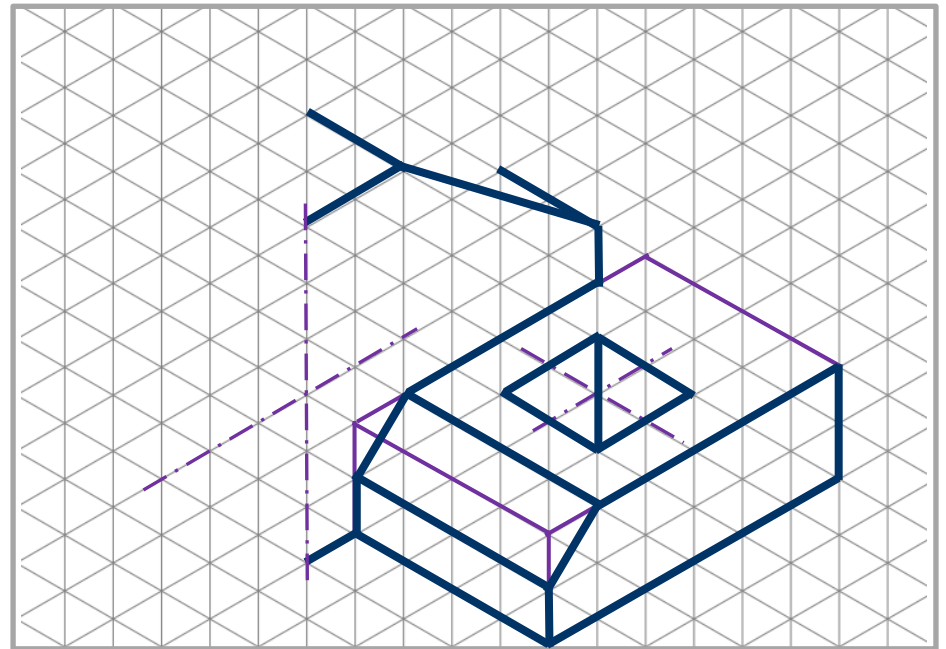
Perspectiva Isométrica - 7



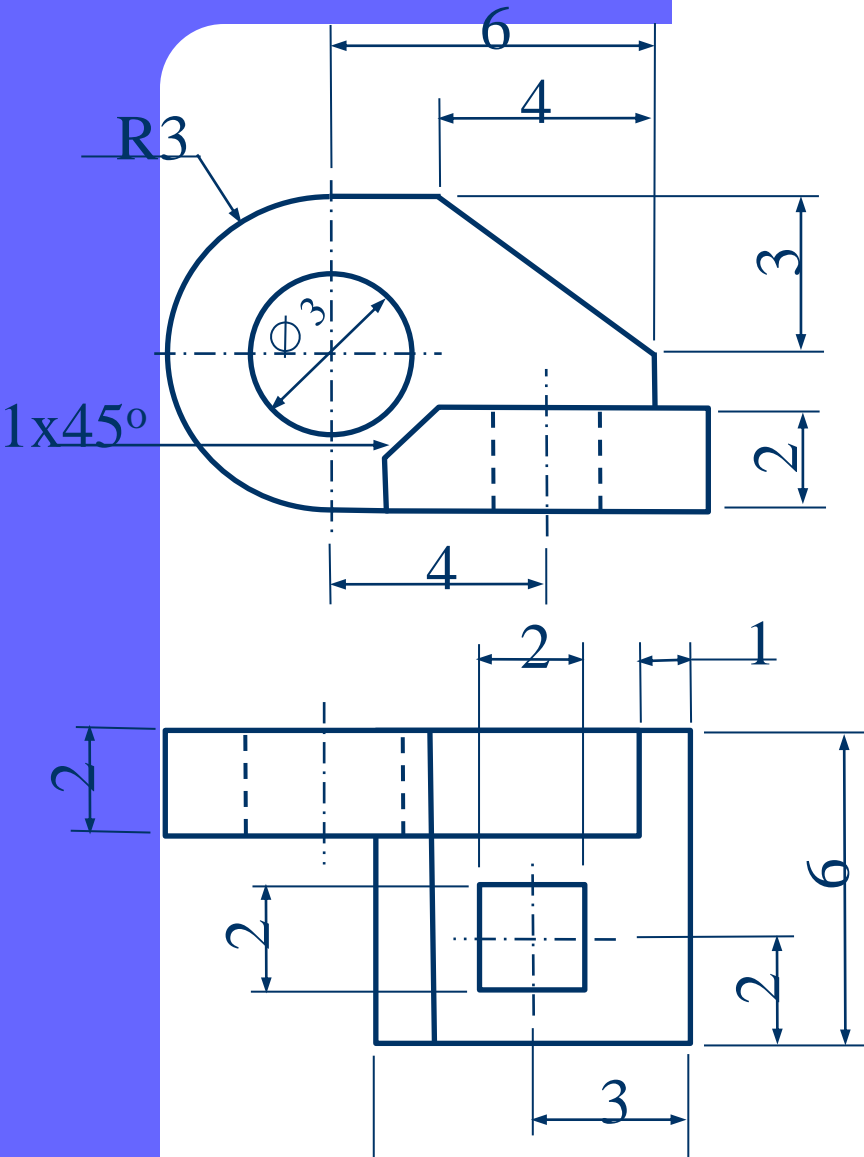
Vistas ortográficas



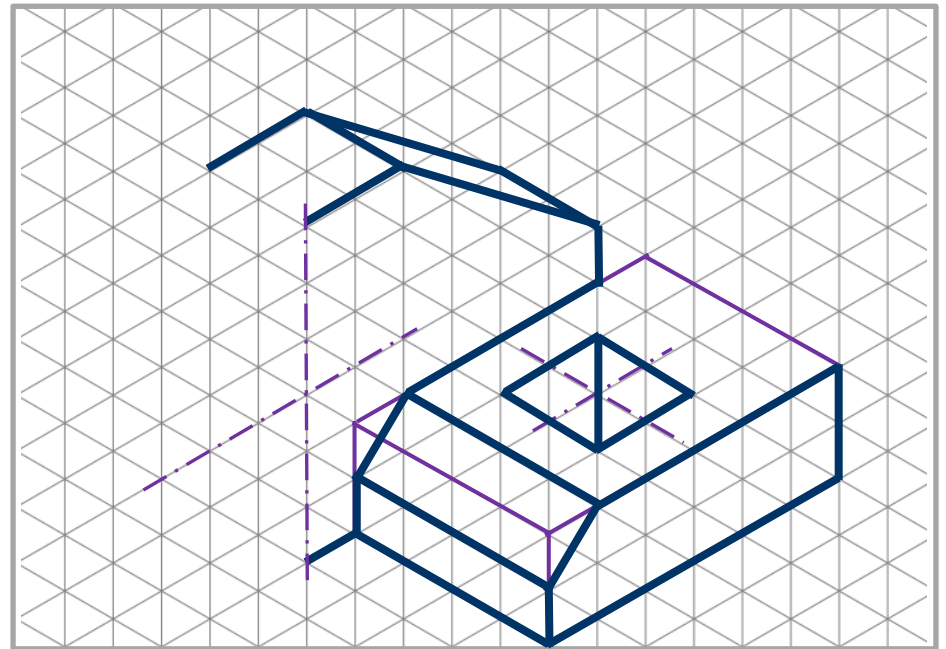
Perspectiva Isométrica - 7



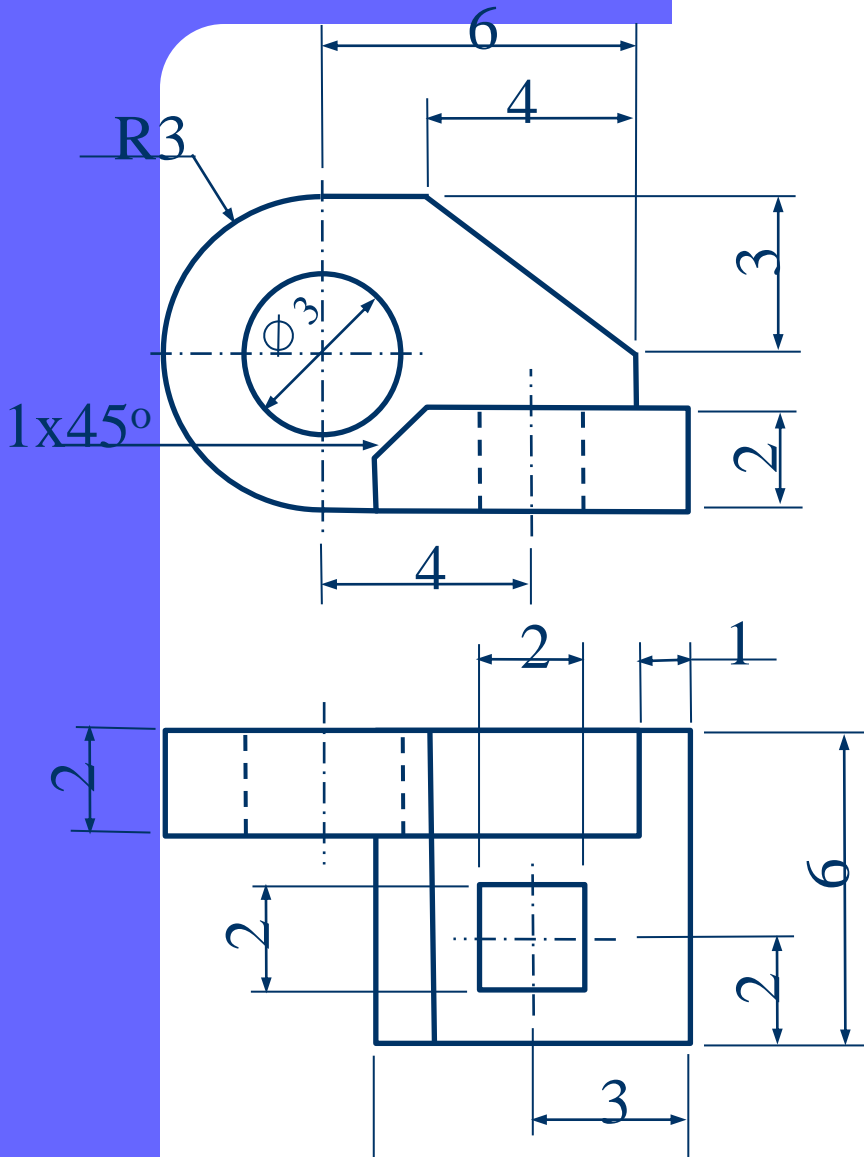
Vistas ortográficas



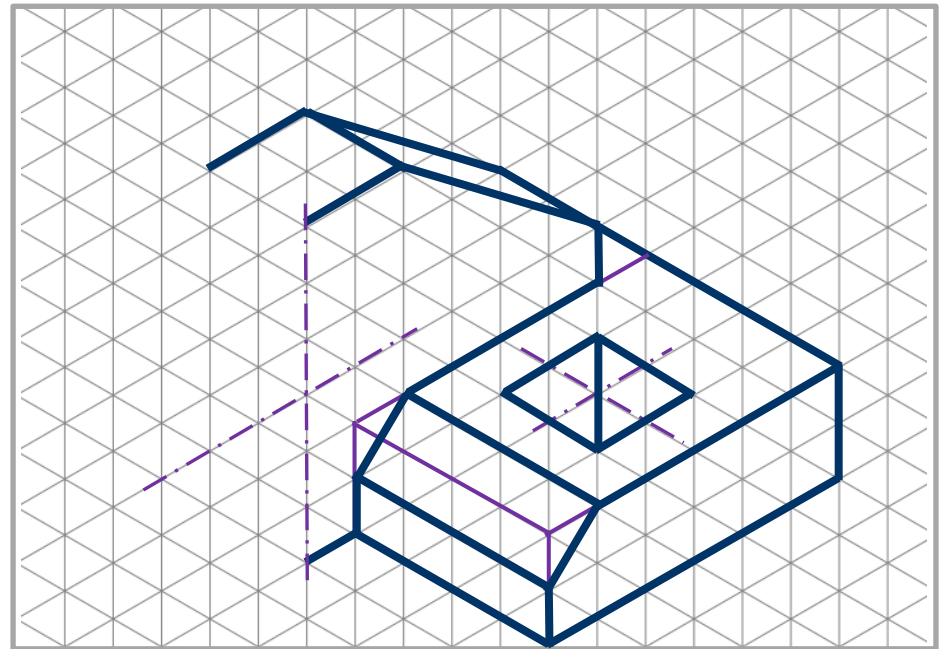
Perspectiva Isométrica - 7



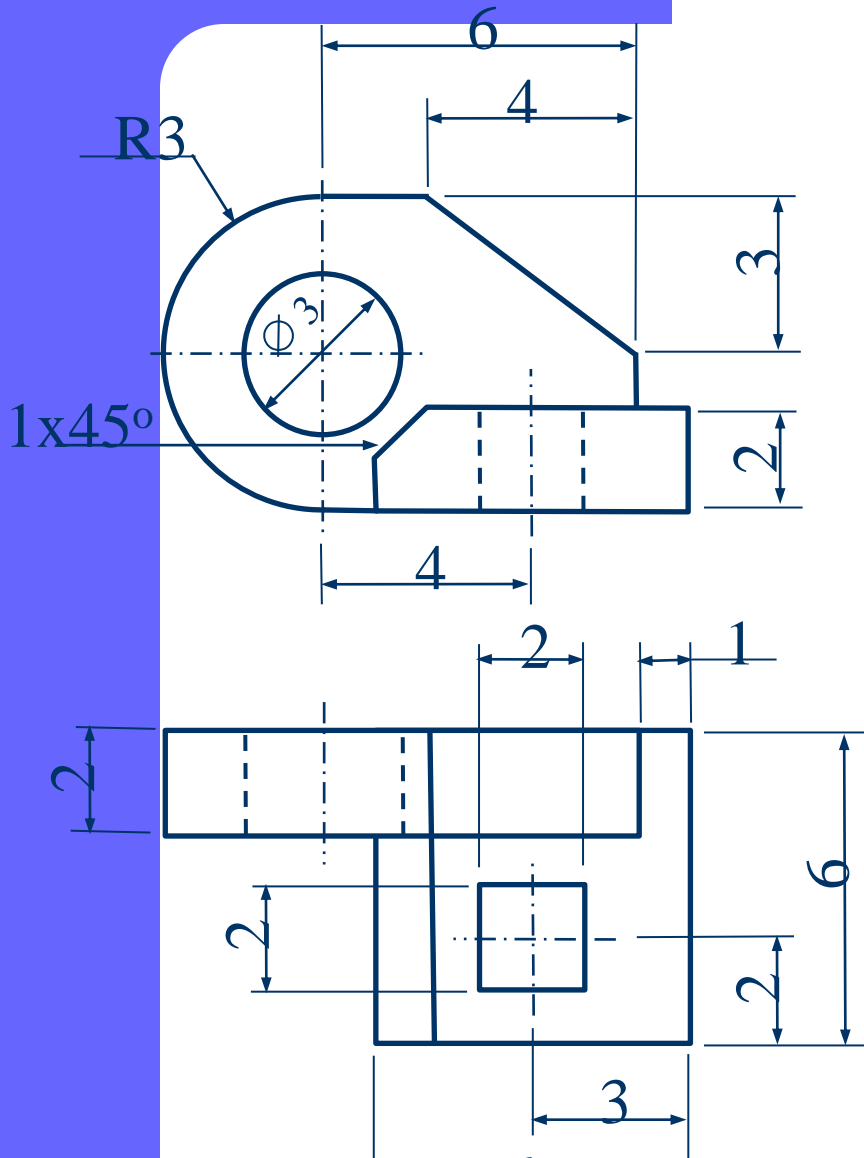
Vistas ortográficas



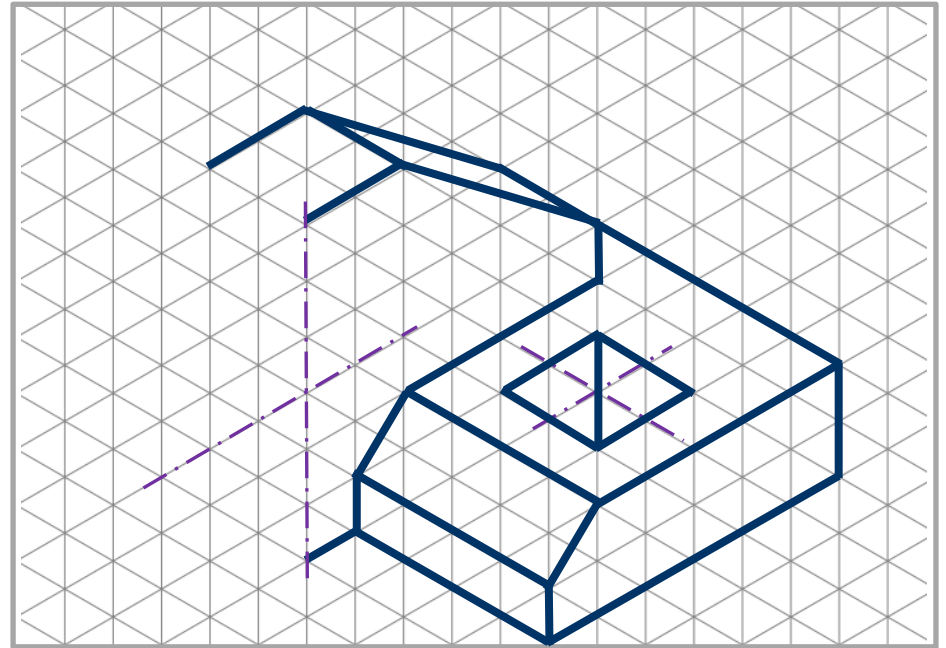
Perspectiva Isométrica - 7



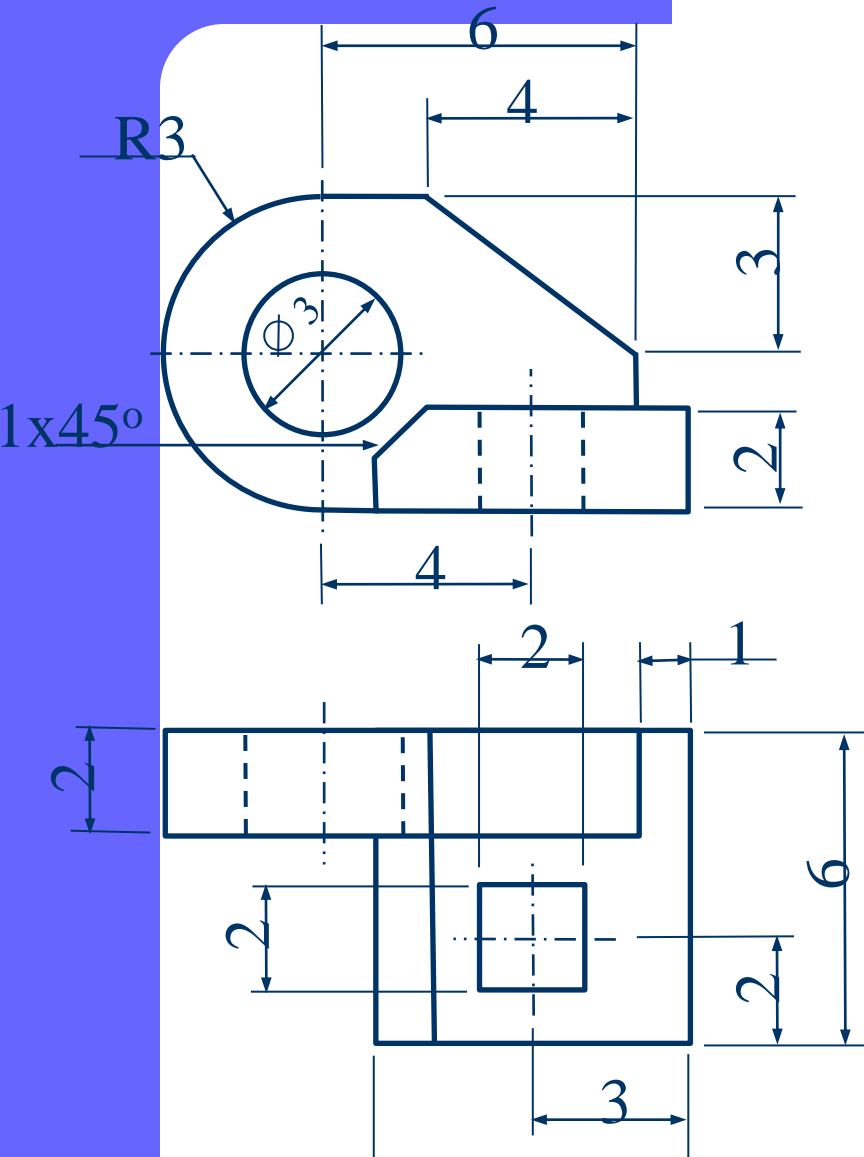
Vistas ortográficas



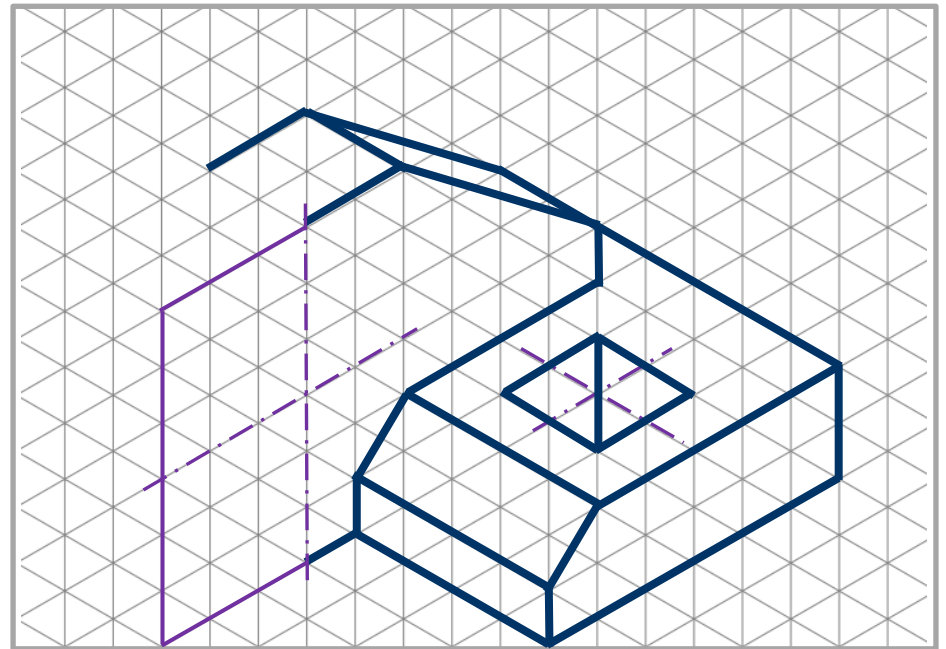
Perspectiva Isométrica - 7



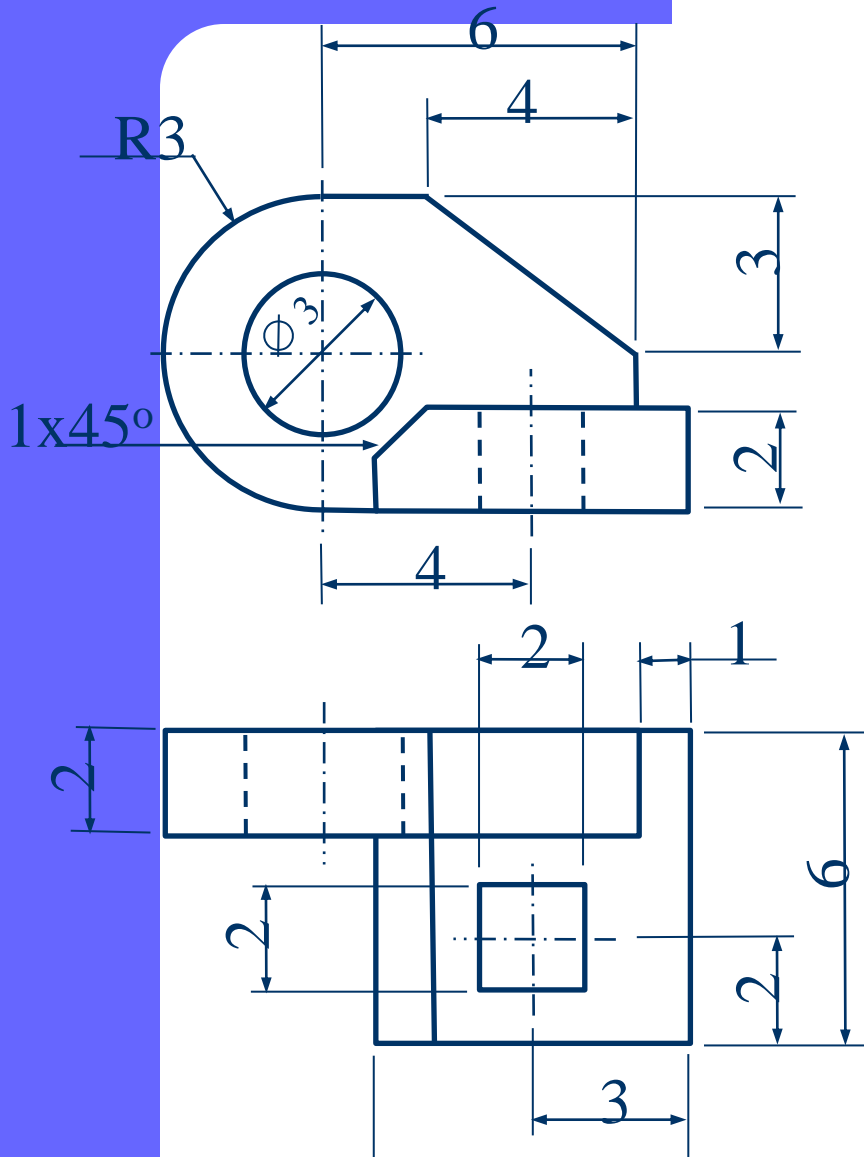
Vistas ortográficas



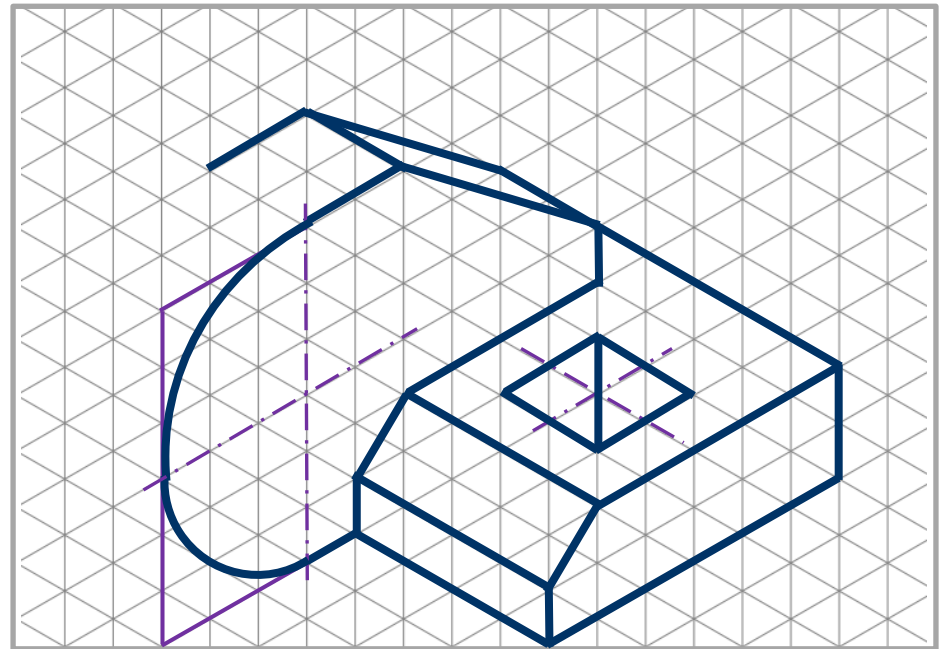
Perspectiva Isométrica - 7



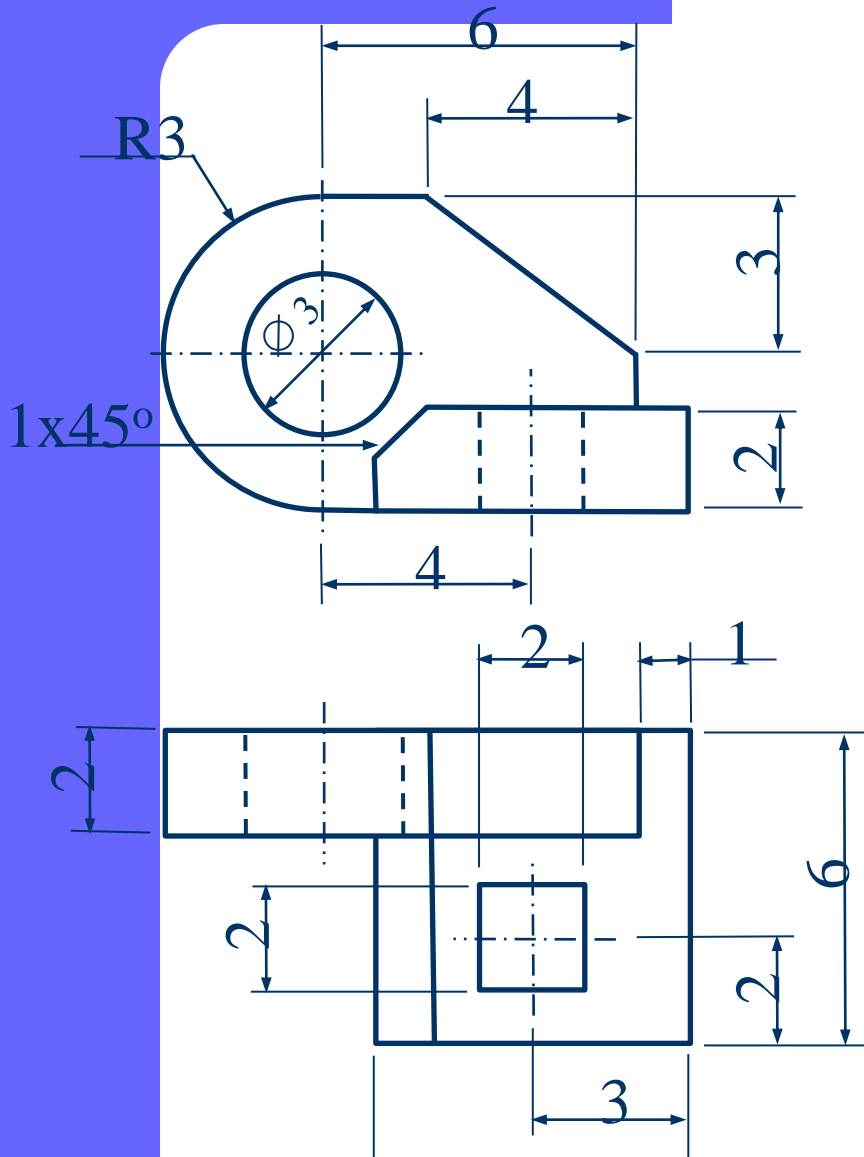
Vistas ortográficas



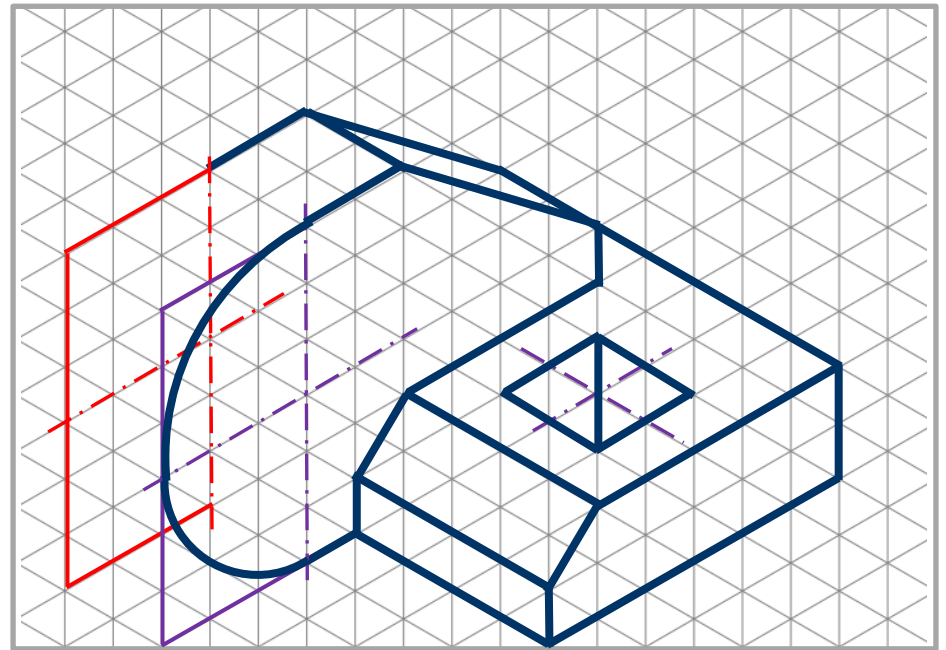
Perspectiva Isométrica - 7



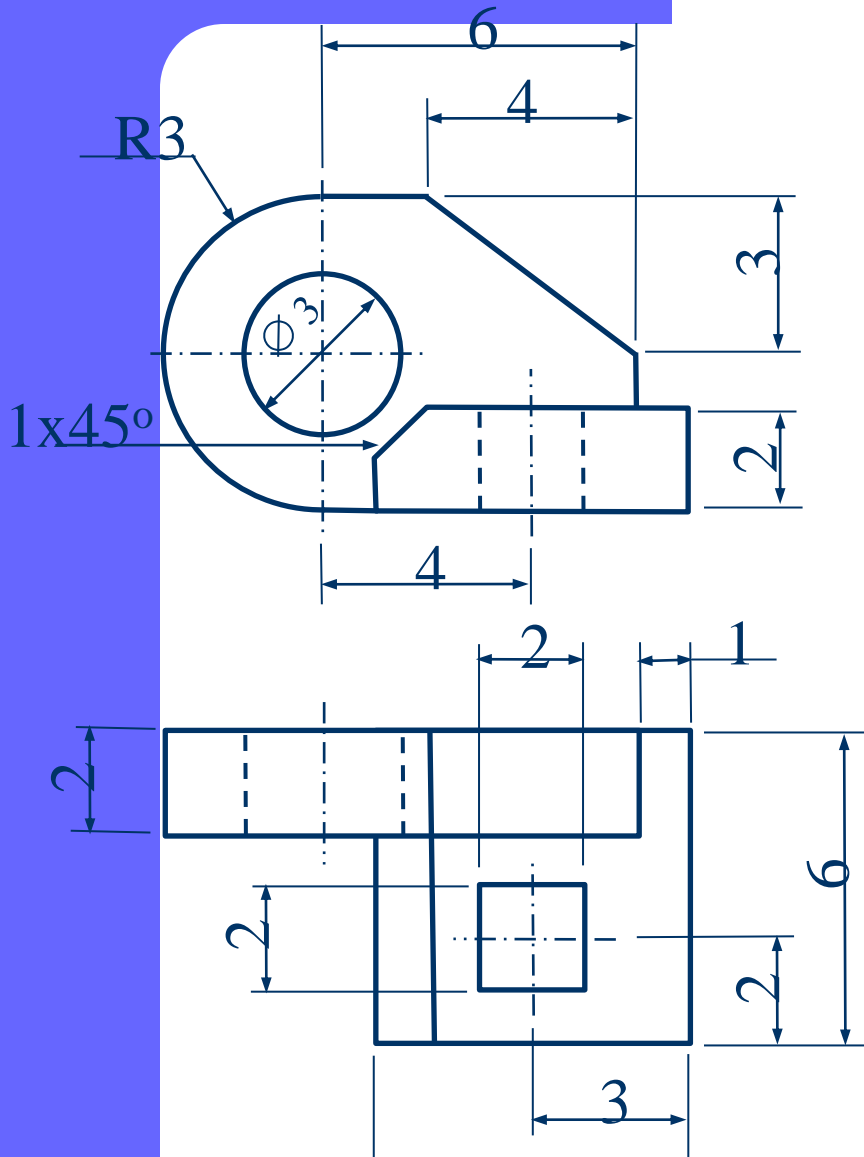
Vistas ortográficas



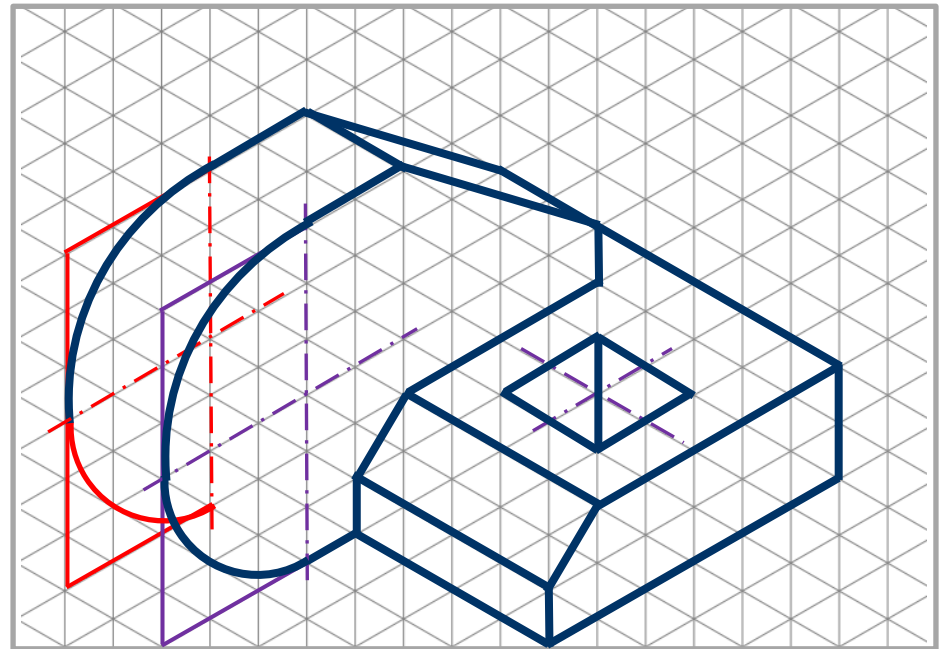
Perspectiva Isométrica - 7



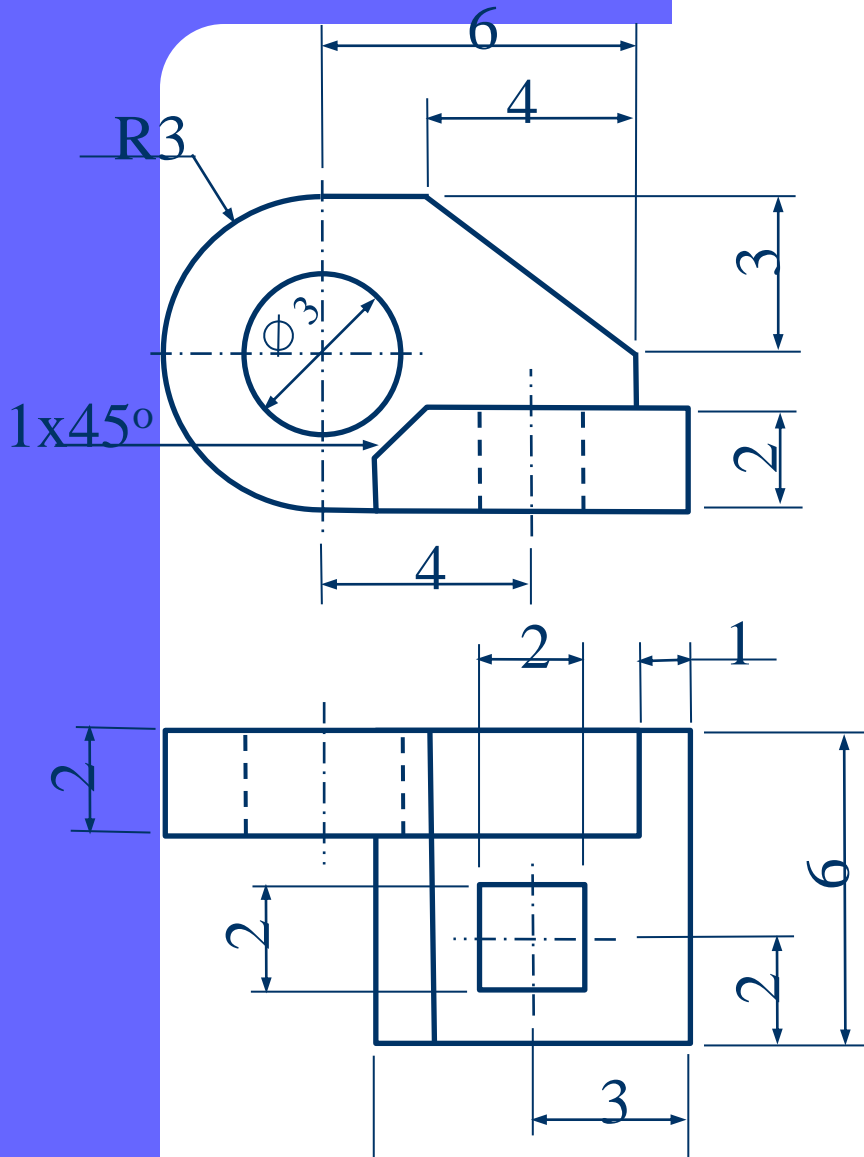
Vistas ortográficas



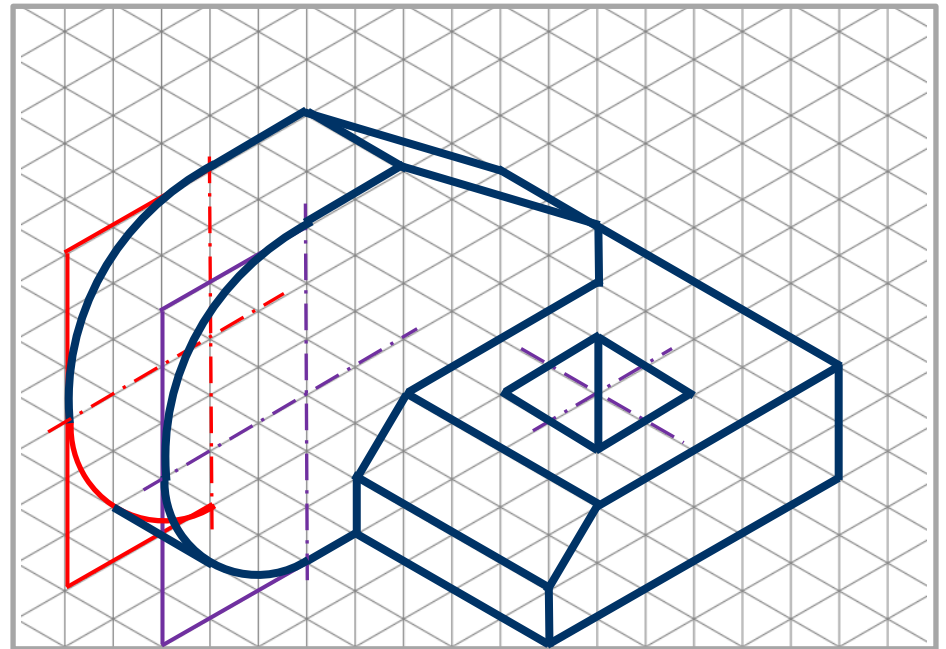
Perspectiva Isométrica - 7



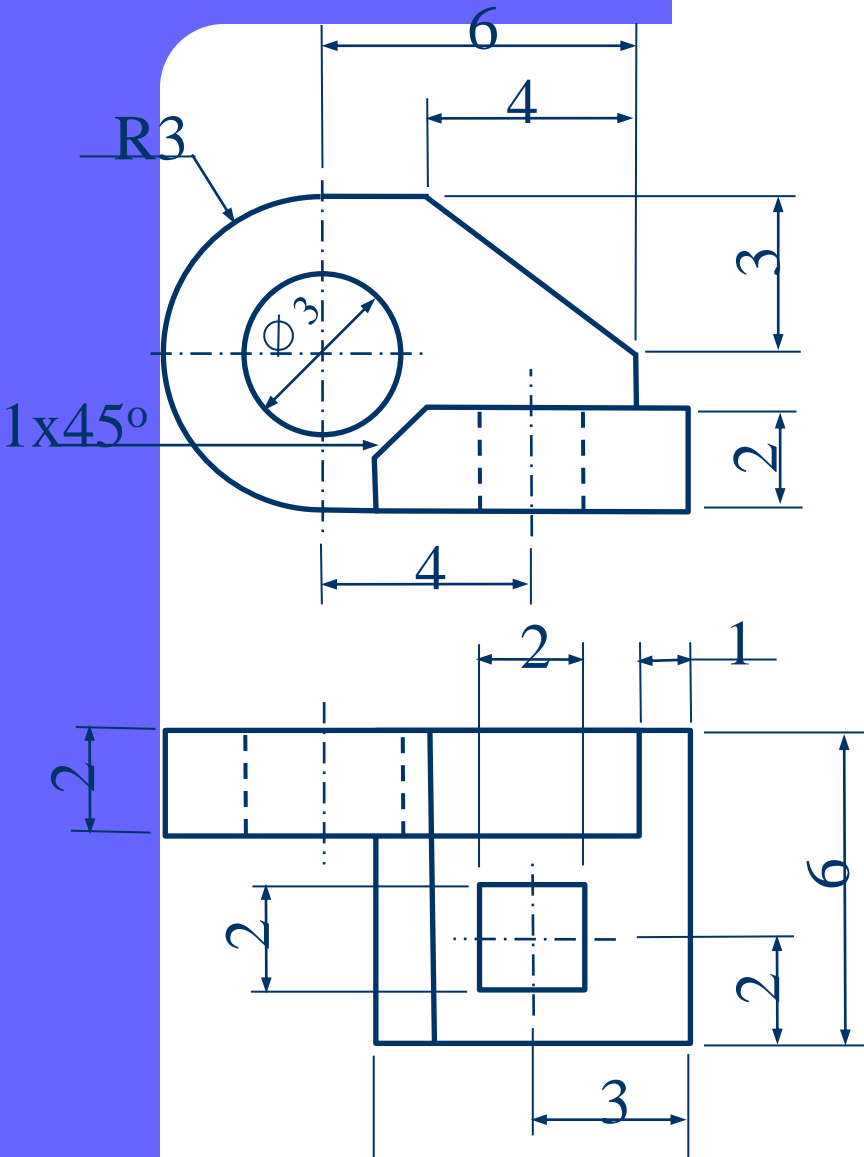
Vistas ortográficas



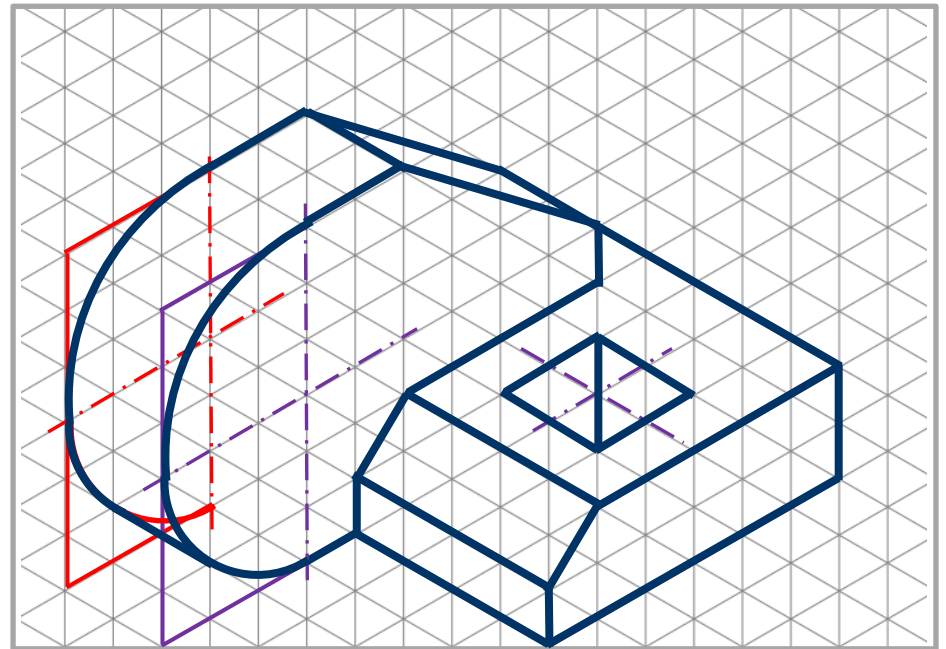
Perspectiva Isométrica - 7



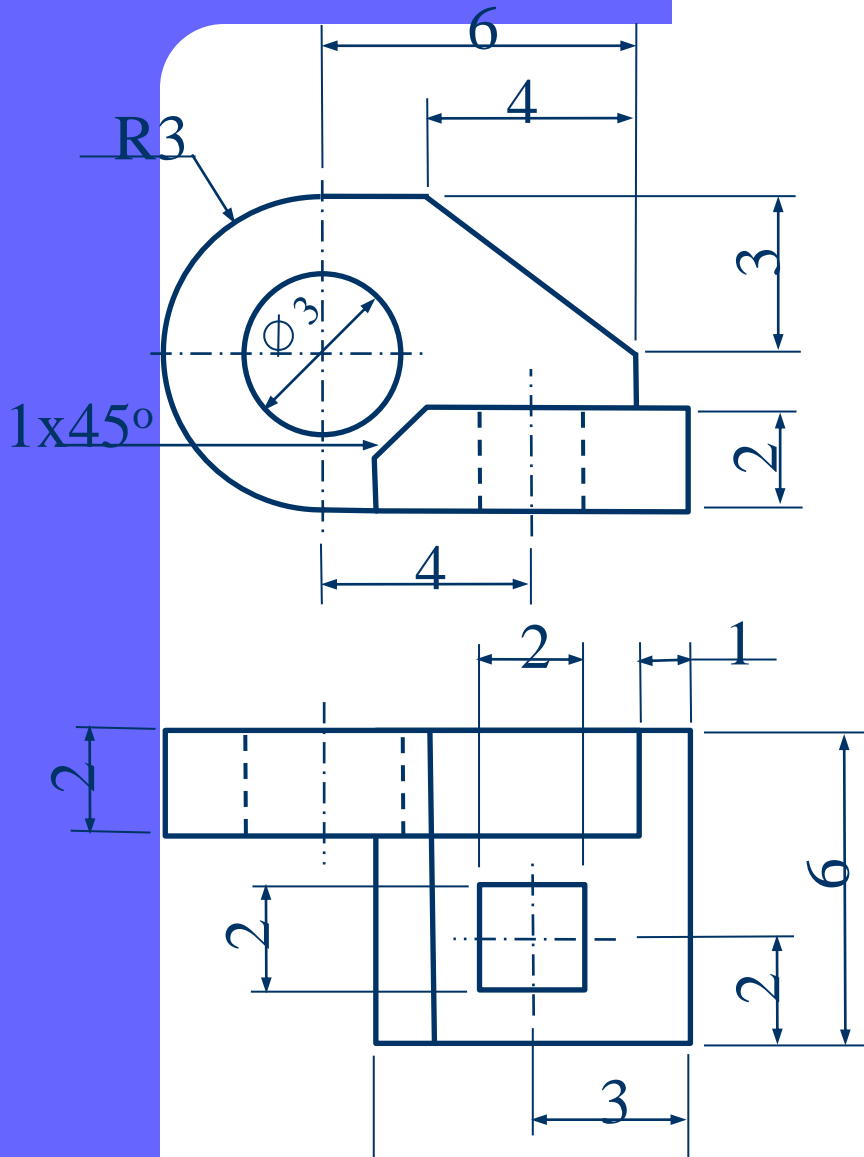
Vistas ortográficas



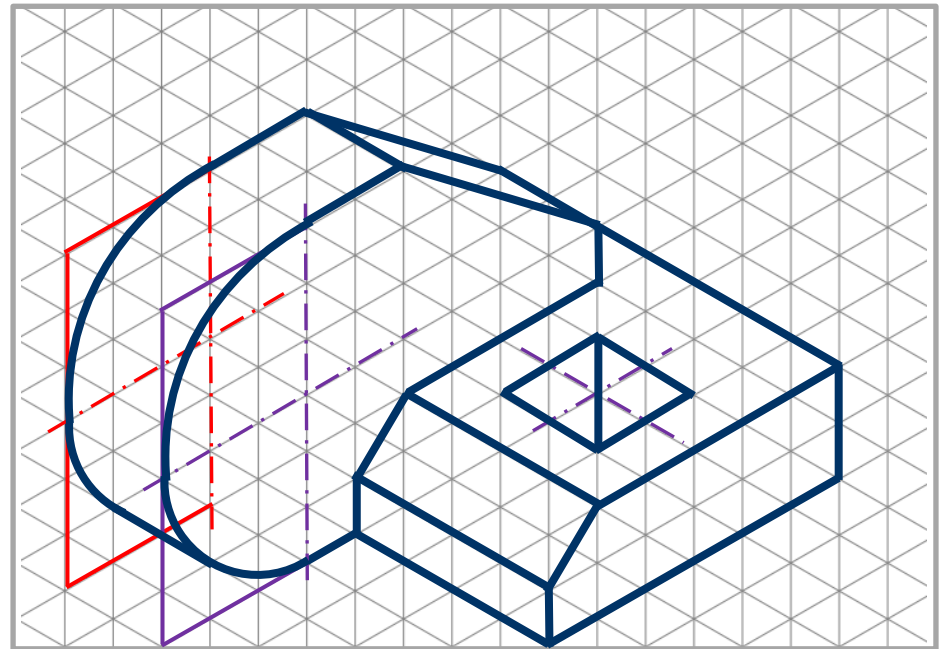
Perspectiva Isométrica - 7



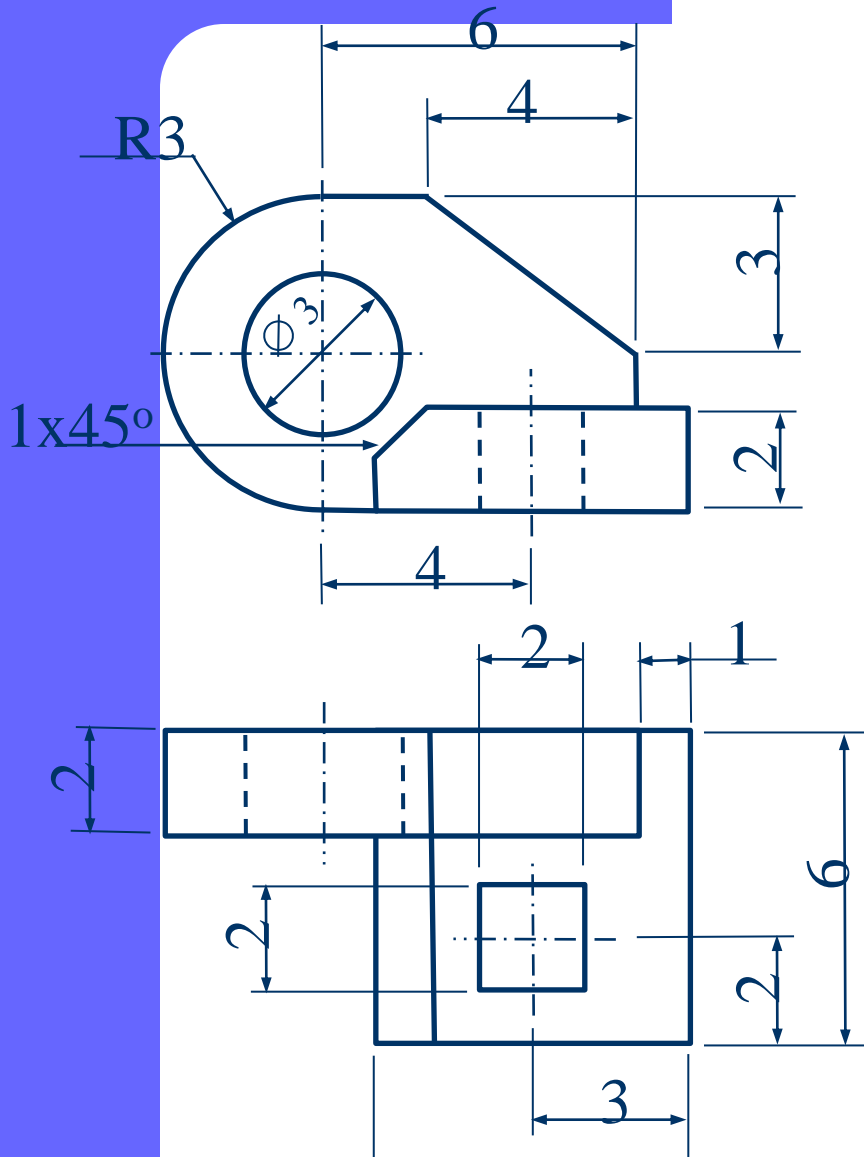
Vistas ortográficas



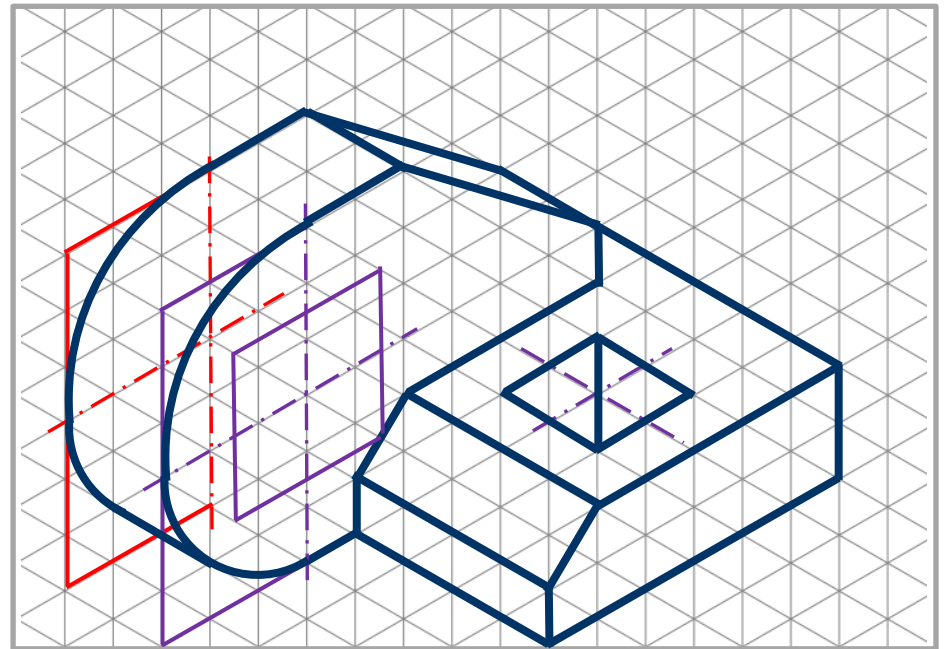
Perspectiva Isométrica - 7



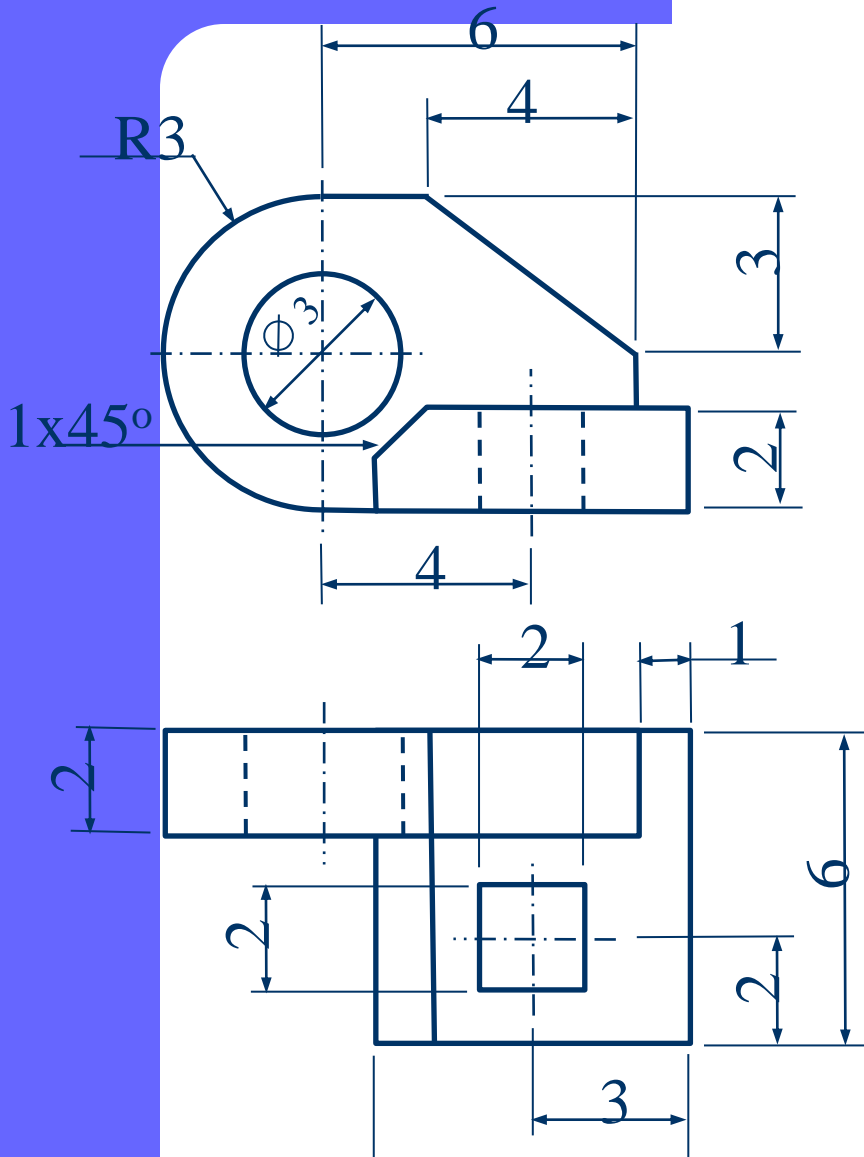
Vistas ortográficas



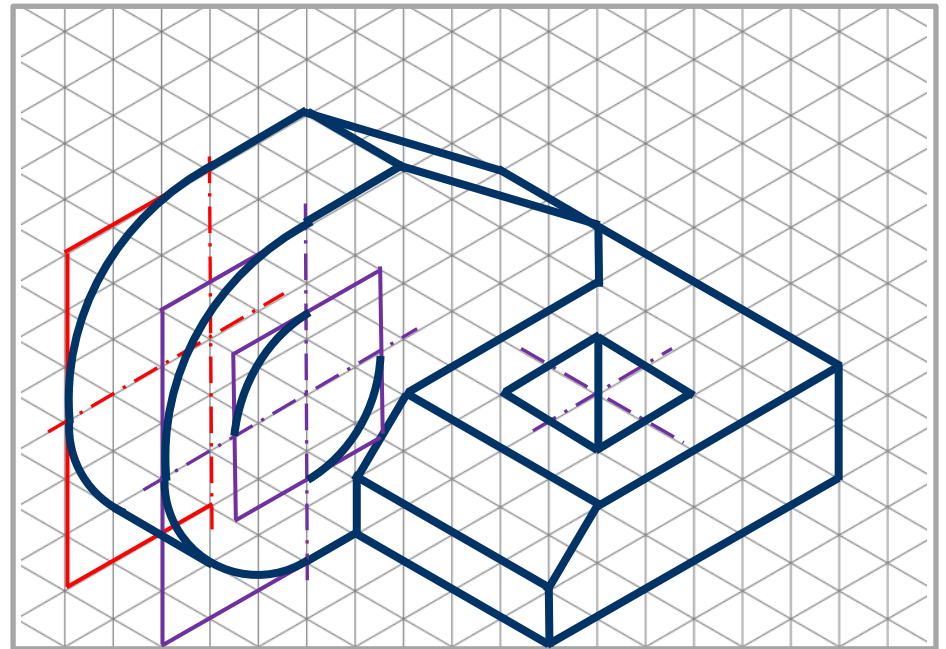
Perspectiva Isométrica - 7



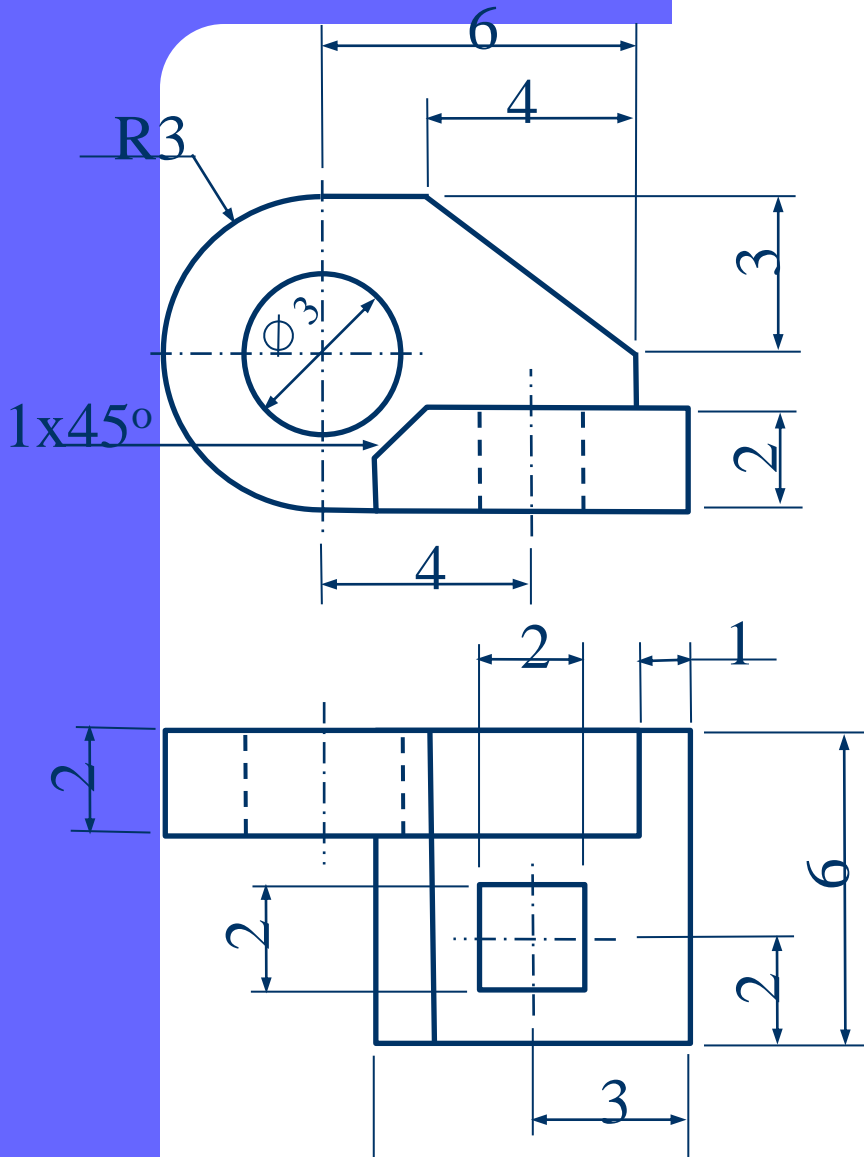
Vistas ortográficas



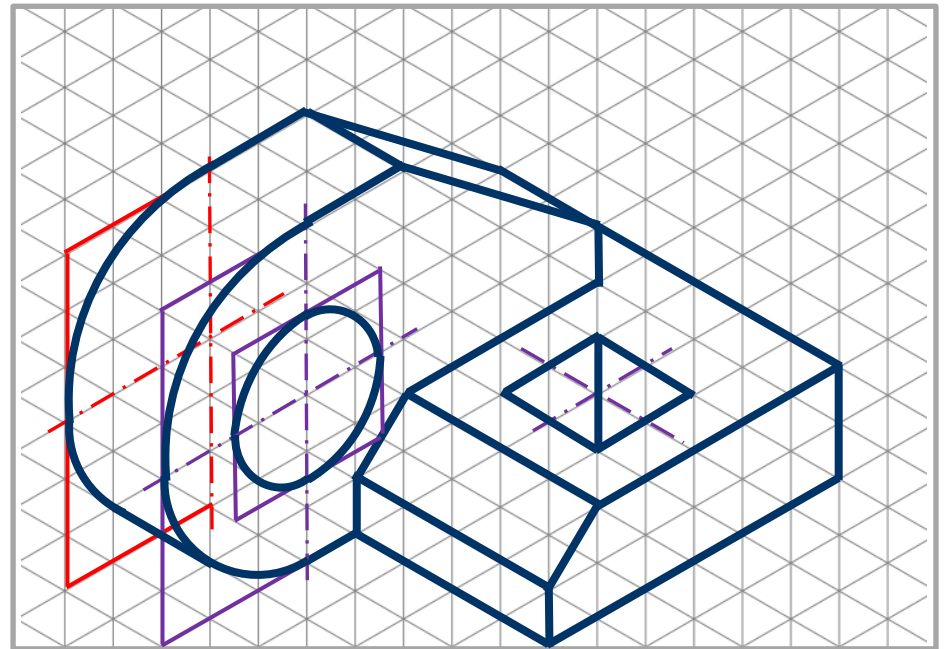
Perspectiva Isométrica - 7



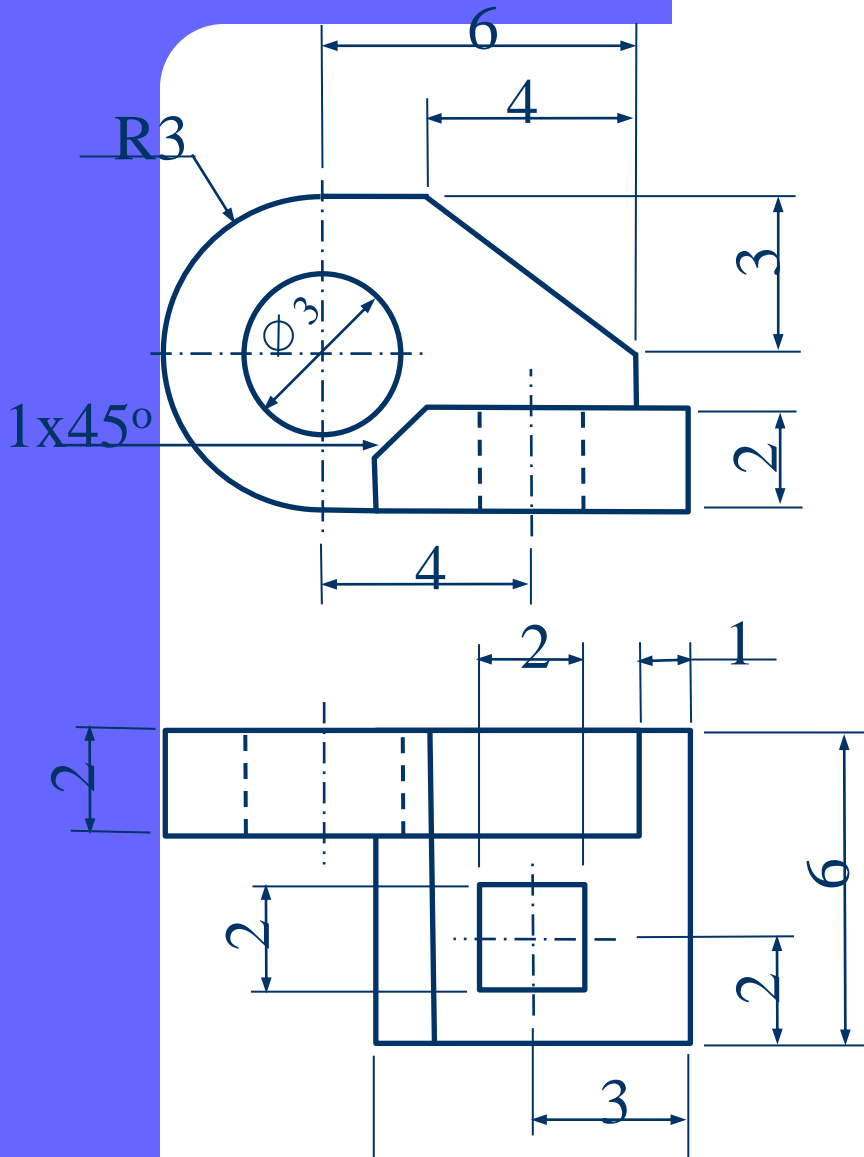
Vistas ortográficas



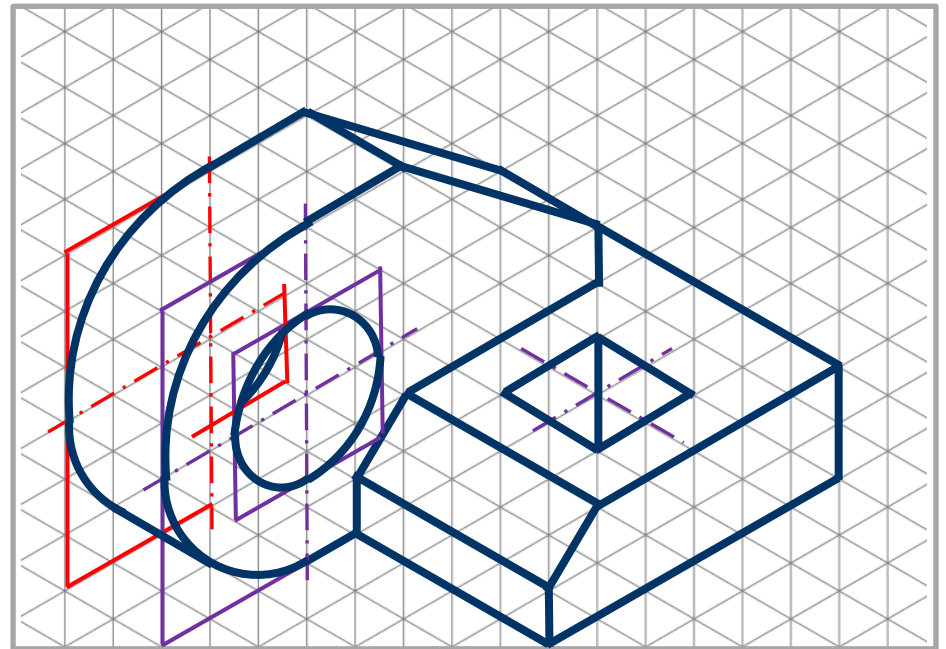
Perspectiva Isométrica - 7



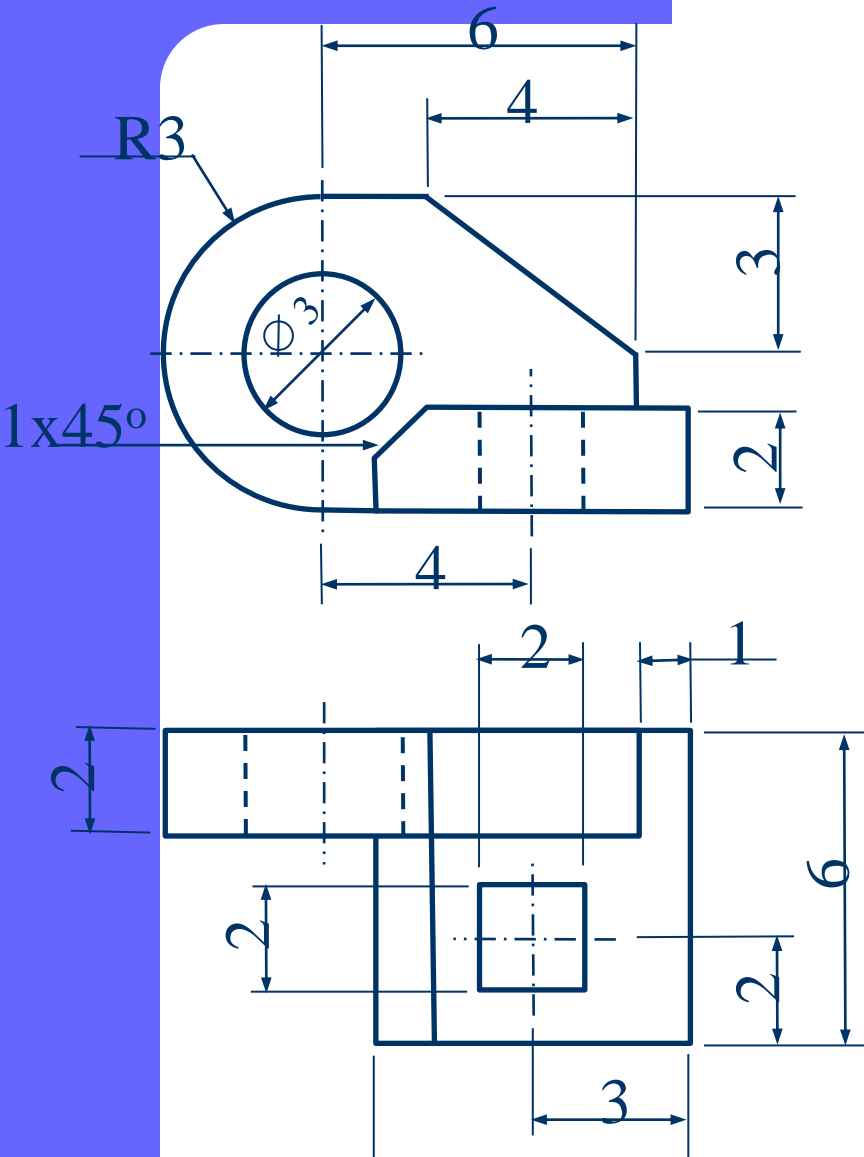
Vistas ortográficas



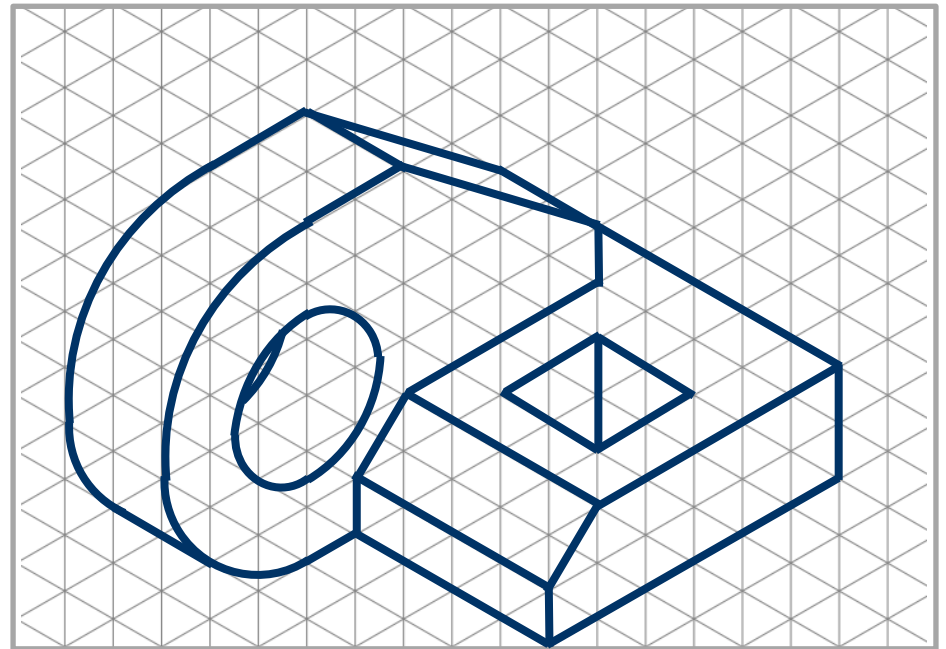
Perspectiva Isométrica - 7

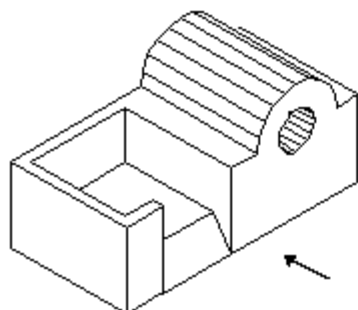


Vistas ortográficas

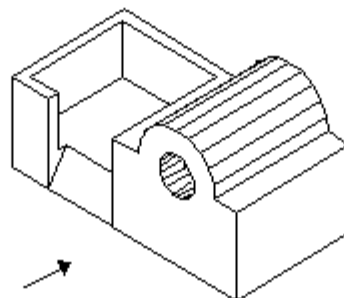


Perspectiva Isométrica - 7

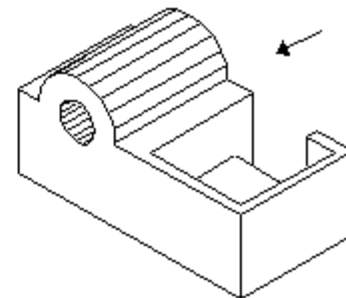




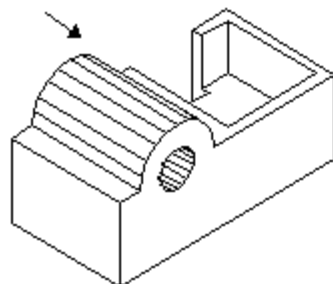
a) faces F, LE e S



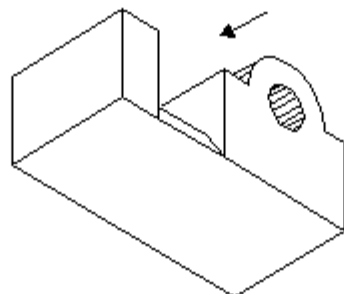
b) faces F, LD e S



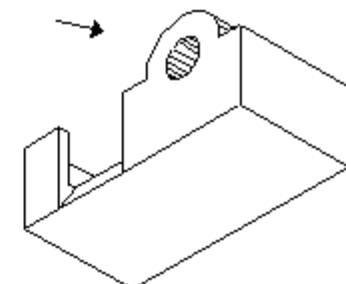
c) faces P, LE e S



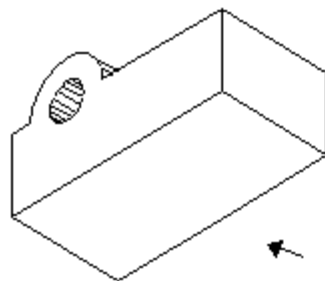
d) faces P, LD e S



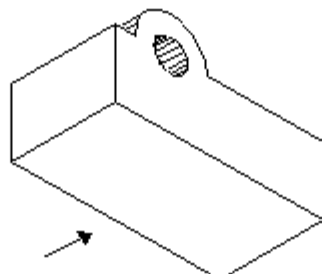
e) faces F, LE e I



f) faces F, LD e I



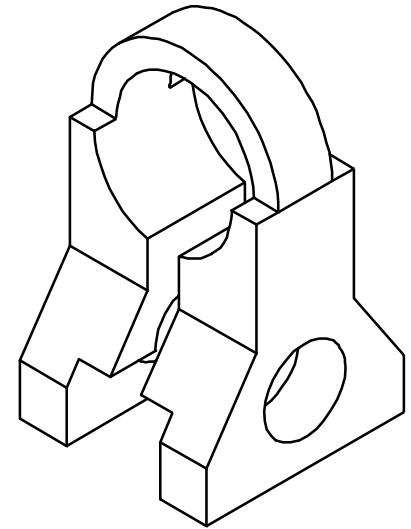
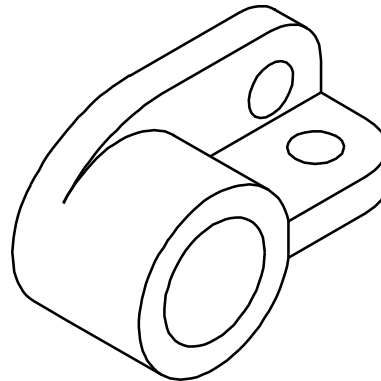
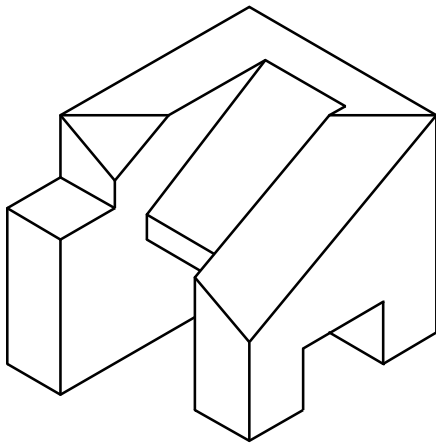
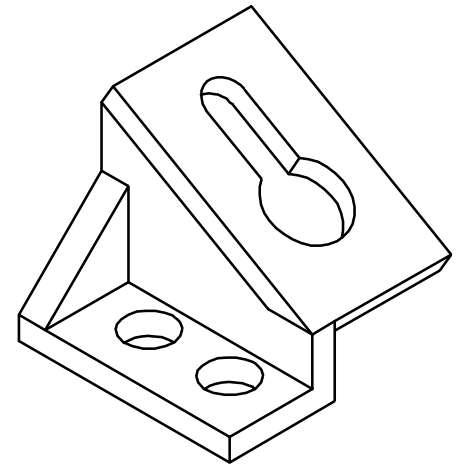
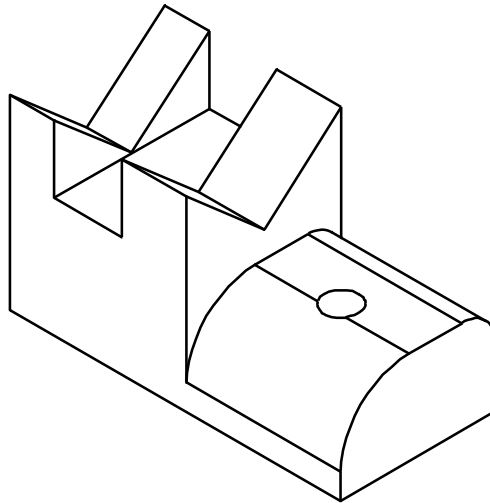
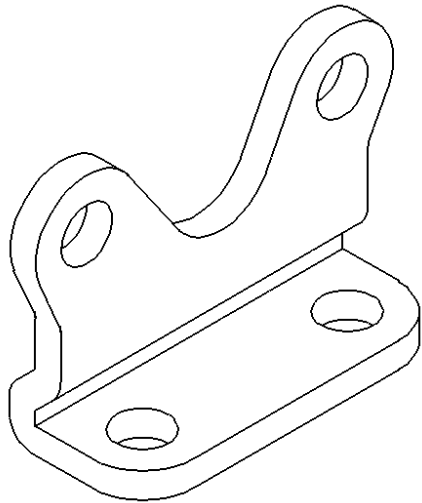
g) faces P, LE e I



h) faces P, LD e I

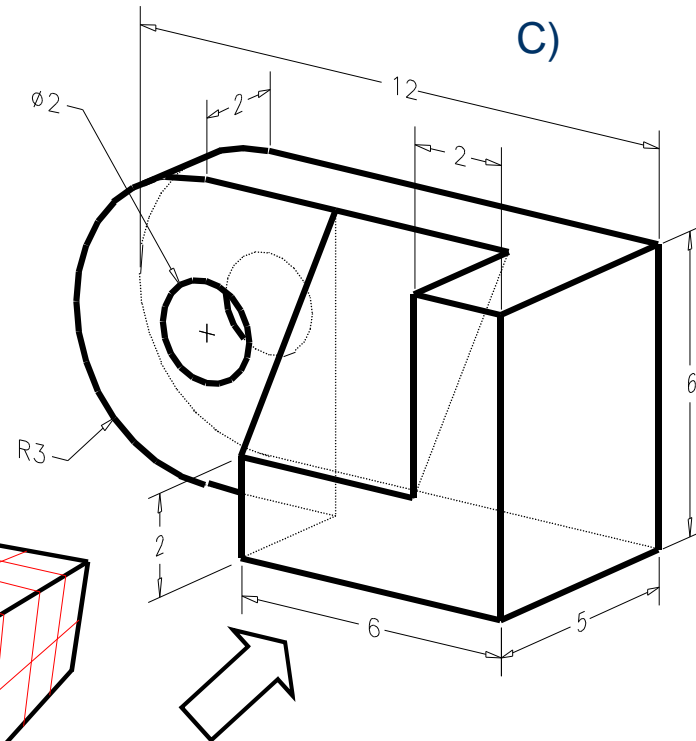
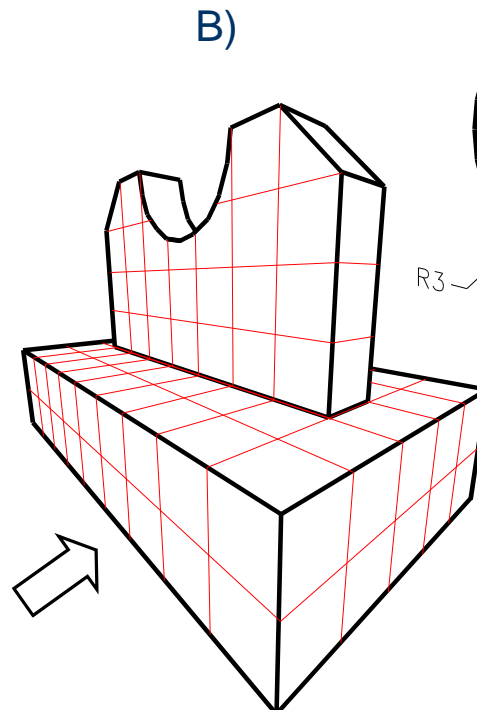
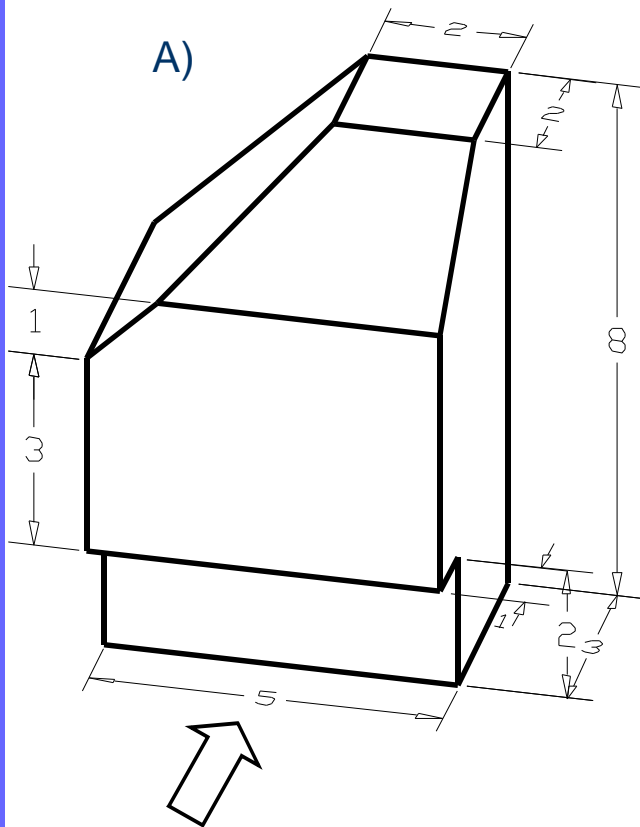
FIG. 15 - As 8 posições da perspectiva isométrica de uma mesma peça.

POSIÇÕES DA PERSPECTIVA ISOMÉTRICA



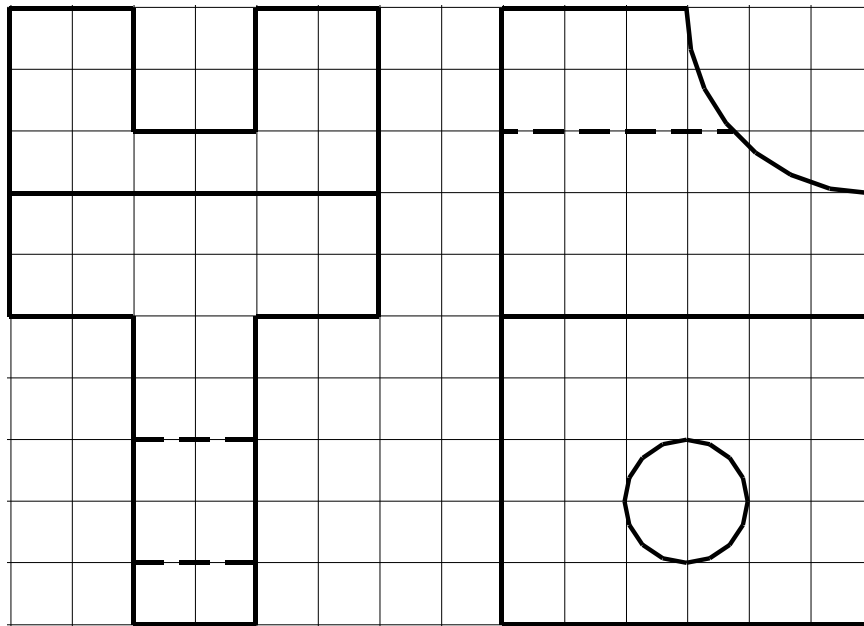
EXEMPLOS DE PEÇAS EM PERSPECTIVA ISOMÉTRICA

Esboçar a perspectiva **isométrica** das peças a seguir, em papel isométrico (fornecido em sala), **mostrando as faces frontal, lateral esquerda e superior**. A face frontal é aquela indicada pela seta.



EXERCÍCIOS EM SALA

D)



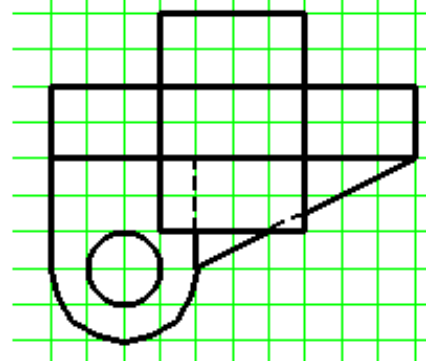
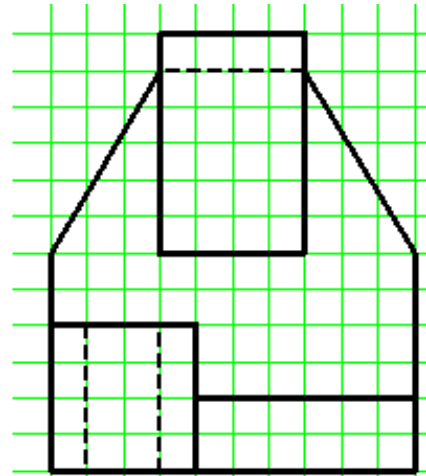
FRONTAL

LATERAL ESQUERDA

E)

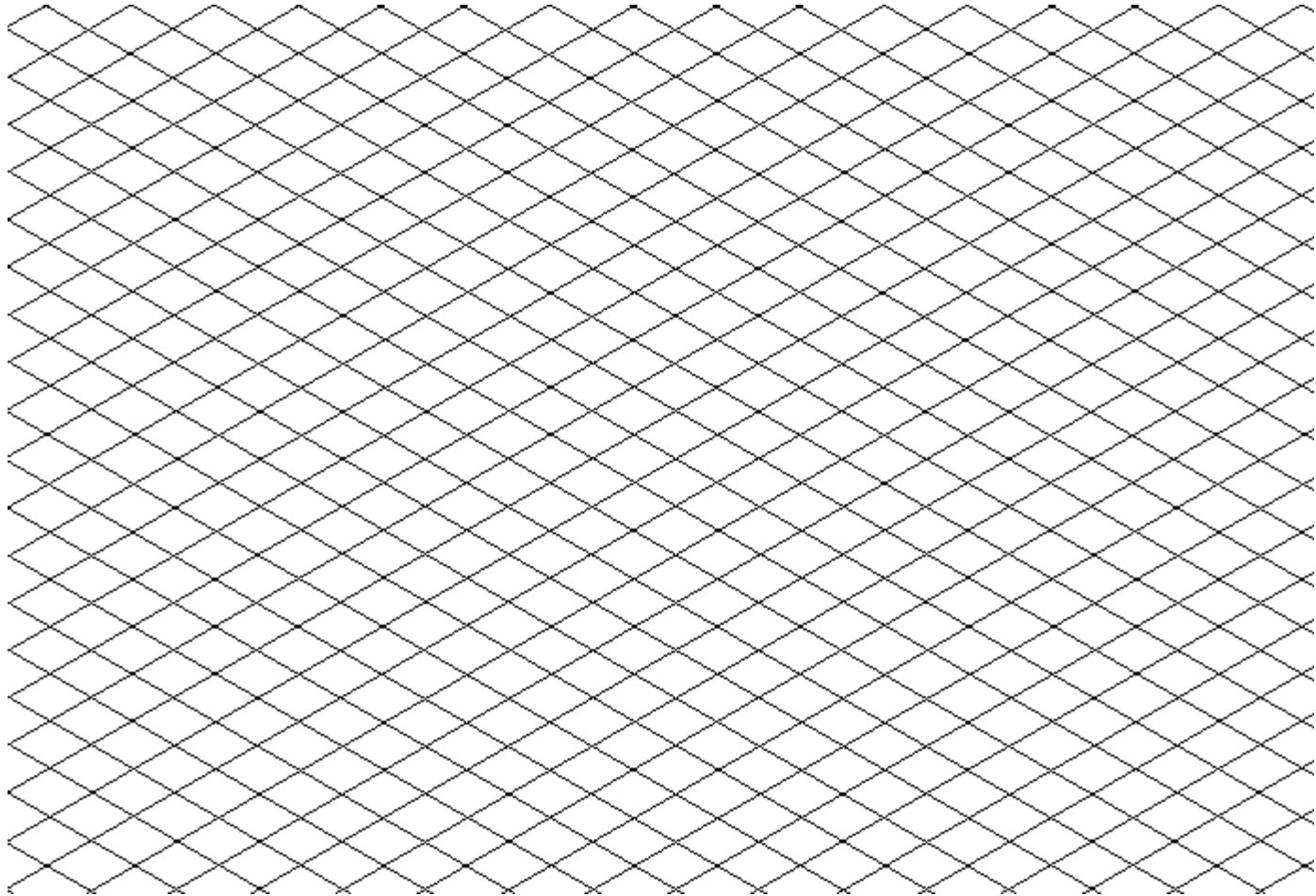
FRONTAL

LATERAL ESQUERDA



SUPERIOR

EXERCÍCIOS PARA CASA



PAPEL ISOMÉTRICO