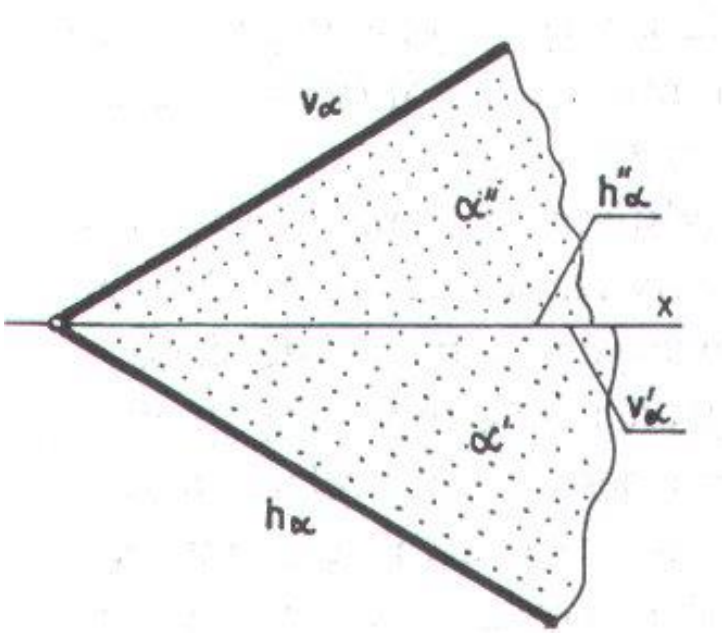
Politechnika Wrocławska

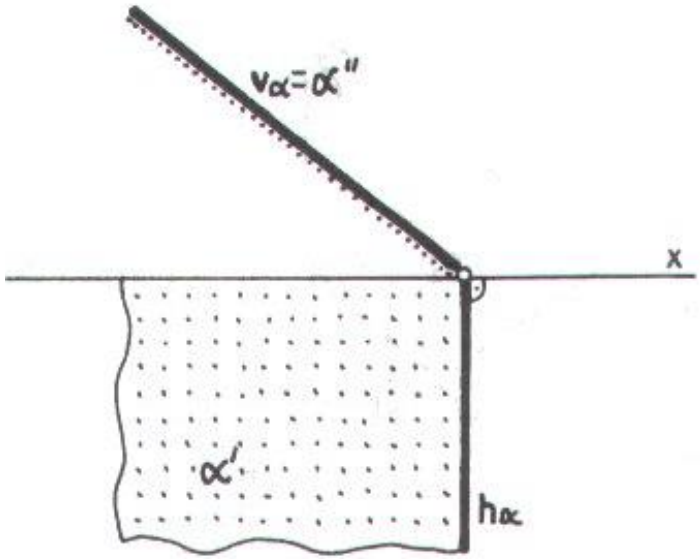
Fundamentals of engineering drawing, p.3

Dr inż. Stanisław Frąckowiak

Sections with the projective plane



Plane projections in any position



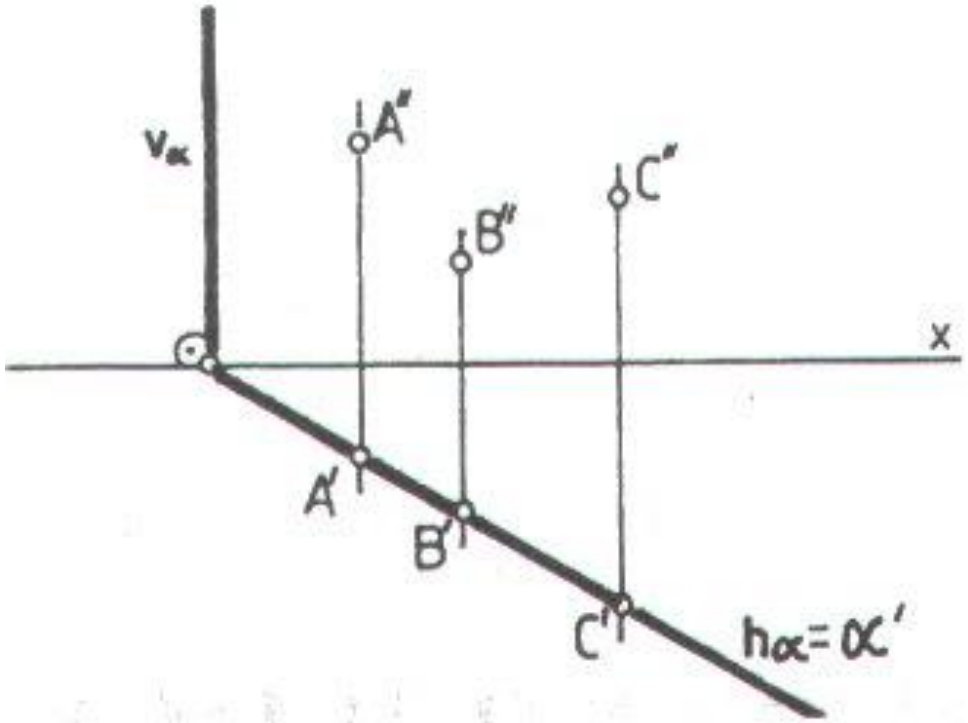
Projections of a vertically projecting plane

Sections with the projective plane

- In the projecting position, in one of the projections, the projection direction coincides with its perpendicular position (in Monge's method, perpendicular projection applies!)

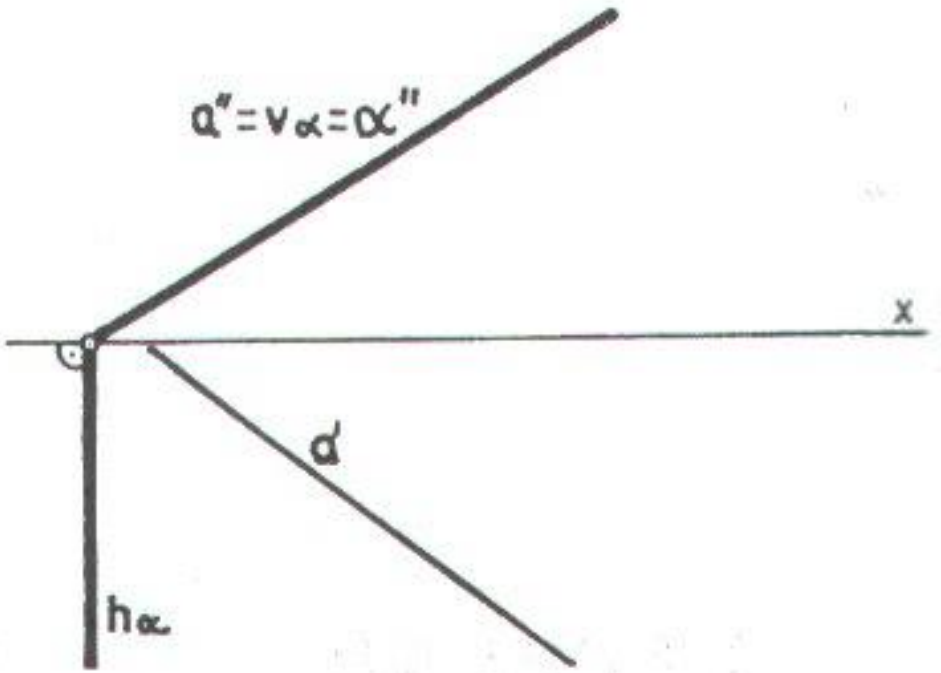
Projection plane properties

- Points lying on a plane (horizontally projecting)



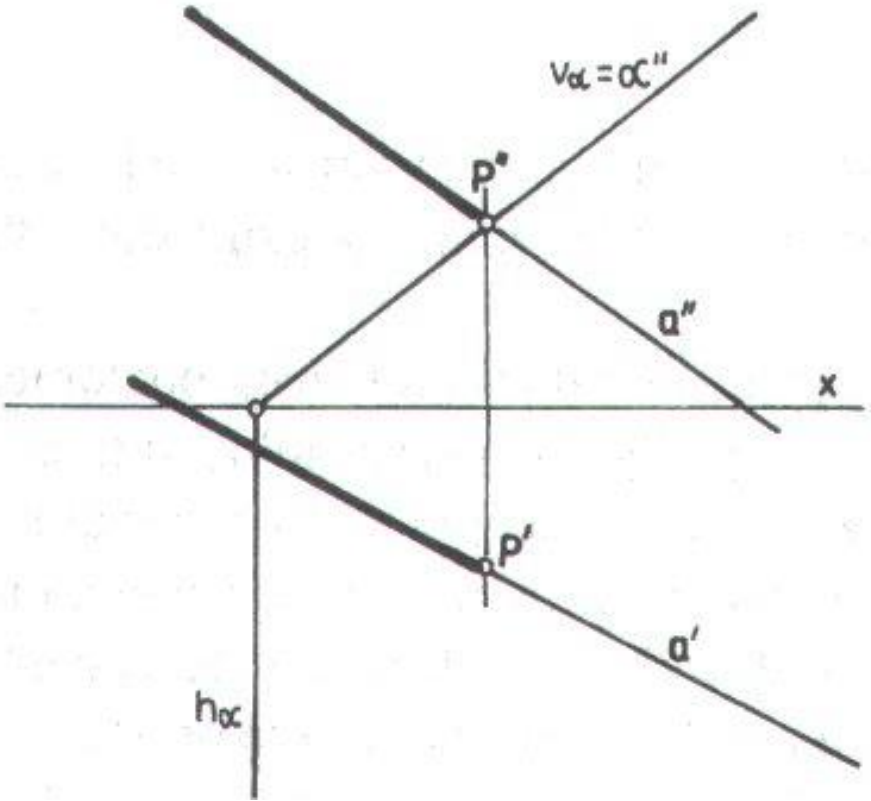
Projection plane properties

- Line lying on the plane (projecting vertically)



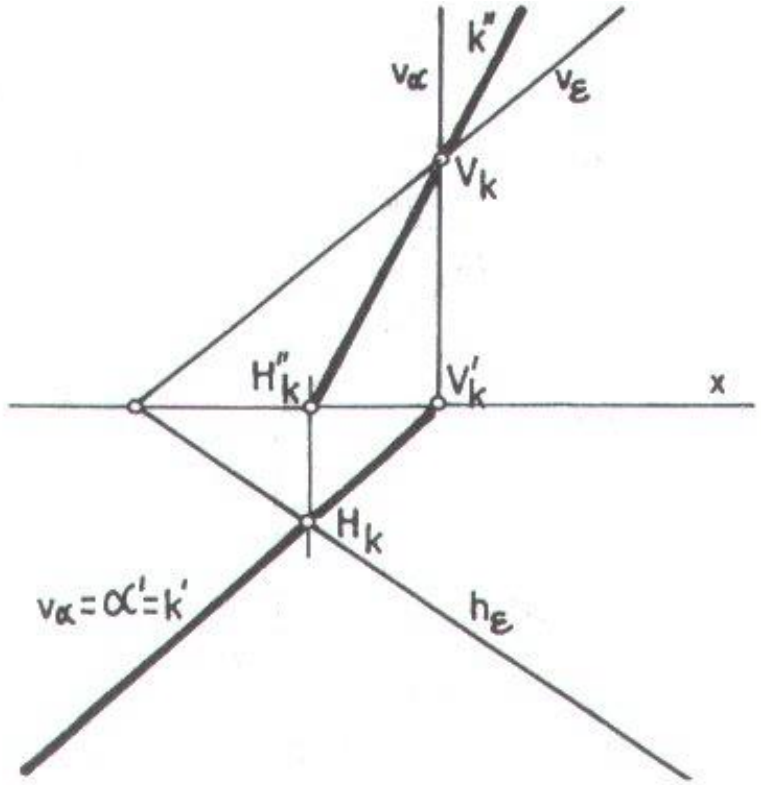
Projection plane properties

- Line not lying on the projection plane (vertical)



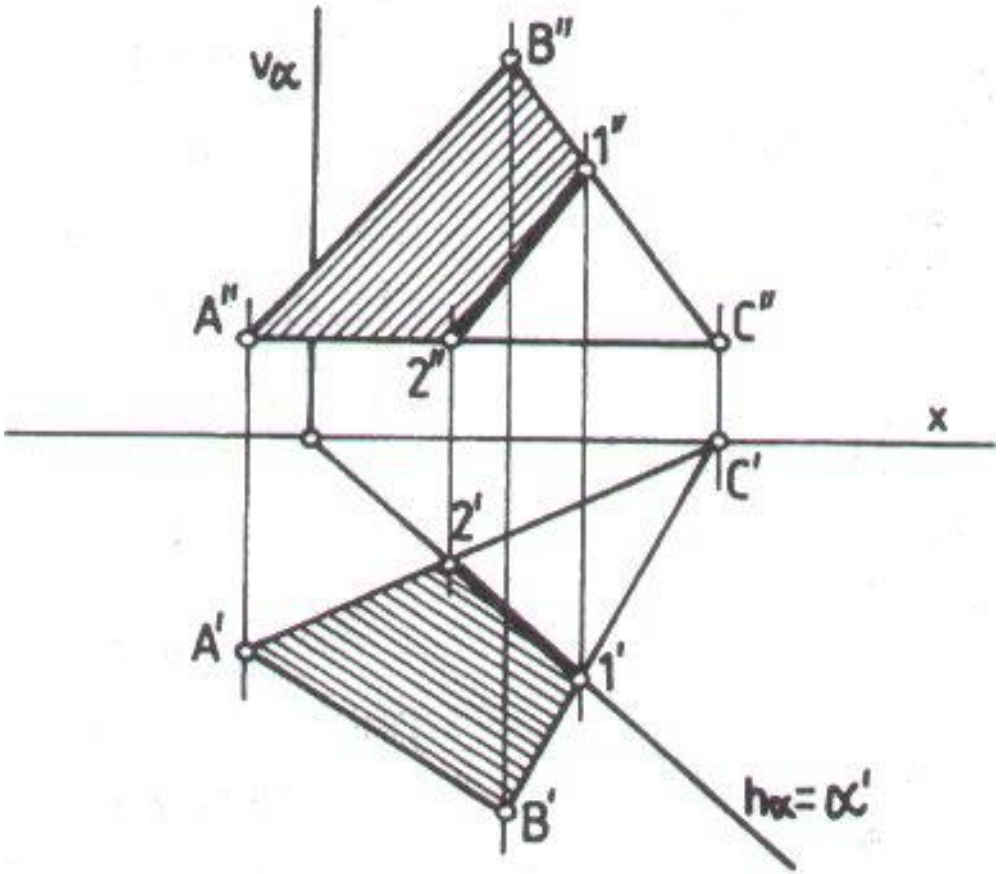
Projection plane properties

- The intersection edge of the free and projecting planesedge k lies on the projection plane
  - so its horizontal projection lies on the trace $h_\alpha = \alpha'$



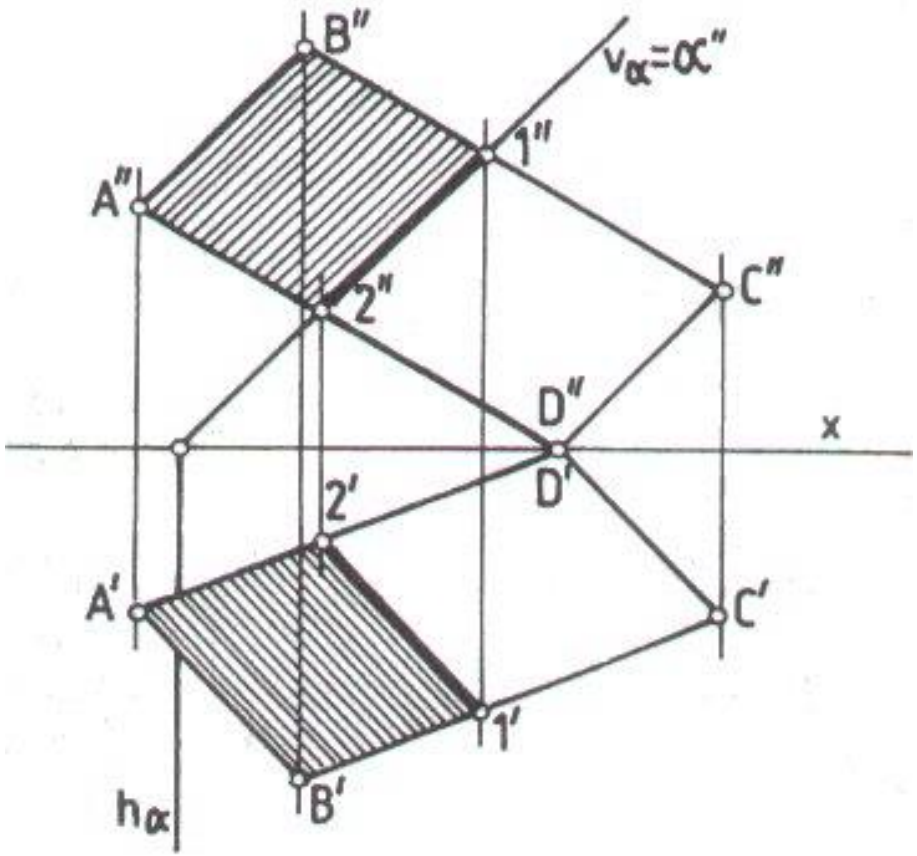
Section of a polygon with a projecting plane α

- Section of the triangle ABC



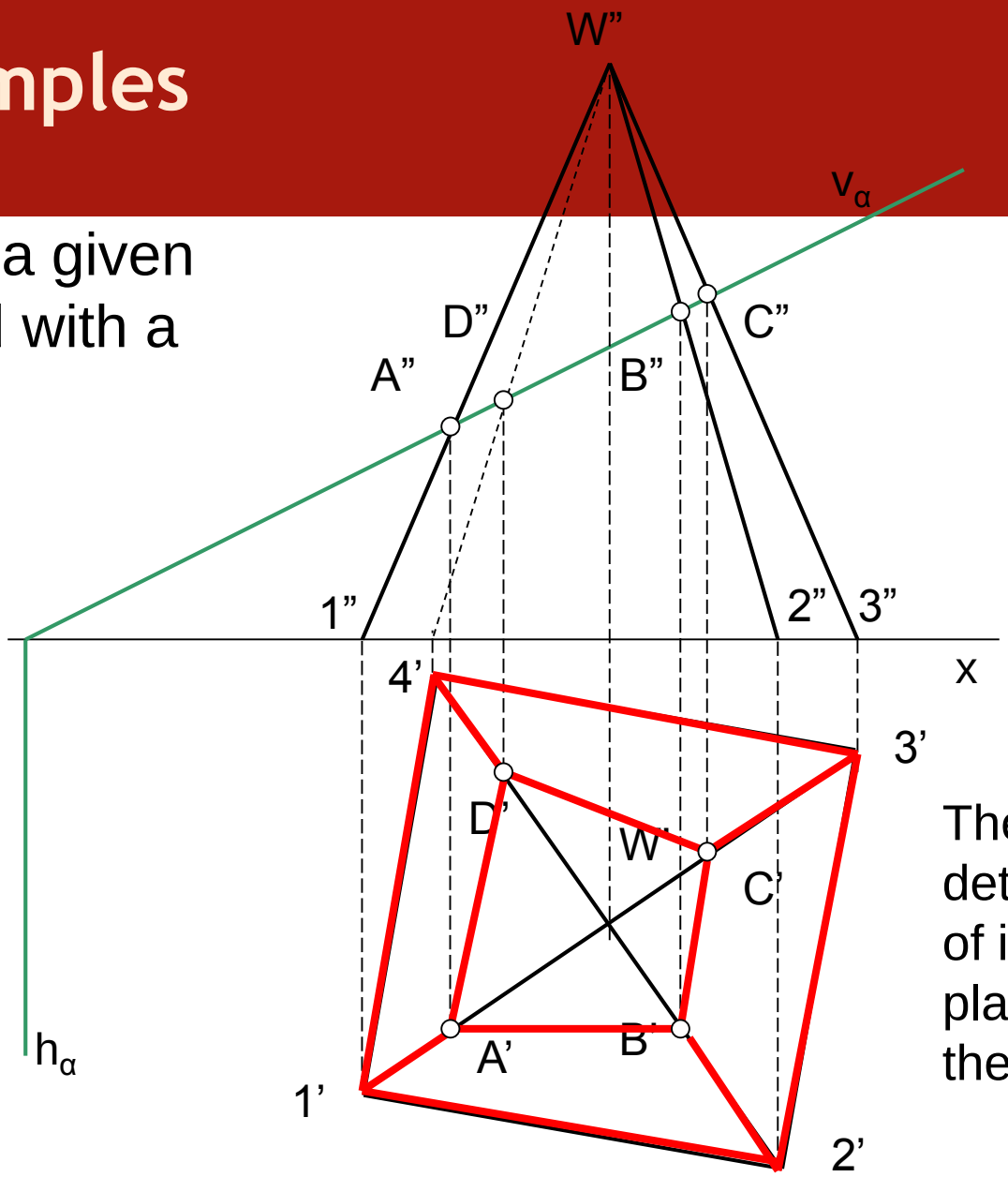
Section of a polygon with a projecting plane α

- Section of the quadrilateral ABCD



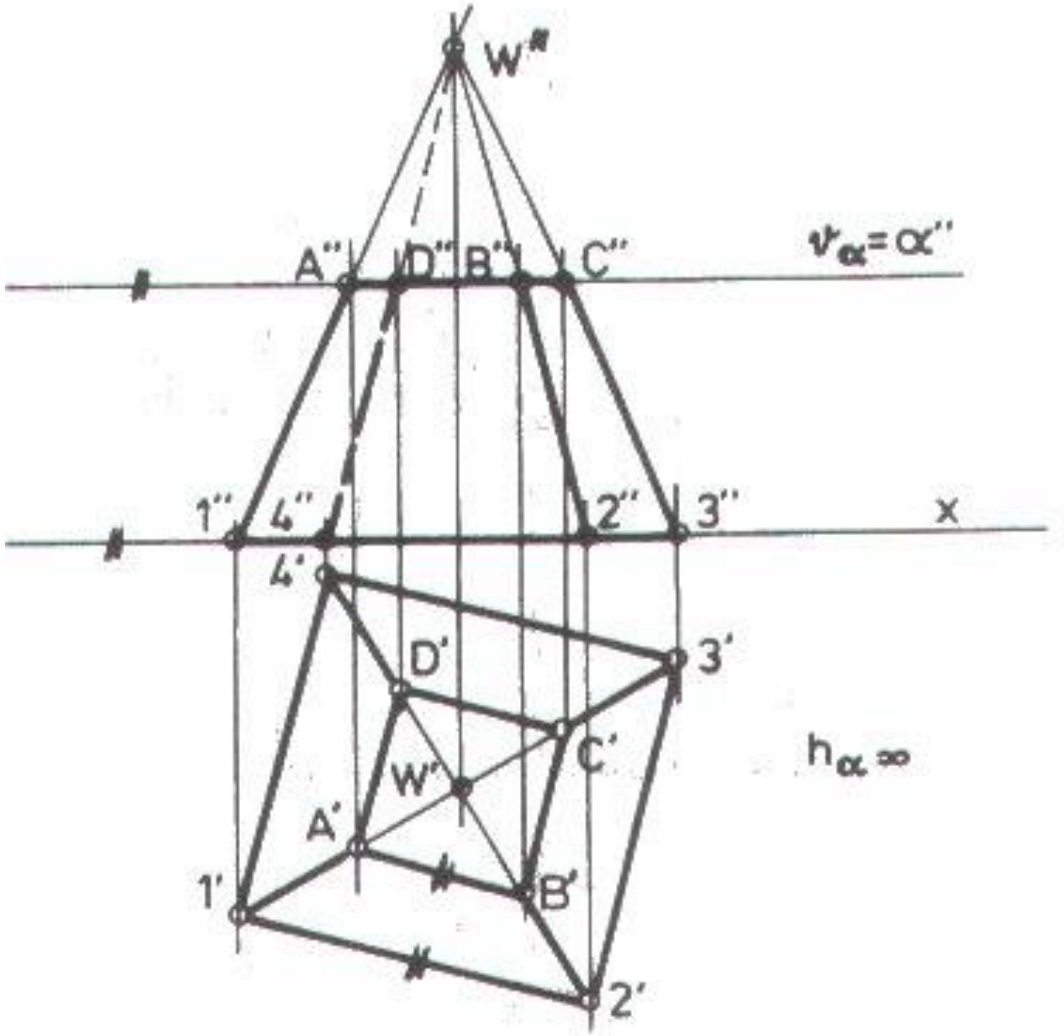
Examples

Cut out a given pyramid with a plane α

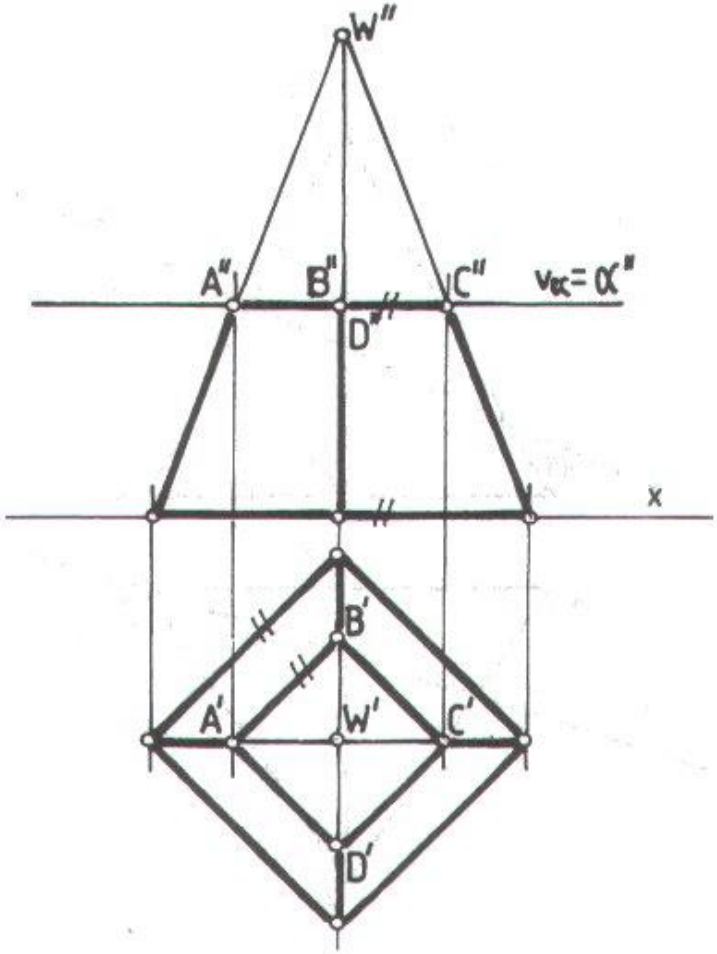


The task boils down to determining the points of intersection of the plane with the edges of the pyramid

Cut a polyhedron with a plane parallel to π_1

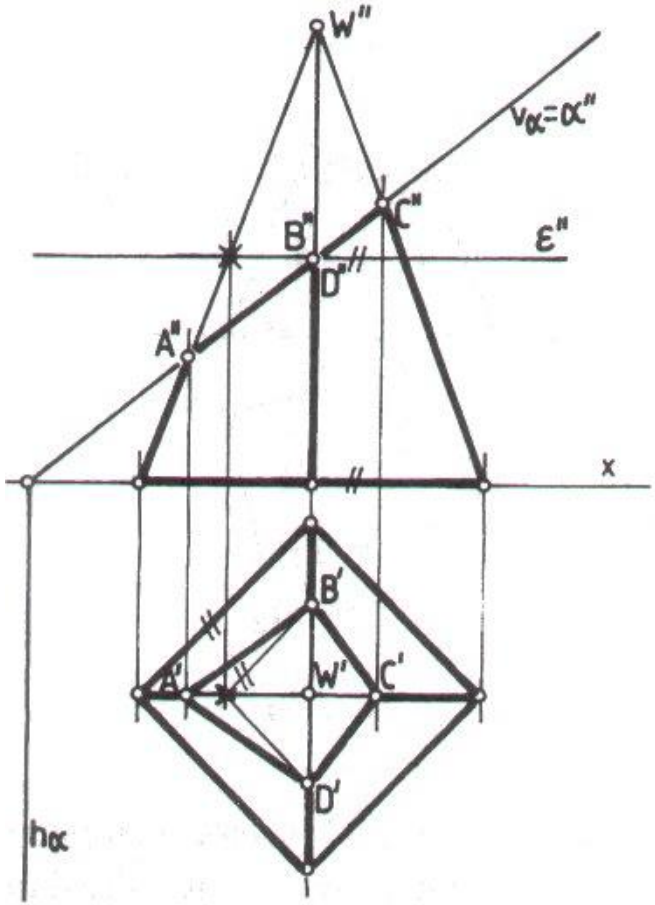


Cut a polyhedron with a plane parallel to π_1



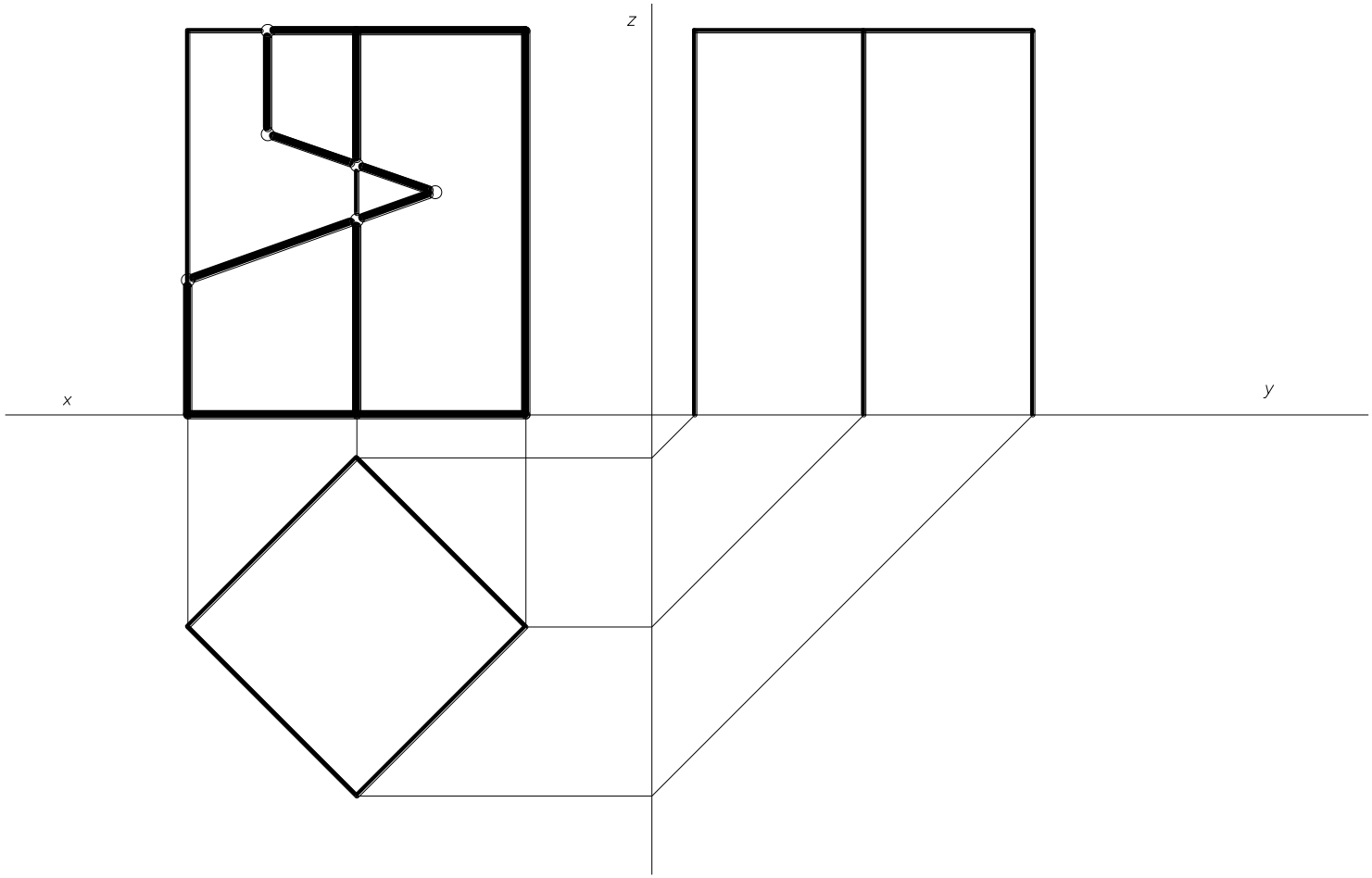
Cut a polyhedron with a plane parallel to π_1

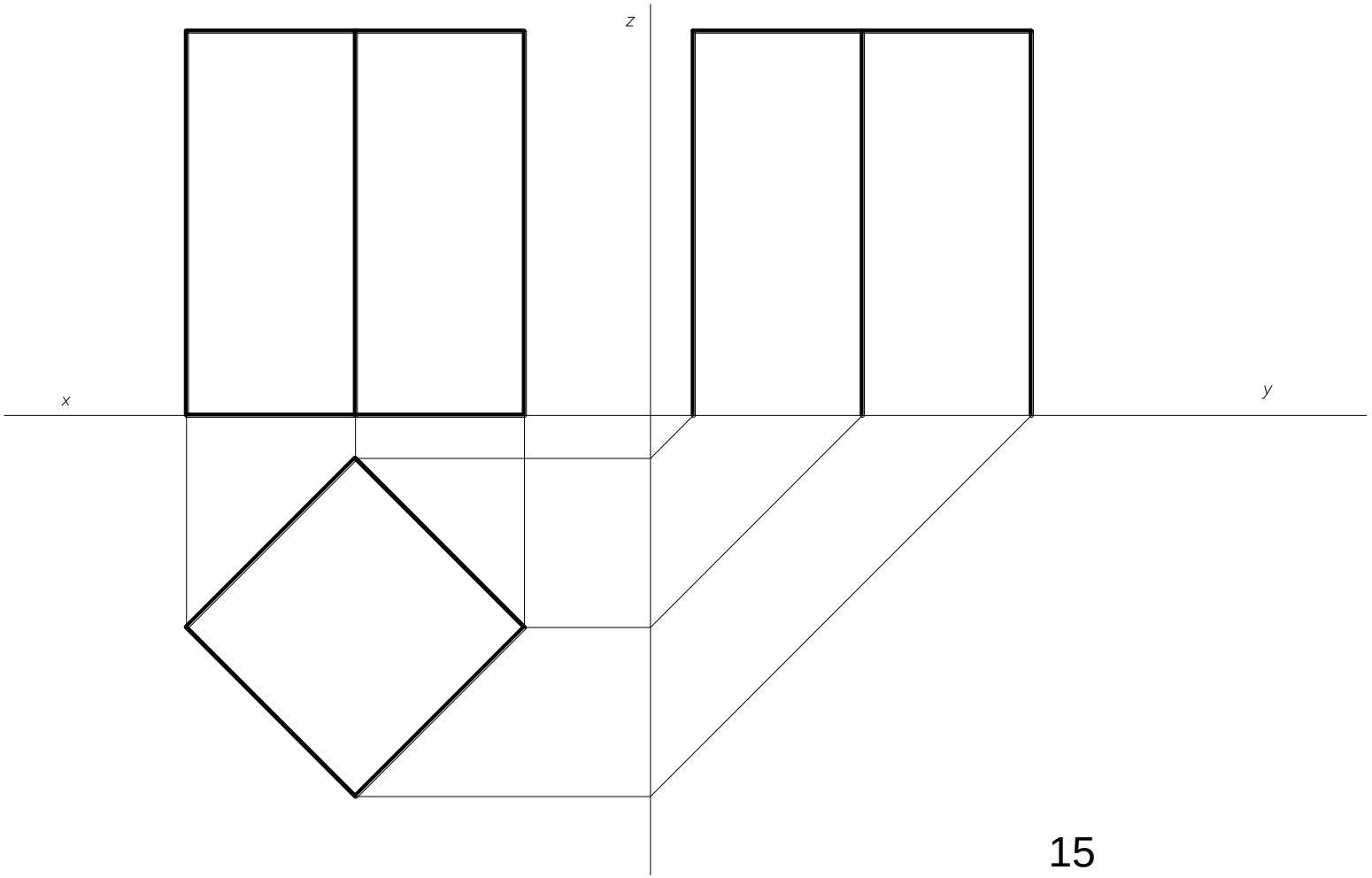
- A special case of a pattern - auxiliary planes

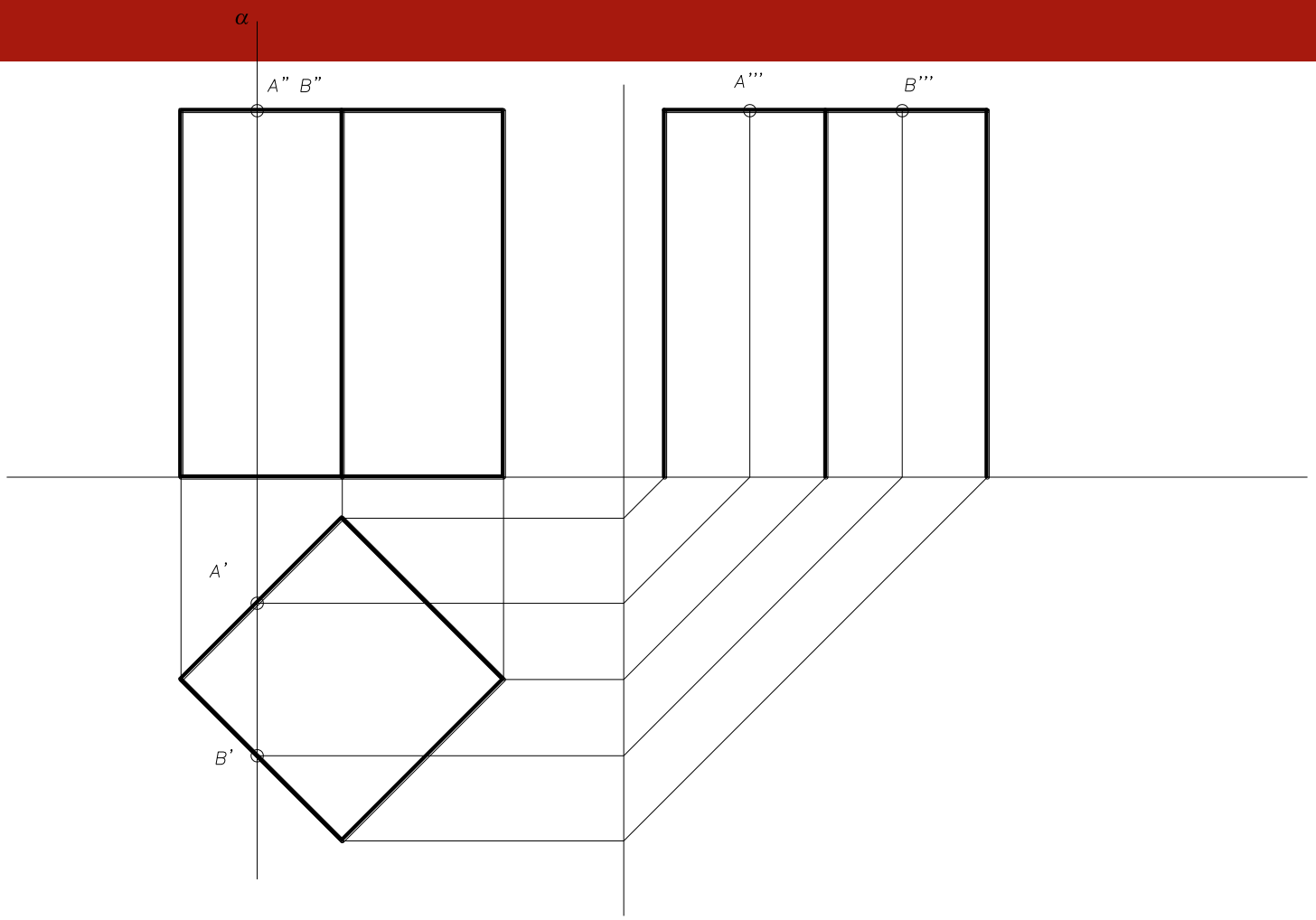


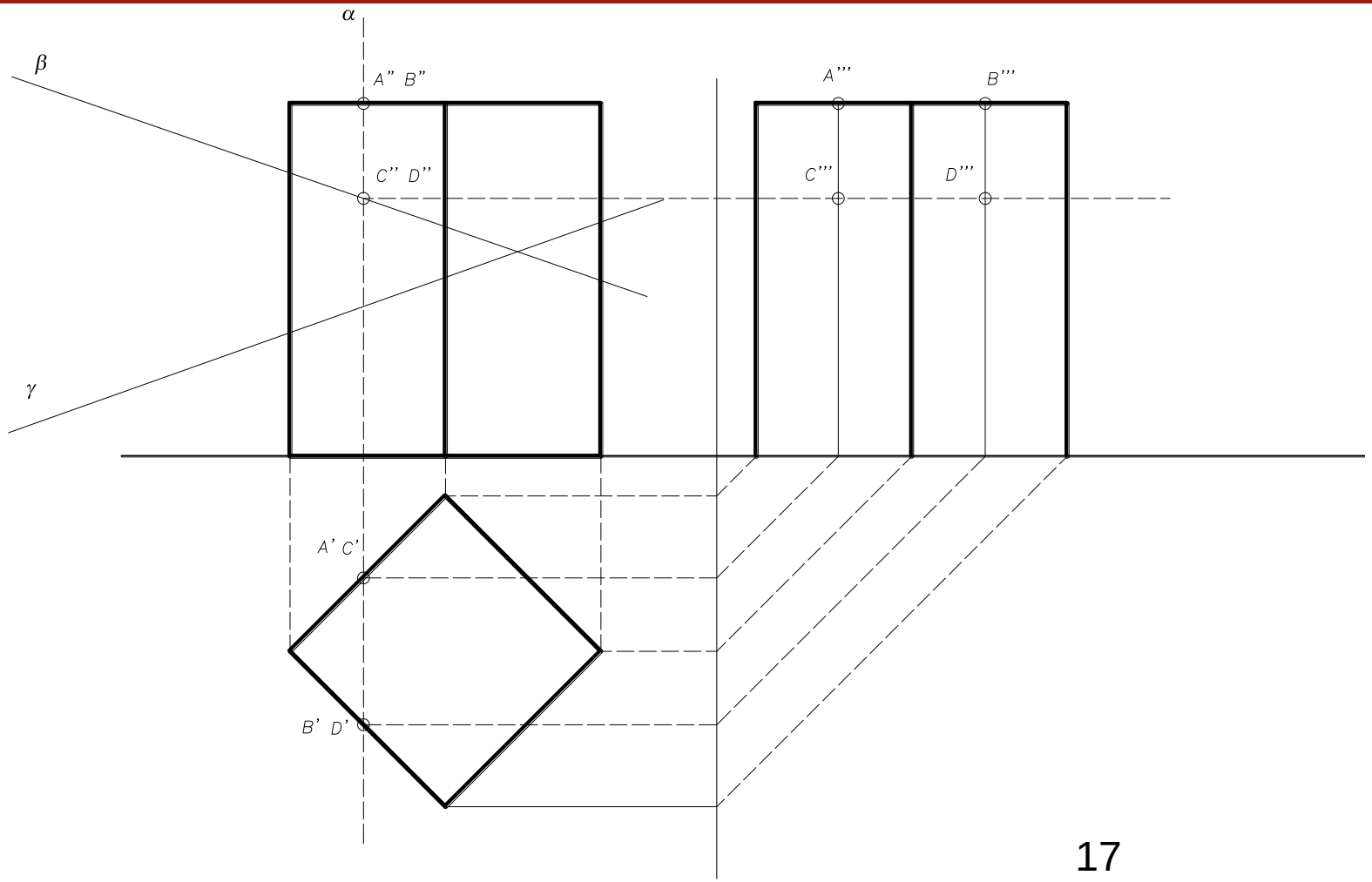
Polyhedron cut pattern

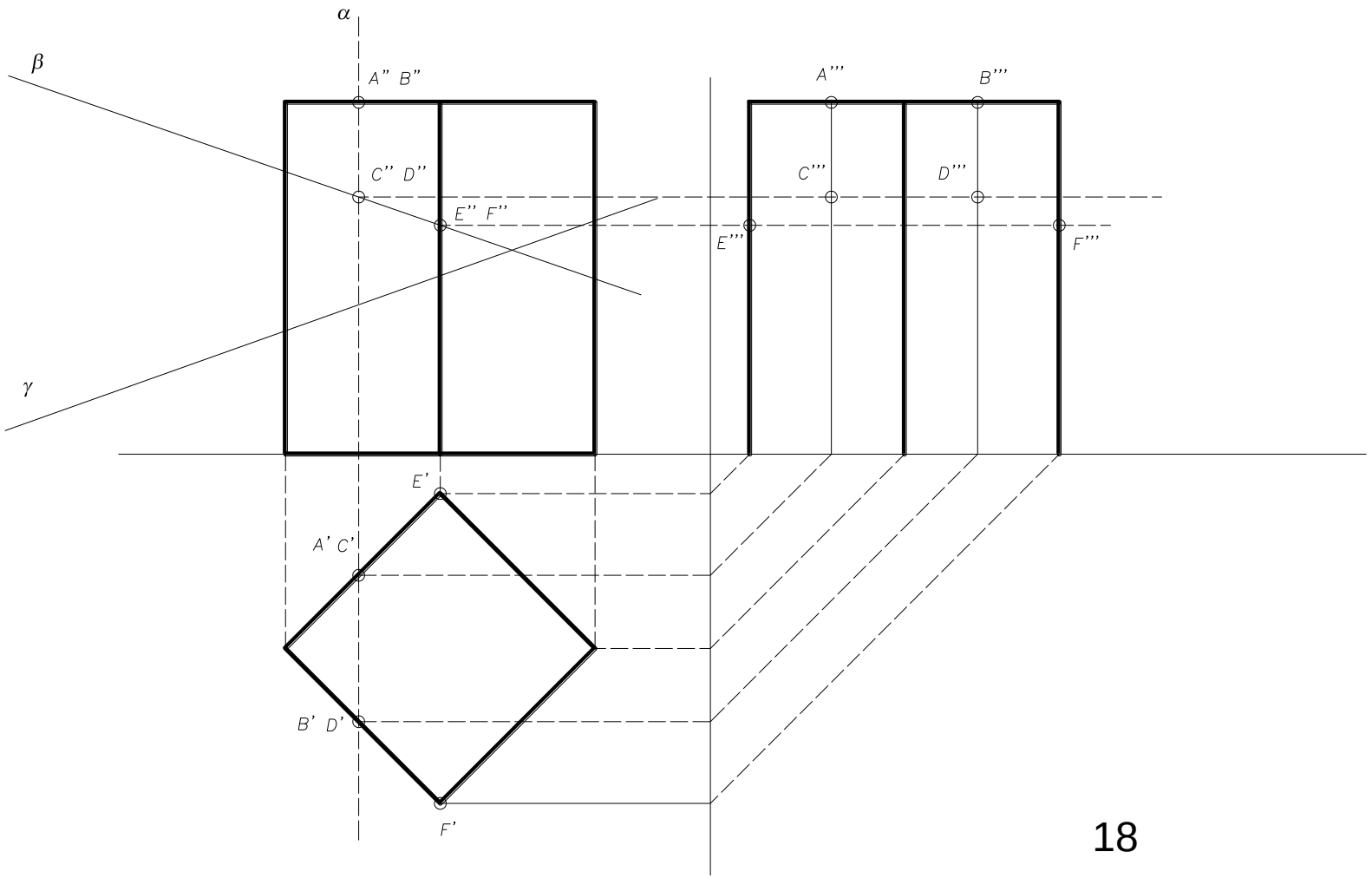
Complete the missing projections of the polyhedron pattern

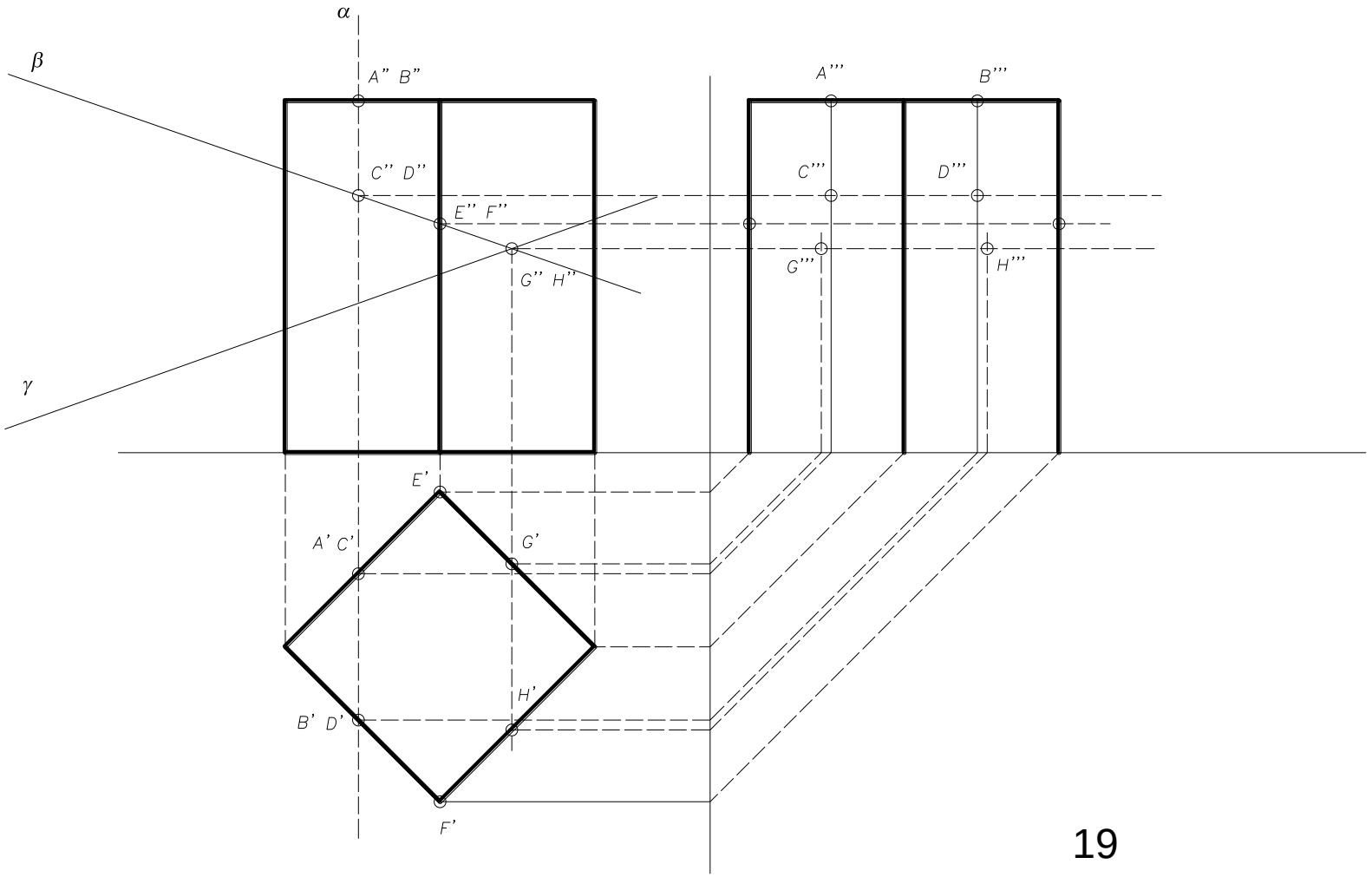


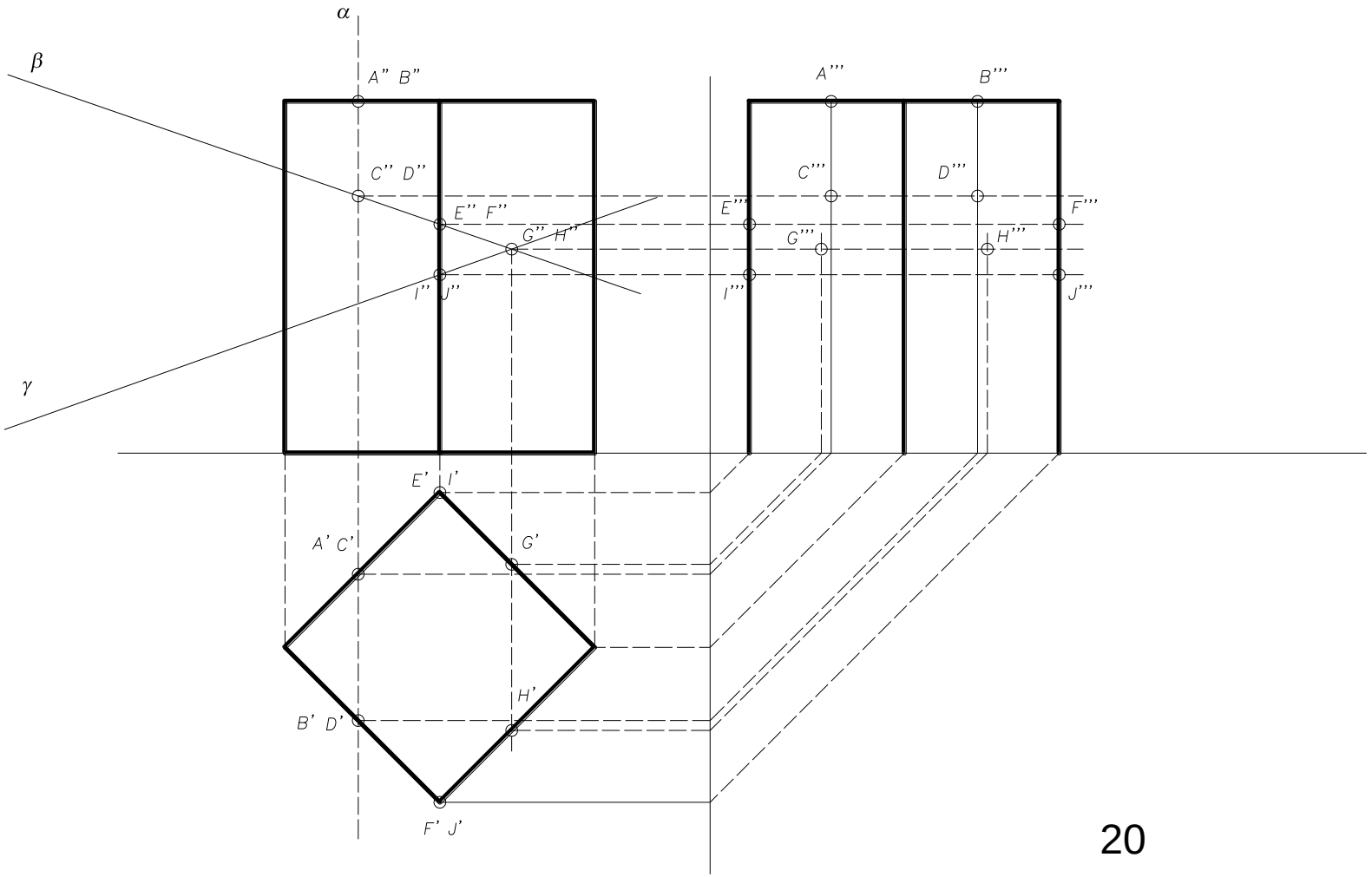

z
x
y

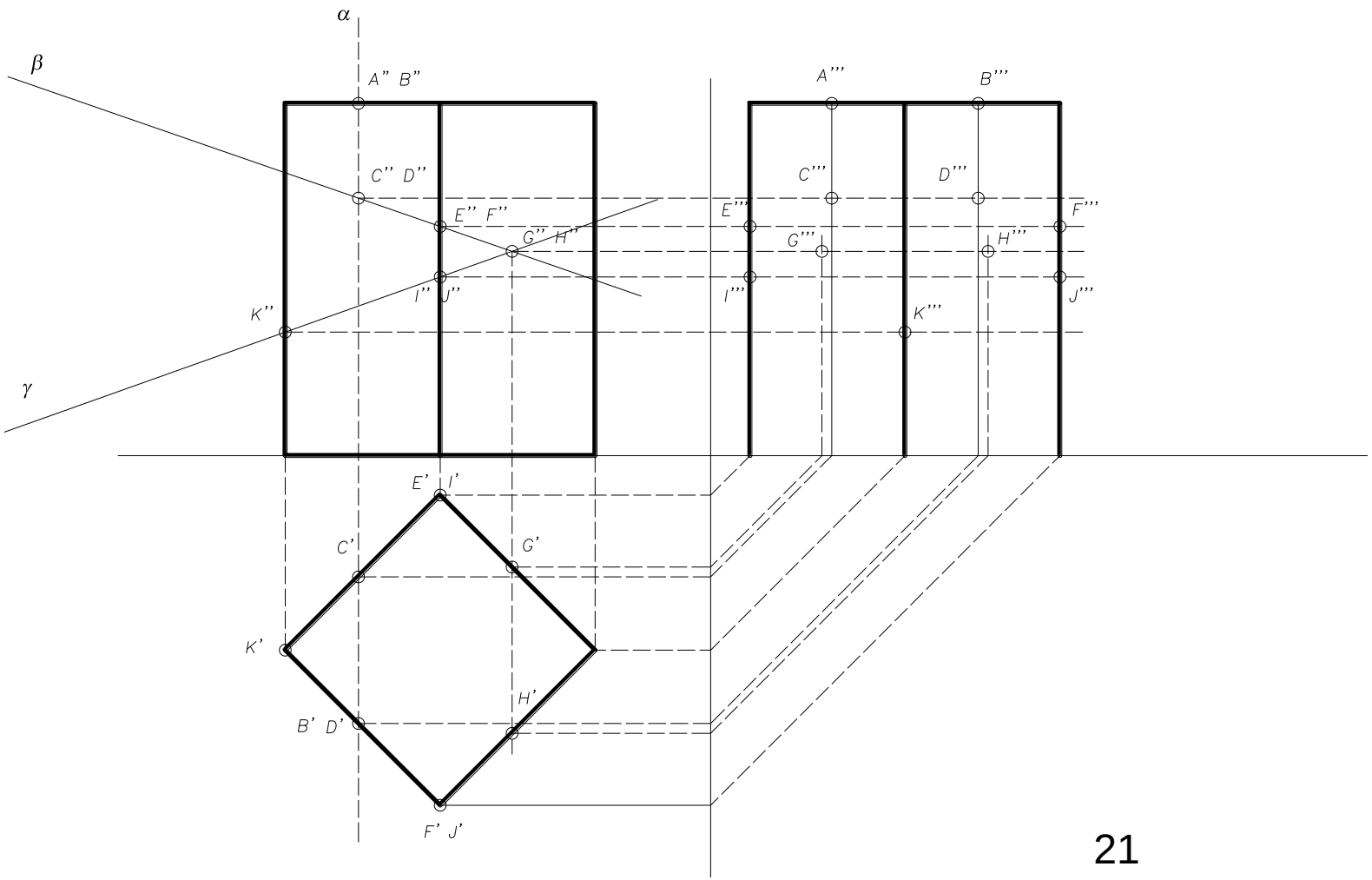

α
A" B"
A'''
B'''
A'
B'

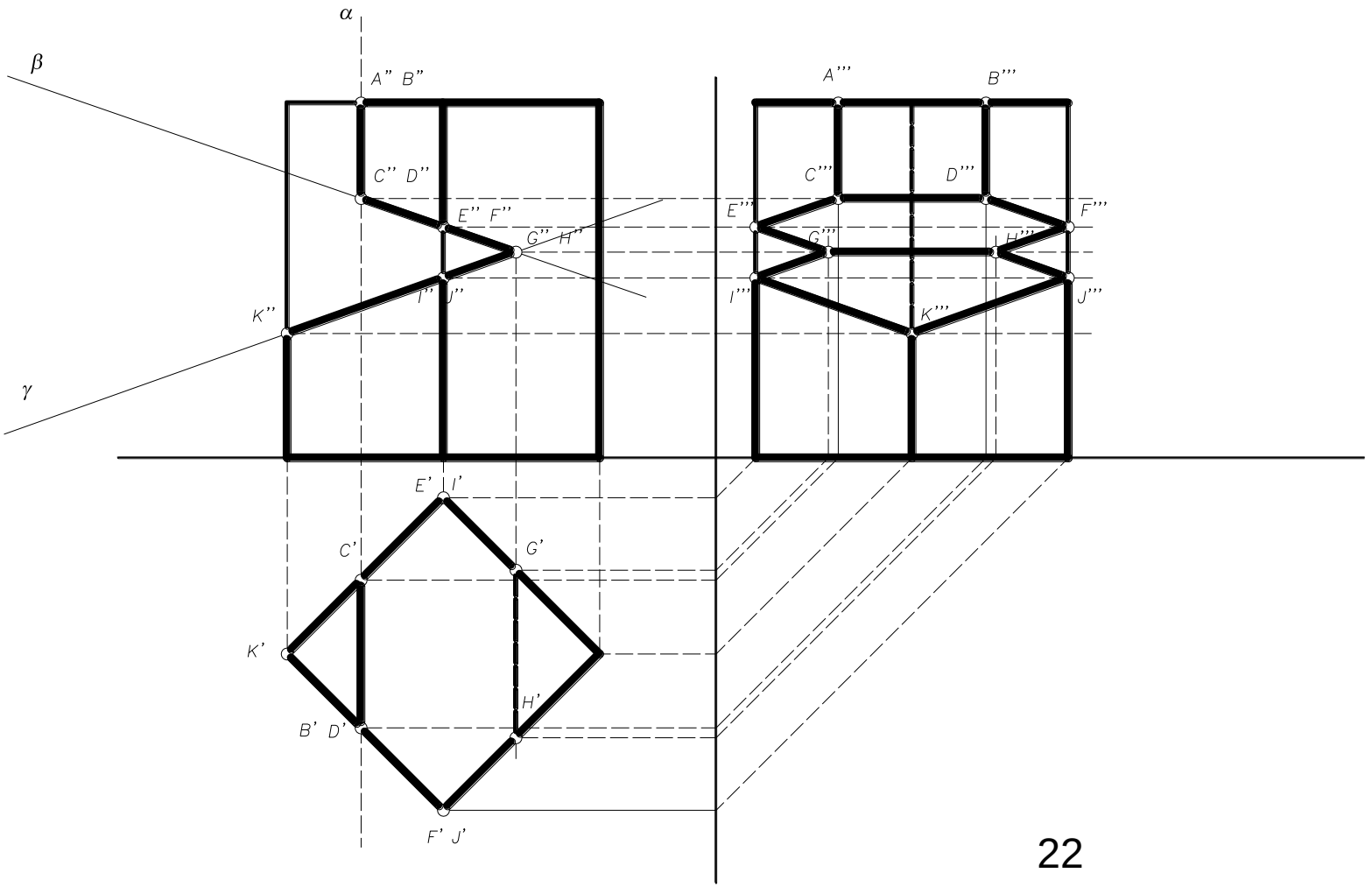

α
β
γ
A'' B''
C'' D''
A''' B'''
C''' D'''
A' C'
B' D'


α
β
γ
A'' B''
C'' D''
E'' F''
A''' B'''
C''' D'''
E''' F'''
E'
A' C'
B' D'
F'


α
β
γ
A'' B''
C'' D''
E'' F''
G'' H''
A''' B'''
C''' D'''
G''' H'''
E'
A' C'
G'
H'
B' D'
F'


α
β
γ
A'' B''
C'' D''
E'' F''
G'' H''
I'' J''
A''' B'''
C''' D'''
E''' F'''
G''' H'''
I''' J'''
E' I'
A' C'
G'
H'
B' D'
F' J'


α
β
γ
A'' B''
C'' D''
E'' F''
G'' H''
I'' J''
K''
A''' B'''
C''' D'''
E''' F'''
G''' H'''
I''' J'''
K'''
E' I'
C' G'
K'
H'
B' D'
F' J'


α
β
γ
A'' B''
C'' D''
E'' F''
G'' H''
I'' J''
K''
A''' B'''
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E''' F'''
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