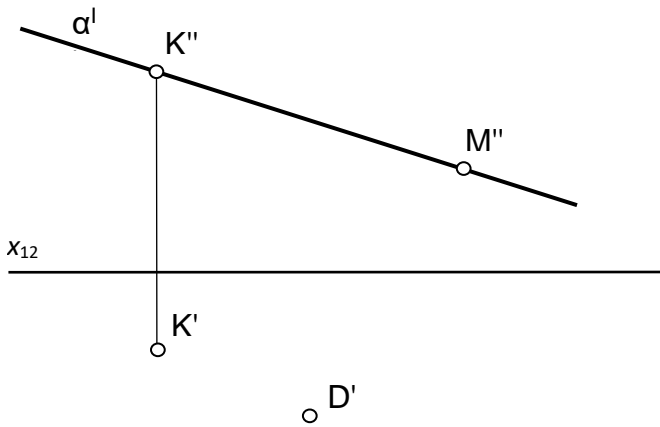


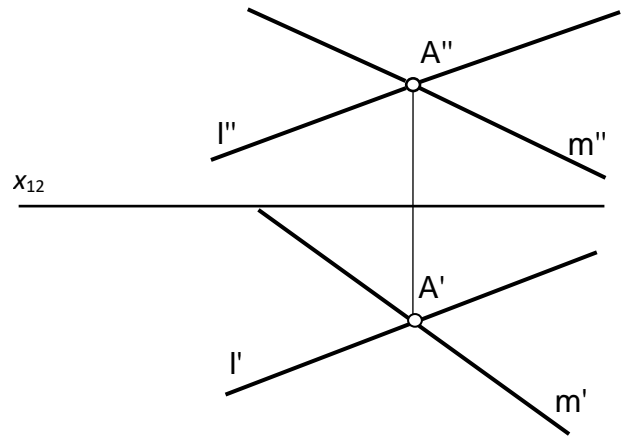
**PARALLEL AND PERPENDICULAR RELATIONSHIPS:  
LINES AND PLANES**

<b>PROBLEMS</b>									
13	14	15	16	17	18	19	20	21	22

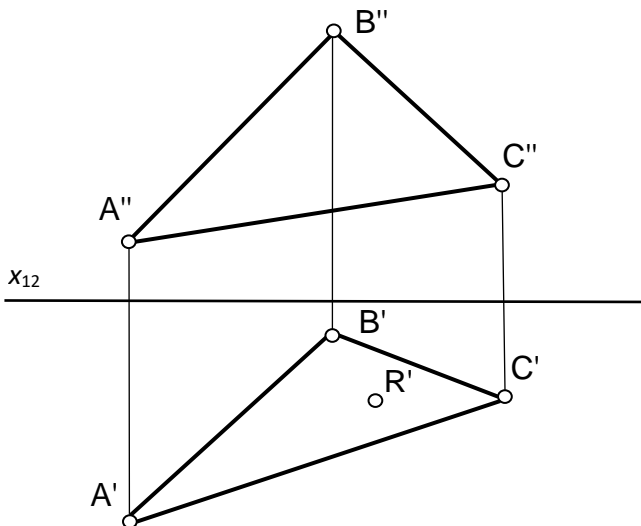
13. Complete missing views of points **D** and **M** belonging to a given vertically-projecting plane  $\alpha$



14. On the given plane  $\gamma(l,m)$  draw two lines: a horizontal line **p** and an oblique line **b**

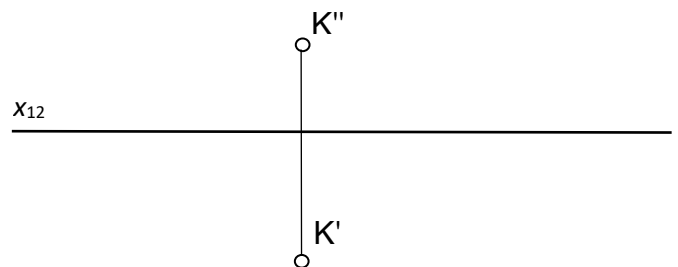


15. Find the missing view of point **R**, representing a hole in a triangular plate **ABC**.



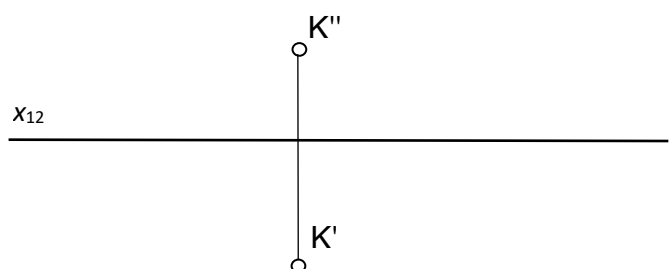
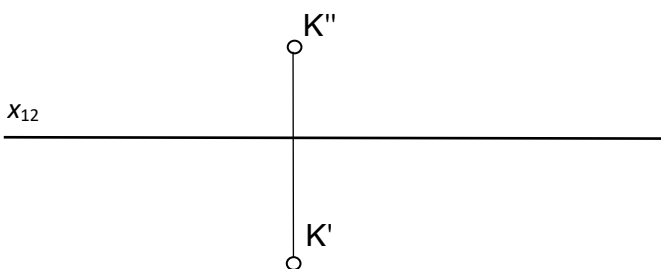
16. Define an oblique plane  $\delta$  using a horizontal and a frontal line. Point **K** should belong to this plane,  $K \in \delta$ . Solve the problem for:

16 a)  $K = p \cap c$

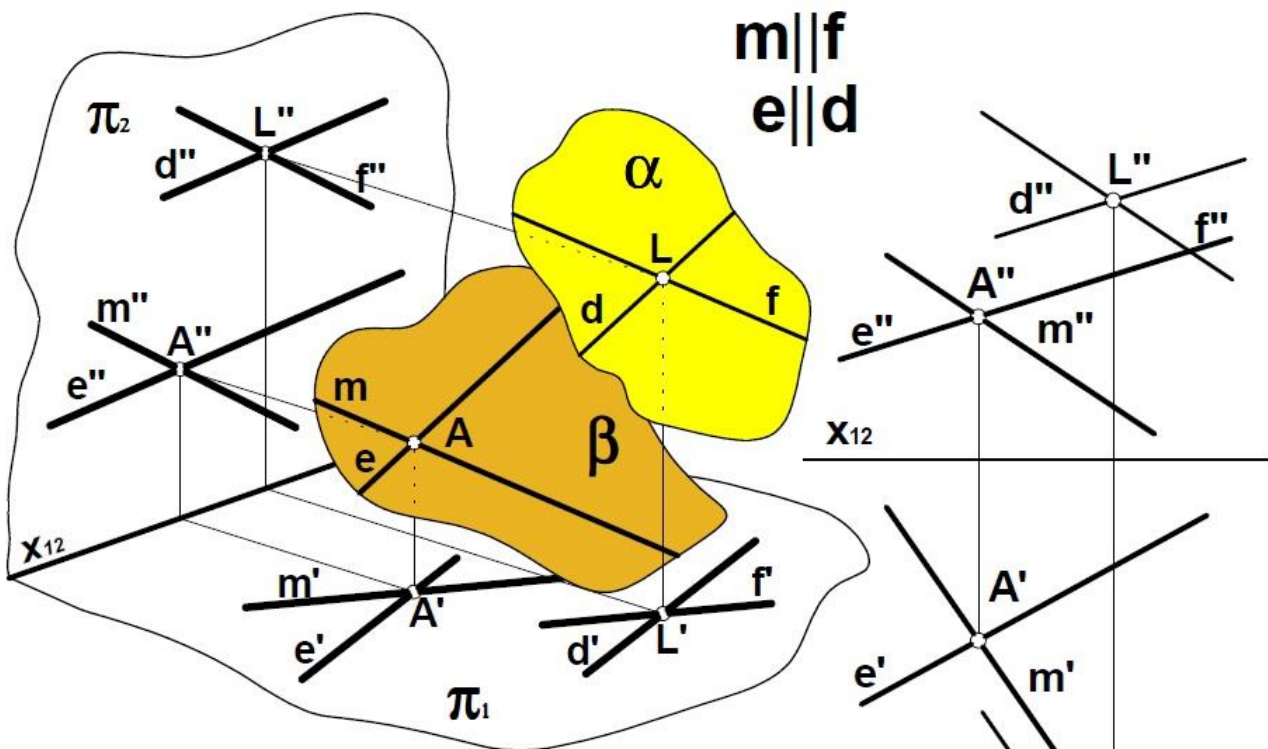
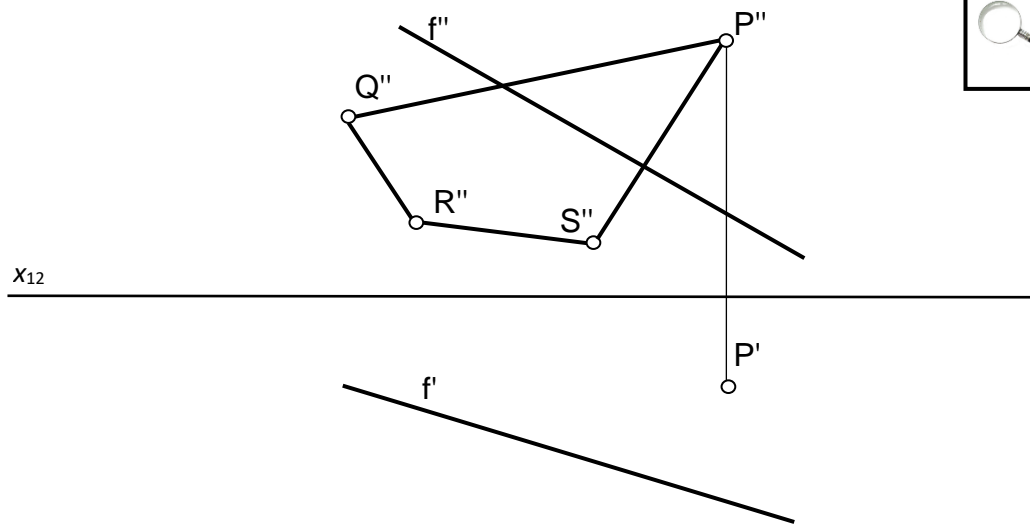


16. b)  $K \in p; K \notin c$

16. c)  $K \notin p; K \in c$



17. Find the missing view of the quadrangle PQRS, assuming, that it belongs to the given plane  $\beta$  (P, f).

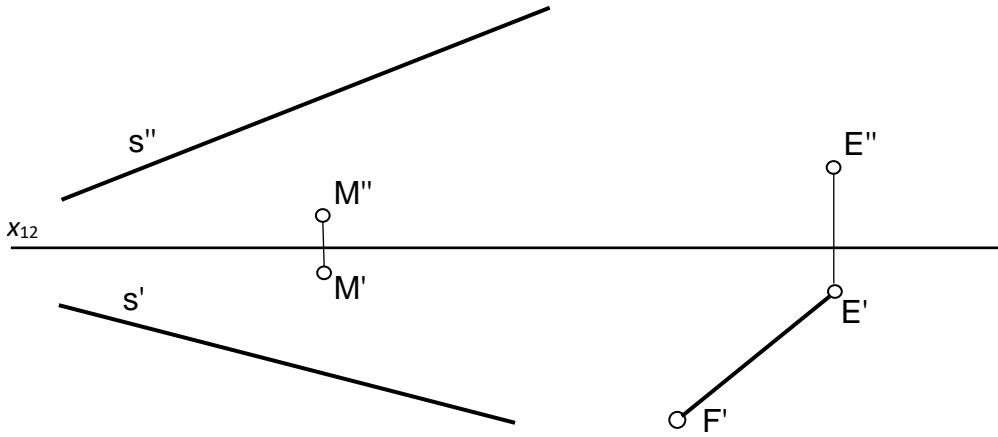


Plane  $\alpha(d, f)$  is given and  $L = f \cap d$ .

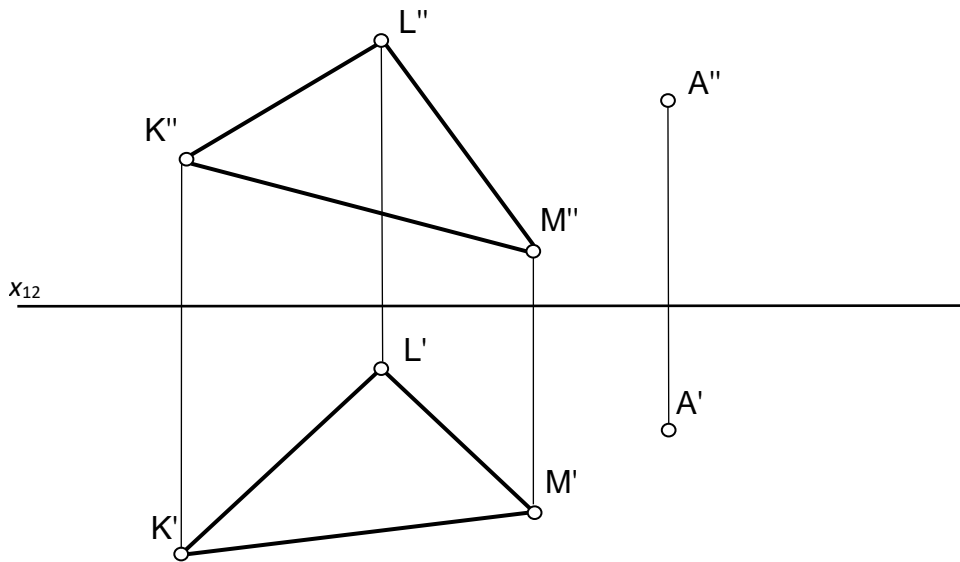
If  $m \parallel f$  and  $e \parallel d$  and  $A = e \cap m$  then:

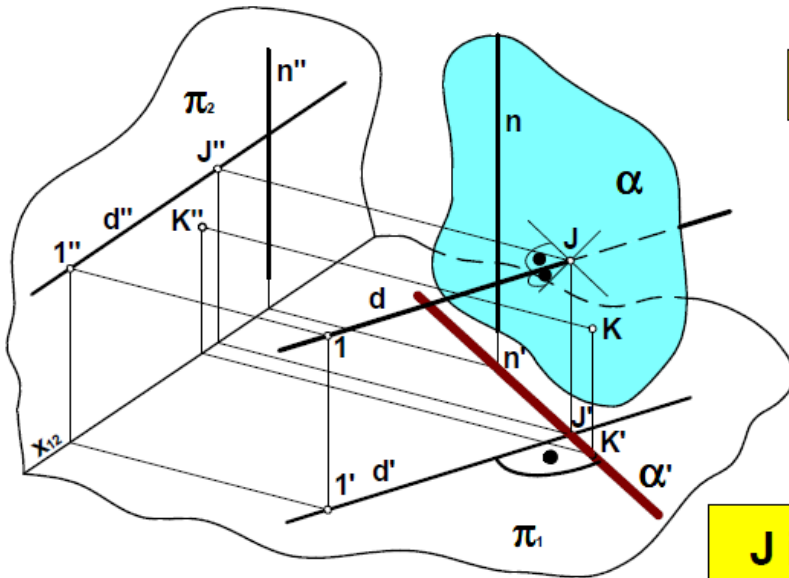
$$\beta(e, m) \parallel \alpha(d, f)$$

18. Find the missing view of segment **EF** assuming that  $EF \parallel \varphi(M, s)$ .



19. Define an oblique plane  $\alpha$  parallel to the plane of triangle **KLM**. Point **A** should belong to plane  $\alpha$ ,  $A \in \alpha$





If  $d \perp \alpha$ , and  $\alpha \perp \pi_1$ ,

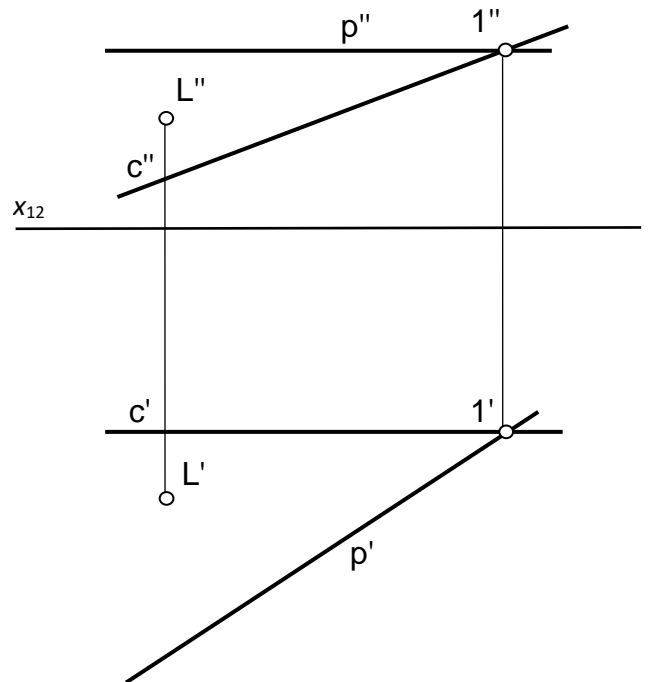
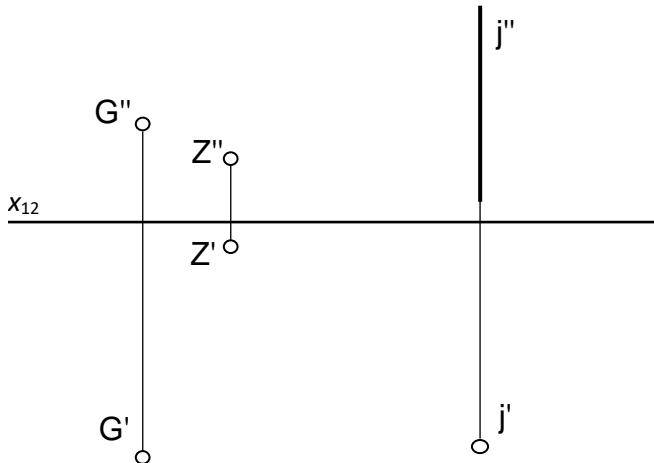
then:  $d \parallel \pi_1$

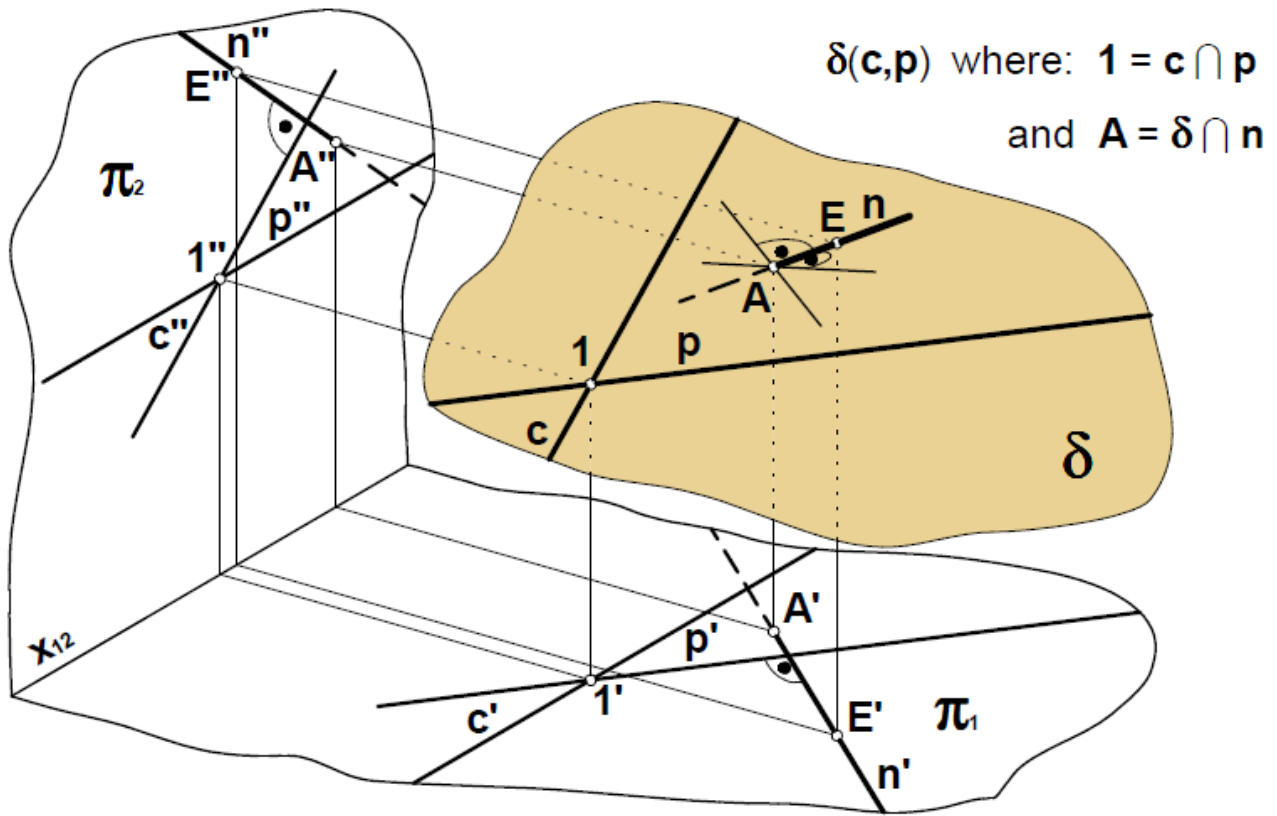
**J is the piercing point**

The point **J** is the point of intersection of the plane  $\alpha$  pierced by the straight line **d**, what can be marked as;  
 **$J = \alpha \cap d$ .**

20. Draw line **b**,  $G \in b$ , perpendicular to plane  $\delta$  (**Z, j**). Find the point of intersection **Q** of line **b** and plane  $\delta$ .

21. Draw line **n**, perpendicular to plane  $\beta$  (**p, c**). Point **L** should belong to line **n**,  $L \in n$ .





If  $n \perp \delta(c,p)$  then  $n' \perp p'$  and  $n'' \perp c''$ .

22. Draw line  $n$  perpendicular to plane  $\alpha(D,e)$ . Point  $H$  should belong to line  $n$ ,  $H \in n$ .

