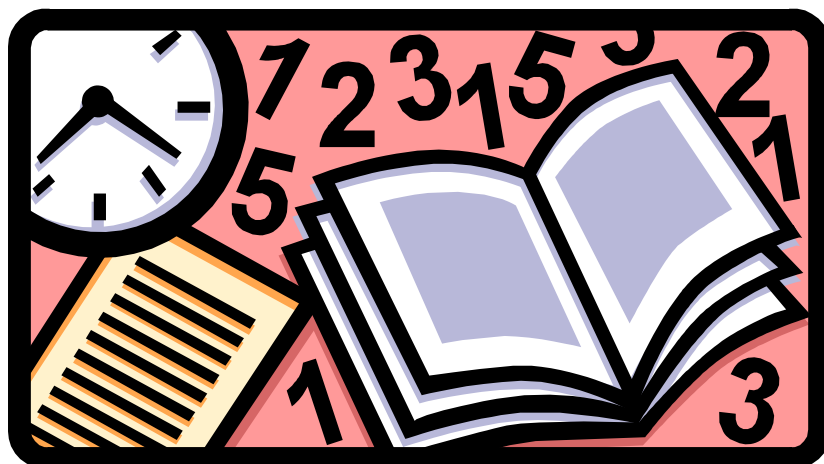


**O'zbekiston Respublikasi Oliy va o'rta maxsus  
ta'lim Vazirligi**

**Toshkent avtomobil-yo'llar instituti**

**“Chizma geometriya va grafika” kafedrası**

***CHIZMA GEOMETRIYADAN  
MASALALAR TO'PLAMI***



**Toshkent-2010**

**Maskur to'plam institutning YeUTT - 5521100, TVF - 5521200, kasbiy ta'lim - 5140900, TGIQ va BIQ – 558300 yo'nalishlarida taxsil olayotgan birinchi kurs talabalariga mo'ljallangan bo'lib, «Chizma geometriya» fanining na'munaviy dasturi asosida tuzilgan. Mazkur to'plam o'qituvchilarga amaliy mashg'ulotlar o'qazish uchun uslubiy qo'llanma sifatida ishlatilsa, talabalar uchun chizma geometriyadan masalalar echish uchun ish daftari sifatida qo'llanilishi mumkin.**

**To'plamda «Chizma geometriya» fanining nuqta, to'g'ri chiziq va sirlarga oid mavzulari bo'yicha masalalar keltirilgan.**

**Tuzuvchilar:            *Sindarov R.U. – Chizma geometriya va grafika» kafedrası dotsenti, t.f.n.***

**Taqrizchilar:        *To'xtayev A.T. – TAYI «Chizma geometriya va grafika» kafedrası katta o'qituvchisi.***

***Abduraimov M.A. – Sam DMQI «ChG va MG» kafedrası dosenti, t.f.n.***

**«Chizma geometriya va grafika» kafedrası majlisida tasdiqlangan.**

**Bayonnoma №\_4 12.10.09.\_\_\_\_\_**

**Fundamental ta'lim fakulteti o'quv uslubiy kengashi tomonidan tasdiqlangan. Bayonnoma №\_5 28.11.09\_\_**

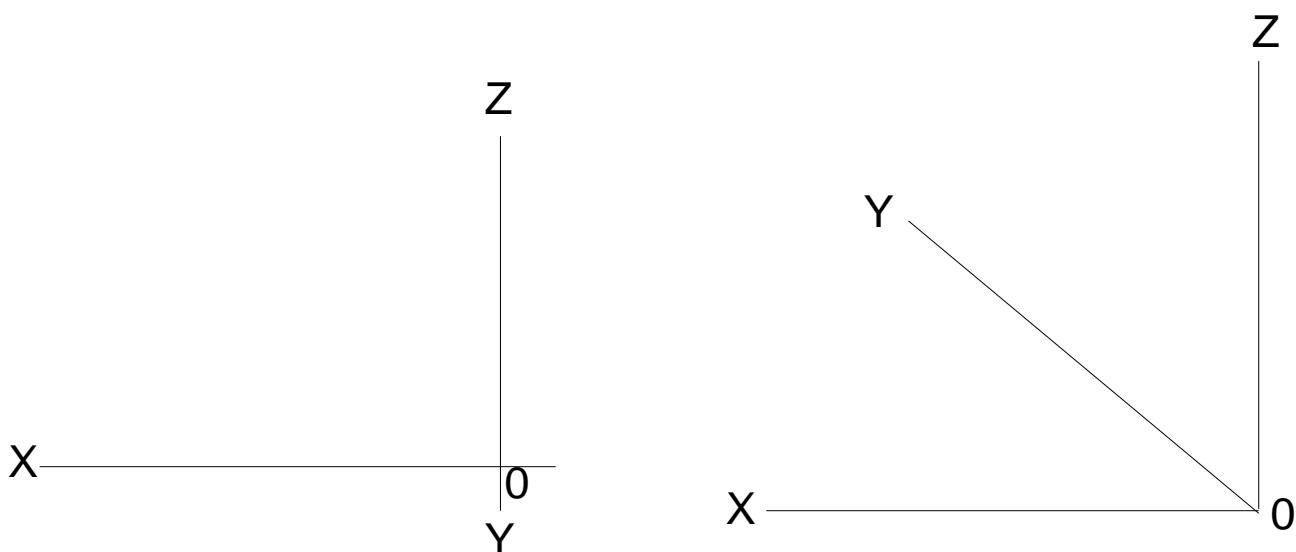
# 1 –mashg'ulot

## Mavzu: NUQTA, TO'G'RI CHIZIQ, TEKISLIK

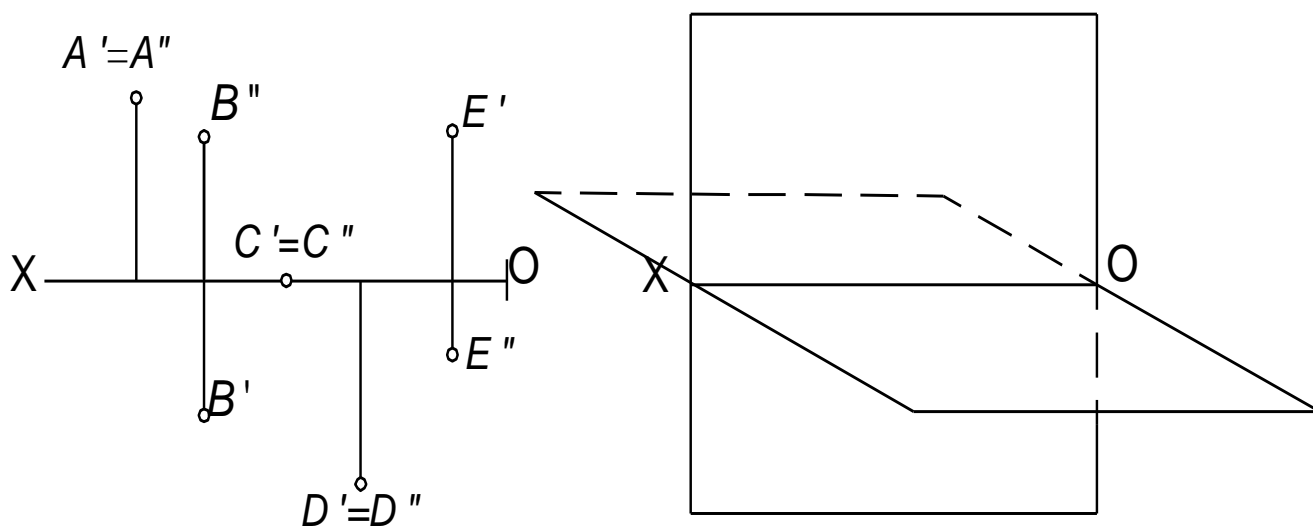
### *Nuqtaning ortogonal proeksiyasi va aksonometriyasi.*

#### *Masalalar:*

1. A nuqtaning uchta proeksiyasi va yaqqol tasvirini yasang. Bunda A nuqta fazoning ikkinchi choragida joylashgan bo'lib, H tekisligidan 25 mm, V tekisligidan 40 mm va W tekisligidan 30 mm uzoqlikda joylashgan.

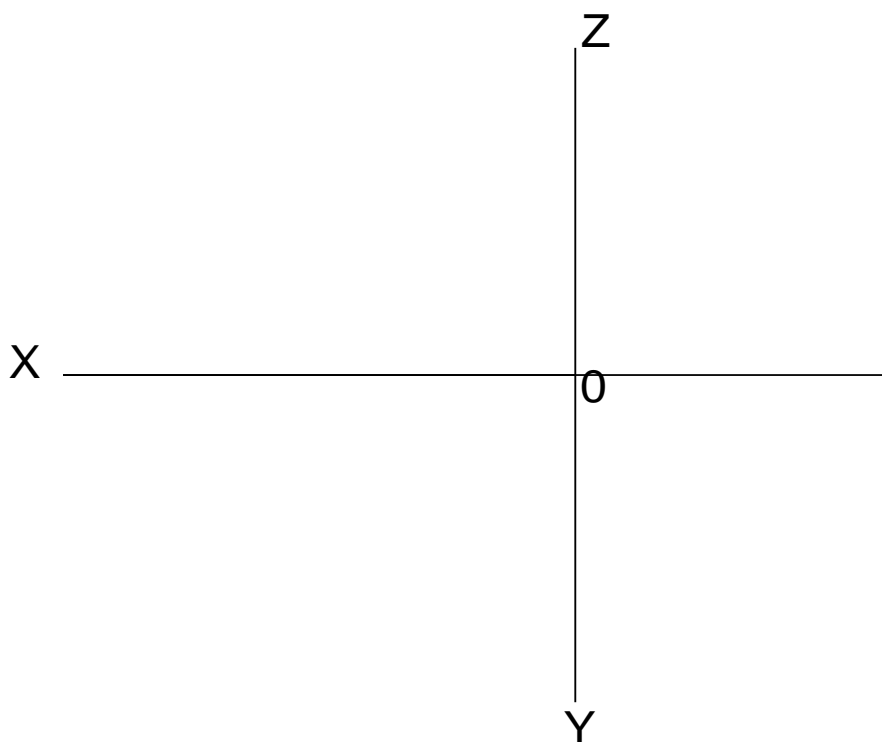


2. Proeksiyalari bilan berilgan A, B, C, D, E, nuqtalarning aksonometriyasi yasalsin

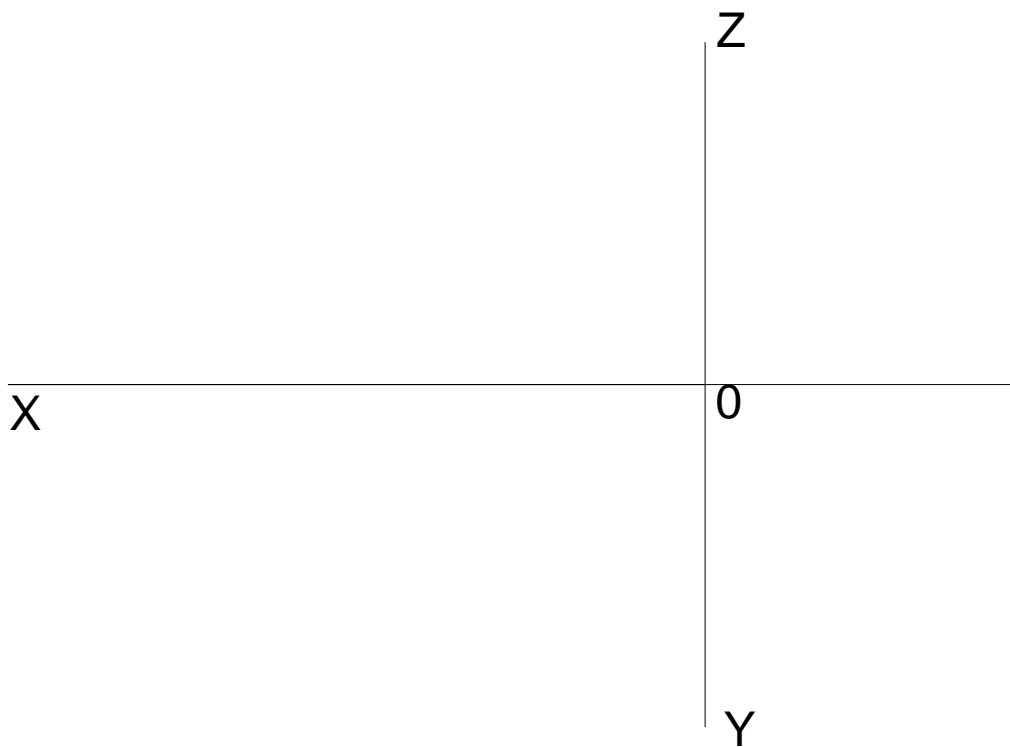


3. Nuqtalarning koordinatalari boyicha uch proeksiyasi yasalsin

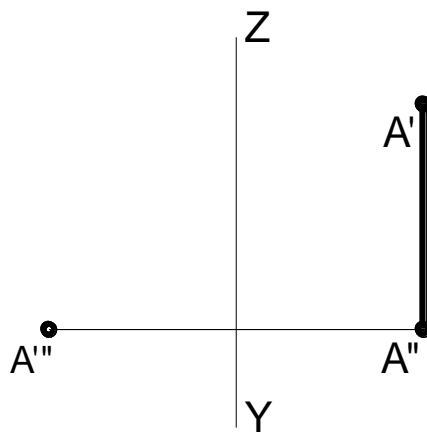
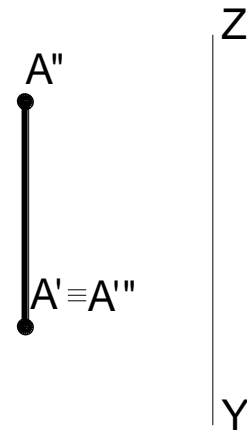
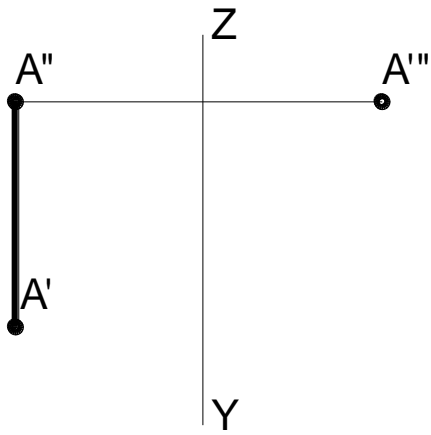
	X	Y	Z
A			
B			
C			
D			
E			



4. H, V tekisliklarga va OX proeksiyalar o'qiga nisbatan A (40, -20, 10) nuqtaga simmetrik bo'lgan nuqtaning proeksiyasi yasalsin.



5. A nuqtaning uch proeksiyasi berilgan. OX o'qning holatini va A nuqtadan H,V va W tekisliklarga bo'lgan masofalar aniqlansin

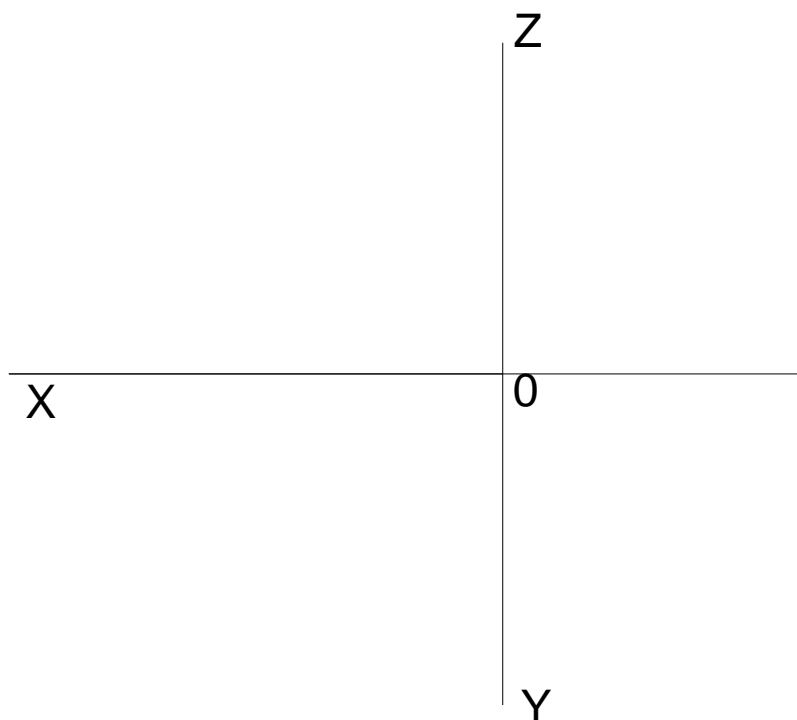


## 2 –mashg'ulot

1. *To'g'ri chiziqning proeksiyasi.*
2. *Xususiy va umumiy xolatdagi to'g'ri chiziq.*
3. *Kesmaning haqiqiy uzunligini va uning proeksiyalar tekisliklariga nisbatan ogish burchagini aniqlash.*
4. *To'g'ri chiziqning izilarni yasash.*

*Masalalar:* AB va CD to'g'ri chiziqning proeksiyalari koordinatalari bo'yicha yasalsin

	X	Y	Z
A			
B			
C			
D			



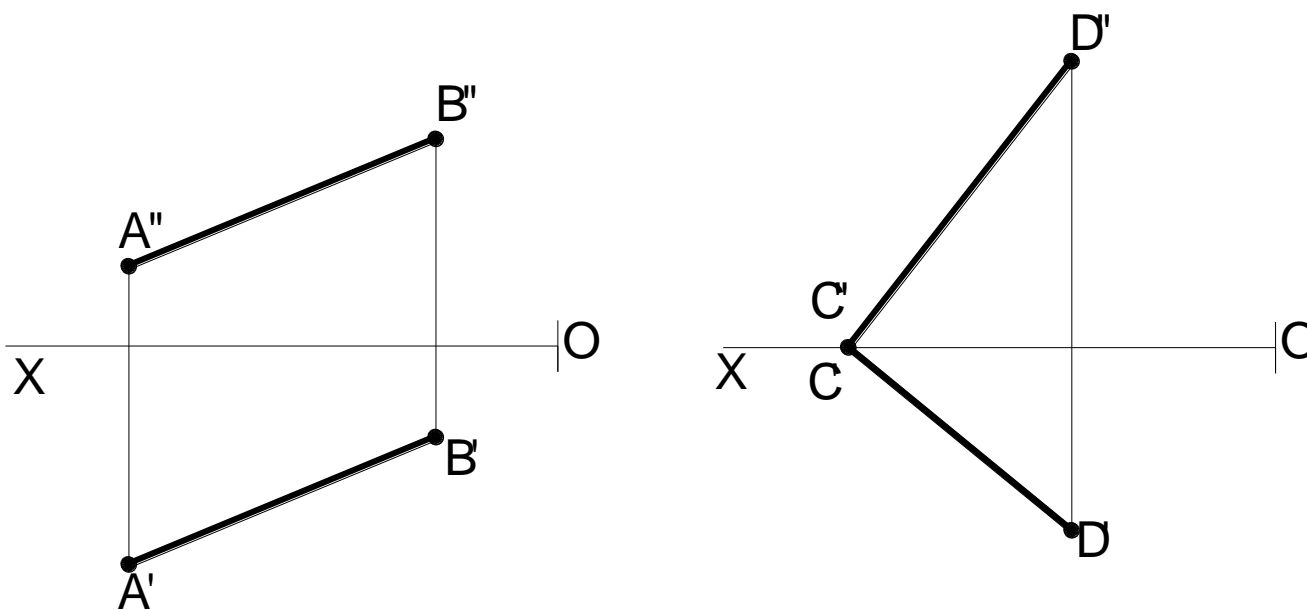
2. Uzunligi 30 mm bo'lgan va quyida kursatilgan tekisliclarga parallel bo'lgan to'g'ri chiziq kesmasining proeksiyalari yasalsin: 1) H- gorizont; 2) V - frontal; 3) W- profil



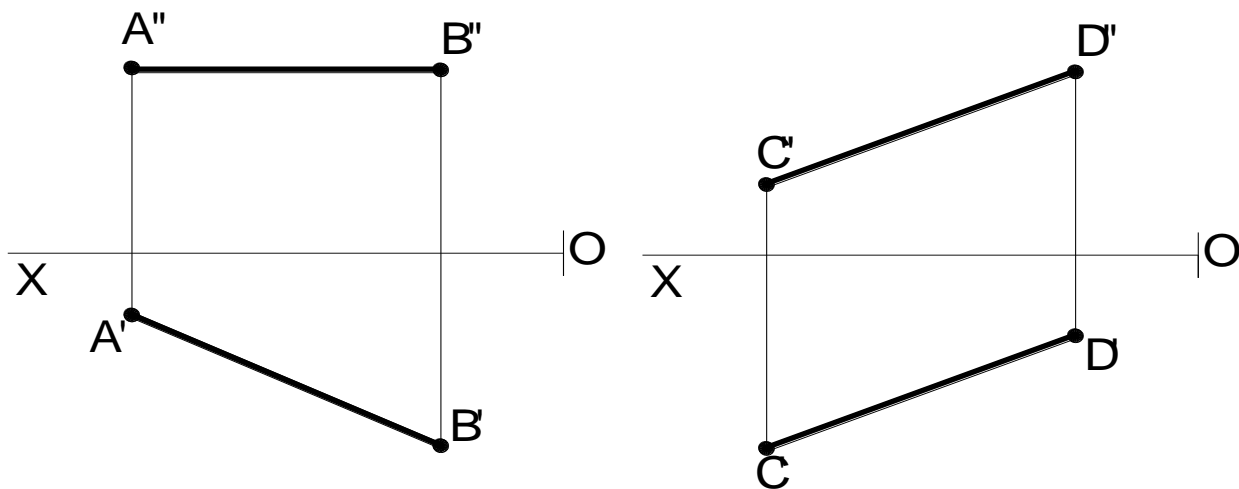
3. Uzunligi 30 mm bo'lgan va quyida ko'rsatilgan tekisliklarga perpendikulyar bo'lgan to'g'ri chiziq kesmasining proeksiyalari yasalsin: 1) H- goriz.; 2) V – fron.; 3) W- profil



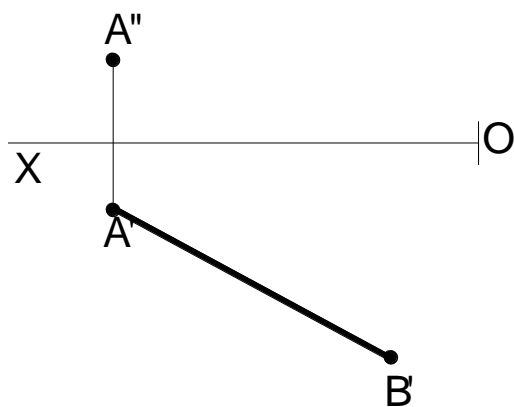
4. AB va CD kesmalarining haqiqiy kattaliklari, hamda AB ning H ga, CD ning V ga nisbatan o'gish burchaklari aniqlansin



5. AB va CD kesmalarda A va C nuqtalardan 15 mm uzoqlikdagi K nuqtaning proeksiyalari yasalsin

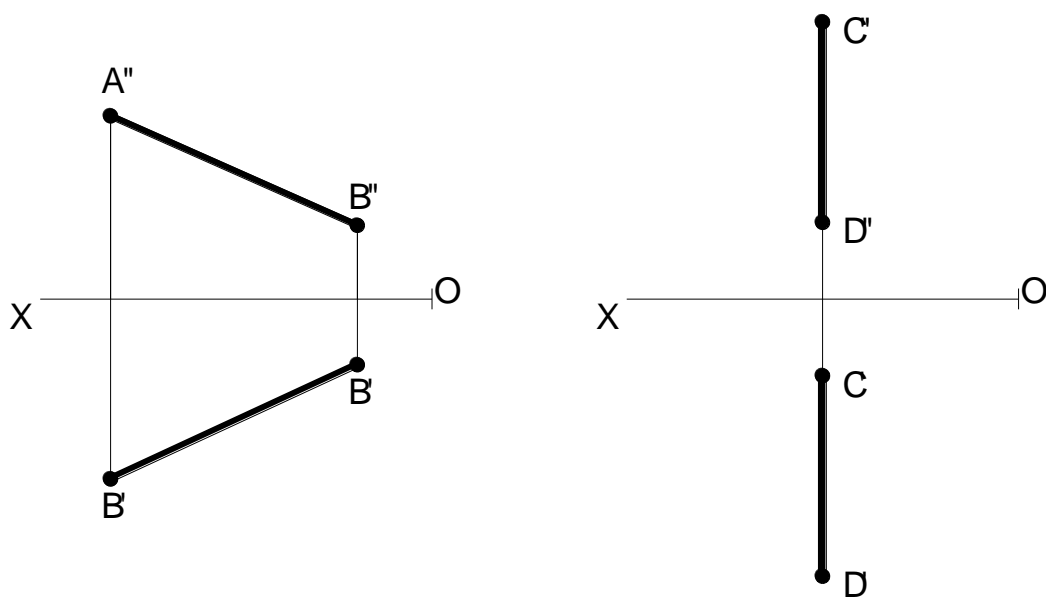


6. H tekislikka  $30^\circ$  ga og'ma bo'lgan AB kesmaning frontal proeksiyasi to'liqligicha yasalsin

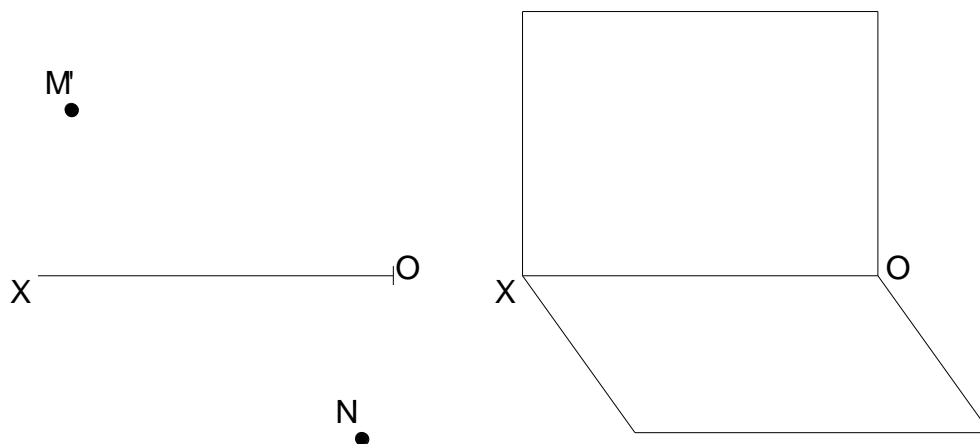




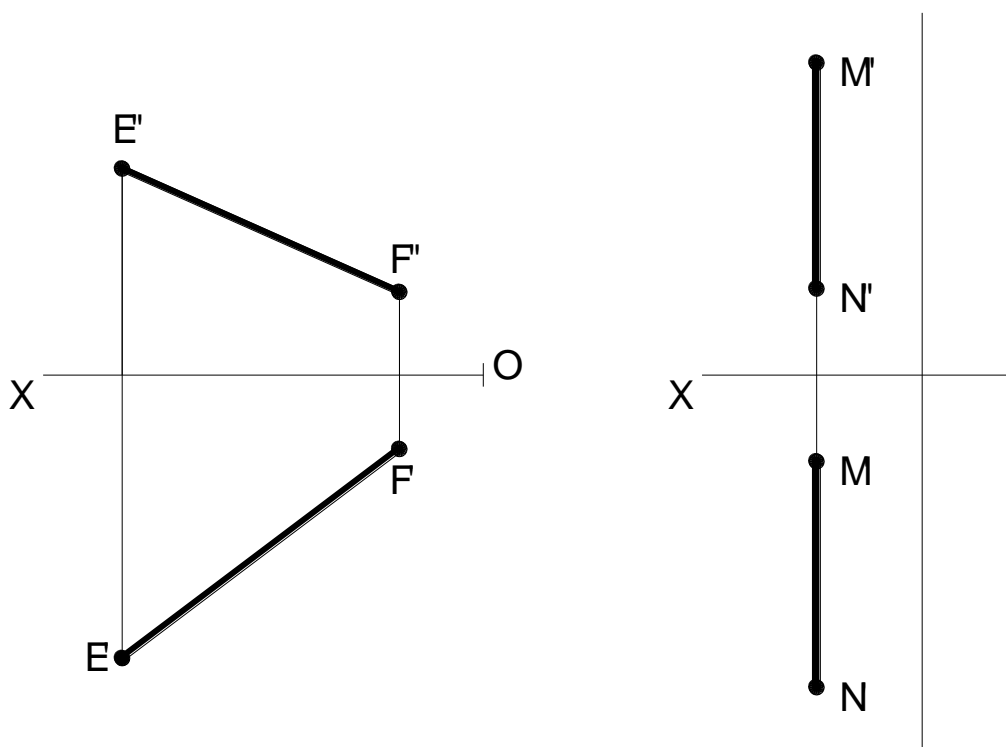
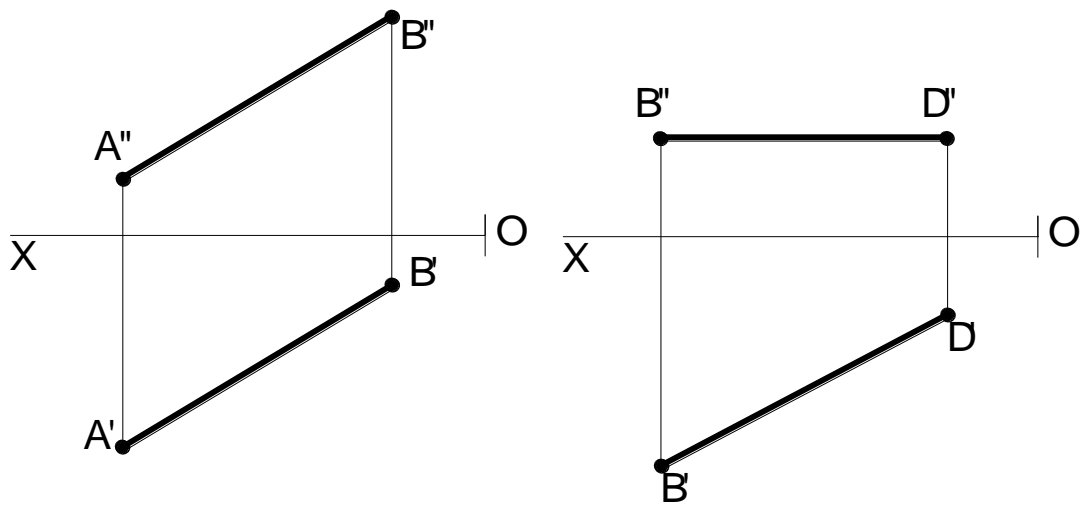
7. AB va CD kesmalarni 1:4 nisbatda bolinsin



8. To'g'ri chiziqning gorizontal va frontal izlari – M'' va N'' nuqtalar berilgan. To'g'ri chiziq kesmasining proeksiyalari va yaqqol tasvirini yasalsin, hamda uning haqiqiy kattaligi aniqlansin.



8. AB, CD, EF va MN to'g'ri chiziqlarning izlari yasalsin va har bir to'g'ri chiziqning fazoning qaysi choraklaridan o'tayotganligi aniqlansin.

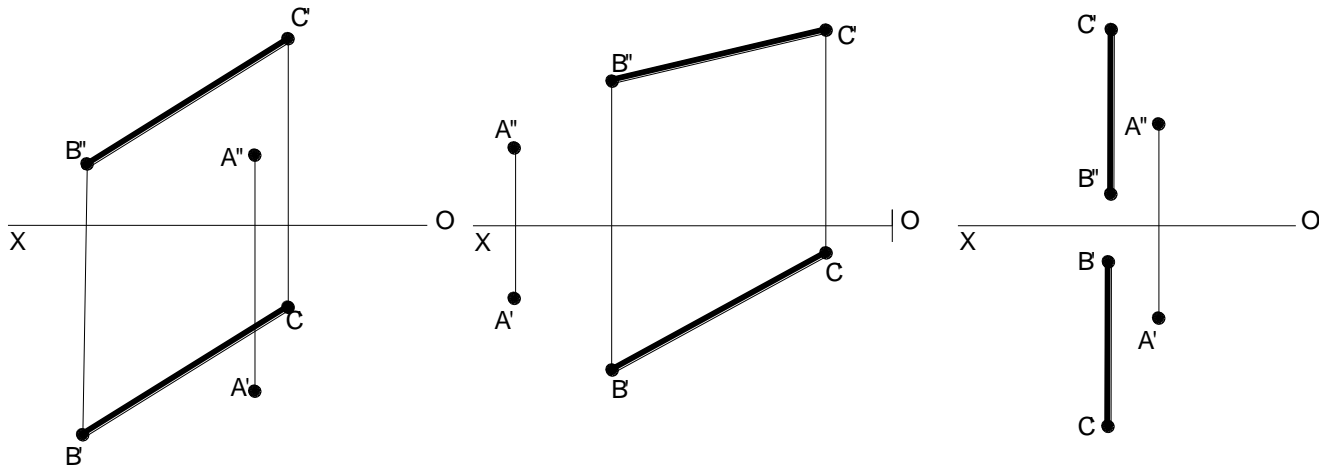


### 3-mashg'ulot

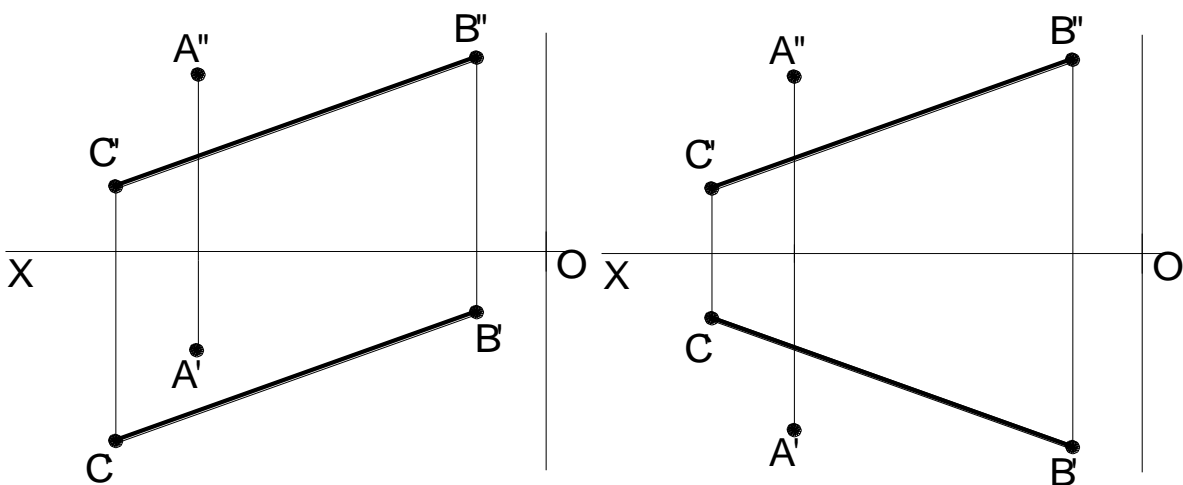
1. Ikki to'g'ri chiziqning o'zaro holati: o'zaro parallel va kesishuvchi chiziqlar.
2. To'g'ri borchakning proeksiyasi.

**Masalalar:**

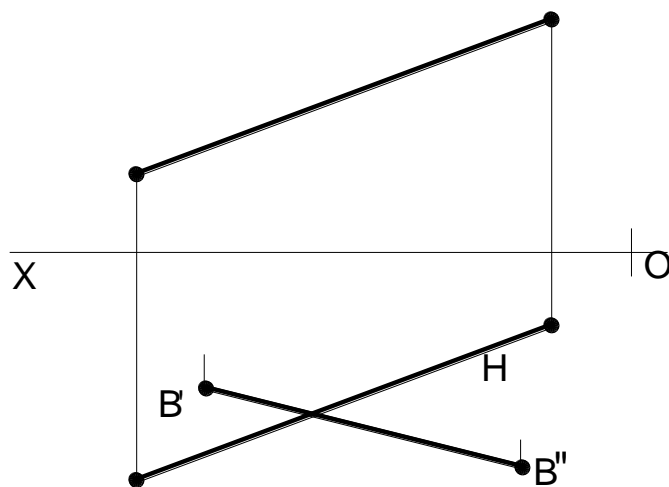
1. A nuqtadan BC kesmani kesib o'tuchi va V tekislikka parallel bo'lgan chiziq o'tkazilsin



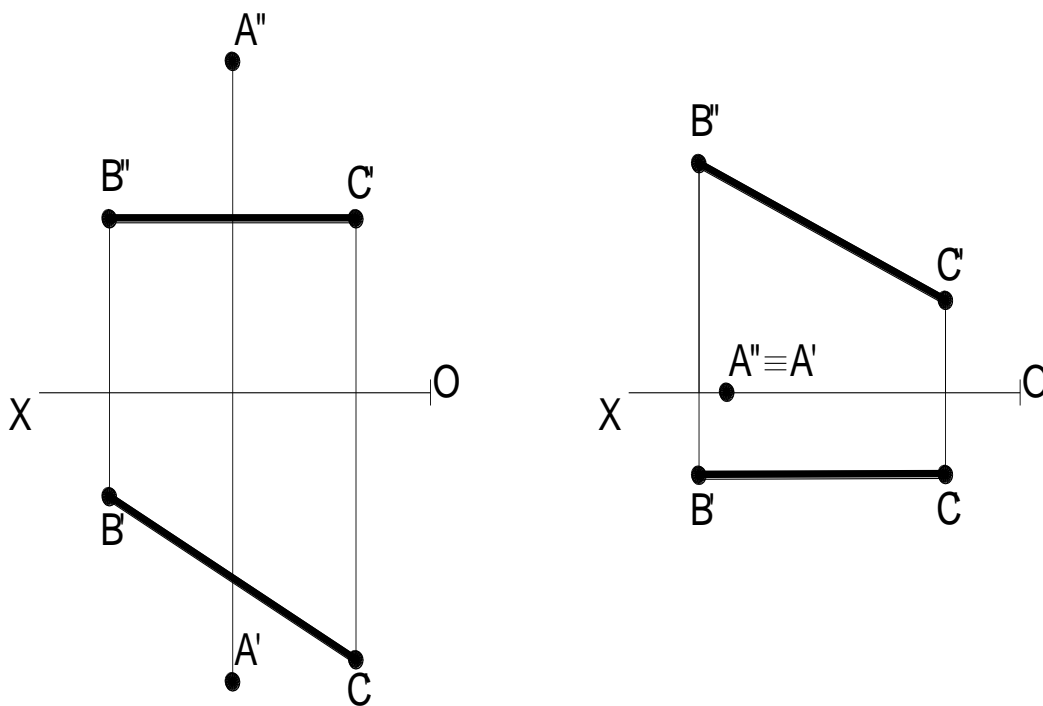
2. Berilgan CD to'g'ri chiziqni va 1) Y o'qni, 2) Z o'qni kesib o'tivchi AB to'g'ri chiziq o'tkazilsin



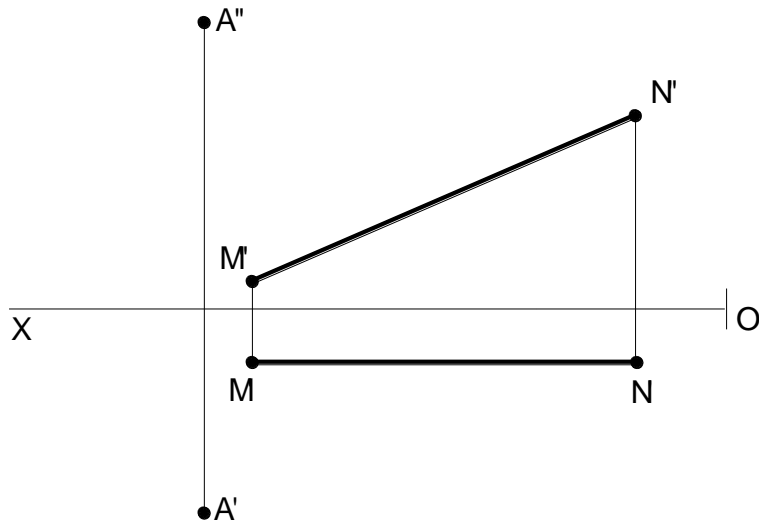
3. H tekislikka parallel va undan 30 mm uzoqlikda yotgan AB togri chiziqning frontal proeksiyasi va hosil bolgan o'zaro ayqash chiziqning konkurent nuqtalari aniqlansin.



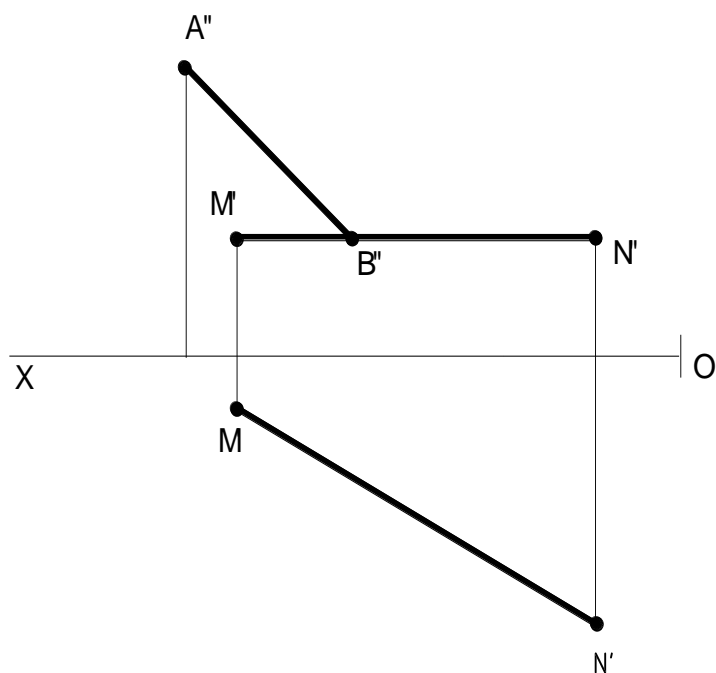
4. A nuqtadan BC to'g'ri chiziqgacha bo'lgan masofa aniqlansin.



5. V tekislikka parallel bo'lgan va MN to'g'ri chiziqda BC tomoni bilan yotgan ABCD kvadrat yasalsin



6. BC kateti MN to'g'ri chiziqda yotgan to'g'ri burchakli uchburchak ABC yasalsin. AB katet uchun A'' B'' berilgan. BC katetdan 1,5 marta katta bo'lishi shart

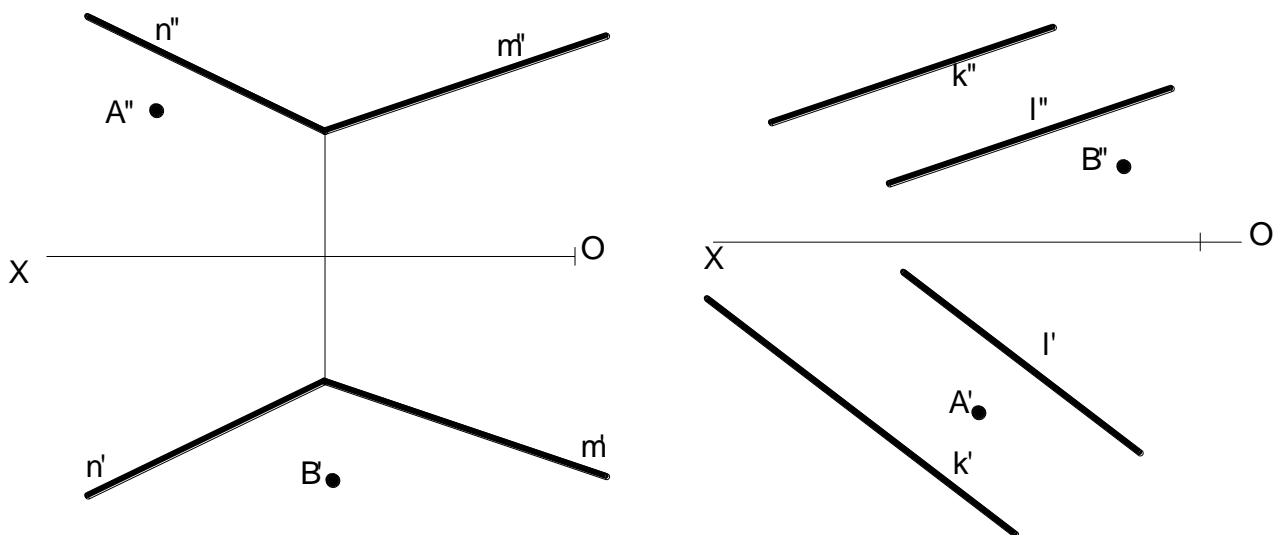


#### 4 – mashg'ulot

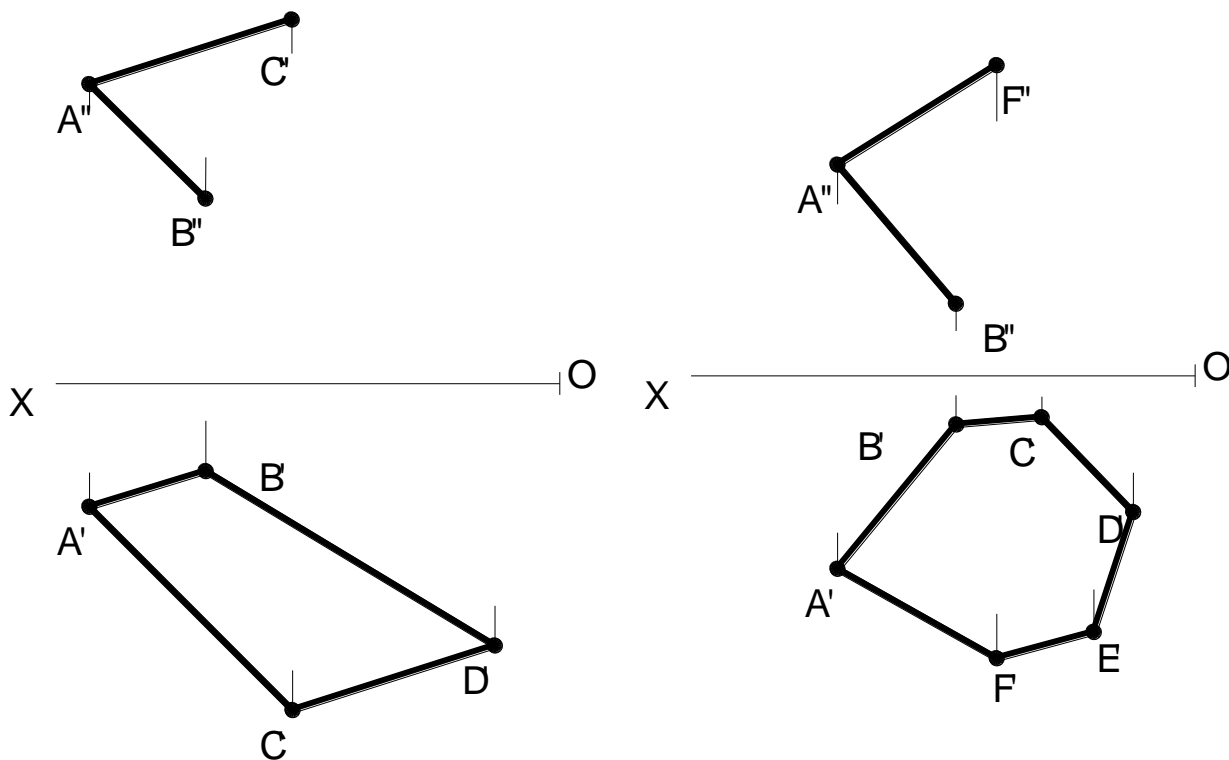
1. Nuqta, to'g'ri chiziq va tekisliklarning o'zaro tegishliligi.
2. Tekislikning izlarini yasash.
3. Tekislikning bosh chiziqlarini yasash.

**Masalalar:**

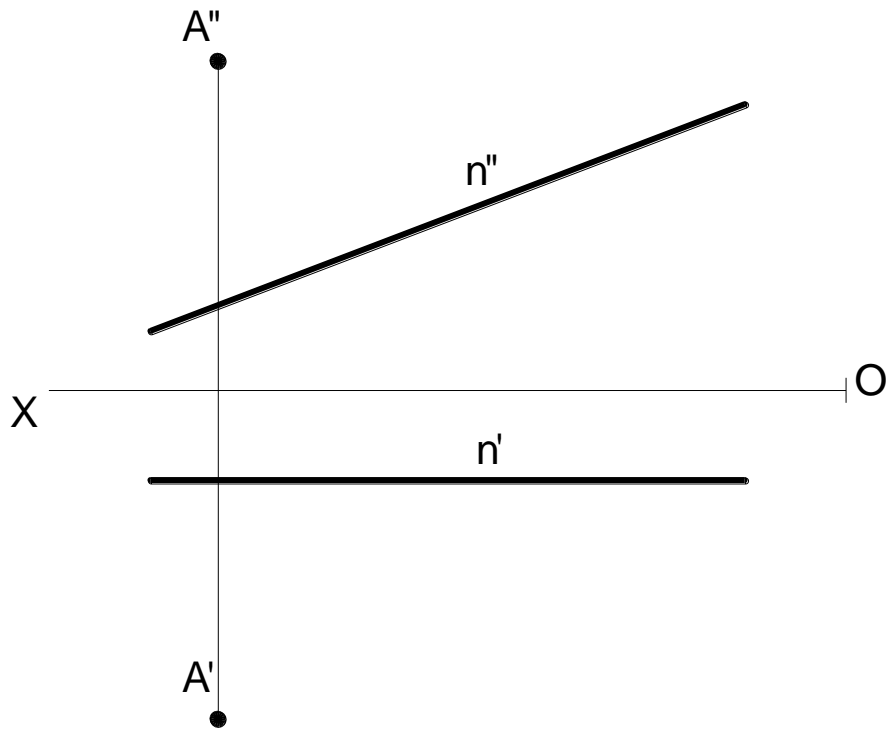
1. O'zaro kesishuvchi tekisliklar bilan berilgan tekislikda yotuvchi A va B nuqtalarning yetishmagan proyeksiyalari yasalsin



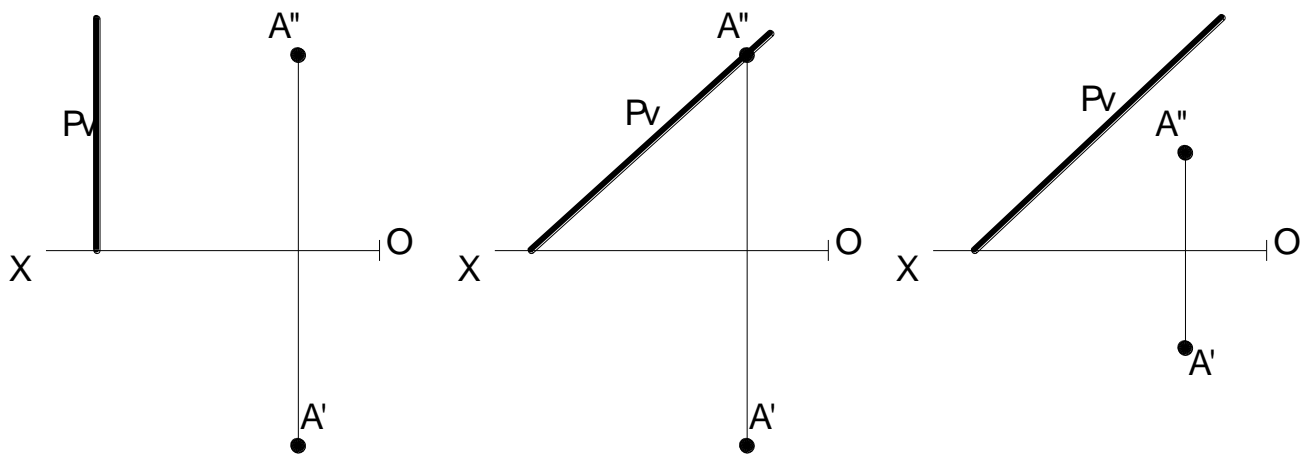
2. Tekis to'rtburchak va oltiburchaklarning frontal proyeksiyalari yasalsin



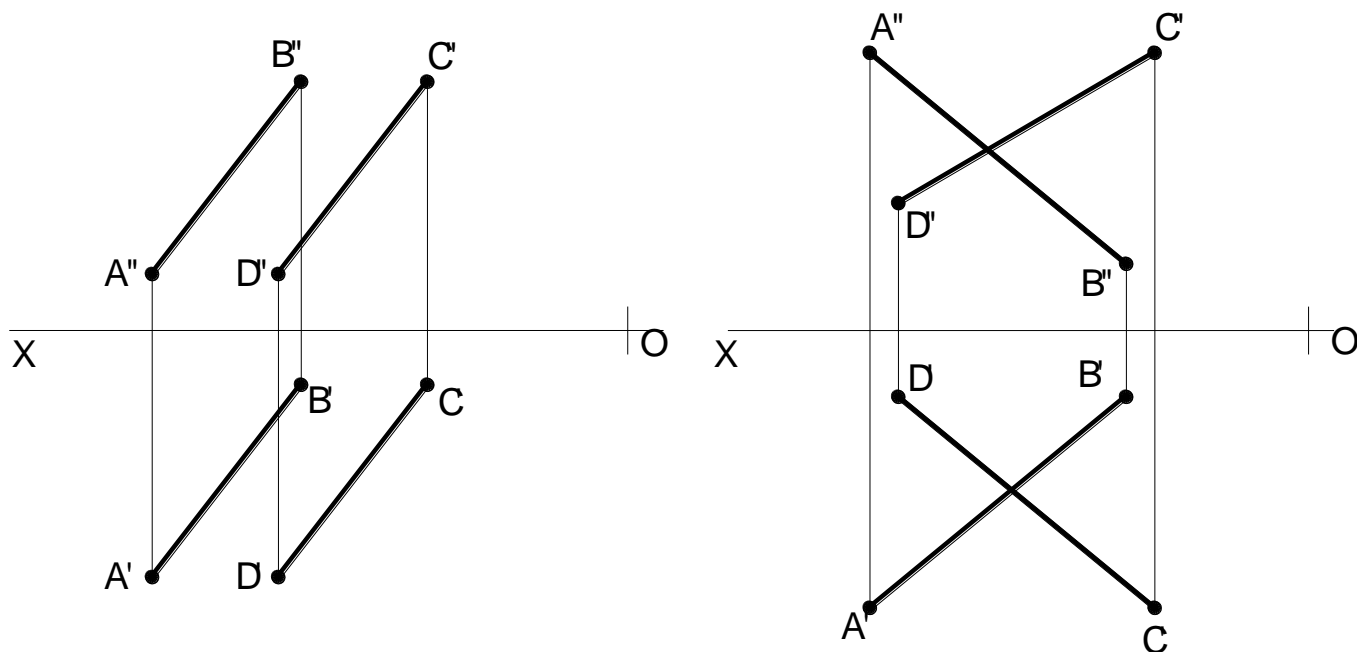
2. Uchi A nuqtada, BC kateti L to'g'ri chiziqda yotgan to'g'ri burchakli teng yonli uchburchak proyeksiyalari yasalsin



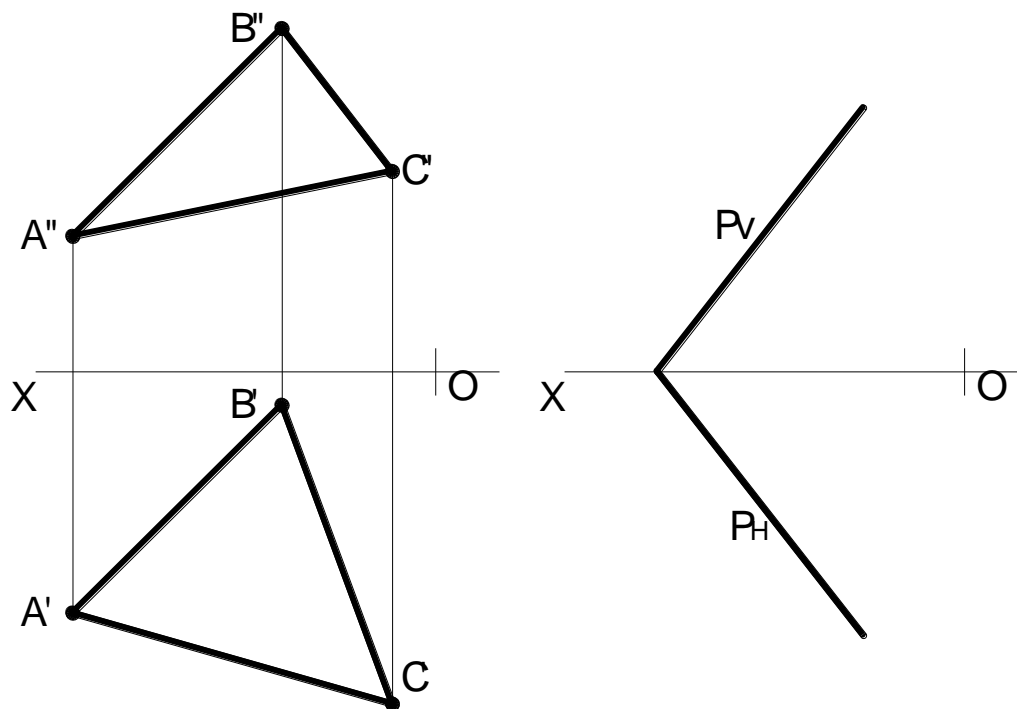
3. Tekislikka tegishli bo'lgan AB kesmaning yetishmagan proeksiyasi yasalsin



4. Berilgan tekisliklarning izlari yasalsin

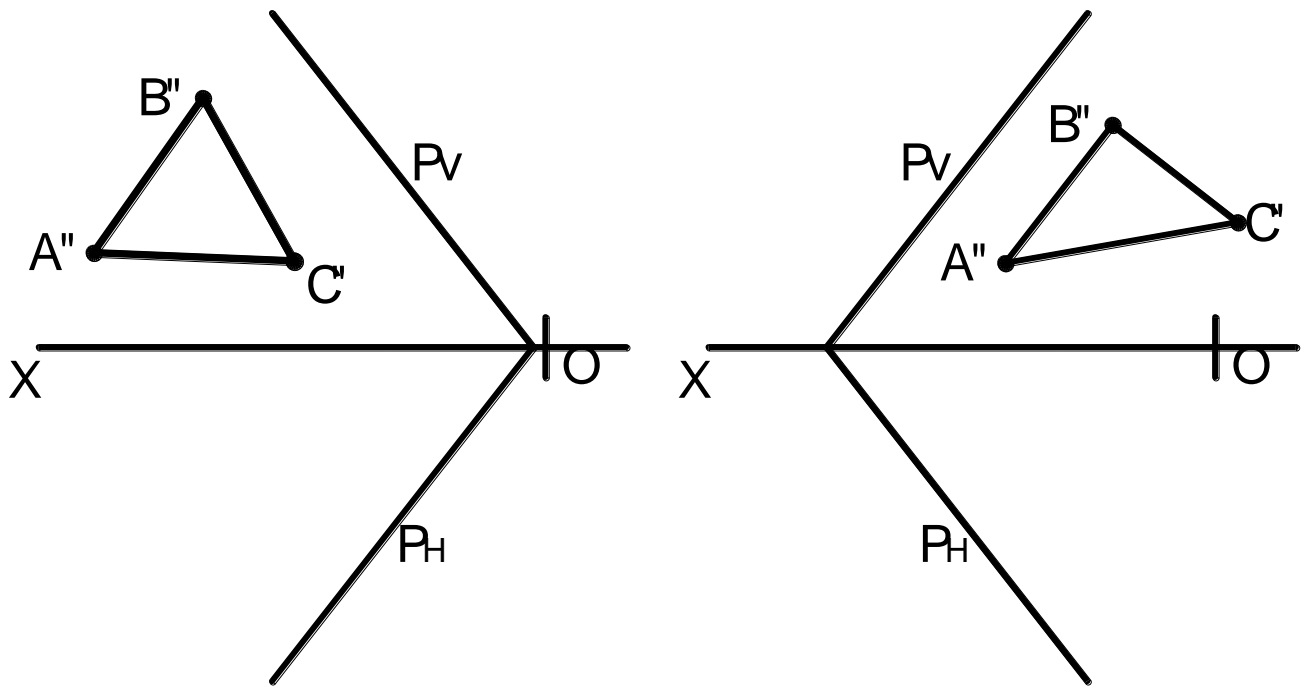


5. Berilgan tekisliklarning garizontali va frontali o'tkazilsin

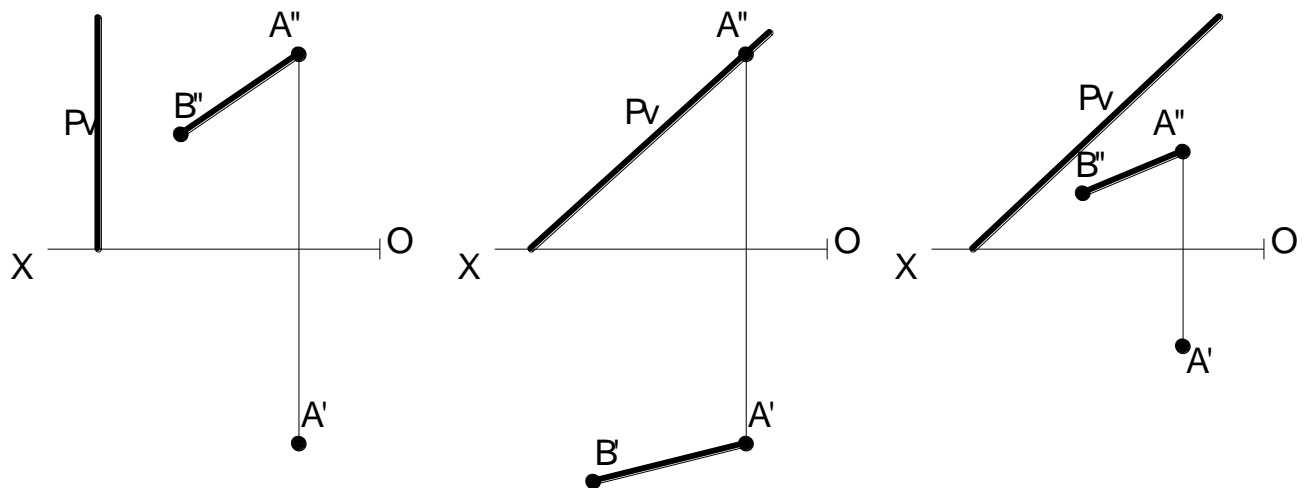




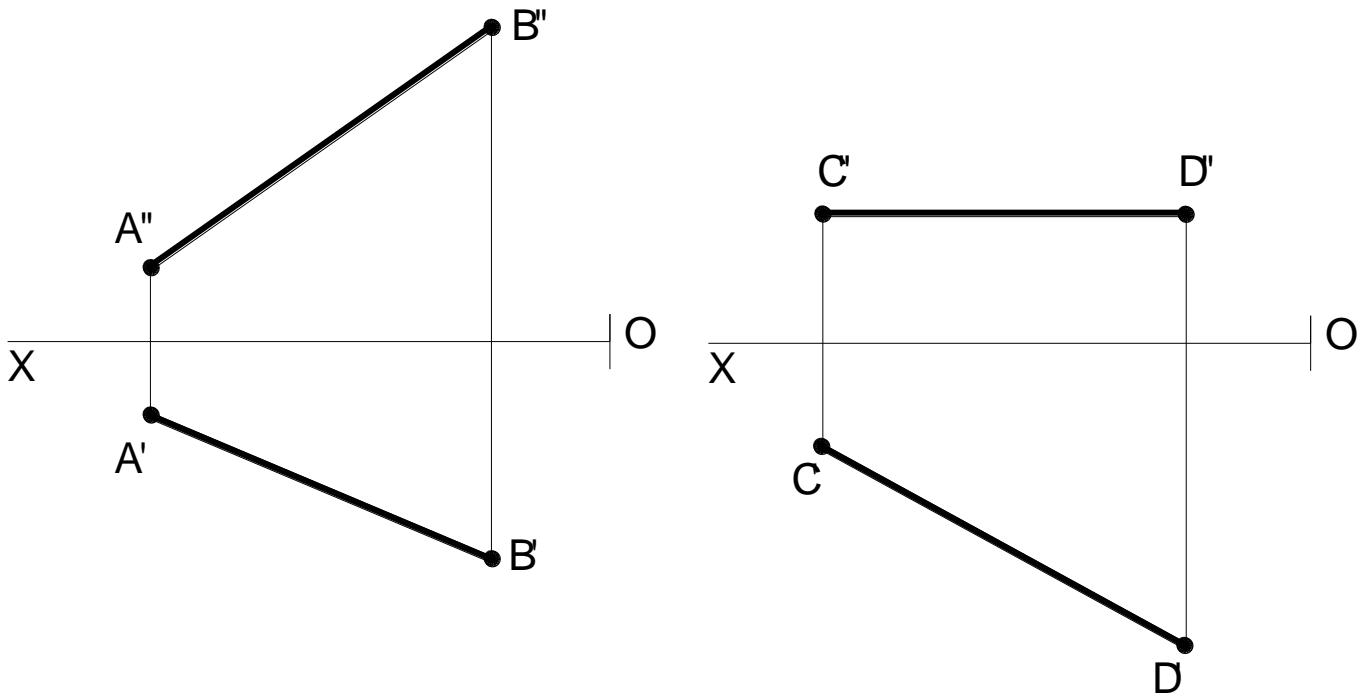
6. . Tekislikda yotgan ABC uchburchakning gorizontal proyeksiyasi yasalsin



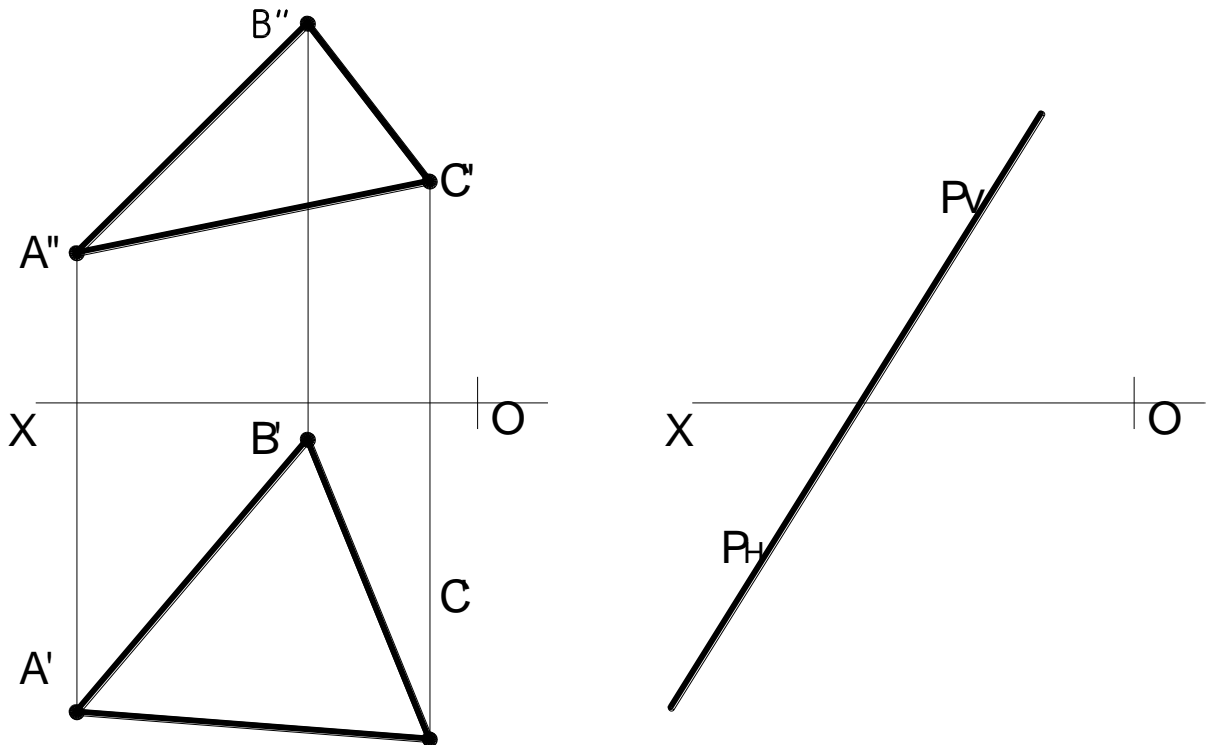
7. Tekislikka tegishli bo'lgan AB kesmaning yetishmagan proyeksiyasi yasalsin



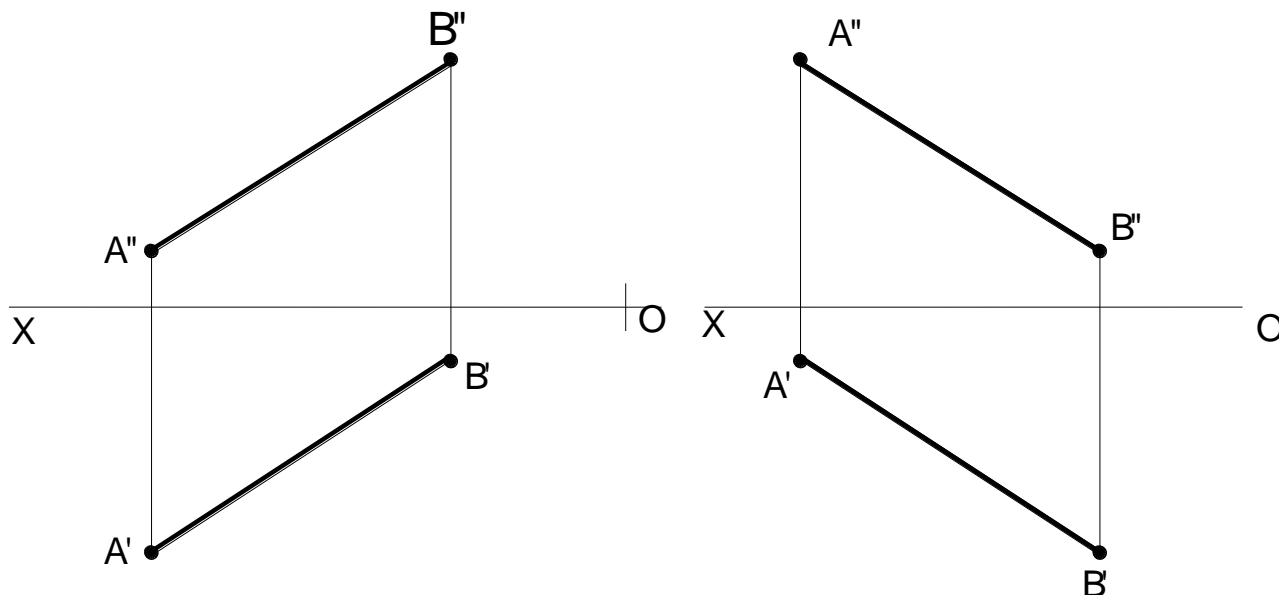
8. AB kesma orqali frontal proyeksiyalovchi tekislik, CD kesma orqali esa biror umumiy xolatdagi tekislik o'tkazilsin



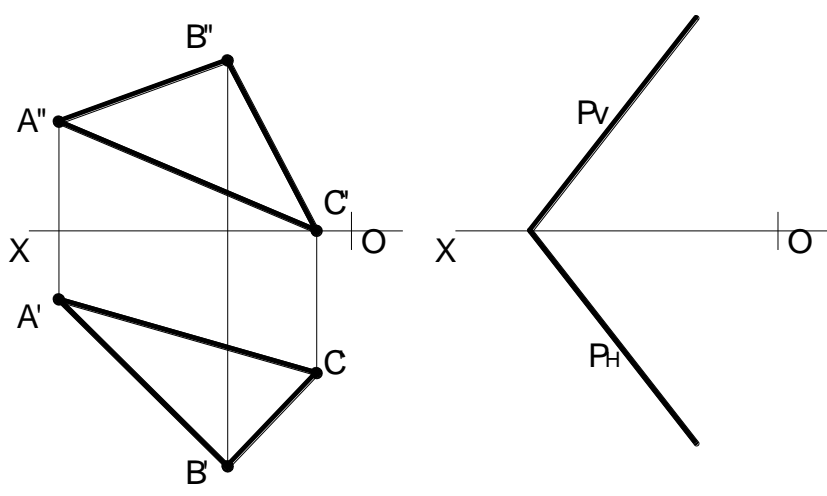
9. Berilgan tekislikning eng katta og'ish chizigi yordamida H tekislikka nisbatan og'ish burchagi aniqlansin



11. AB kesma tekislikning eng katta og'ish chizig'i bo'lsa, uning bosh chizilari o'tkazilsin



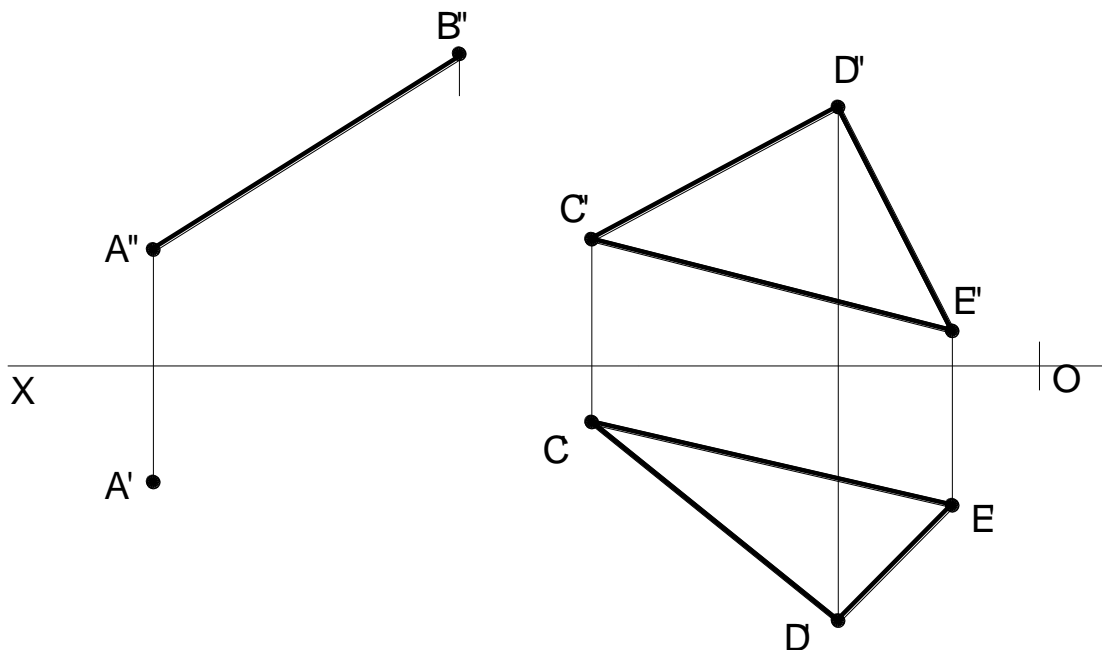
12. Berilgan tekisliklarni H va V ga nisbatan og'ich burchaklari aniqlansin



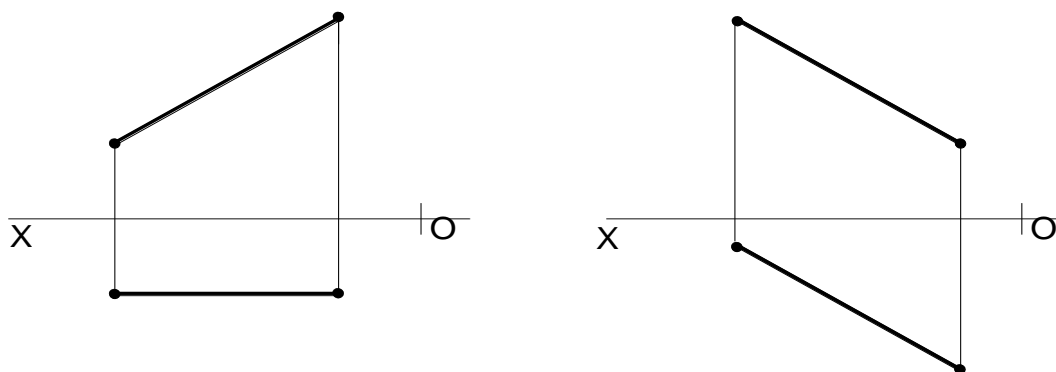
1. *Ikki tekislikning o'zaro holati.*
2. *Tekislikka parallel tekislik o'tqazish.*
3. *Ikki tekislikning o'zaro kesishuvi.*

*Masalalar:*

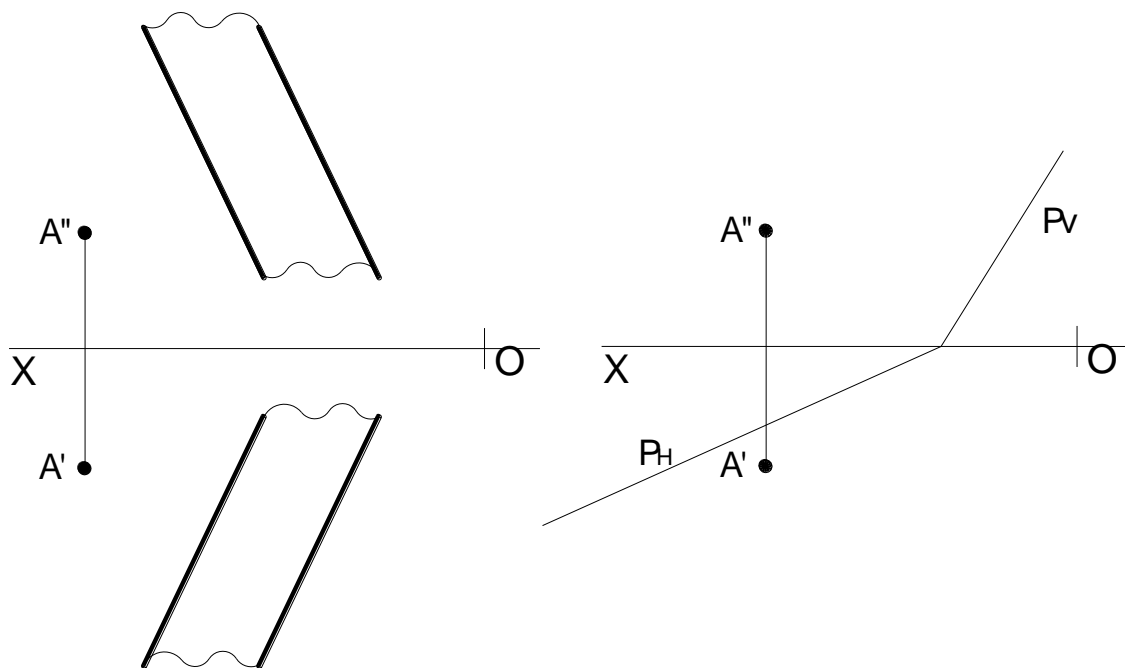
1. CDE uchburchak tekisligiga parallel bo'lgan AB kesmaning gorizontaal proyeksiyasi to'liqligicha yasalsin



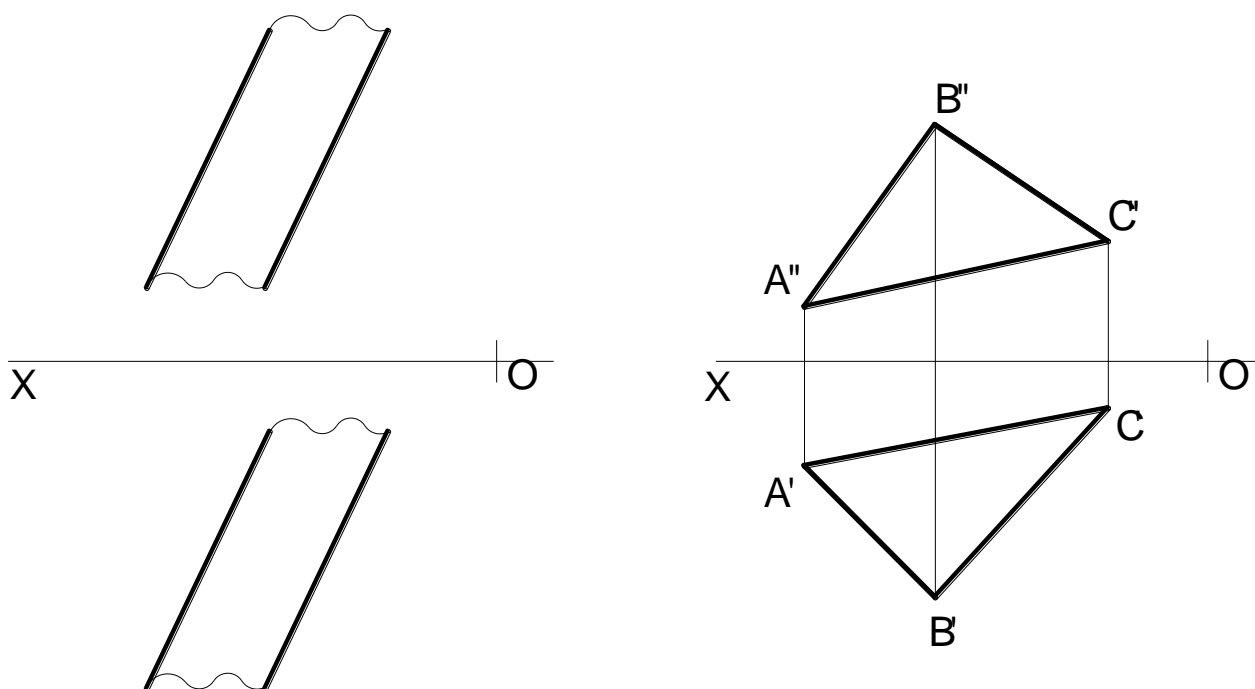
2. M to'g'ri chiziqning A nuqtasidan L to'g'ri chiziqqa parallel bo'lgan tekislik o'tkazilsin



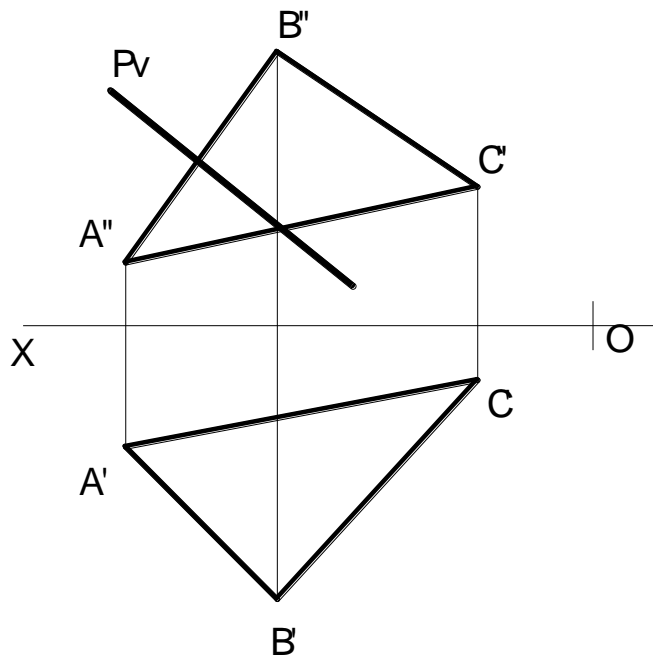
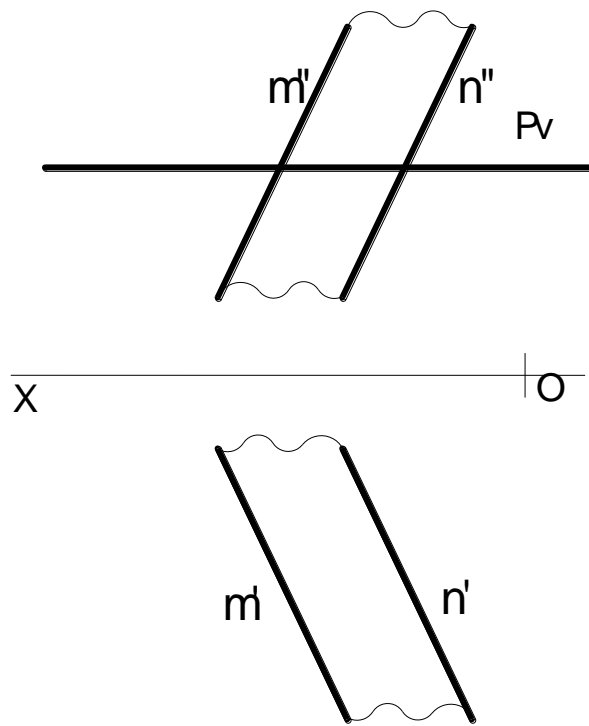
3. A nuqtadan berilgan tekislikka parallel bo'lgan tekislik o'tkazilsin



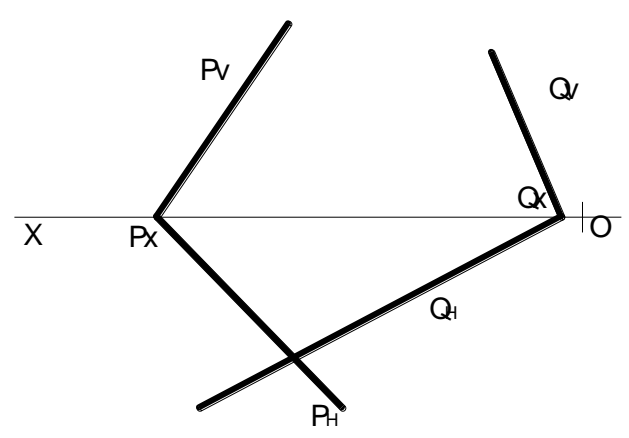
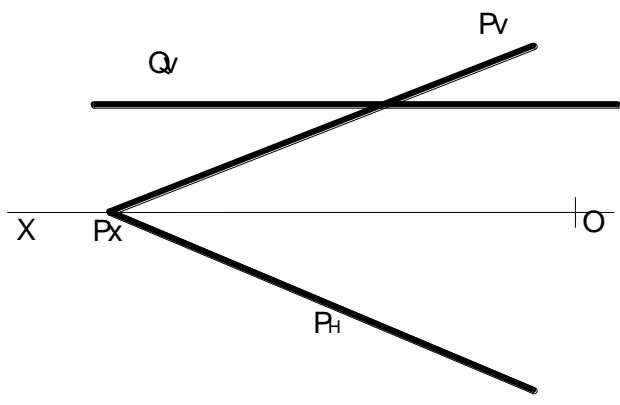
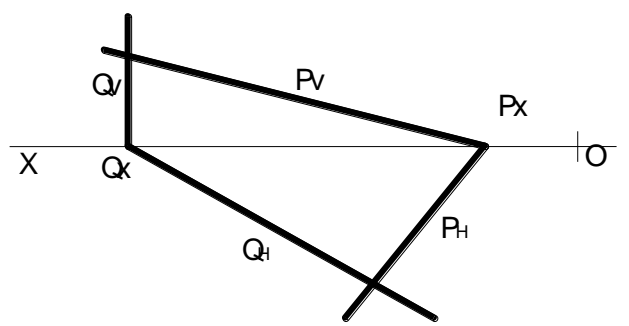
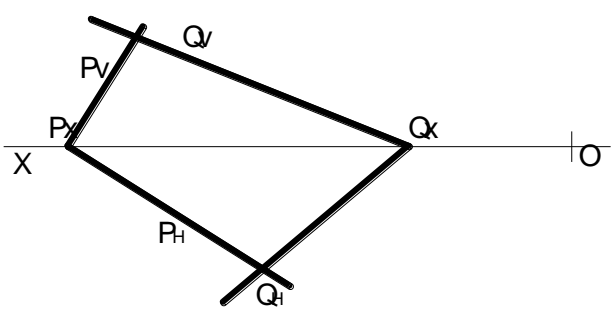
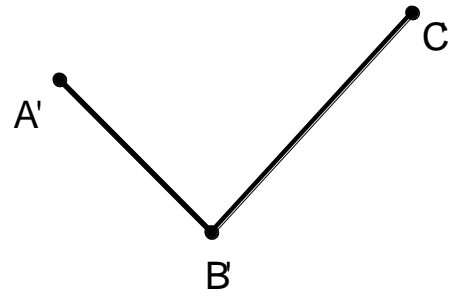
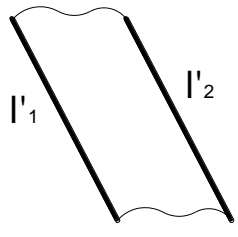
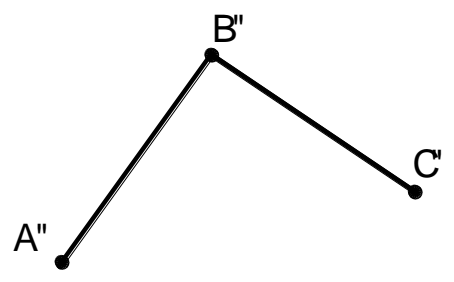
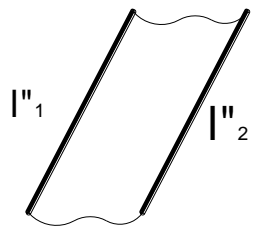
4. Berilgan tekisliklarning o'zaro parallelligi aniqlansin



5. Berilgan tekisliklarni kesishish chizig'ining proyeksiyalari yasalsin.



6. Berilgan tekisliklarni kesishish chizig'ining proyeksiyalari yasalsin.



## **Adabiyot**

- 1. Xorunov R., Akbarov A. Chizma geometriyadan masalalar va ularni yechish usullari. Oliy o'quv yurt. talabalari uchun darslik. 2-nashri. –T: Oqituvchi, 1995. – 144 b.**
- 2. Четверухин Н. Ф. и др. Начертательная геометрия. М., «Высшая школа», 1968.**
- 3. Арустамов Х. А. Сборник задач по начертательной геометрии. М., «Машиностроение», 1965.**
- 4. Н. Н. Иванов и И. С. Храмова. Сборник упражнений по начертательной геометрии. РОСВУЗИЗДАТ 1963.**



## Mundarija

Nuqta, to'g'ri chiziq, tekislik.....	
Nuqtaning ortogonal proeksiyasi va aksonometriyasi.....	
To'g'ri chiziqning proeksiyasi.....	
Xususiy va umumiy xolatdagi to'g'ri chiziq.....	
Kesmaning haqiqiy uzunligini va uning proeksiyalar tekisliklariga nisbatan ogish burchagini aniqlash.....	
To'g'ri chiziqning izini yasash.....	
Ikki to'g'ri chiziqning o'zaro holati: o'zaro parallel va kesishuvchi chiziqlar.....	