

O‘ZBEKISTON RESPUBLIKASI OLIY VA O‘RTA MAXSUS
TA‘LIM VAZIRLIGI
O‘RTA MAXSUS, KASB-HUNAR TA‘LIMI MARKAZI

E.I. RO‘ZIYEV, R.A. LATIPOV

CHIZMACHILIK

(TOPSHIRIQLAR TO‘PLAMI)

Kasb-hunar kollejlari uchun o‘quv qo‘llanma

*Oliy va o'rta maxsus, kasb-hunar ta'limi ilmiy-metodik
birlashmalari faoliyatini muvofiqlashtiruvchi Kengash
tomonidan nashrga tavsiya etilgan.*

O'quv qo'llanmada kasb-hunar kollejlari o'quvchilari uchun chizmachilik fani bo'yicha grafik topshiriqlar variantlari keltirilgan. Topshiriqlar chizmachilik fanining asosiy mavzulari bo'yicha tuzilgan bo'lib, ta'lim mazmunining majburiy minimumiga to'la mos keladi.

Ushbu qo'llanmada chizmachilik fanining asosiy vazifalaridan bo'lgan — texnika ta'limi yo'nalishini kuchaytirish, grafik tasvirlarning rivojlanishi va zamonaviy grafikada milliylik komponentlari bilan tanishtirish maqsadida ilk bora o'quvchilarning konstruksiyalash va ijodkorlik qobiliyatlarini rivojlantirishga yo'naltirilgan topshiriqlar variantlari alohida bo'limlar sifatida kiritildi. Bu bo'limlar materiallaridan fan o'qituvchilari chizmachilikdan olimpiada topshiriqlarini tuzishda, shuningdek, fakultativ va to'g'arak mashg'ulotlarida ham samarali foydalanishlari mumkin.

Qo'llanmadagi topshiriqlar variantlari chizmachilik fanining asosiy mavzulari bo'yicha yaratilgan bo'lib, har bir mavzuga tegishli topshiriqlar, asosan, 12 variantda tuzilgan. Topshiriqlar chizmachilikdan kasb-hunar kollejlariidagi namunaviy o'quv dasturi hamda amalda qo'llanilayotgan darsliklarga to'la mos keladi. Amaliy va grafik ishlarning joylashish ketma-ketligi ham dastur va darslikka mos keladi.

*Pedagogika fanlari doktori, professor E.I.Ro'ziyevning
umumiy tahriri ostida*

Taqrizchilar: **Xodjabayev A.R.** — O'rta maxsus, kasb-hunar ta'limi tizimi kadrlari malakasini oshirish va ularni qayta tayyorlash institutining «Zamonaviy pedagogik, axborot texnologiyalarini joriy etish va masofaviy o'qitishni tashkil etish» bo'limi boshlig'i, pedagogika fanlari doktori, professor;
Odilov P.O. — Nizomiy nomidagi Toshkent davlat pedagogika universiteti «Chizmachilik va uni o'qitish metodikasi» kafedrası dotsenti, texnika fanlari nomzodi.

KIRISH

Chizmachilik fani o'quvchilarning politexnik ta'limida kuchli vosita hisoblanadi. Chizmalarni o'z qo'li bilan yuqori sifatda bajarishga hamma o'quvchini o'rgatish mumkin, bu ularda go'zallik tuyg'ularini uyg'otib, o'z ishidan qoniqish hisini hosil qiladi. O'z qo'li bilan sifatli chizmalar bajarish o'quvchilarda ozodalik, mehnat-sevarlik, intizomlilik va tartiblilik xususiyatlarini rivojlantiradi.

Grafikaning hayotning hamma sohalarida turli ko'rinishlarda keng qo'llanilayotganiga juda ko'plab misollarni keltirish mumkin. Demak, har qanday inson qaysi kasb egasi bo'lishidan qat'i nazar ma'lum bir grafik bilimlarni o'rganib, ularni amalda qo'llay olish ko'nikmalarini egallagan bo'lishi kerak. Kasbi bevosita muhandislik yoki badiiy grafika faoliyati bilan bog'liq bo'lmagan har bir kishi-ning grafik savodxonligini texnik chizmachilikning amaliy foydali bo'lgan mavzulari: «Ko'rinishlar, qirqimlar, kesimlar», «Eskizlar», «Yig'ish chizmalari», «Yoyilmalarni qurish», «Aksonometrik proyeksiya va texnik rasm» mavzularidan turmushda foydalana olishini belgilaydi.

Kishining grafik madaniyati uning umumiy grafik savodxonligi, «Perspektiva» bo'limi va badiiy grafika (rasm solish) bilan tanishligi, kompyuter grafikasi asoslarini bilishi hamda grafika tarixining umumiy masalalari va uning hozirgi ahvoli haqida tushunchalarga egaligi bilan baholanadi. Grafik savodxonlik kishilarda obrazli va mantiqiy fikrlash qobiliyatlarini rivojlantiradi.

Jamiyat a'zolarining grafik madaniyati darajasi jamiyatning texnik rivojlanganlik darajasiga bog'liqligi aniqlangan. Shuning uchun ham O'zbekiston hududida maktablarda ta'lim tizimi shakllana boshlagan davrdanoq o'quvchilarga chizmachilik asoslari o'rgatila boshlangan. O'zbekiston grafik madaniyati tarixiga nazar tashlaydigan bo'lsak, tarixiy arxitektura obidalari, xalq amaliy san'ati va hunarmandchiligi namunalariidagi tasvirlar bu yerda grafik madaniyat qadimdan yuqori darajada rivojlanganligini isbotlaydi. So'nggi mingyillikdagi geometrik va o'simliksimon naqshlarning yetakchi o'ringa chiqishida islom dinining taqiqlari va chegaralashlari sabab bo'lgan bo'lsa ham, ularda xalq badiiy ijodiyoti namunalari, hunarmandchilik, qurilish ishlari va amaliy fanlarning yuksak yutuqlari namoyon bo'lgan.

Chizmachilikdan mustaqil grafik topshiriqlar va metodik ko'rsatmalar yangi dastur asosida tayyorlandi.

Ushbu qo'llanma kasb-hunar kollejlari o'quvchilari va o'qituvchilar uchun mo'ljallangan bo'lib, 26 turdagi mustaqil grafik topshiriqlardan iborat. Har bir grafik topshiriq 8–12 ta variantda tuzilgan. Bu grafik topshiriqlar o'qituvchiga o'quvchilarni fan olimpiadalariga tayyorlash va dars davomida foydalanishi uchun yordam tariqasida tayyorlandi. Har bir darsda grafik topshiriqlardan imkoni boricha ko'proq foydalanish tavsiya etiladi.

Qo'llanmada grafik topshiriqlarni bajarishga doir metodik ko'rsatmalar berildi.

O'qituvchining diqqat markazida hamisha o'quvchilarda amaliy grafik ish bajarish malakalarini shakllantirish asosiy vazifa ekanligi turishi kerak.

O'quvchilarning chizmachilikdan egallagan nazariy bilimlarini mustahkamlash maqsadida har bir o'quvchiga individual grafik topshiriqlar beriladi. O'qituvchi o'quvchilarning mustaqil ishiga alohida e'tibor berishi, ularga chizmalarni o'qish va bajarish kabi masalalarni mustaqil hal qilish malakalarini singdirmog'i lozim. Agar o'quvchi grafik topshiriqni bajarishda qiynalsa yoki uni tushunolmay qolsa, u holda unga oqilona yordam berish kerak.

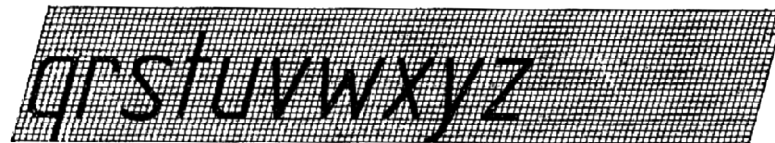
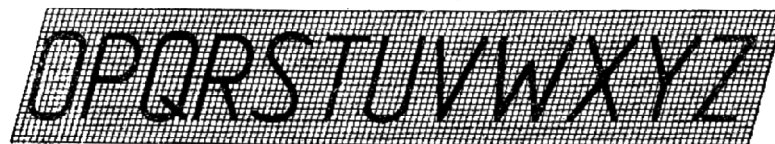
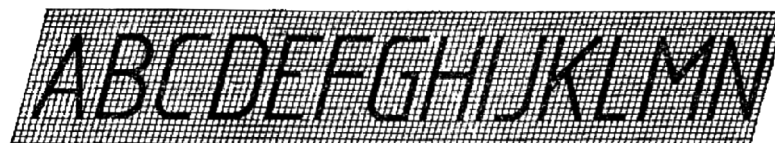
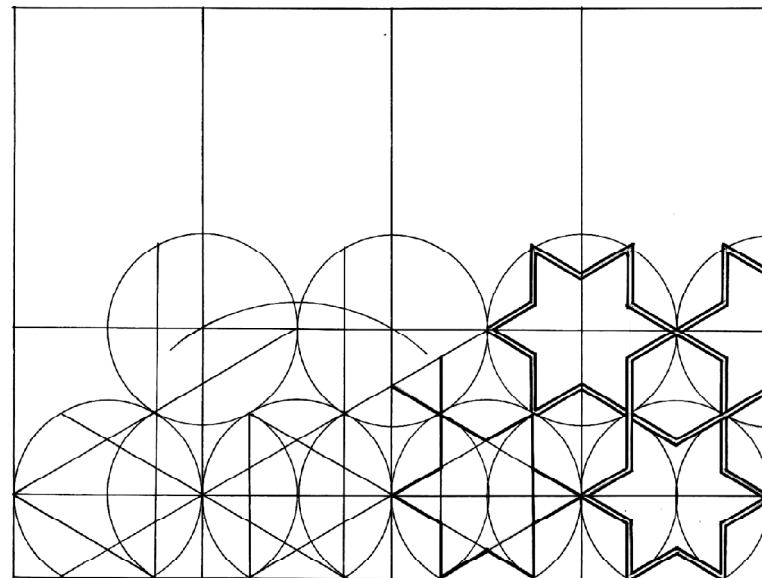
Har bir o'quvchining individual xususiyatlarini namoyon qilishga ko'maklashadigan mustaqil ishlarni to'g'ri tashkil qilish bevosita o'qituvchining mahoratiga bog'liq. Mustaqil ishlarda o'quvchilarning individual xususiyatlari yorqin namoyon bo'ladi, o'qish jarayonida yo'l qo'yilgan kamchiliklarni to'g'rilash imkoniyati ham katta.

Mustaqil ishlarni individuallashtirishda o'quvchi uchun uning qiziqishlarini hisobga olib topshiriq tanlash imkoniyatini yaratish katta ahamiyatga ega. Bunda topshiriq hajmi va mazmuni deyarli o'zgarmasa-da, o'quvchida taklif qilingan topshiriqni bajarishga qiziqishi va istakning keskin ortishiga erishiladi.

Yaxshi grafik tayyorgarlikka ega bo'lgan, chizma va shakllarni savodli bajara oladigan har qanday ishchi ham, mutaxassis ham hamma joyda qadrlanadi. Sizga o'z grafik savodxonligingizni takomillashtirishda muvaffaqiyatlar tilaymiz!

Mualliflar.

I QISM. CHIZMALARNI GRAFIK TEXT QILISH



1–2-topshiriqlarning qisqacha bayoni

1-topshiriq. Chiziq turlari

O'zDSt 2.301-97 da belgilangan chiziqlarning turlariga rioya qilgan holda A4 formatli chizmachilik qog'ozida ko'rsatilgan variant chizmasini ko'chirib chizing.

Chizma bajarishda chiziqlar orasidagi masofalar hamda shakllarning o'lchamlari ixtiyoriy tanlanadi. Chizma bichimi hoshiyasi chizilib, asosiy yozuv to'ldiriladi. Chizmachilik qog'ozining taxminan 2/3 qismi chizma bilan band bo'lishiga harakat qiling.

Bu topshiriqni bajarishda asosiy e'tiborni turli xil chiziqlarni to'g'ri chizishga qaratish kerak. O'quvchilar chiziq turlarining o'zaro vaziyatini saqlagan holda, ular orasidagi masofalarni o'zgartirishlari mumkin. Chizma bajarishga kirishishdan oldin quyidagi savollarga javob berish so'raladi. Bu orqali nazariy ma'lumotlar takrorlanib, ishni bajarish osonlashadi.

1. Tasvirda qanday chiziq turlari tasvirlangan?
2. Shtrix va shtrix-punktir chiziqlar shtrixlarining uzunligi qanday o'lchamda bo'ladi?
3. Aylana markazi qanday chiziqlarning kesishish markazida yotadi?

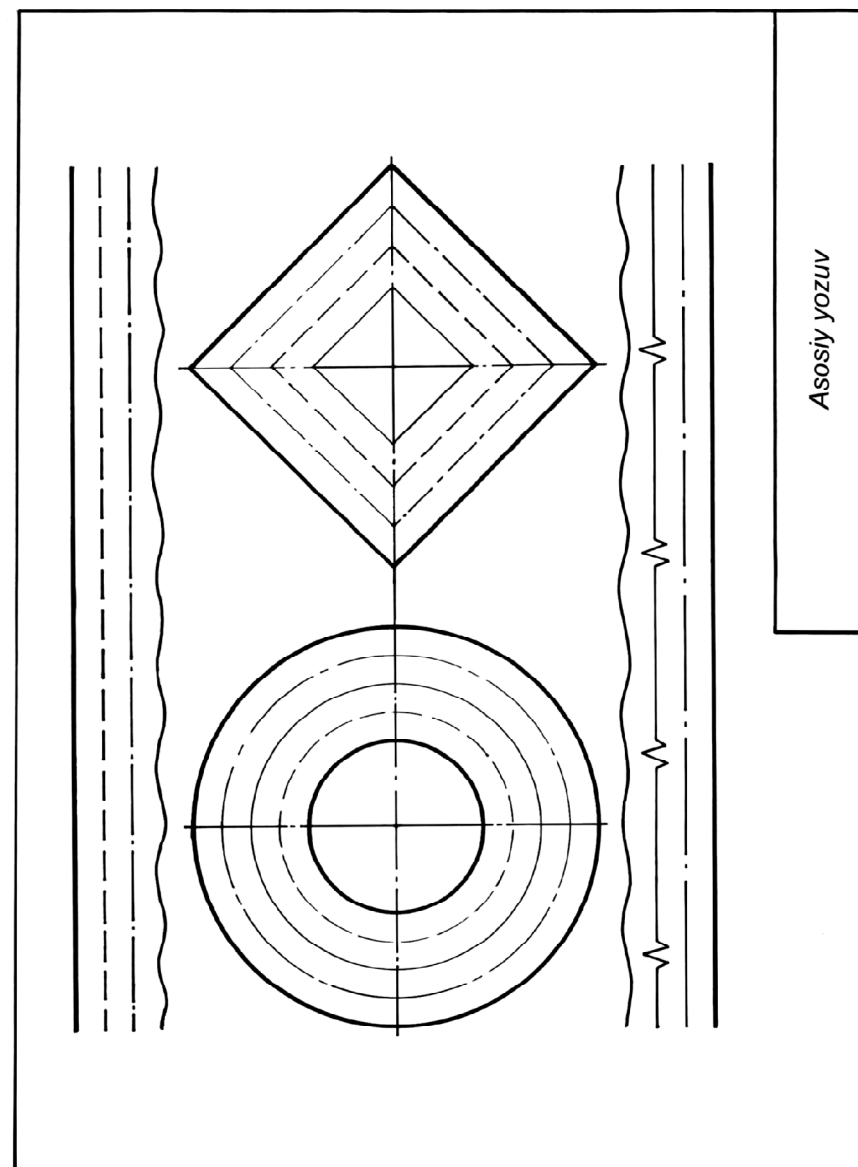
2-topshiriq. Chizma shriftlari va chizmalarga o'lcham qo'yish qoidalari

Topshiriq yassi detal chizmasi hamda bir nechta shrift yozuvlarini bajarishdan iborat. O'qituvchi ko'rsatmasi bo'yicha shrift yozuvlaridan faqat ikkitasini (№5 va №10 o'lchamdagilari) bajarish ham mumkin. Bu topshiriqni bajarishda chiqarish va o'lcham chiziqlarini to'g'ri o'tkazishga hamda o'lchamlarni to'g'ri, standart talablari bo'yicha qo'yishga asosiy e'tiborni qaratish zarur.

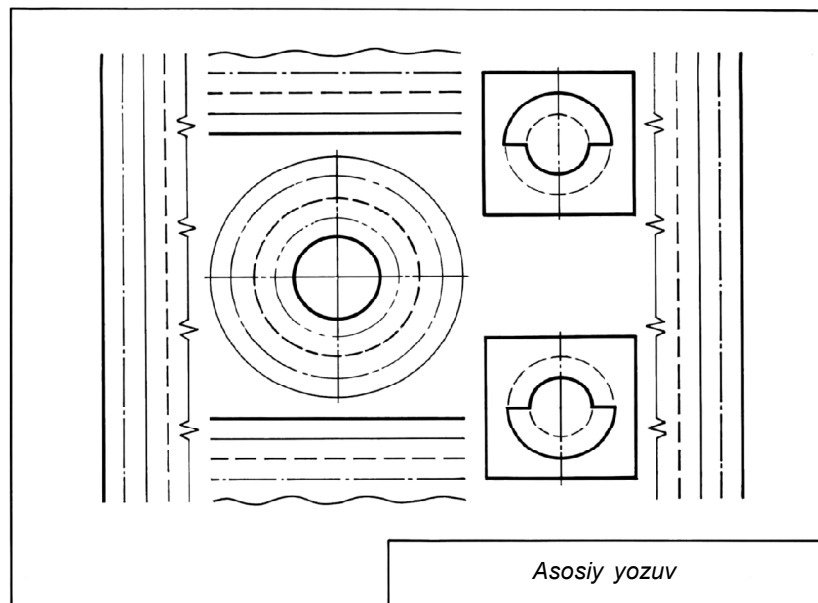
O'quvchilar chizmalarni taxt qilish qoidalarini puxta o'zlash-tirishlariga erishish maqsadida quyidagiga o'xshash savollar yordamida ularning nazariy bilimlarini tekshirish tavsiya qilinadi:

1. Chizmani bajarishda qanday chiziqlardan foydalanilgan? Ularning qalinliklari qanday?
2. Chizmada chiqarish va o'lcham chiziqlari qanday o'tkaziladi?
3. Chizmada diametr va radiuslarni ko'rsatishda o'lcham sonlarining oldiga qanday belgi va harflar qo'yiladi?

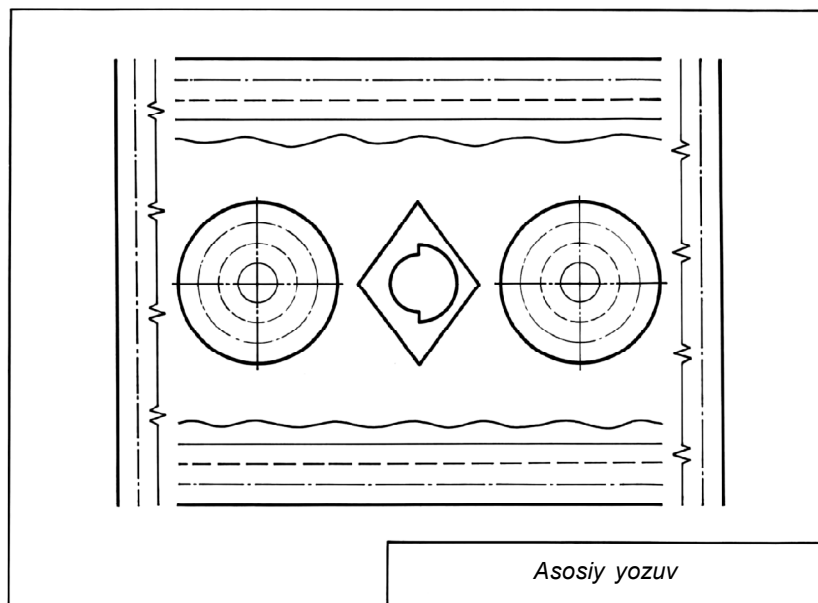
1-topshiriq – «Chiziq turlari»ni bajarish namunasi



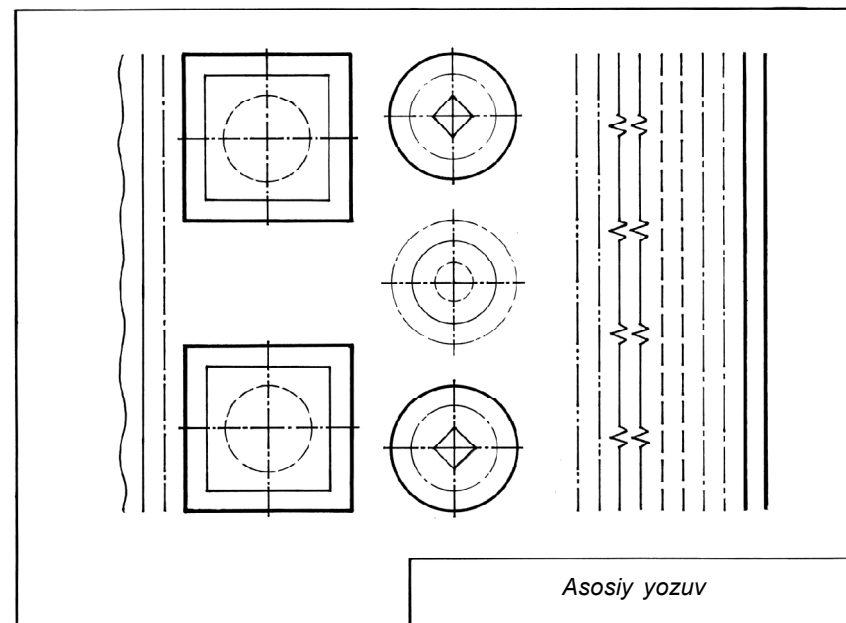
1-variant



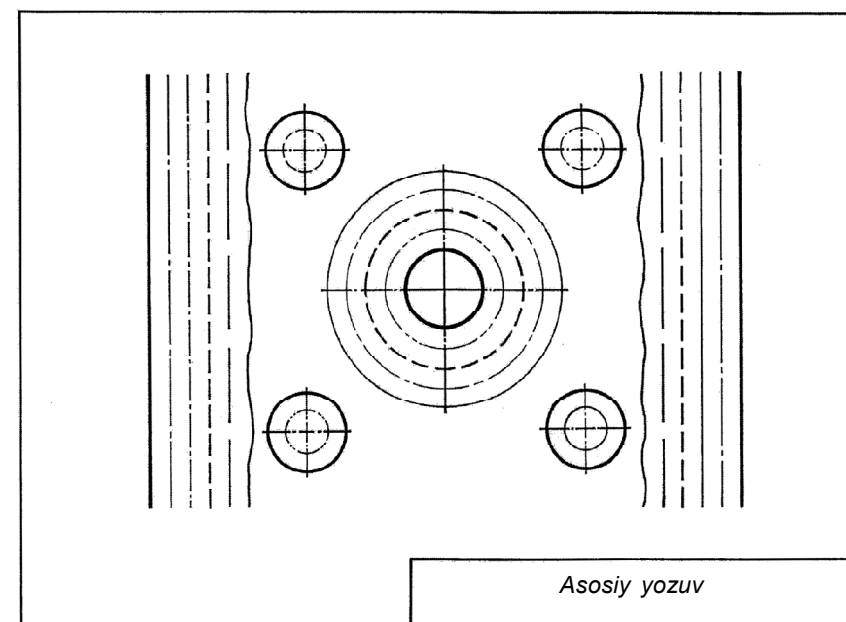
2-variant



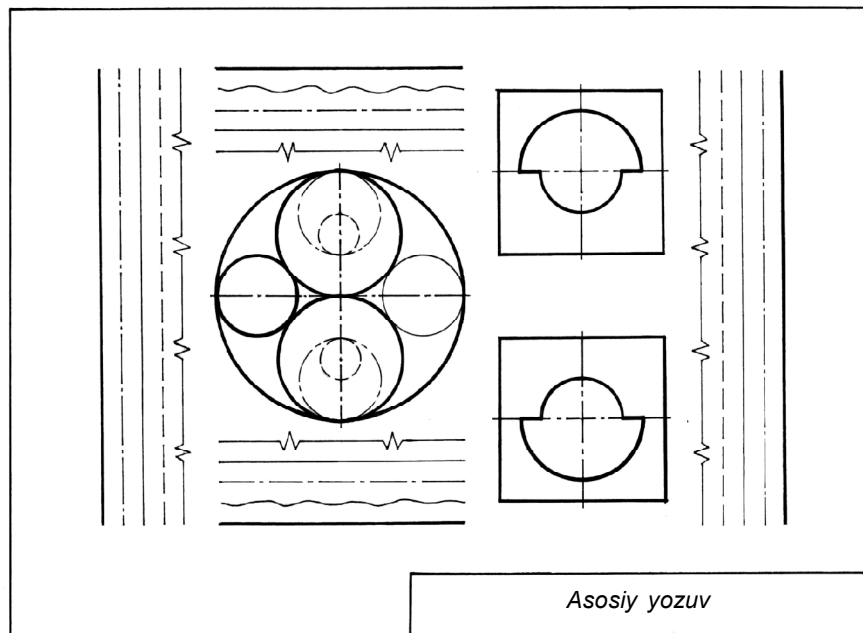
3-variant



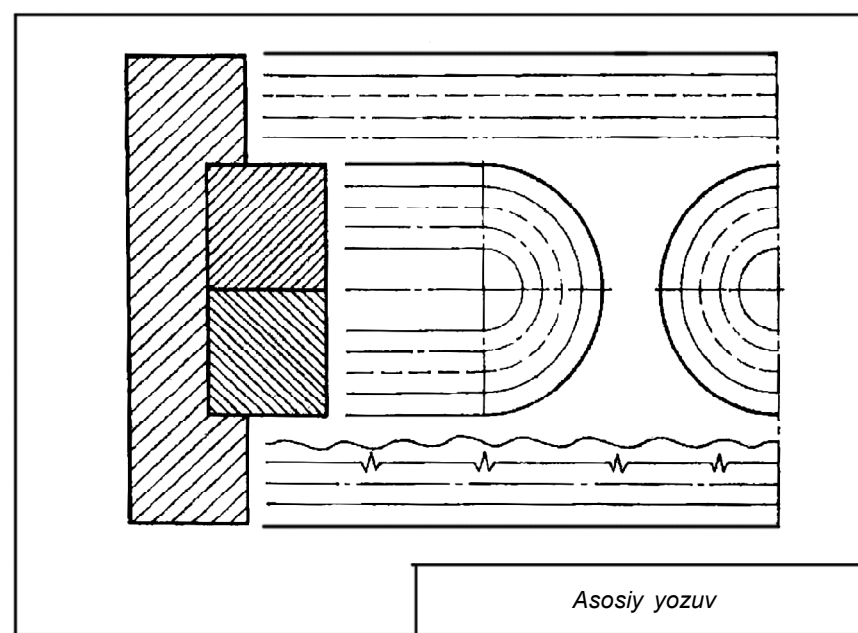
4-variant



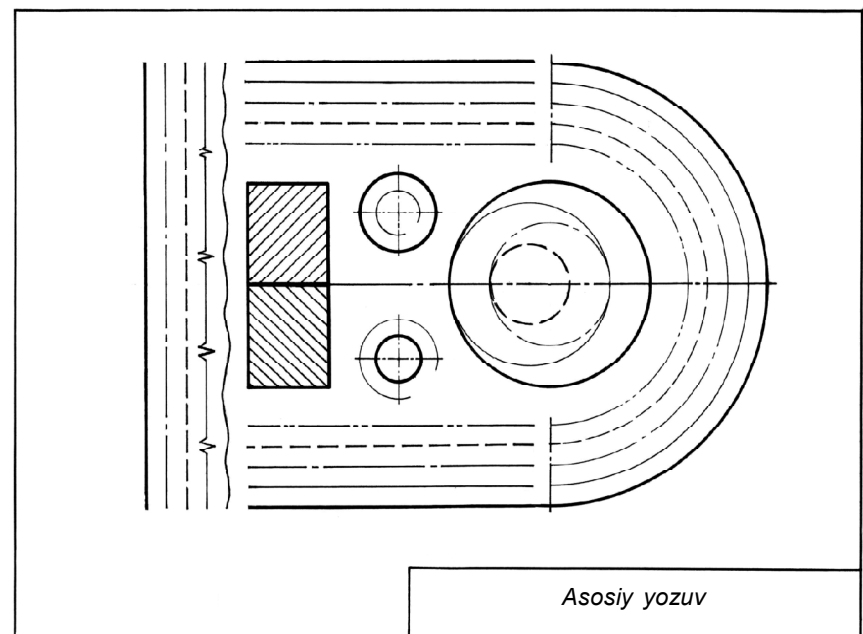
5-variant



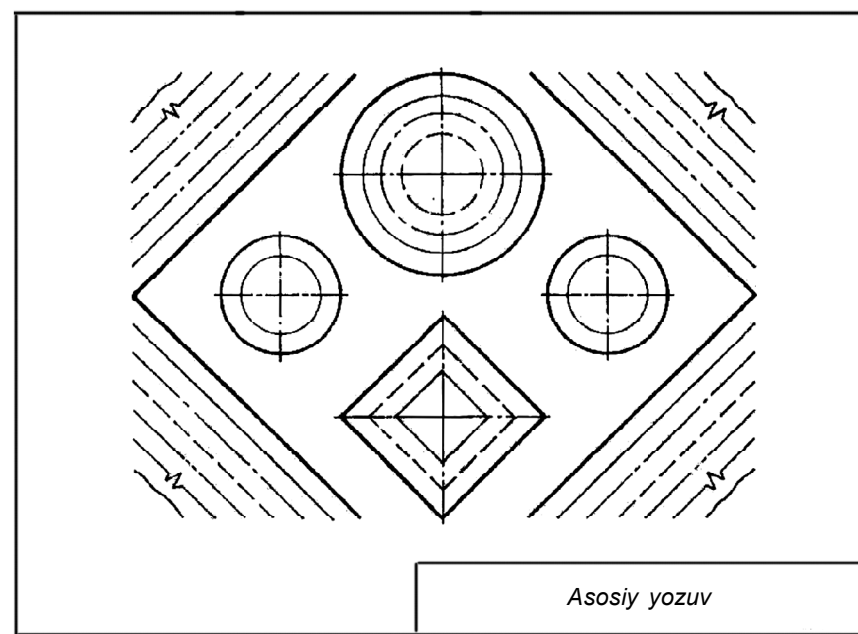
7-variant



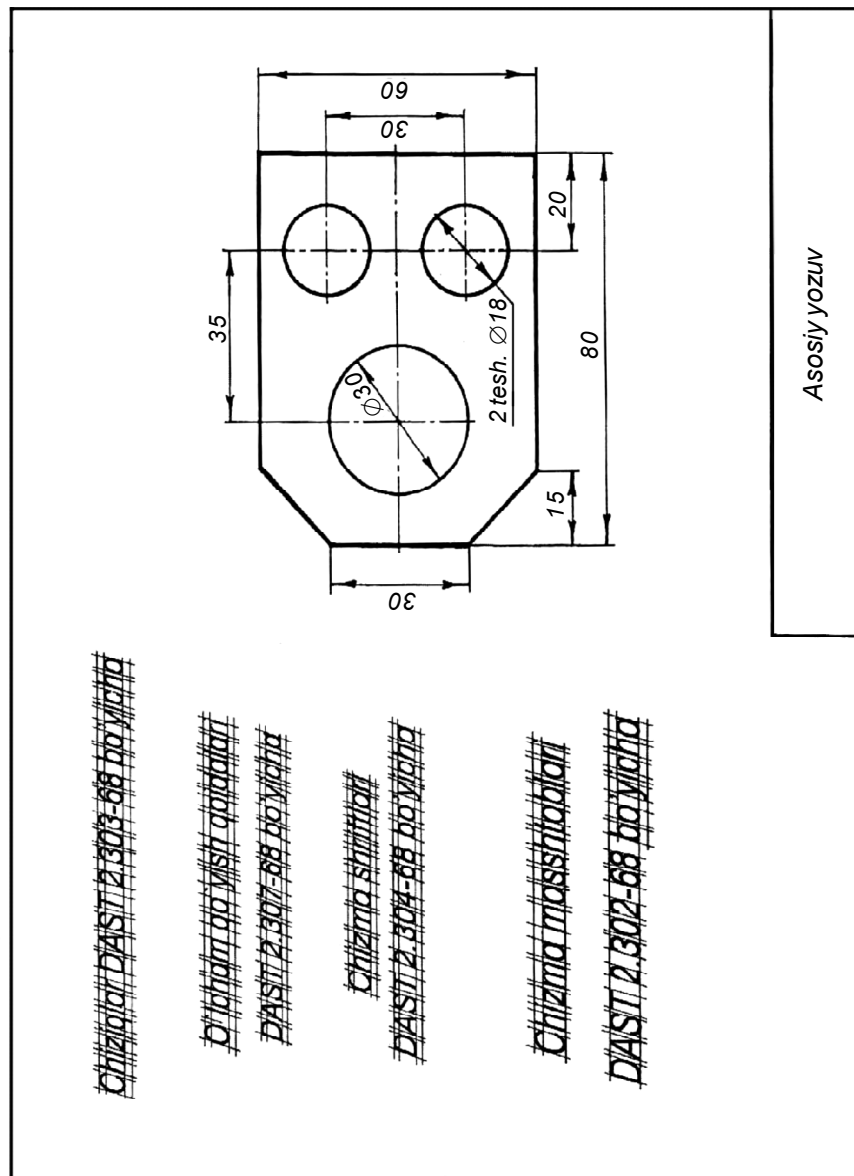
6-variant



8-variant

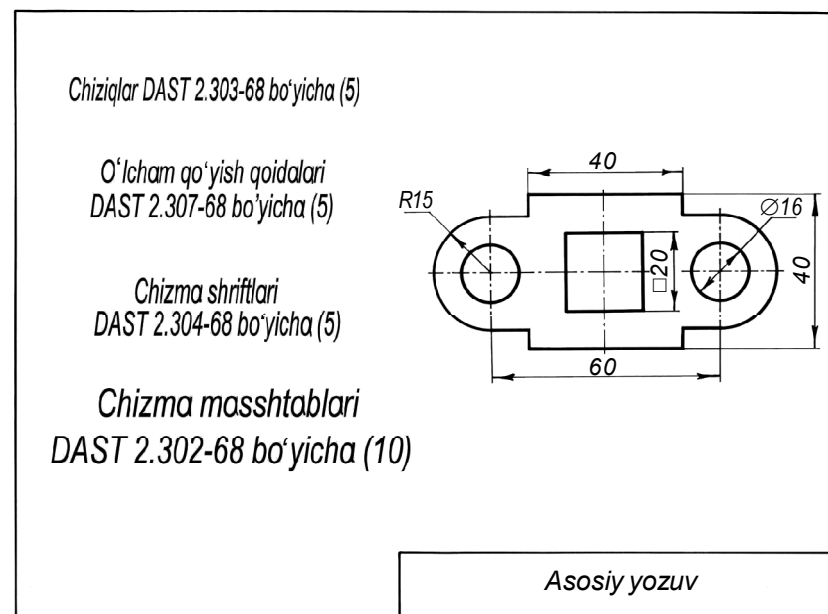


2-topshiriq — «Chizma shriftlari va chizmalarga o'lcham qo'yish qoidalari»ga namuna

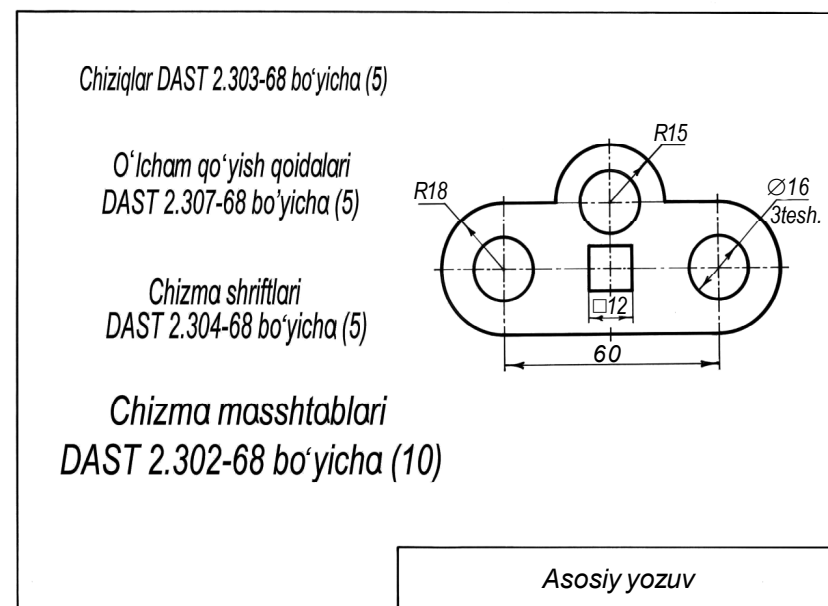


2-topshiriq variantlari

1-variant



2-variant



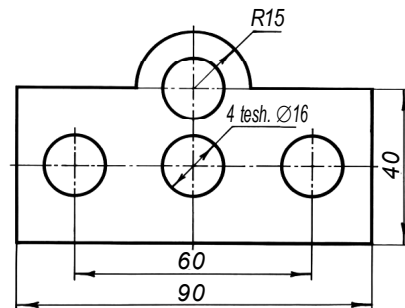
3-variant

Chiziqlar DAST 2.303-68 bo'yicha (5)

O'lcham qo'yish qoidalari
DAST 2.307-68 bo'yicha (5)

Chizma shriftlari
DAST 2.304-68 bo'yicha (5)

Chizma masshtablari
DAST 2.302-68 bo'yicha (10)



Asosiy yozuv

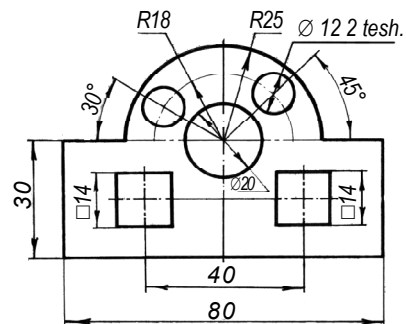
4-variant

Chiziqlar DAST 2.303-68 bo'yicha (5)

O'lcham qo'yish qoidalari
DAST 2.307-68 bo'yicha (5)

Chizma shriftlari
DAST 2.304-68 bo'yicha (5)

Chizma masshtablari
DAST 2.302-68 bo'yicha (10)



Asosiy yozuv

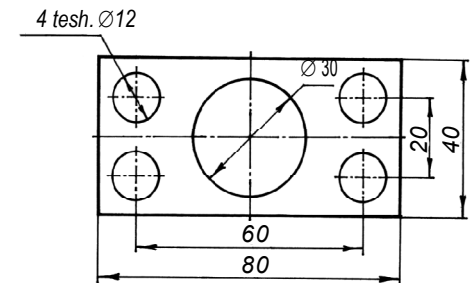
5-variant

Chiziqlar DAST 2.303-68 bo'yicha (5)

O'lcham qo'yish qoidalari
DAST 2.307-68 bo'yicha (5)

Chizma shriftlari
DAST 2.304-68 bo'yicha (5)

Chizma masshtablari
DAST 2.302-68 bo'yicha (10)



Asosiy yozuv

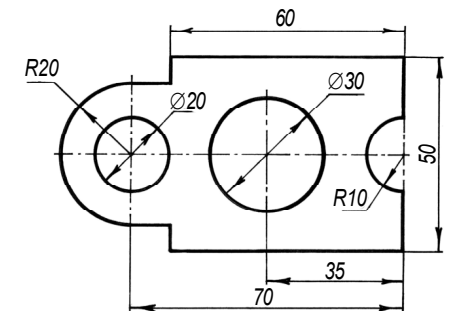
6-variant

Chiziqlar DAST 2.303-68 bo'yicha (5)

O'lcham qo'yish qoidalari
DAST 2.307-68 bo'yicha (5)

Chizma shriftlari
DAST 2.304-68 bo'yicha (5)

Chizma masshtablari
DAST 2.302-68 bo'yicha (10)



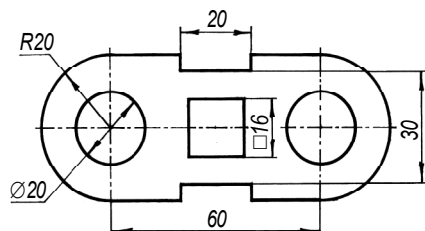
Asosiy yozuv

Chiziqlar DAST 2.303-68 bo'yicha (5)

O'lcham qo'yish qoidalari
DAST 2.307-68 bo'yicha (5)

Chizma shriftlari
DAST 2.304-68 bo'yicha (5)

Chizma masshtablari
DAST 2.302-68 bo'yicha (10)



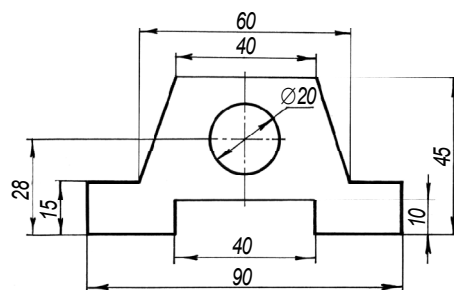
Asosiy yozuv

Chiziqlar DAST 2.303-68 bo'yicha (5)

O'lcham qo'yish qoidalari
DAST 2.307-68 bo'yicha (5)

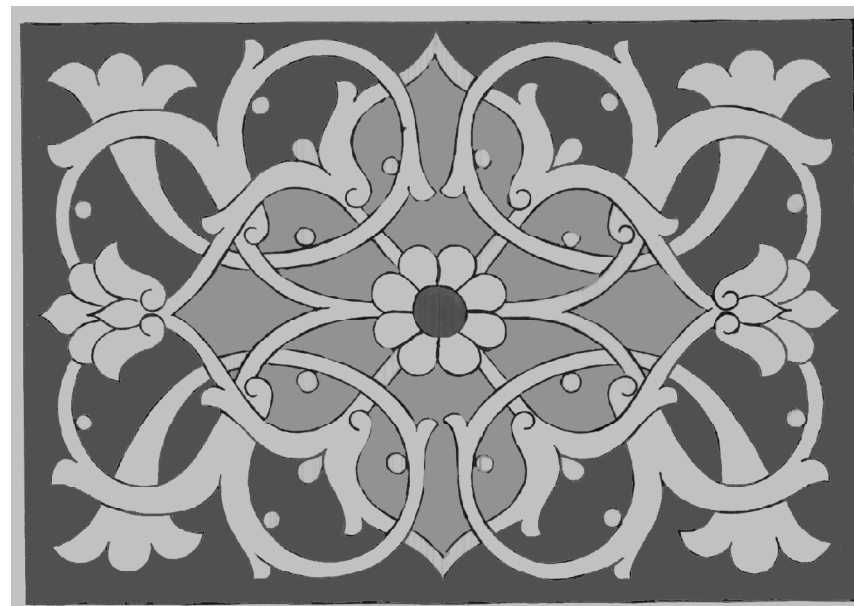
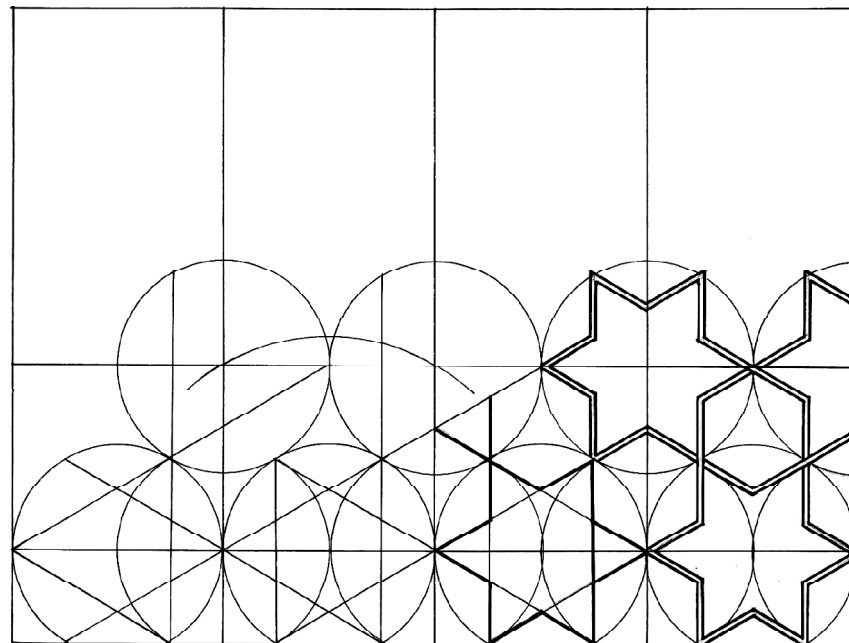
Chizma shriftlari
DAST 2.304-68 bo'yicha (5)

Chizma masshtablari
DAST 2.302-68 bo'yicha (10)



Asosiy yozuv

II QISM. GEOMETRIK CHIZMACHILIK



3–5-topshiriqlarning qisqacha bayoni

3-topshiriq. Geometrik yasashlar. Aylanani teng bo'laklarga bo'lish

Mashina va qurilmalarning ayrim detallari aylana bo'ylab tekis joylashgan elementlarga ega bo'ladi. Bunday detallarning chizmalarini bajarishda aylanani teng bo'laklarga bo'lish qoidalarini bilish zarur bo'ladi.

Ushbu topshiriq o'quvchilarni geometrik yasashlarni to'g'ri bajarishga o'rgatish bilan birgalikda, chizmalarni standart talablari bo'yicha bajarish ko'nikmalarini mustahkamlash va ularning estetik didlarini rivojlantirishga yo'naltirilgan.

Topshiriqni bajarishda o'quvchilarning aylanalarni teng bo'laklarga bo'lish qoidalarini o'zlashtirganliklari, chiziqli turlariga rioya qilishlari va standart yozuvlarini to'g'ri bajarishlariga alohida e'tibor qaratish kerak.

4-topshiriq. Tutashmalar

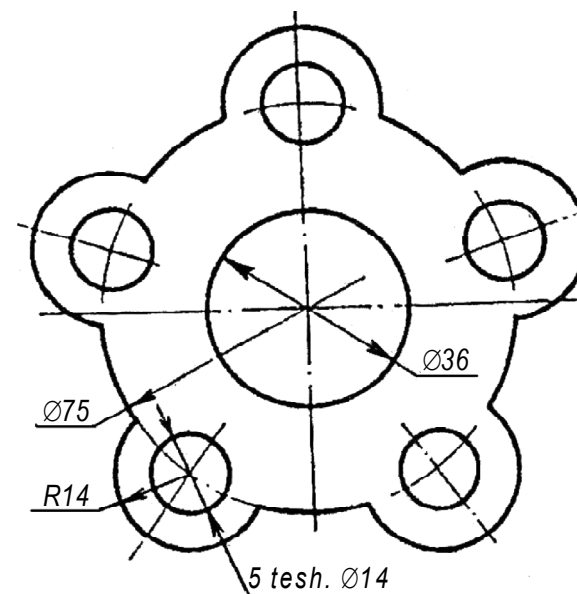
Topshiriq ikkita murakkablikdagi variantda tuzilgan bo'lib, birinchi turdagi topshiriqlar sodda shakldagi tutashmalardan iborat. Ikkinchi turdagi topshiriqlar turmushda uchraydigan uy-ro'zg'or buyumlari va shunga o'xshash mahsulotlar shakli bo'yicha tayyorlangan bo'lib, mavzuni yaxshi o'zlashtirgan o'quvchilarga berishda foydalanish mumkin. Shuningdek, ulardan o'quvchilar oliy ta'lim muassasalariga kirishda ijodiy imtihonlarga tayyorlanishlarida foydalanishlari mumkin.

5-topshiriq. Qiyalik va konusliklar

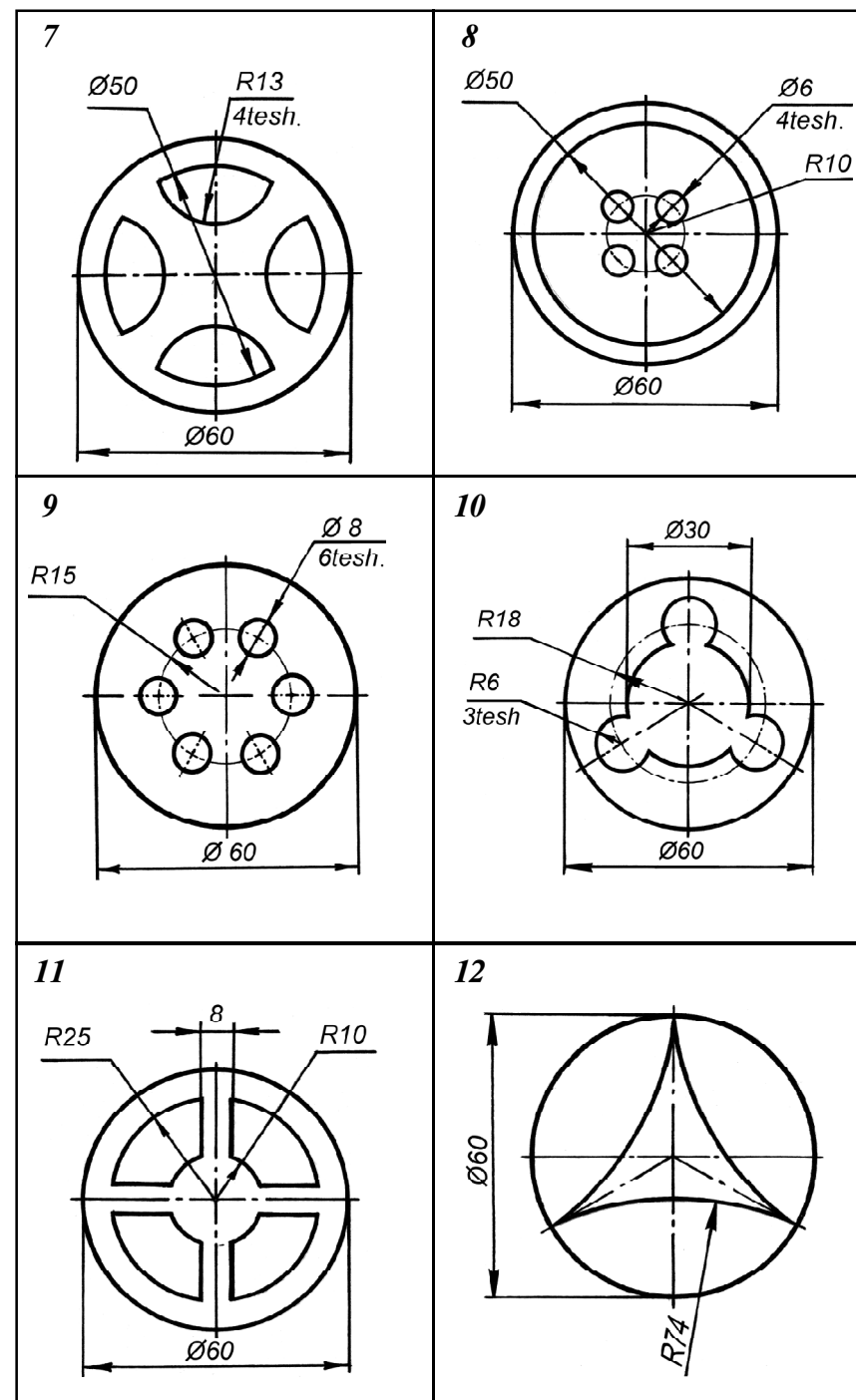
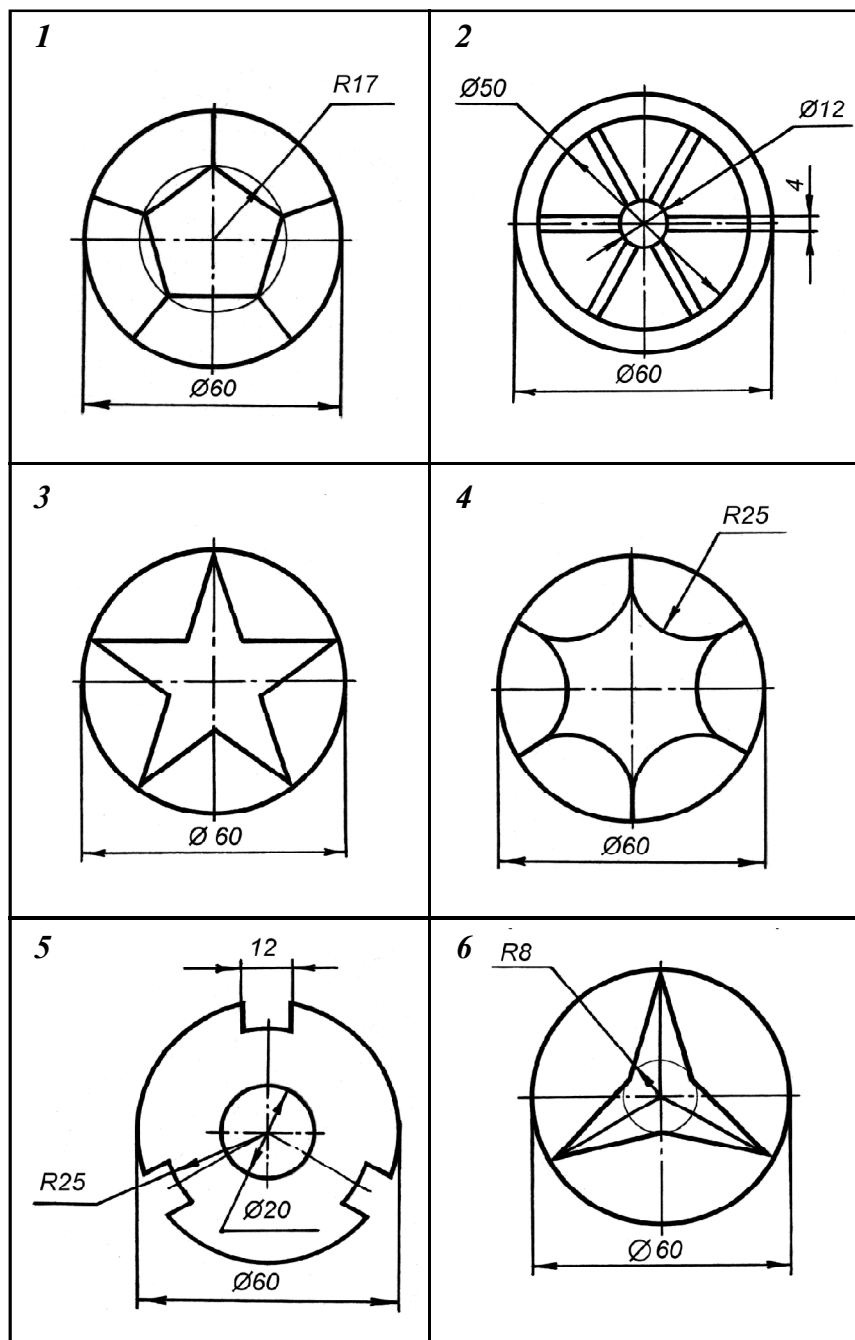
Bir to'g'ri chiziqli ikkinchisiga nisbatan og'ish kattaligiga qiyalik deyiladi (topshiriq namunasidagi 1-shakl). Qiyaliklar kasrlar yoki foizlar orqali ifodalanadi.

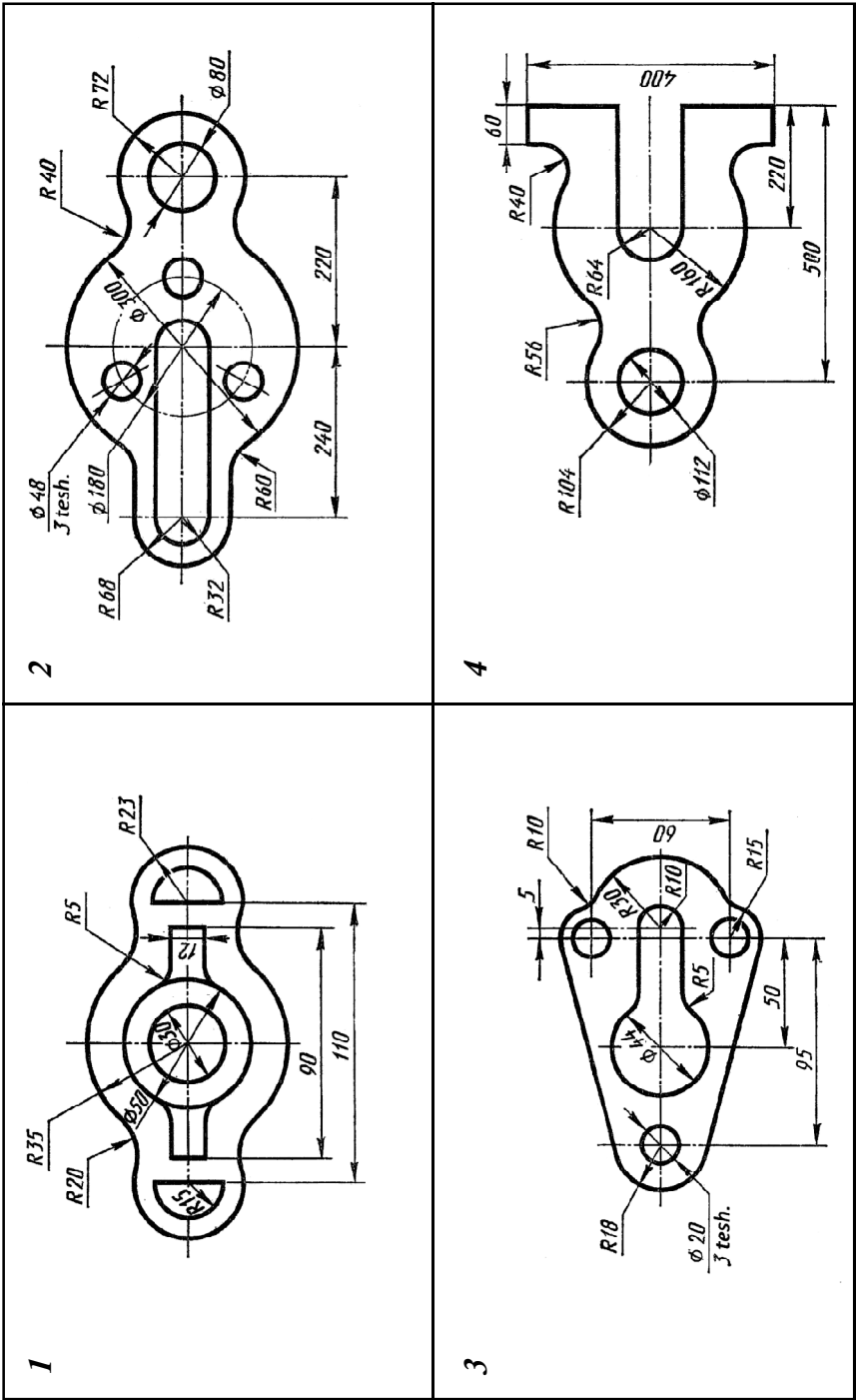
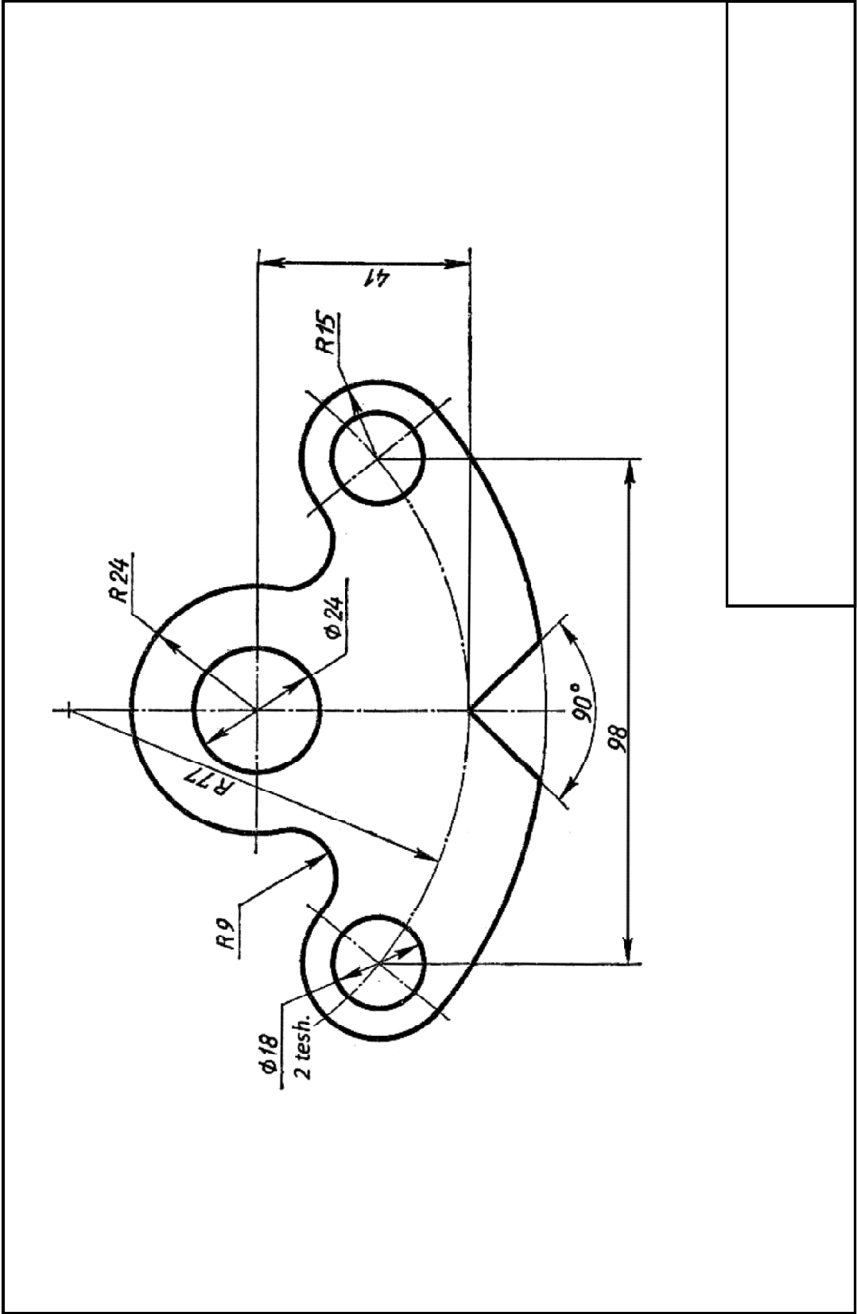
Konus asosi diametrining balandligiga nisbatiga konuslik deyiladi (topshiriq namunasidagi 2-shakl). Konuslik chizmada Δ belgisi bilan ifodalanadi.

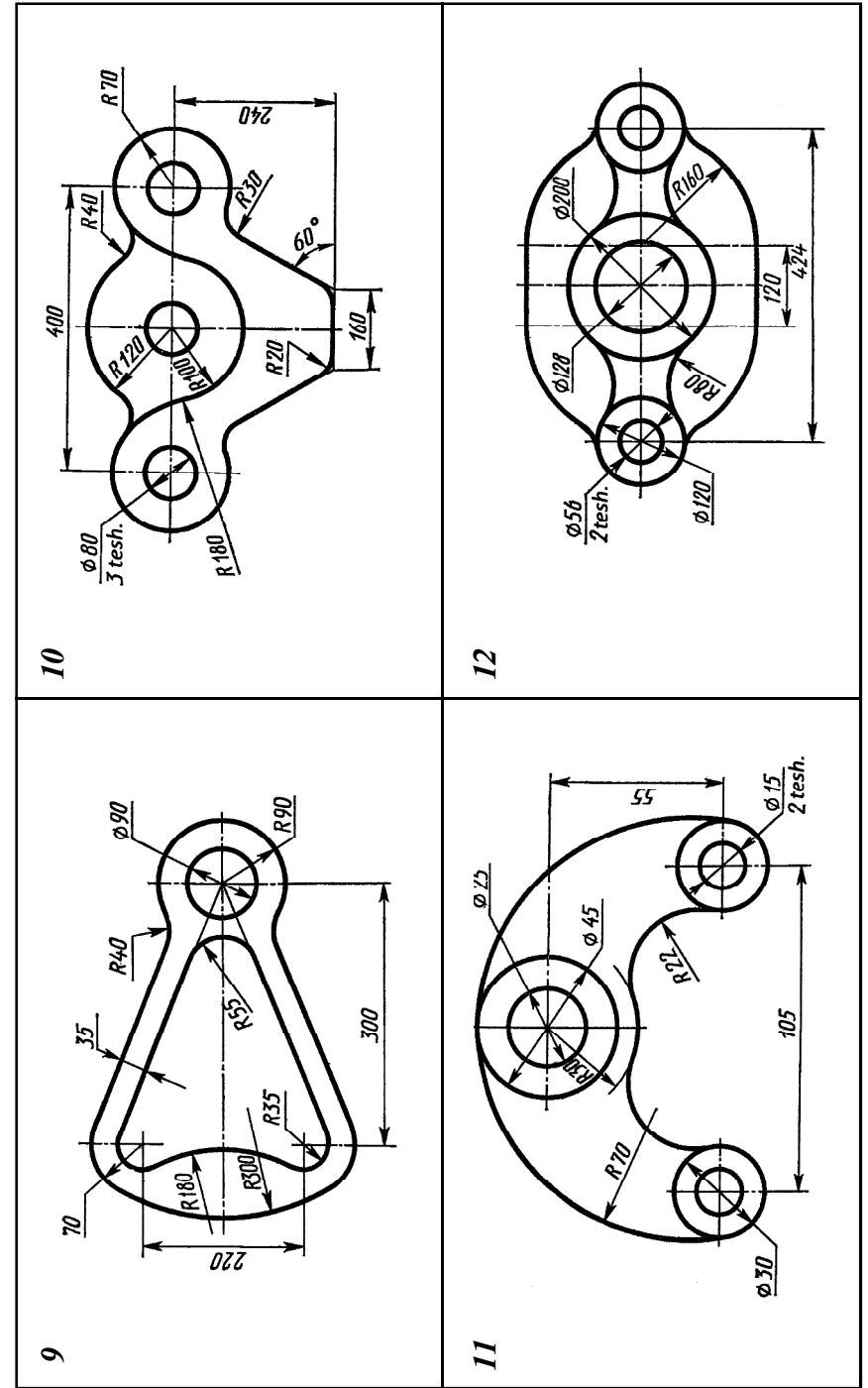
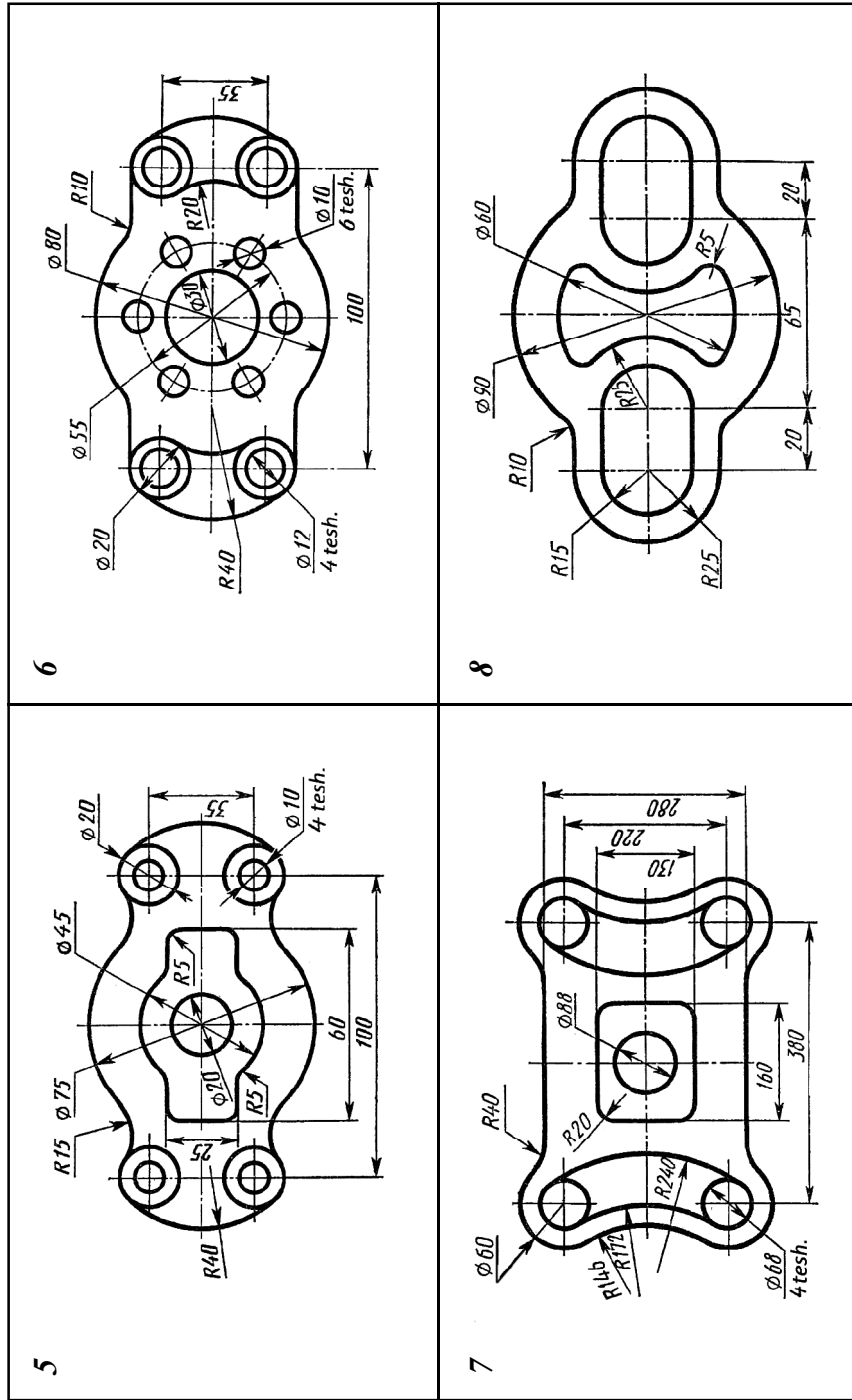
3-topshiriq — «Geometrik yasashlar. Aylanani teng bo'laklarga bo'lish» namunasi

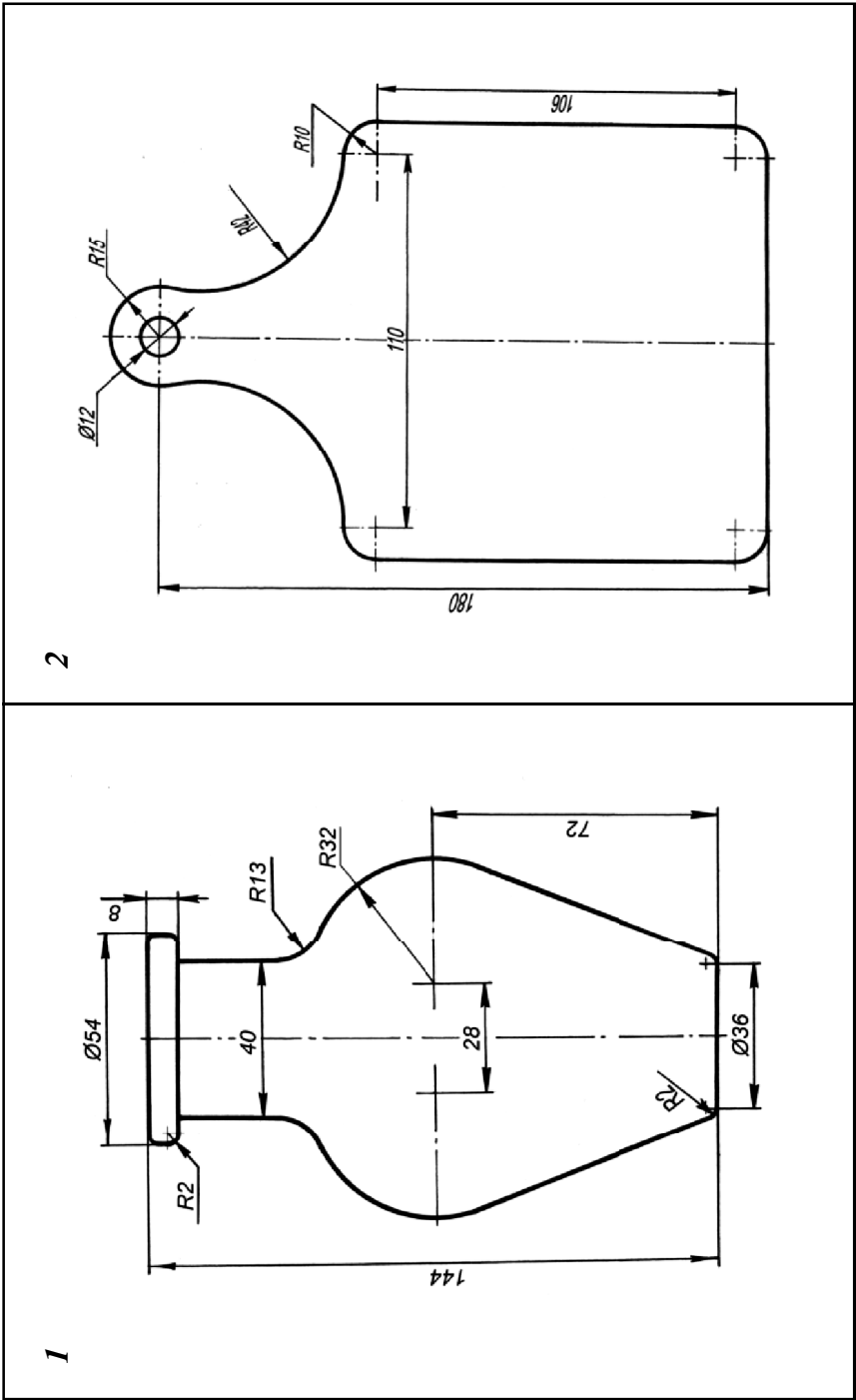
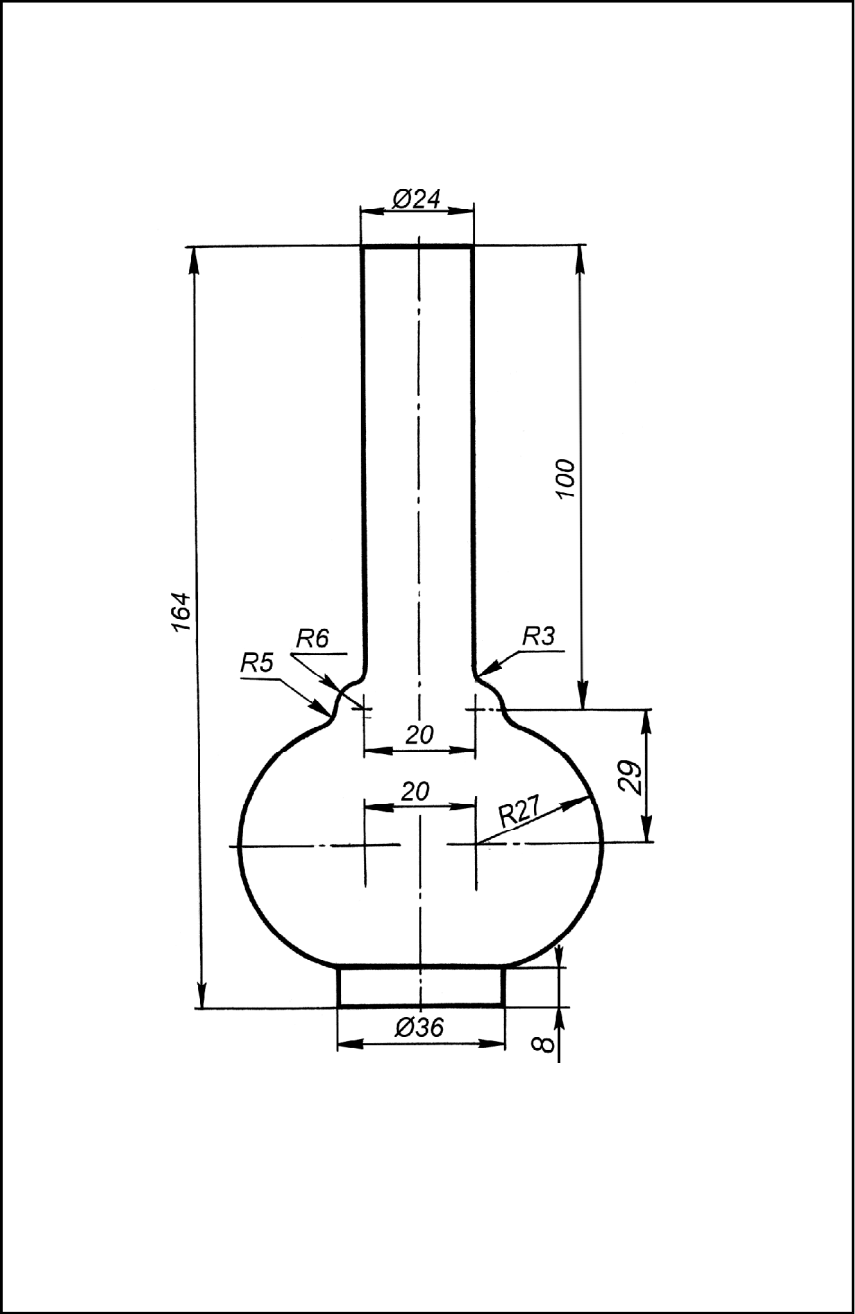


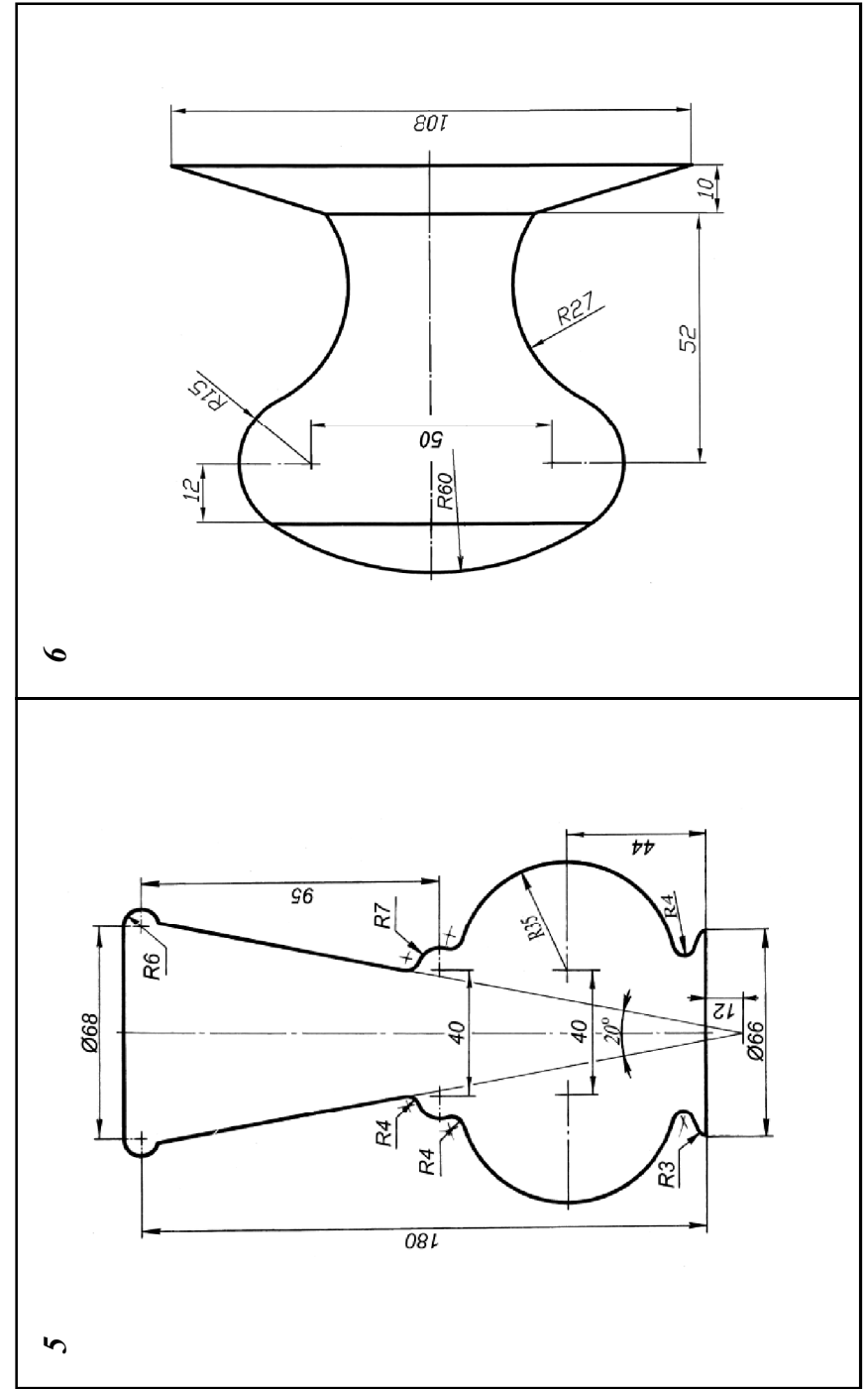
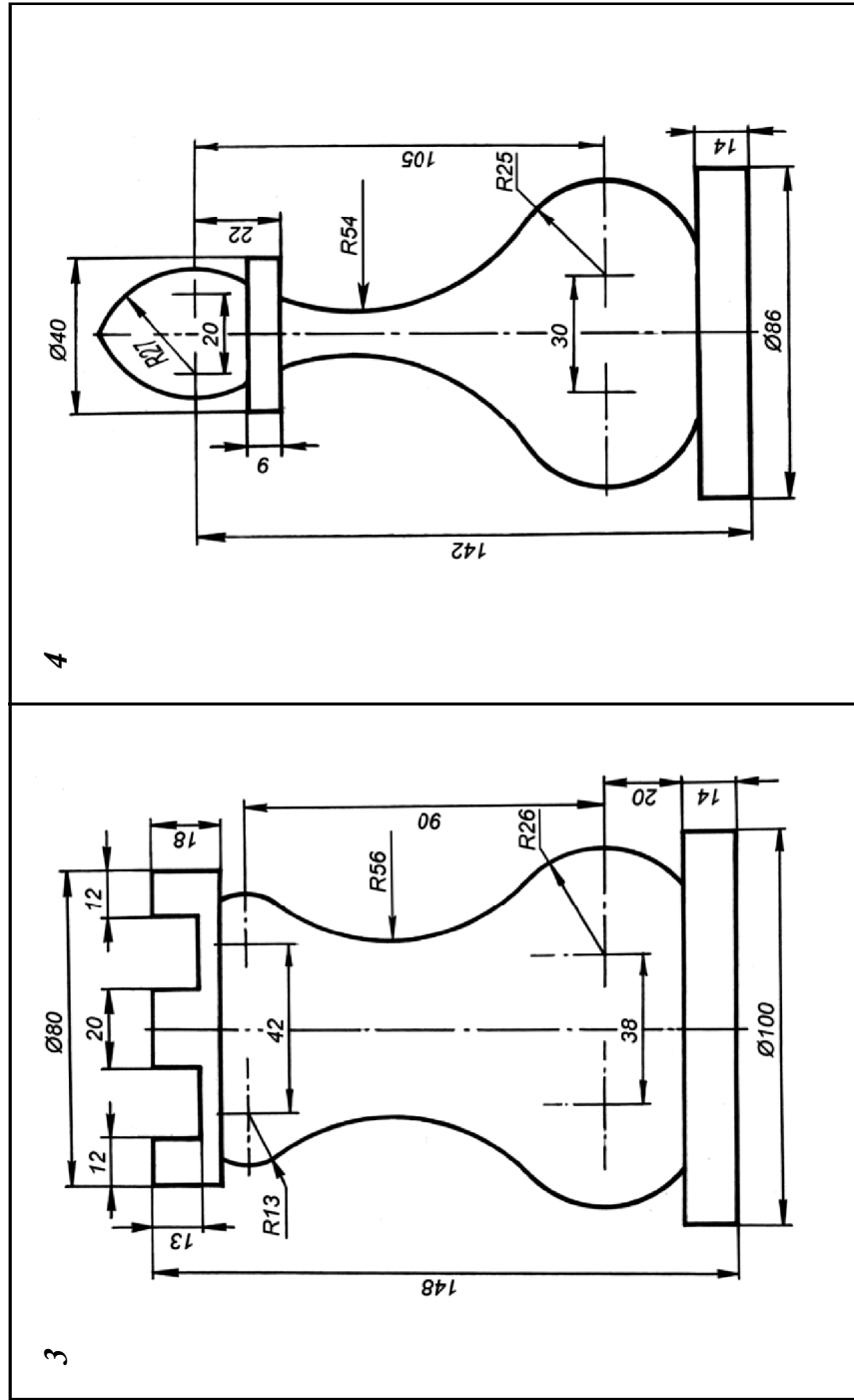
3-topshiriq variantlari

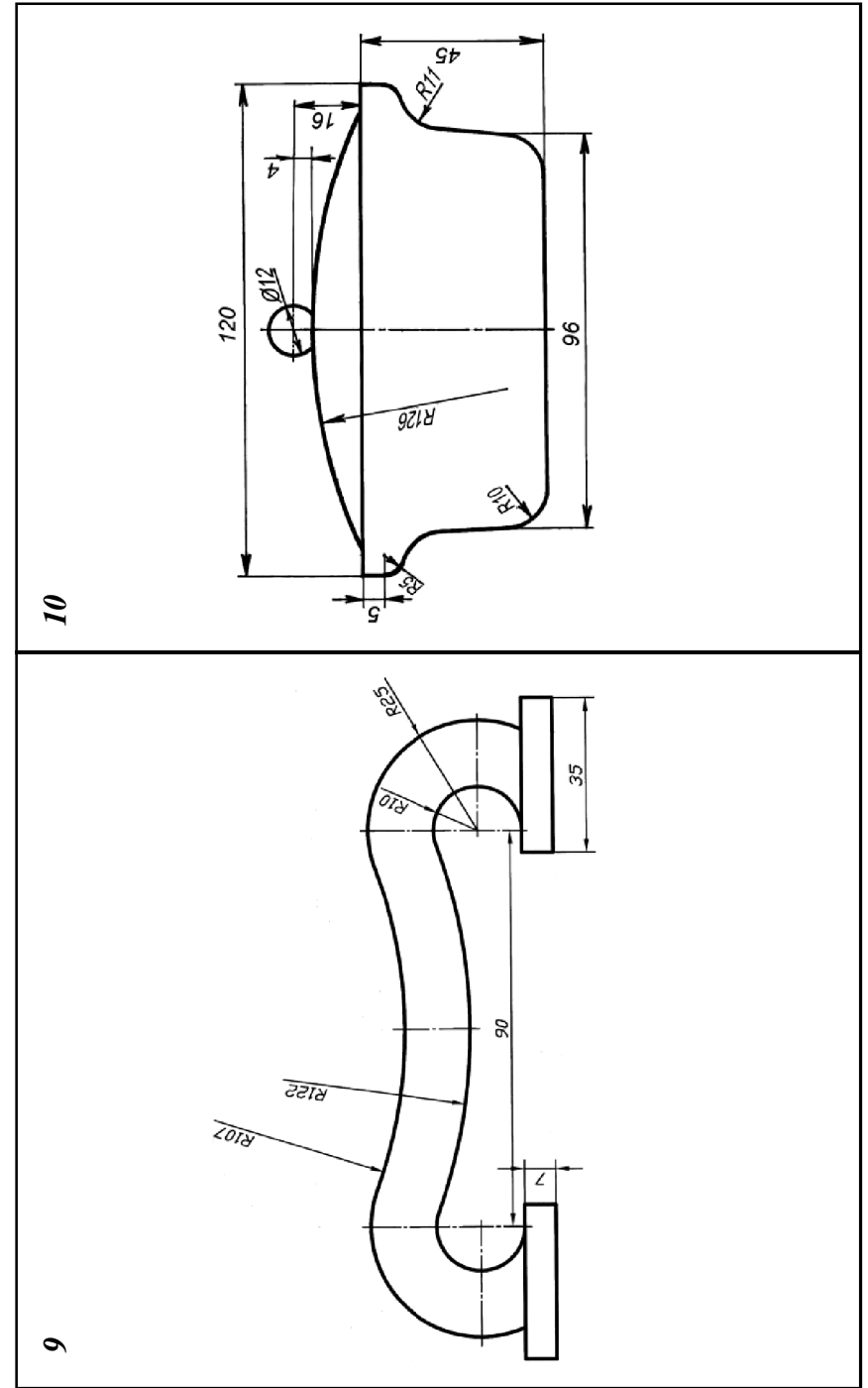
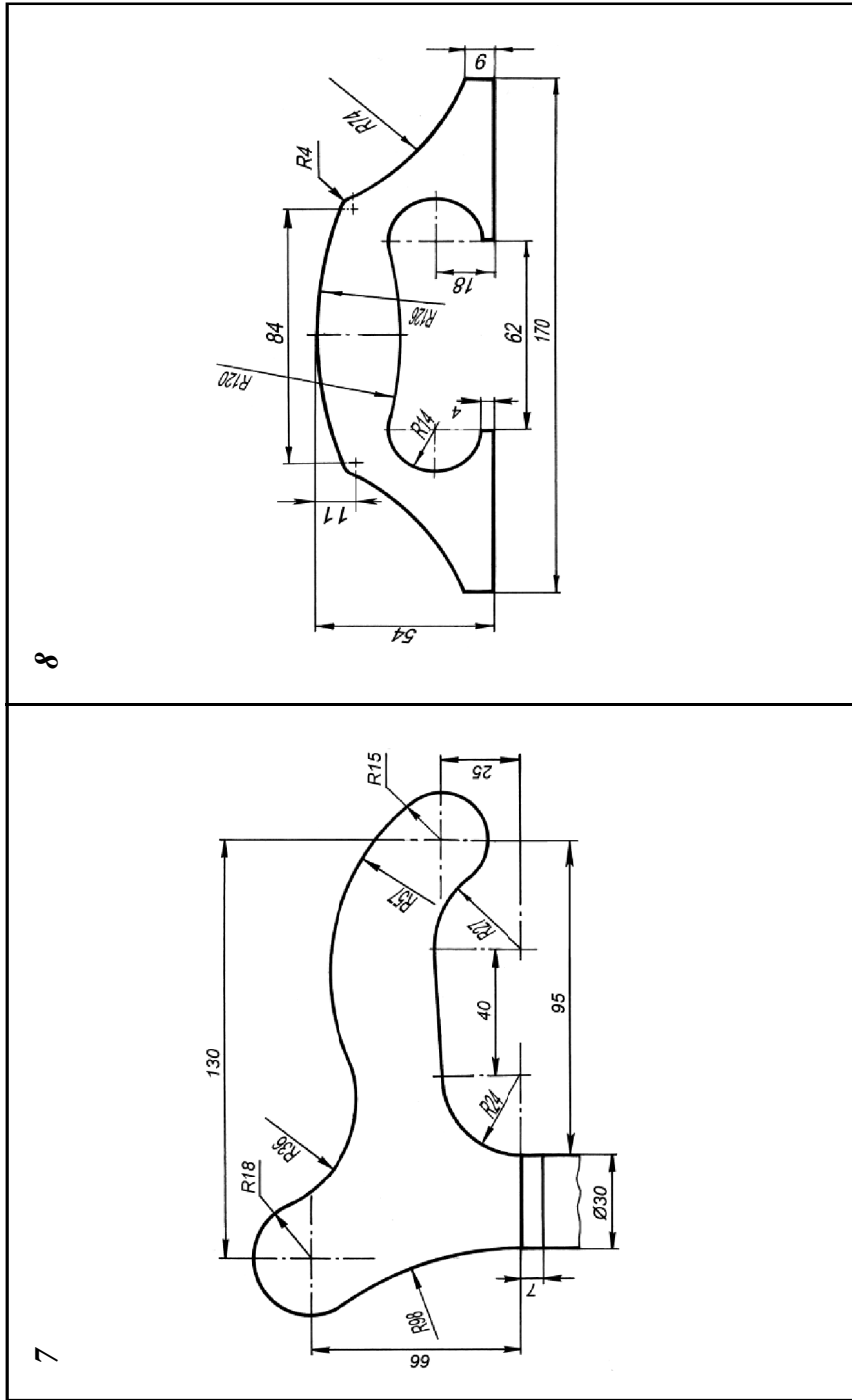


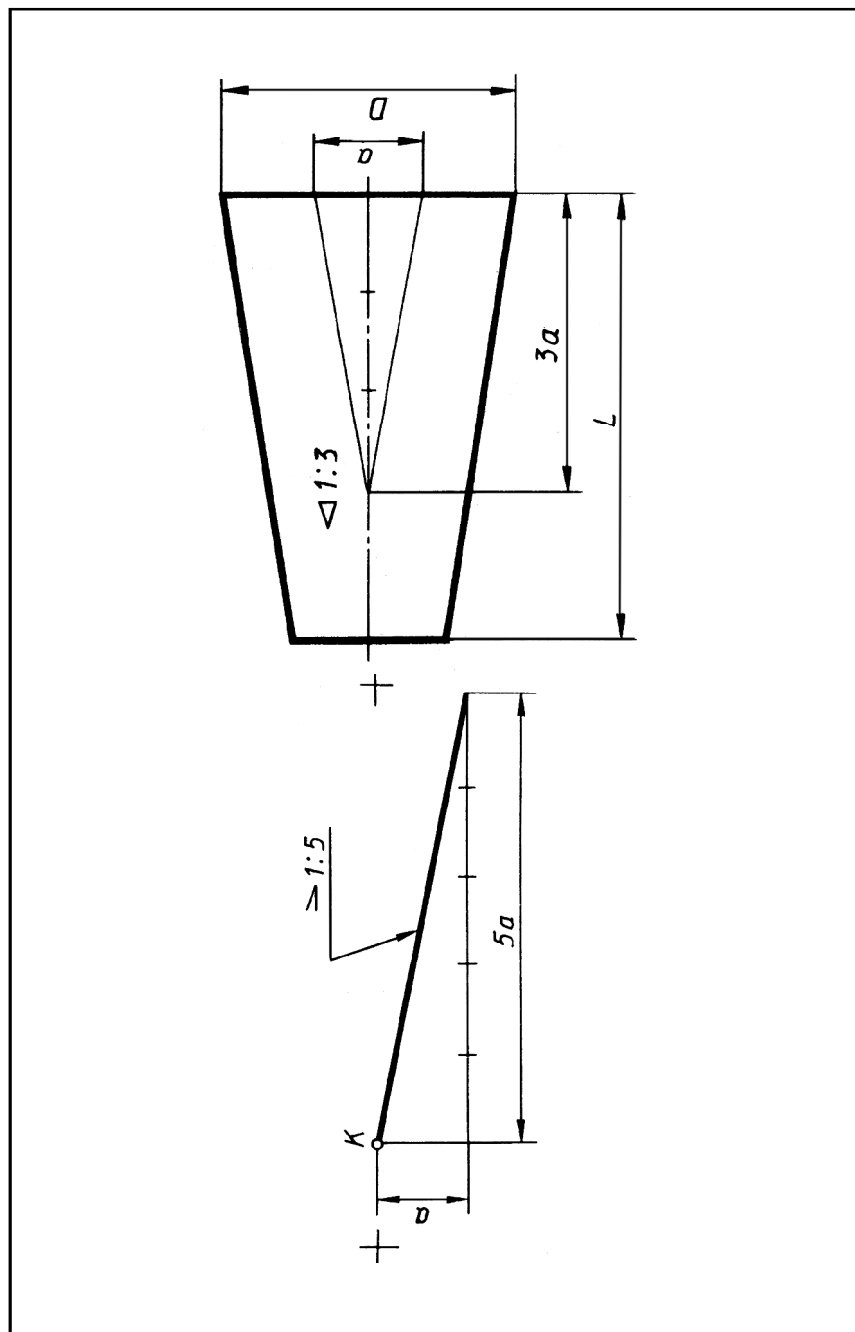




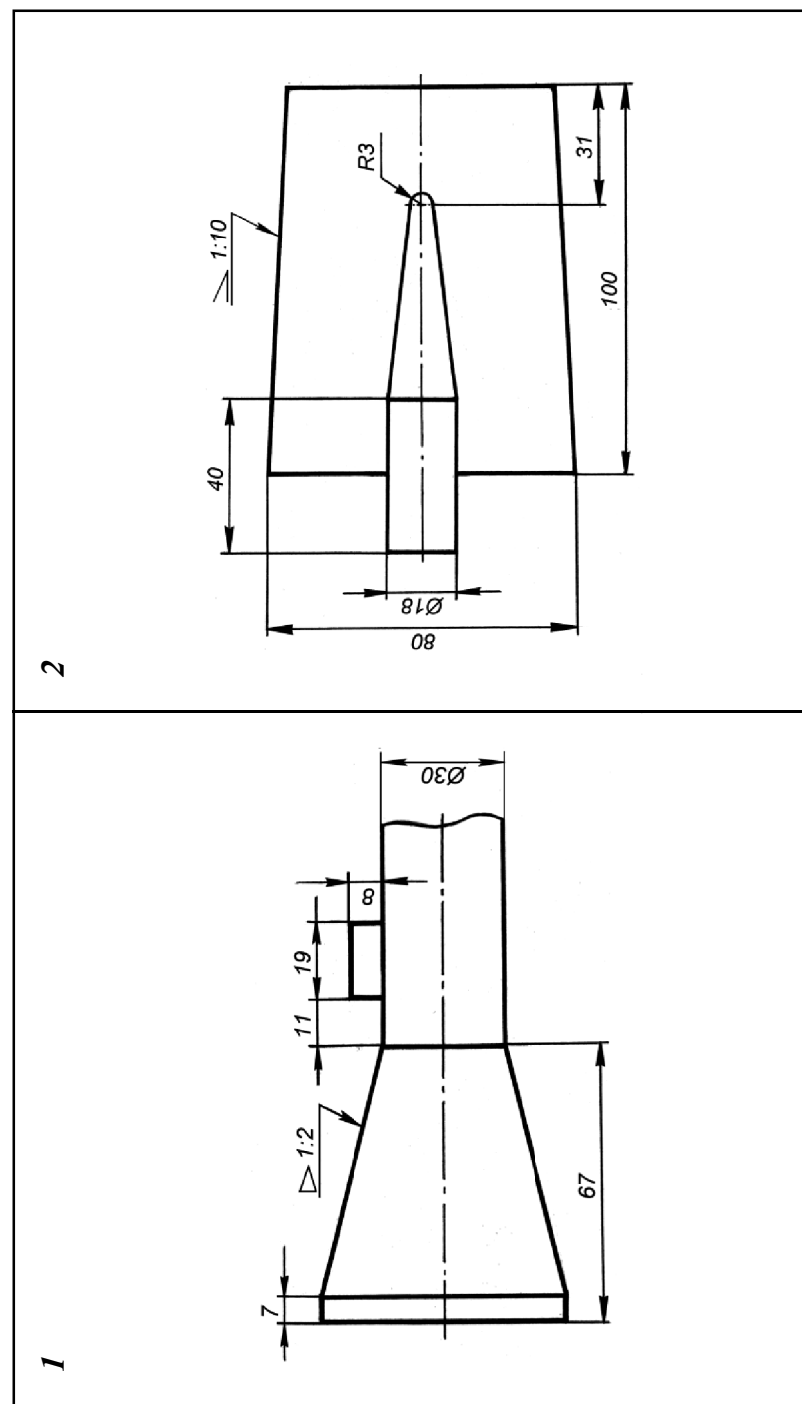




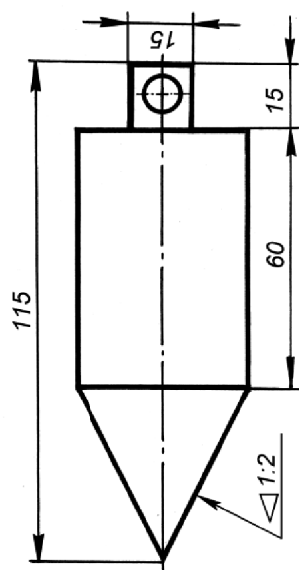




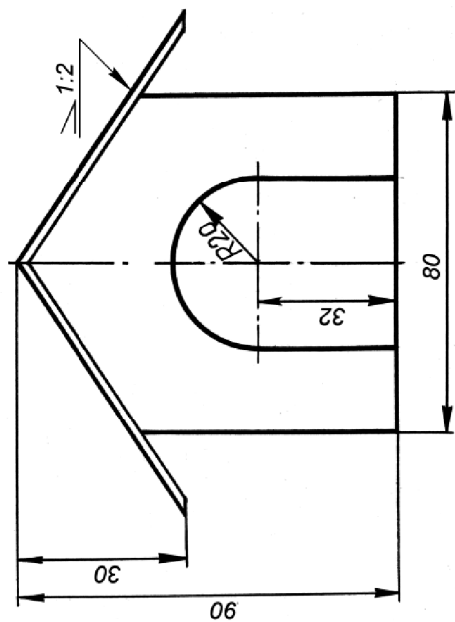
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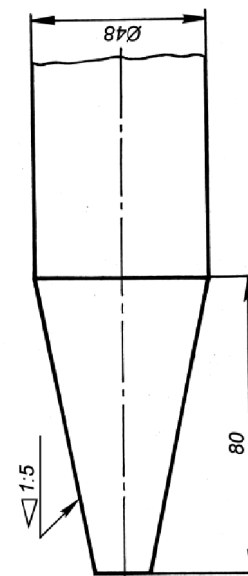
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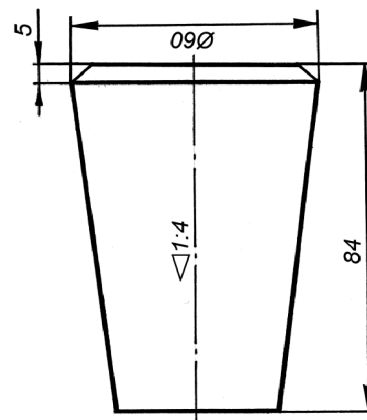
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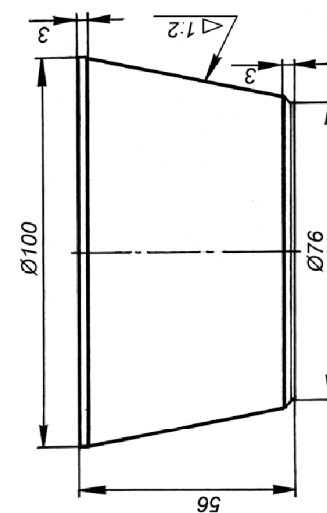
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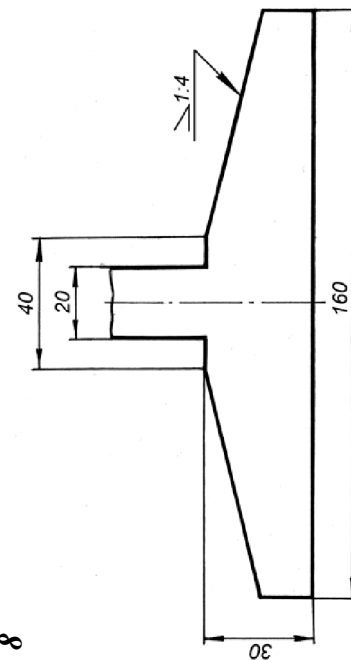
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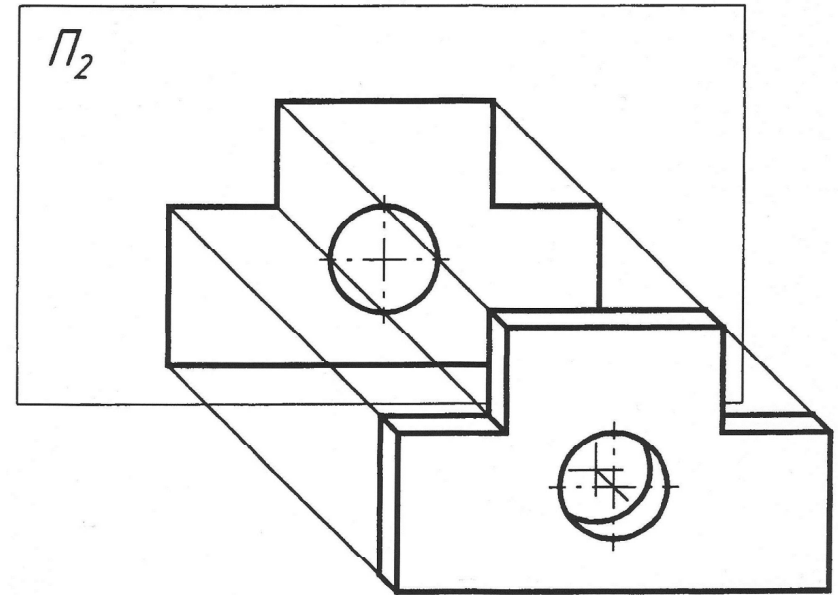
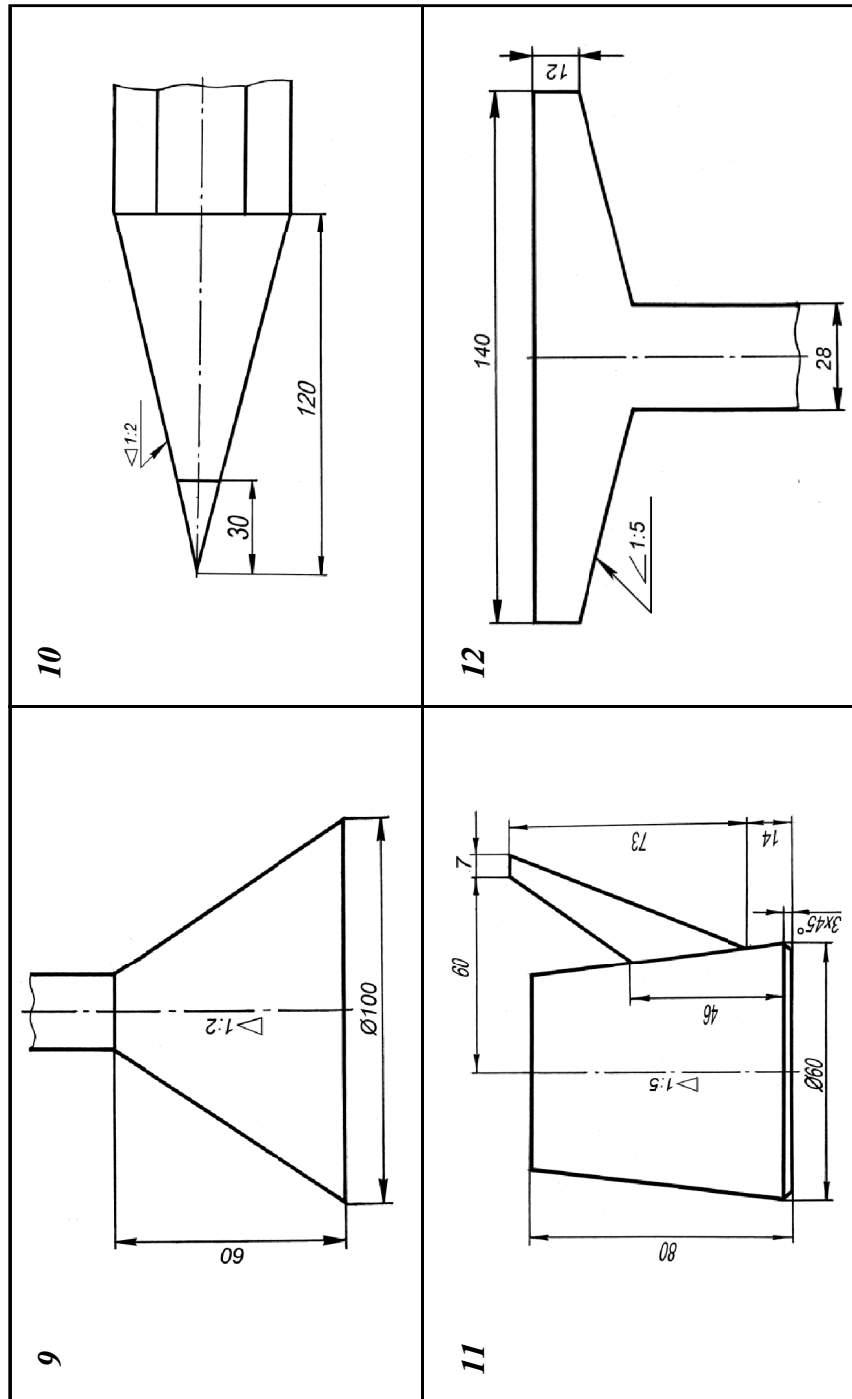


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6–18-topshiriqlarning qisqacha bayoni

6-topshiriq. Detalning yaqqol tasviri bo'yicha ko'rinishlarini bajarish

Bu topshiriqda detalning ikkita yetishmaydigan ko'rinishining yaqqol tasviri va bitta berilgan ko'rinishi bo'yicha qurish ko'zda tutilgan. Chizma bajarishni osonlashtirish maqsadida detal ko'rinishlari orasidagi proyeksion bog'lanishlar orqali aniqlanadigan yetishmaydigan ko'rinishlarning gabarit ramkalari tasvirlangan.

7-topshiriq. Detalning yaqqol tasviri bo'yicha ko'rinishlarini bajarish

Topshiriq detalning yaqqol tasviri bo'yicha zarur bo'lgan ko'rinishlarini qurish vazifasidan iborat. Aksonometriya asosida detal chizmasini bajarishda detal qismlarining o'zaro nisbatlarining saqlanishiga ahamiyat berish kerak bo'ladi. Bu topshiriqda o'quvchilarning ko'rinishlarni to'g'ri bajarishlari bilan bir qatorda, o'lchamlarni to'g'ri qo'yish malakalarini egallashlari ham e'tiborga olinadi.

8-topshiriq. Berilgan ikkita proyeksiyaga asosan yetishmovchi proyeksiyani bajarish

Bu topshiriqni o'quvchilar bajaradigan majburiy grafik topshiriqlar sifatida bajarilishi tavsiya qilinadi. Topshiriqni bajarishga kirishishdan avval o'quvchilarga quyidagi savollarga javob berishlarini taklif qilish mumkin:

1. Chizmada detalning qanday ko'rinishlari tasvirlangan?
2. Detal shaklini og'zaki ta'riflab bering.
3. Detalda qanday shakldagi o'yi yoki kesiklar bor?
4. Detalning gabarit o'lchamlari nimaga teng?

9-topshiriq. Tekis shaklning izometrik proyeksiyasini bajarish

Topshiriqni bajarishda o'lchamlar ixtiyoriy tanlanib, shakl tomonlarining o'zaro nisbatlarini saqlash va qog'oz varag'ining taxminan 2/3 qismi chizma bilan band bo'lishiga e'tibor qaratish zarur.

Yassi shakllar izometrik proyeksiyalarda gorizonta, frontal yoki profil tekisliklarning birida yotishi mumkin. Shaklning qaysi tekislikda joylashganligini uning o'qlarga nisbatan vaziyatidan aniqlanadi.

10-topshiriq. Geometrik shaklli detalning izometrik proyeksiyasini bajarish

Topshiriq variantlaridagi detallarning ko'rinishlaridan biri, asosan, uchburchak, to'rtburchak yoki oltiburchak shakli yoki geometrik shakldagi o'yiqa ega. Izometrik proyeksiya o'qlaridan birini geometrik shakl markazidan o'tkazilsa, tasvirni bajarish osonlashadi.

11-topshiriq. Detalning izometrik proyeksiyasini bajarish

Topshiriq varianti chizma varag'iga ko'chirib olinganidan keyin berilgan ikkita ko'rinishga asosan detalning uchinchi ko'rinishining chizmasi bajariladi. Detal o'lchamlari uchta ko'rinishga ham taqsimlab qo'yiladi. Shundan keyin detalning izometrik proyeksiyasi bajariladi.

12-topshiriq. Berilgan ikkita proyeksiyaga asosan yetishmovchi proyeksiyani topish, qirqim va izometrik proyeksiyani bajarish

Topshiriqning maqsadi — detal chizmasini bajarishda o'quvchilarning qirqim, kesim va boshqa shartlilik va soddalashtirishlarni mustaqil qo'llay olish malakalarini aniqlashdan iborat.

Bu topshiriq ham avvalgi topshiriq kabi bajarilib, o'quvchilarning qirqimlar mavzusi bo'yicha nazariy bilimlarini mustahkamlashga yo'naltirilgan. Variant bo'yicha uchinchi ko'rinish va detalning izometrik proyeksiyasi qurilganidan keyin ko'rinishlarda zarur qirqimlar bajariladi. Detalning izometrik proyeksiyasi uning 1/4 qismi (ikkita simmetriya tekisligiga ega detallar uchun) yoki undagi teshikni ko'rsatish uchun zarur bo'lgan qismi qirqilgan holda tasvirlanadi.

13-topshiriq. Detalning yaqqol tasviri bo'yicha eskizini bajarish

Topshiriqni katak qog'ozda, chizmachilik asboblariidan foydalanmasdan bajarish kerak. Detalning yaqqol tasviri o'rganib chiqilib, bosh ko'rinish tanlanadi. Shundan keyin qog'ozda detal ko'rinishlari chizib chiqilib, zarur bo'lgan kesim yoki qirqimlar bajariladi. Ko'rinishlarga o'lchamlar qo'yiladi.

14-topshiriq. Ko‘rinishning yarmi bilan qirqimning yarmini birlashtirishdagi yetishmovchi chiziqlarini bajarish

Topshiriqda simmetriya o‘qiga ega detal ko‘rinishining yarmi bilan qirqimi yarmining tugallanmagan chizmasi berilgan. Chizmadagi yetishmovchi chiziqlarni o‘tkazishdan avval o‘quvchilar detal shakli qanday geometrik jismlar yig‘indisidan hosil bo‘lganini aniqlab olishlari kerak bo‘ladi.

15-topshiriq. Detalning ikkita ko‘rinishiga asosan uning texnik chizmasini bajarish

Topshiriq variantlarining murakkablik darajasi ikki xil qilib tuzilgan. Toq variantlarda sodda detallarning ko‘rinishlari bo‘lib, ular bo‘yicha bajarilgan texnik rasmlar qirqimlarsiz bajariladi (namunadagi 1-shakl). Juft variantlardagi detallarning tuzilishi birmuncha murakkabroq bo‘lib, 1/4 qismi qirqib tasvirlangan texnik rasm bajarilishi ko‘zda tutilgan (namunadagi 2-shakl).

16-topshiriq. Yaqqol tasvir bo‘yicha tarkibida kesim tasvirlangan detal chizmasini bajarish

Bu topshiriqda detalning yaqqol tasviriga asosan uning bosh ko‘rinishi aniqlanadi. Detal tarkibiy qismlarining nisbatlari taxminan saqlangan holda bosh ko‘rinish A4 formatli chizma qog‘oziga chizib olinadi. Shundan keyin zarur kesimlar standart talablariga mos holda chizilib, o‘lchamlar qo‘yiladi.

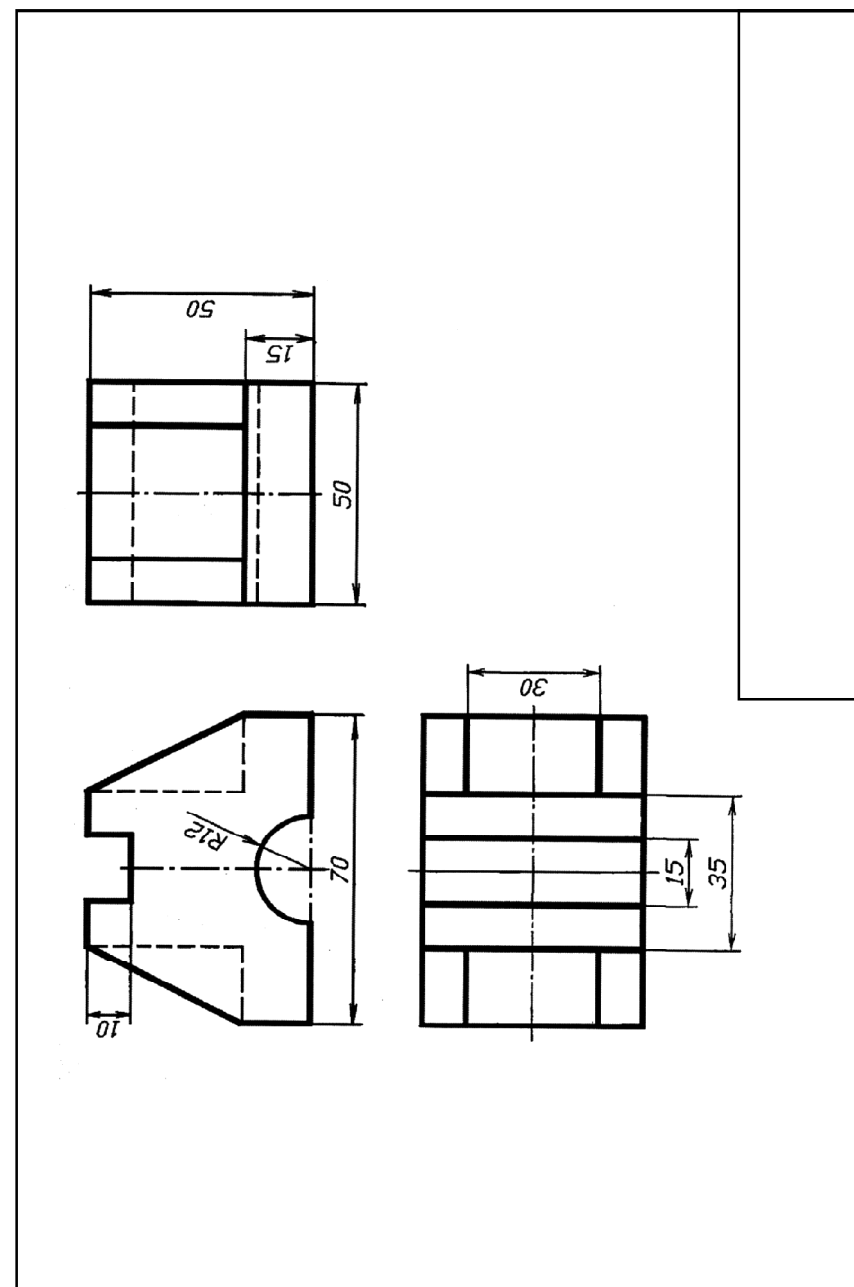
17-topshiriq. Oddiy qirqim chizmasini bajarish

Topshiriq o‘quvchilarda qirqim bajarish ko‘nikmalarini shakllantirishga mo‘ljallangan. O‘quvchilar detal shakli va kesuvchi tekislikning vaziyatini aniq tasavvur qilishlari uchun ularga berilgan detalning texnik rasmi qoralamasini chizib ko‘rishni taklif qilish mumkin. Topshiriq A4 formatli chizma qog‘ozida namunada keltirilgan shaklda bajariladi.

18-topshiriq. Murakkab qirqim chizmasini bajarish

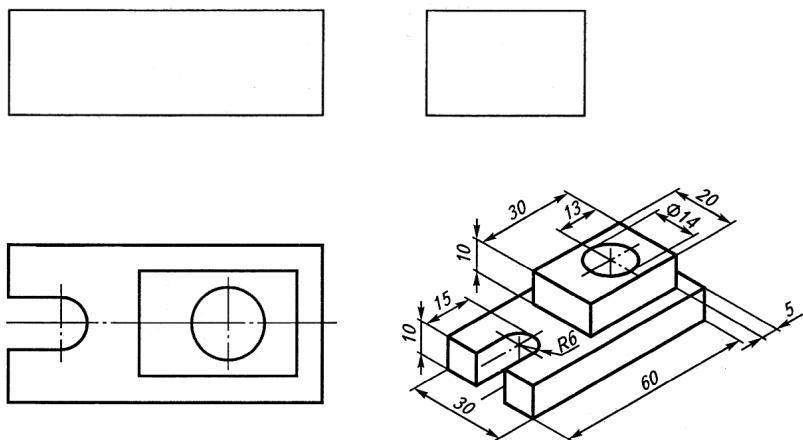
Bir nechta tekisliklardan foydalanib hosil qilingan qirqimga murakkab qirqim deyiladi. Topshiriqdagi 1–6-variantlar pog‘onali, 7–12-variantlar qiya qirqimlar ko‘rinishida bajariladi.

6-topshiriq – «Detailning yaqqol tasviri bo‘yicha ko‘rinishlarini bajarish» namunasi

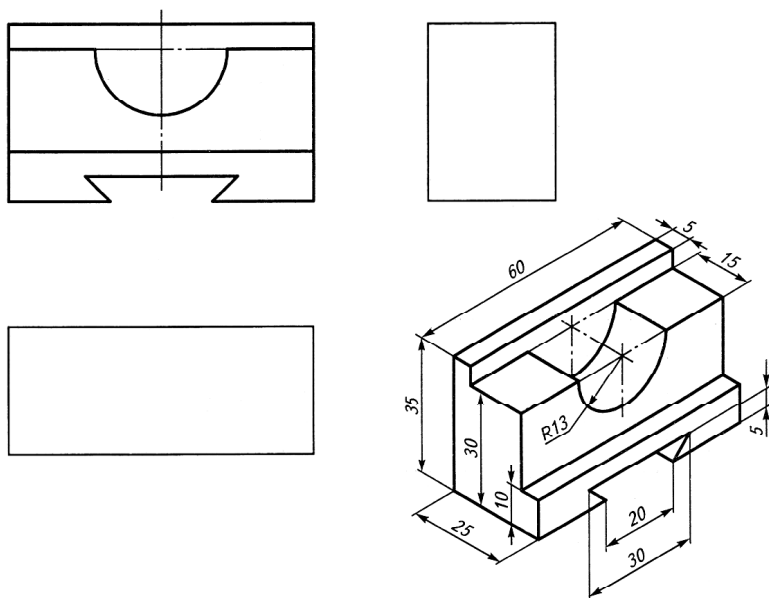


6-topshiriq variantlari

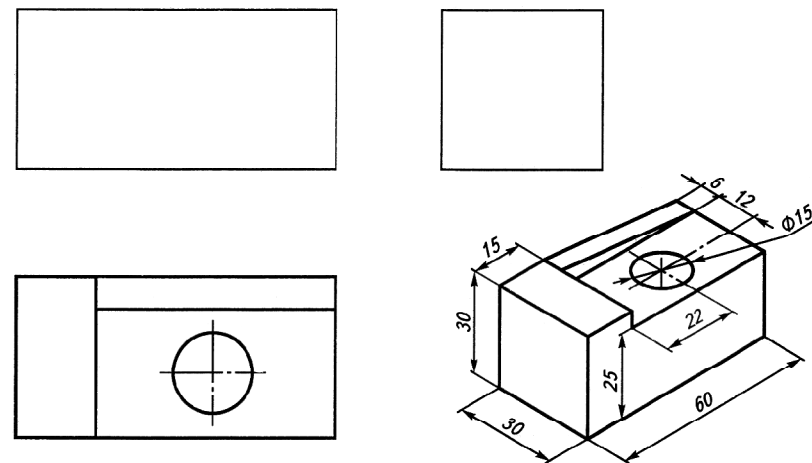
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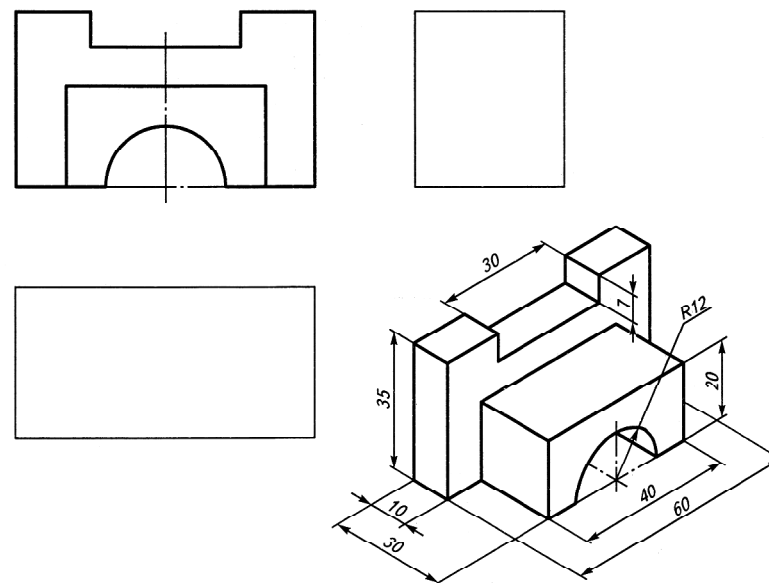
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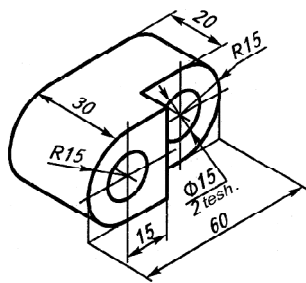
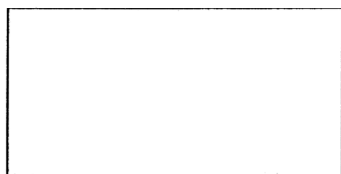
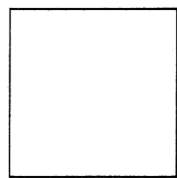
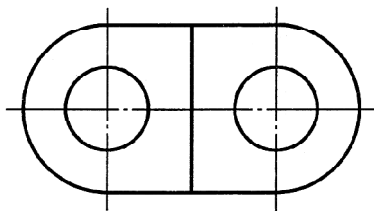
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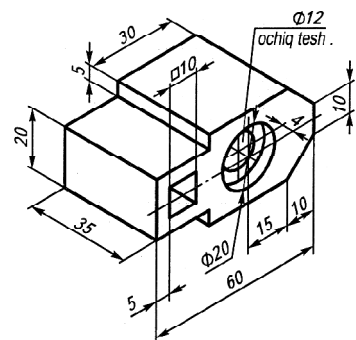
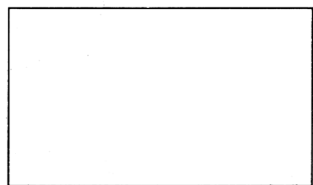
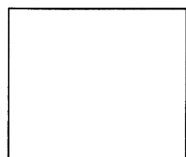
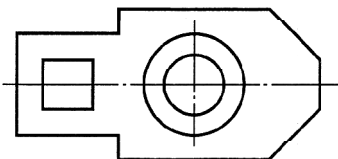
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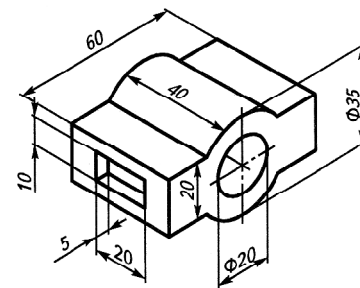
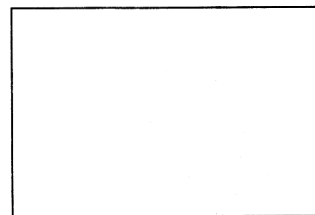
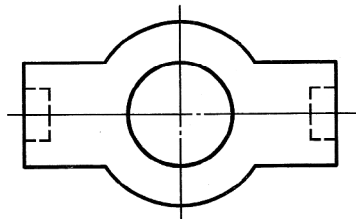
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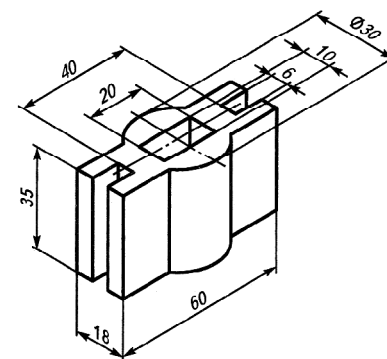
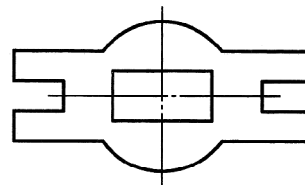
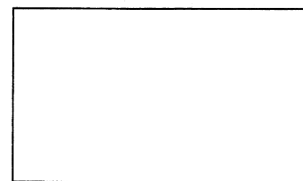
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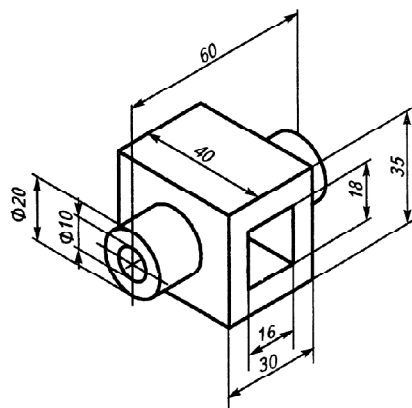
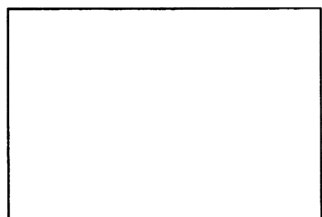
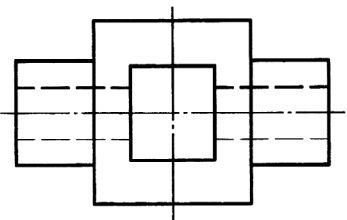
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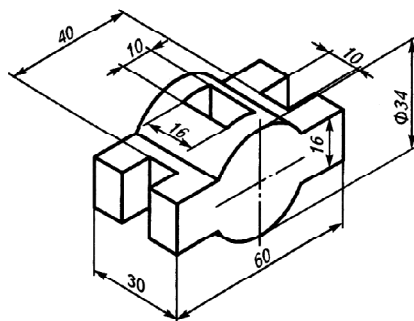
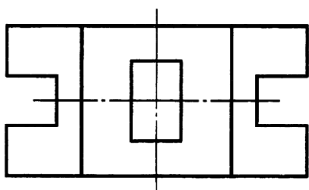
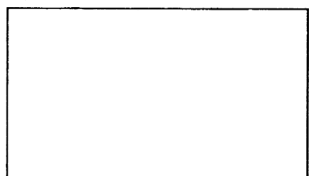
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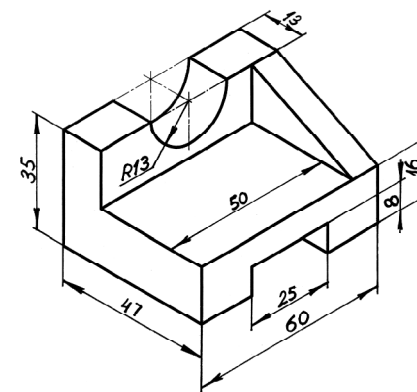
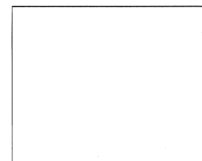
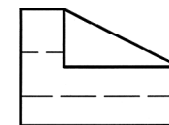
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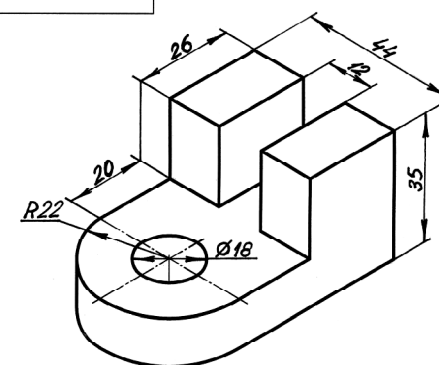
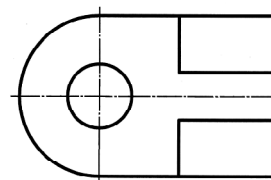
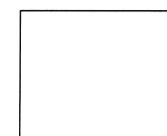
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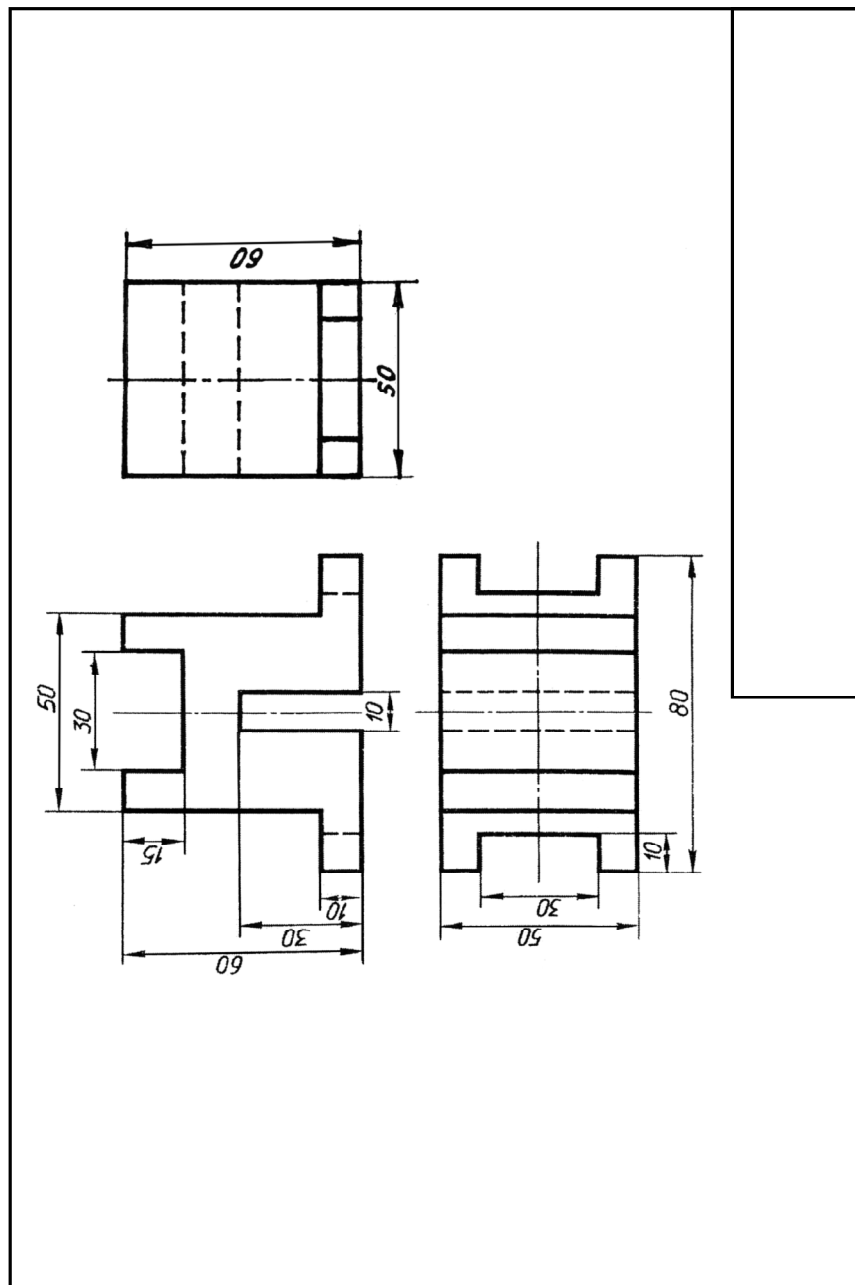
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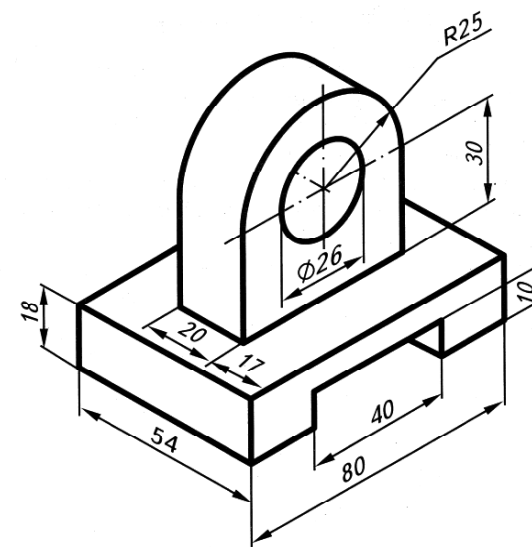


7-topshiriq – «Detalning yaqqol tasviri bo'yicha ko'rinishlarini bajarish» namunasi

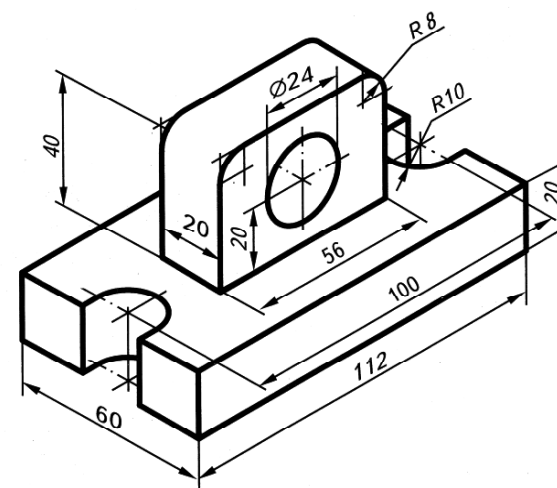


7-topshiriq variantlari

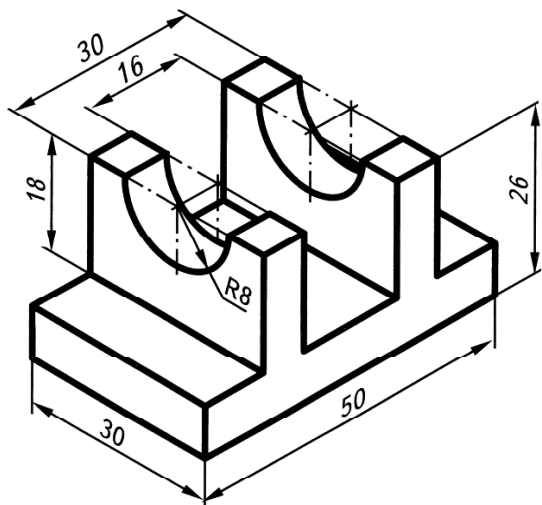
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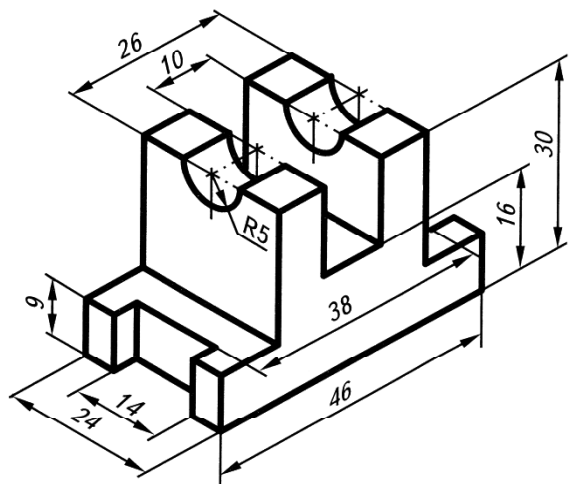
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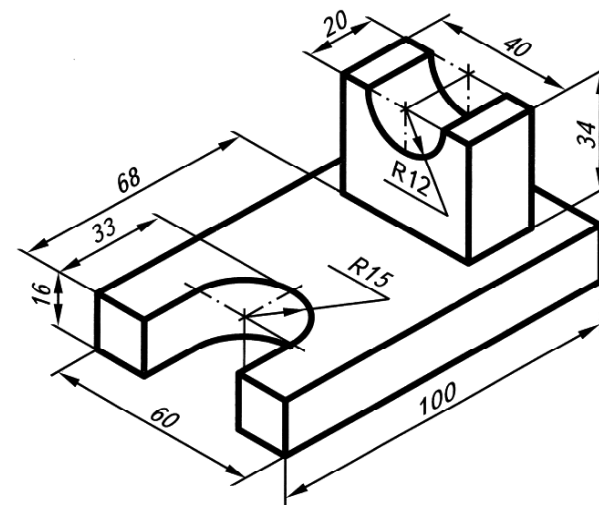
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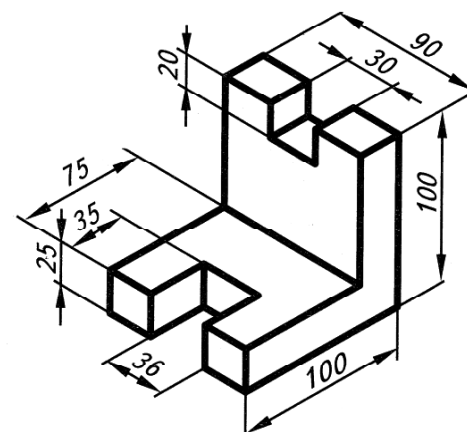
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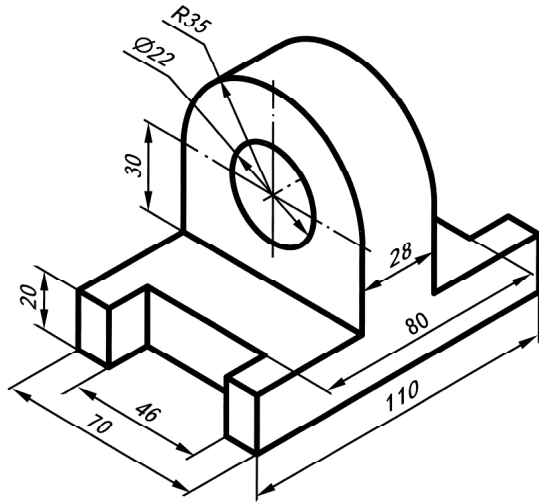
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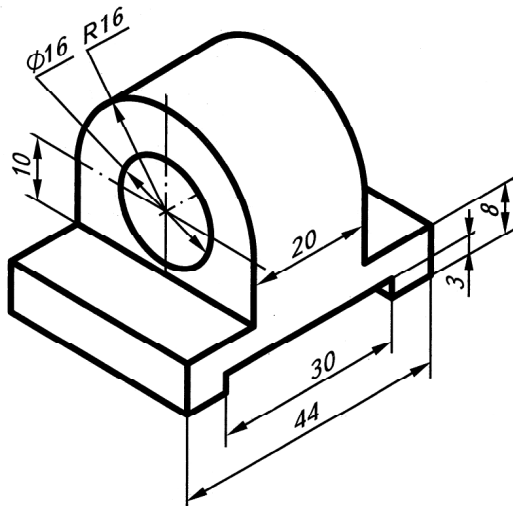
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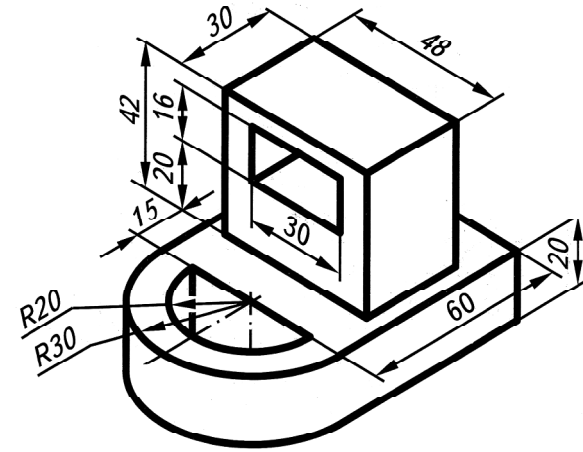
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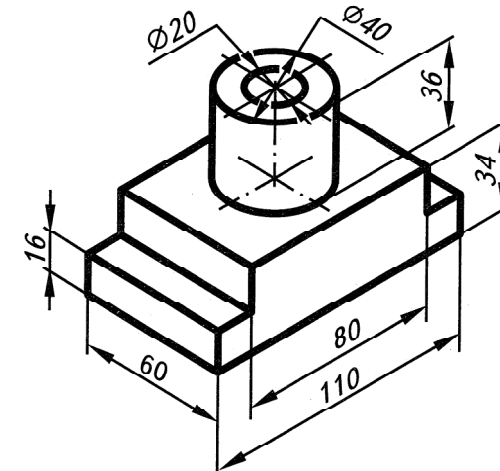
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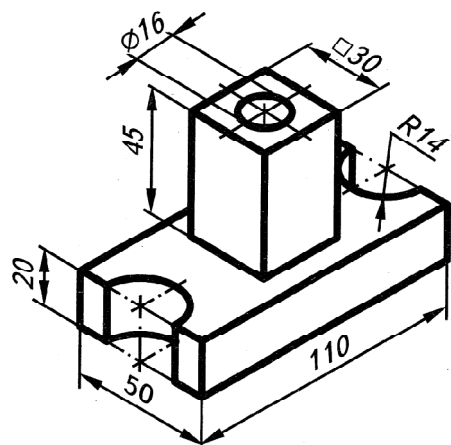
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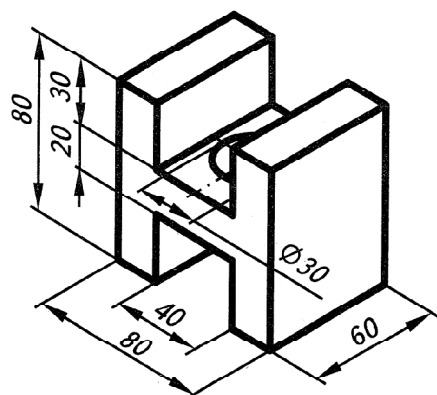
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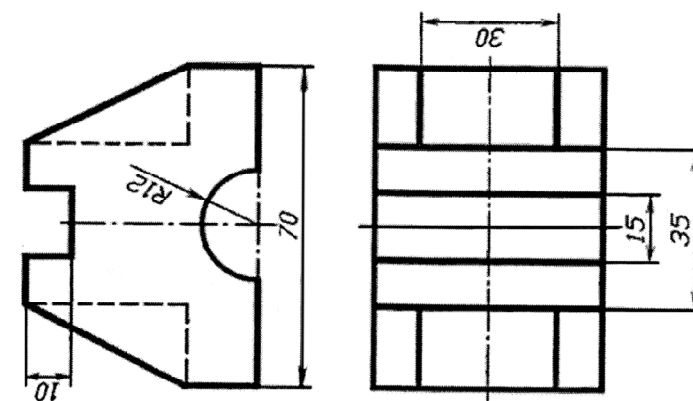
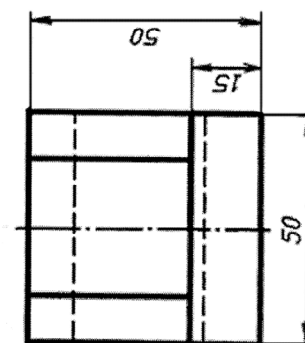
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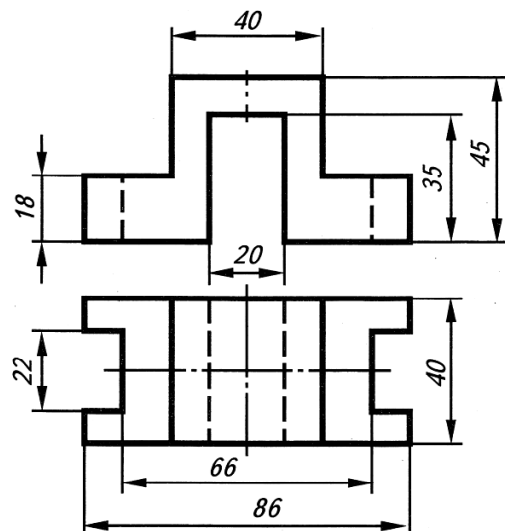


8-topshiriq — «Berilgan ikkita proyeksiyaga asosan yetishmovchi proyeksiyani bajarish» namunasi

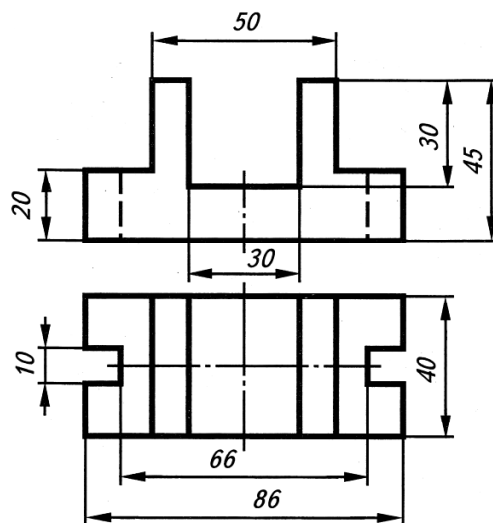


8-topshiriq variantlari

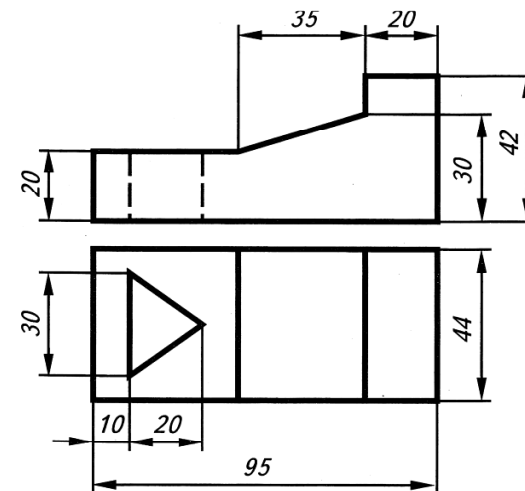
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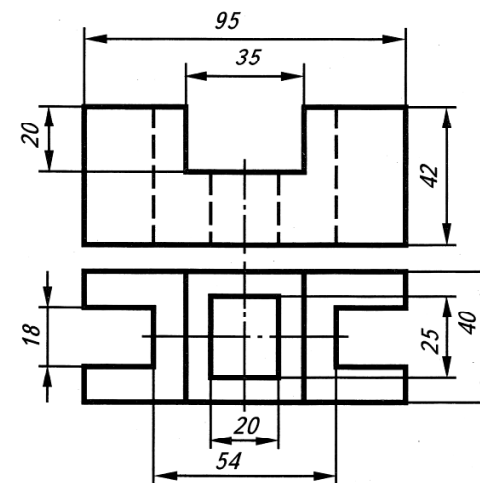
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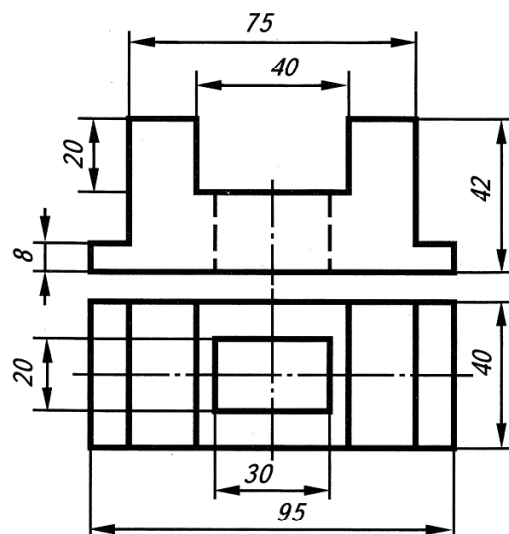
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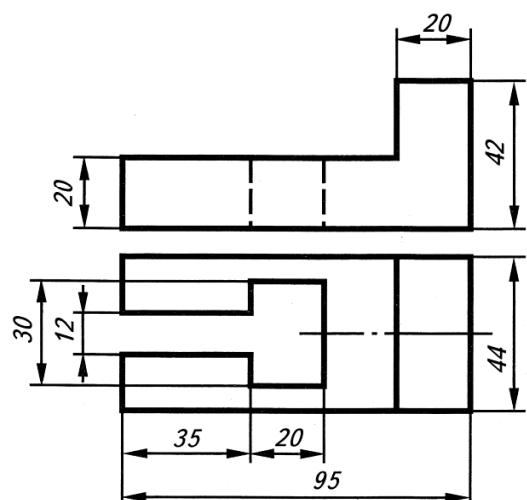
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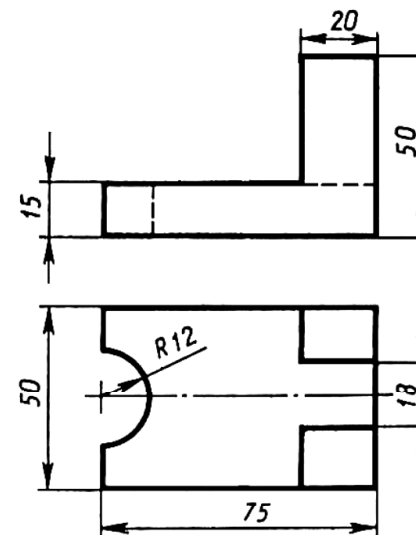
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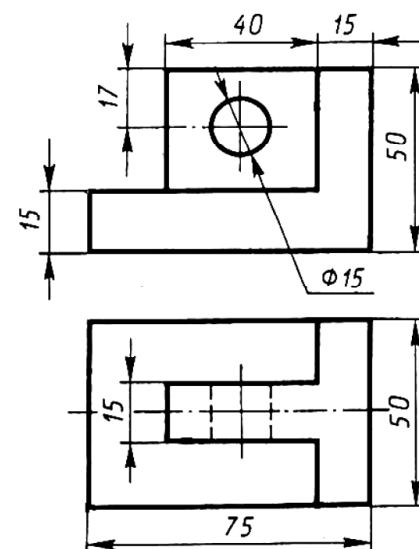
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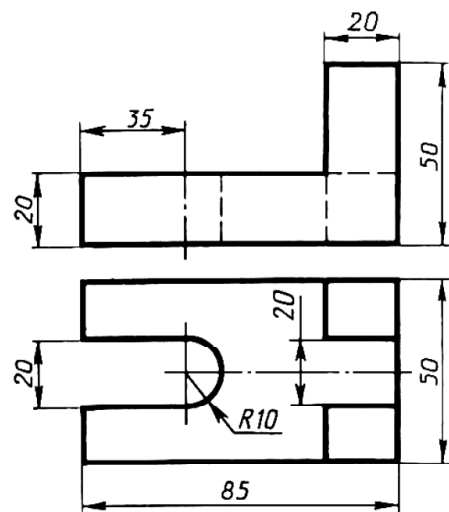
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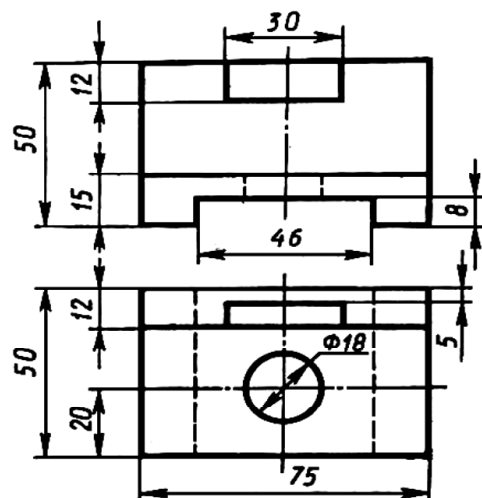
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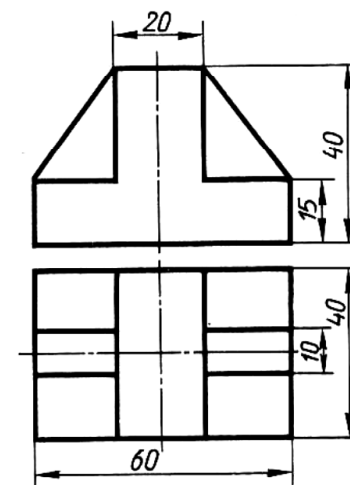
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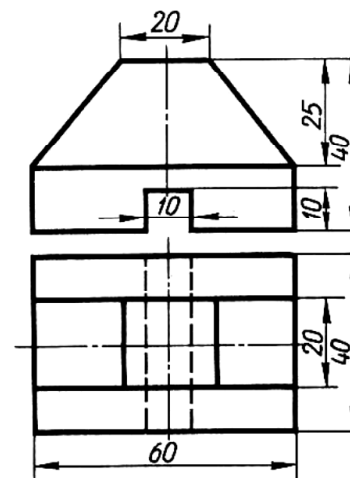
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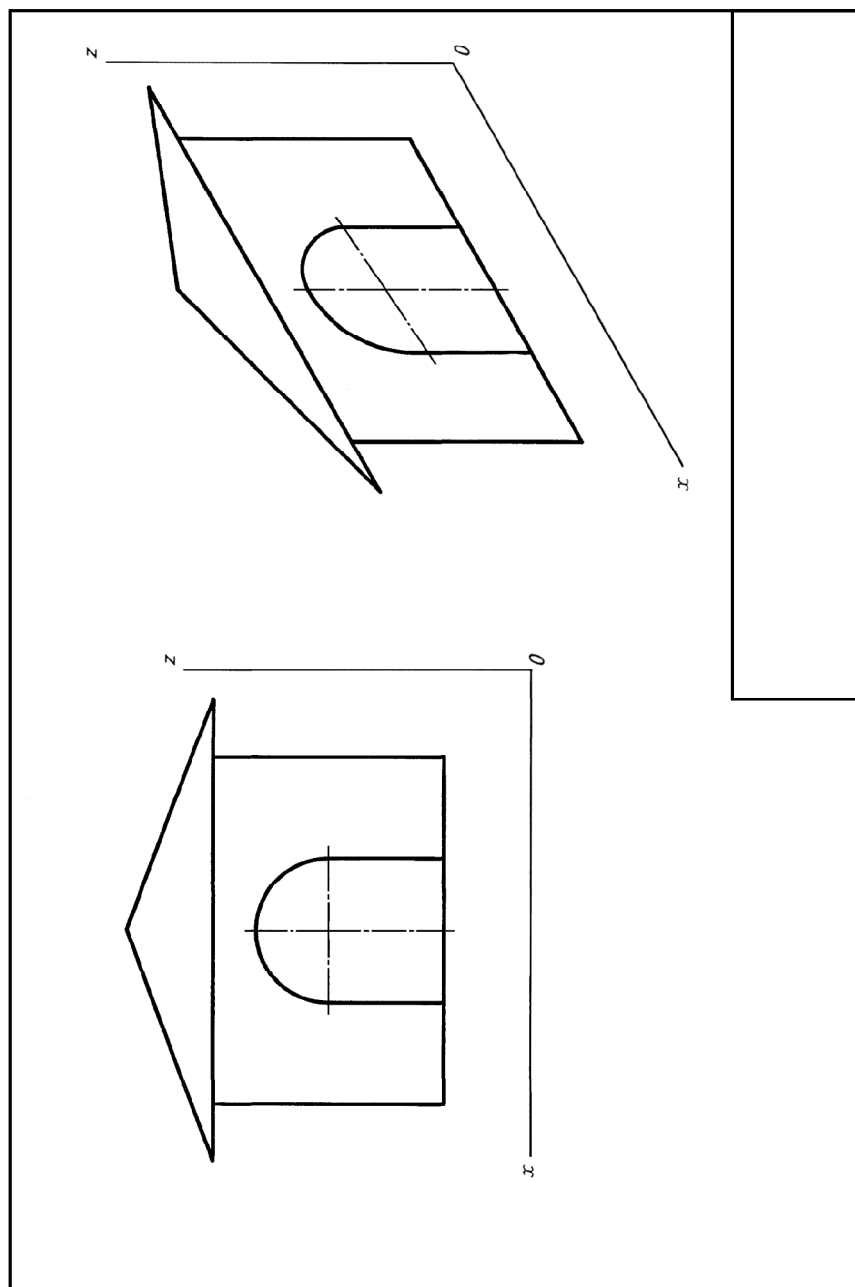
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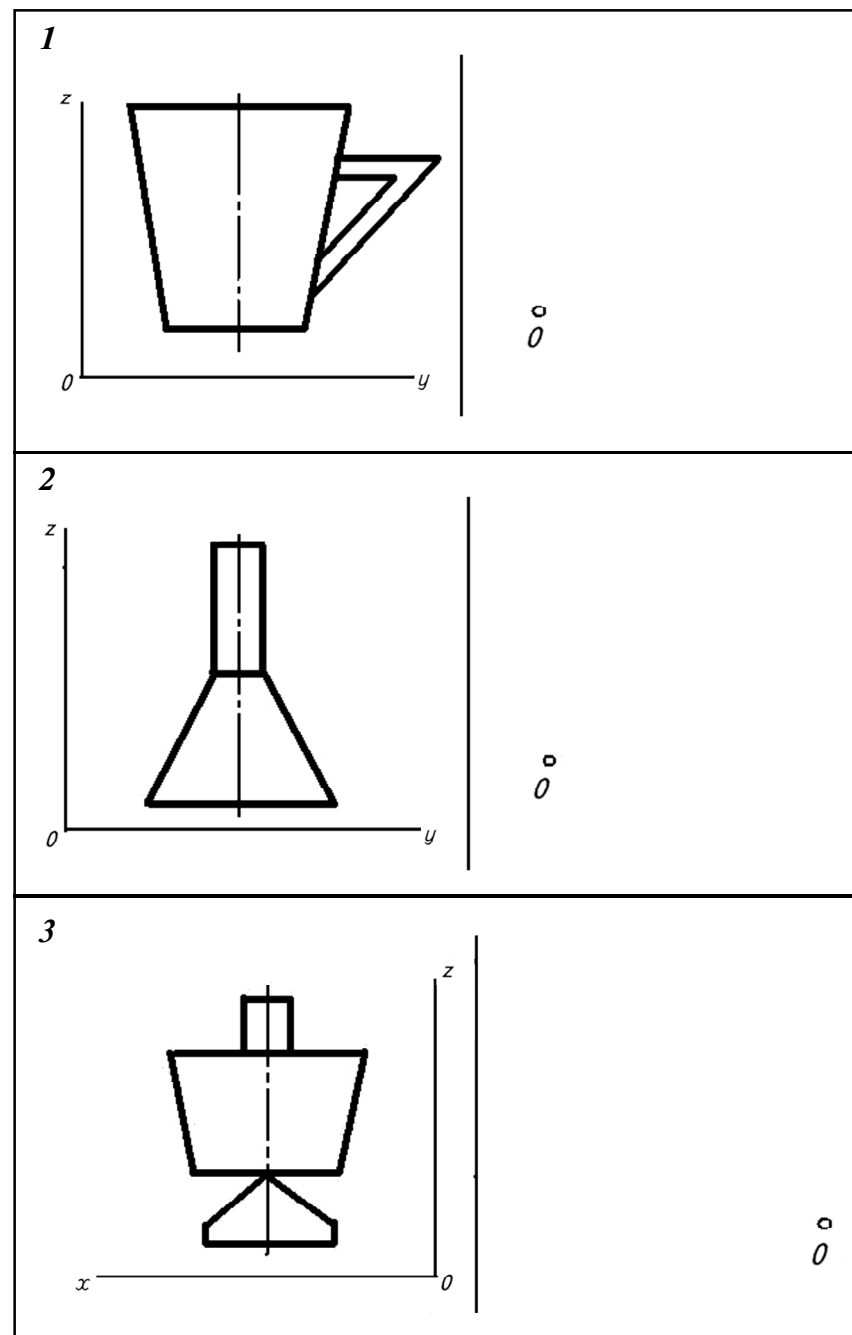
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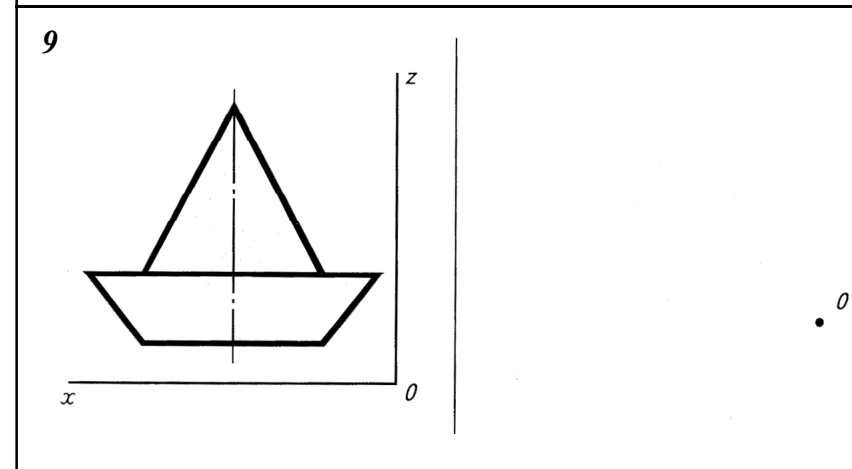
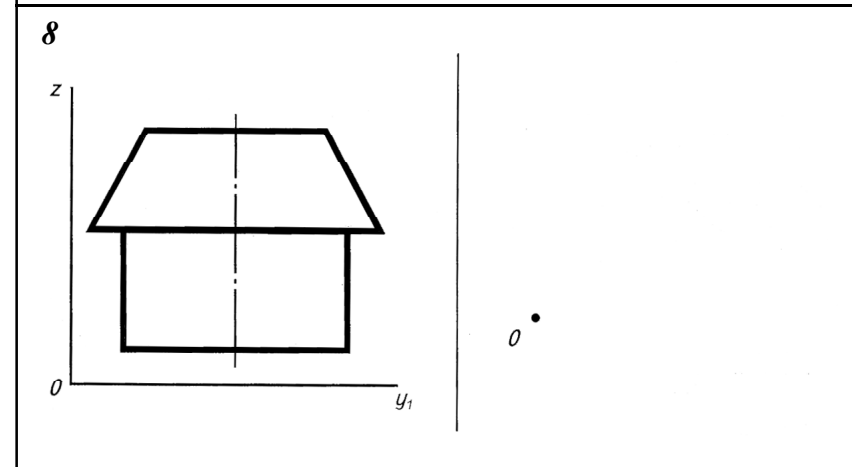
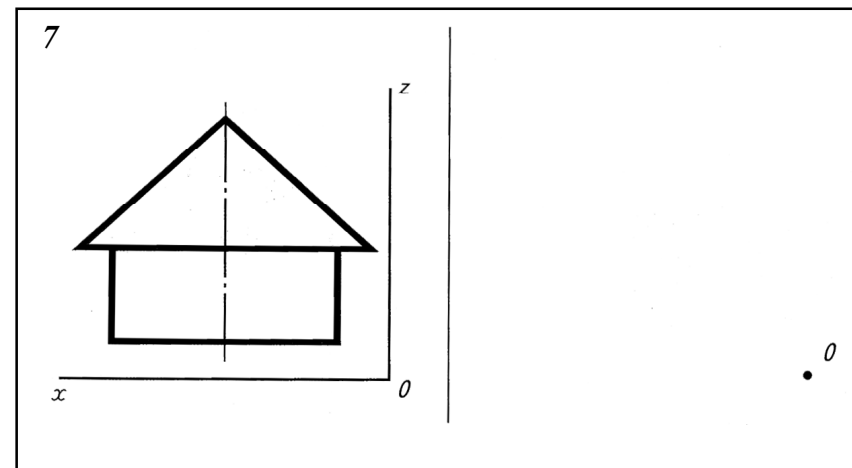
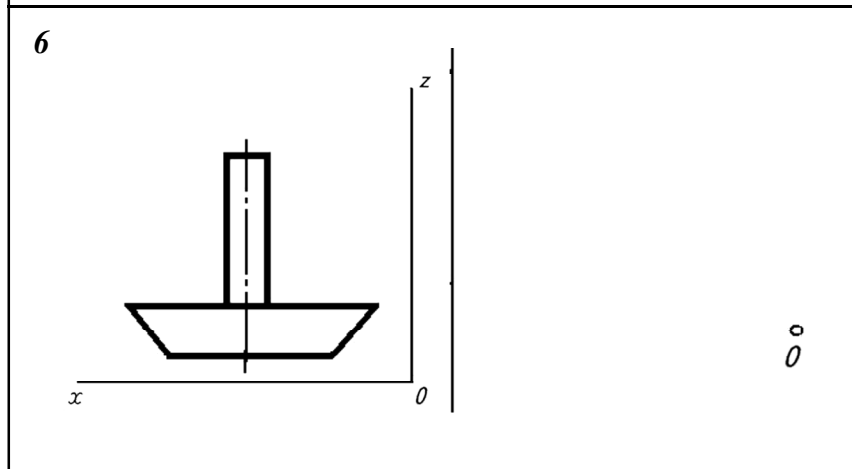
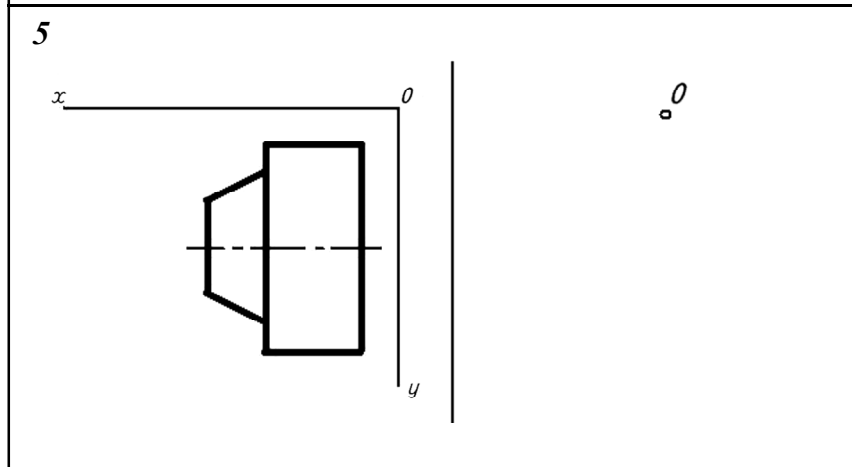
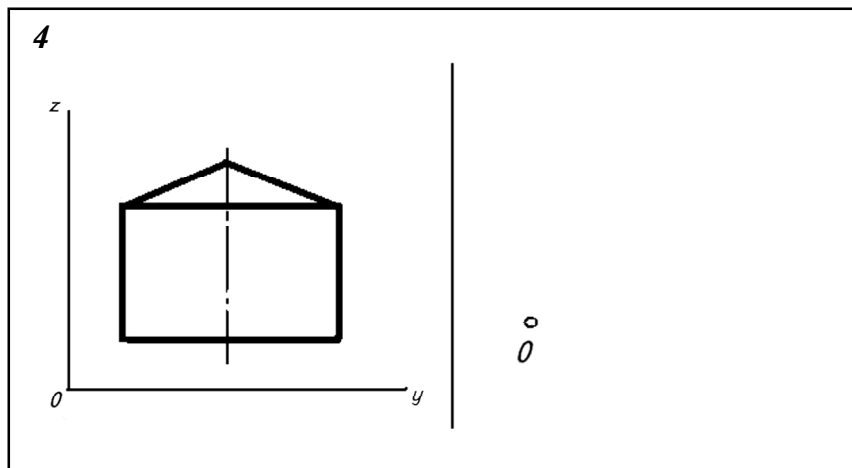


9-topshiriq — «Tekis shaklning izometrik proyeksiyasini bajarish» namunasi

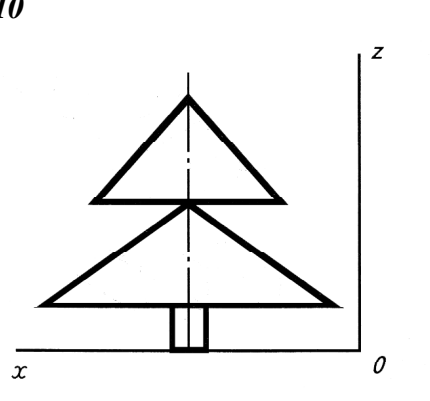


9-topshiriq variantlari



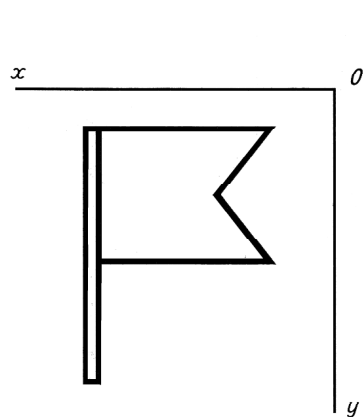


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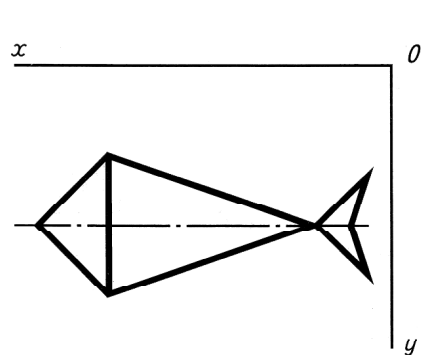
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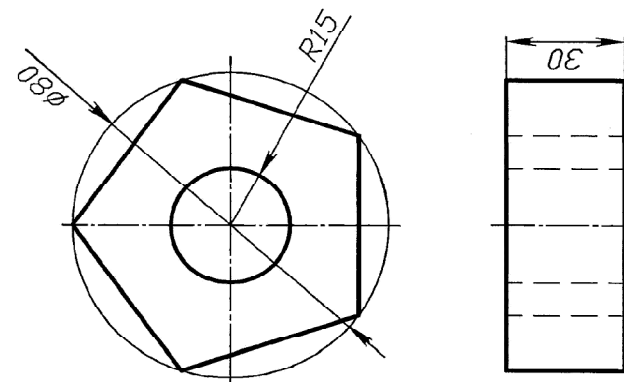
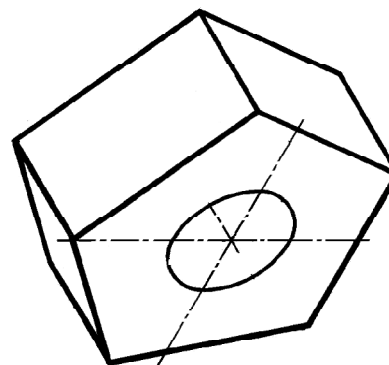
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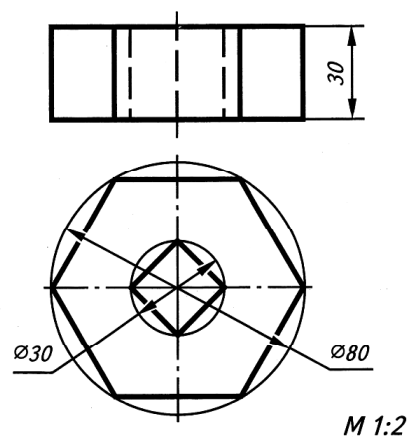
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10-topshiriq – «Geometrik shaklli detalning izometrik proyeksiyasini bajarish» namunasi

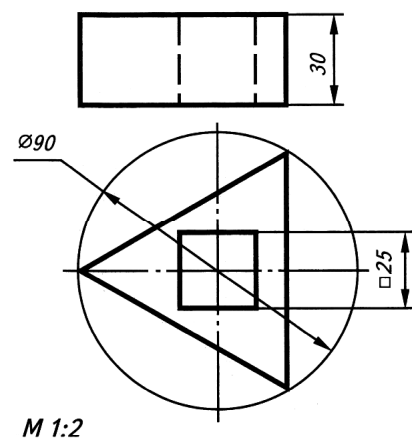


10-topshiriq variantlari

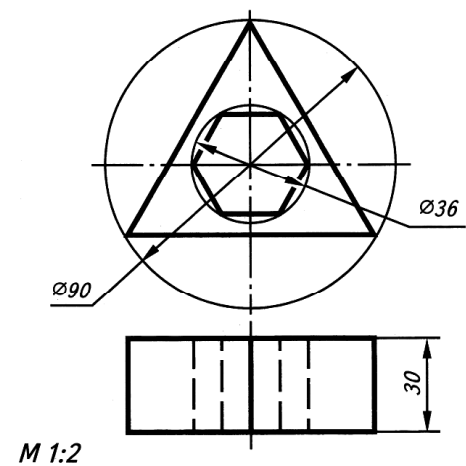
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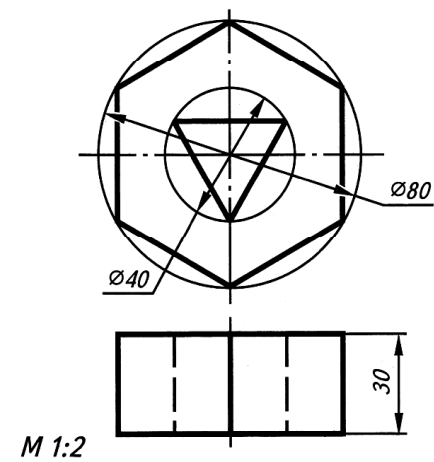
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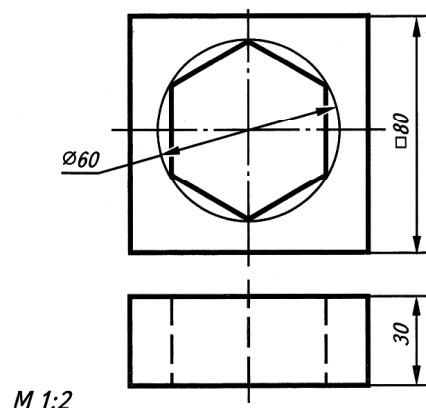
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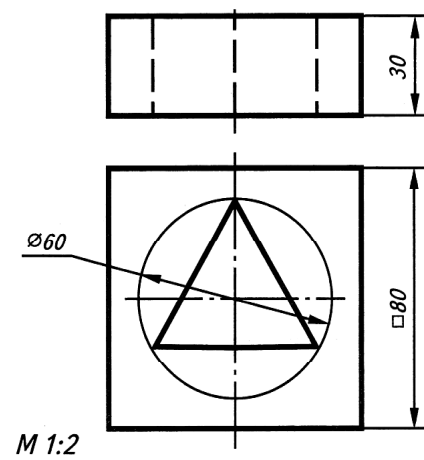
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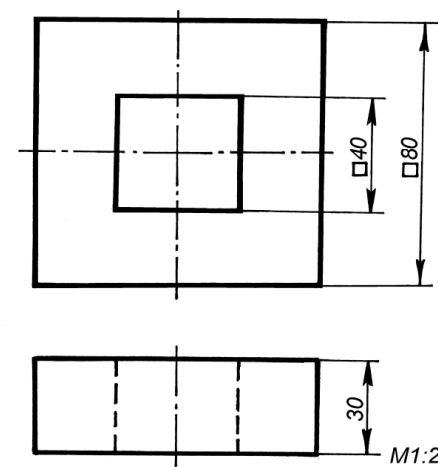
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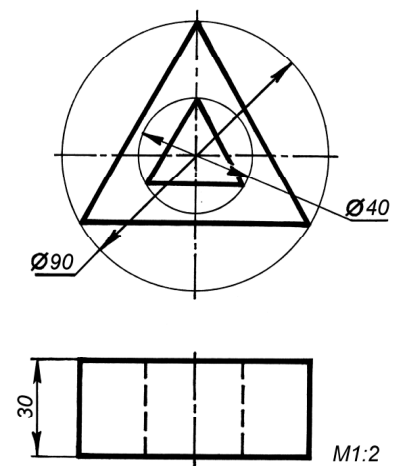
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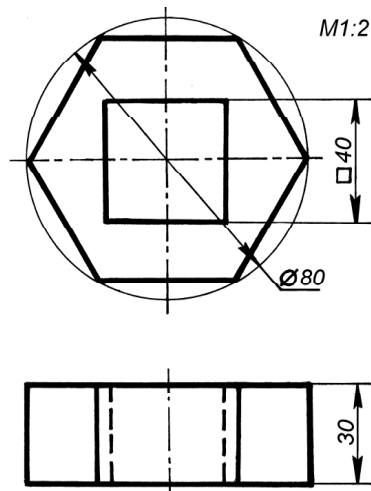
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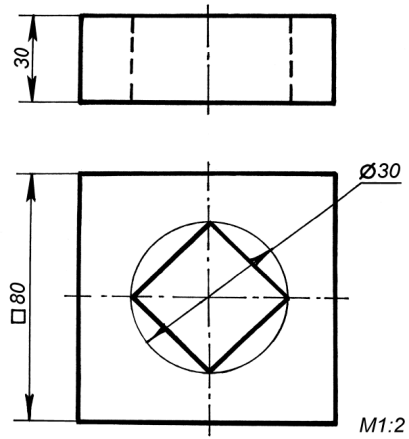
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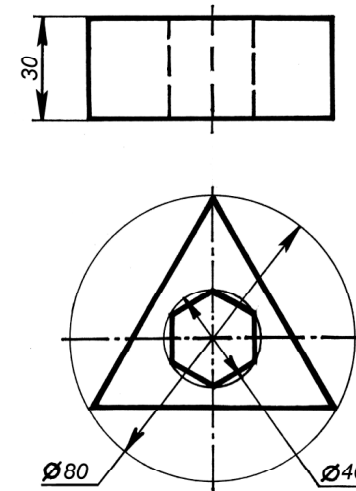
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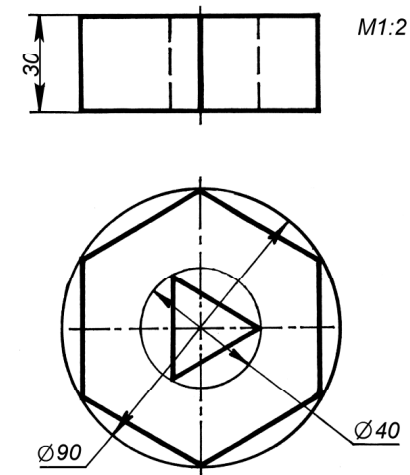
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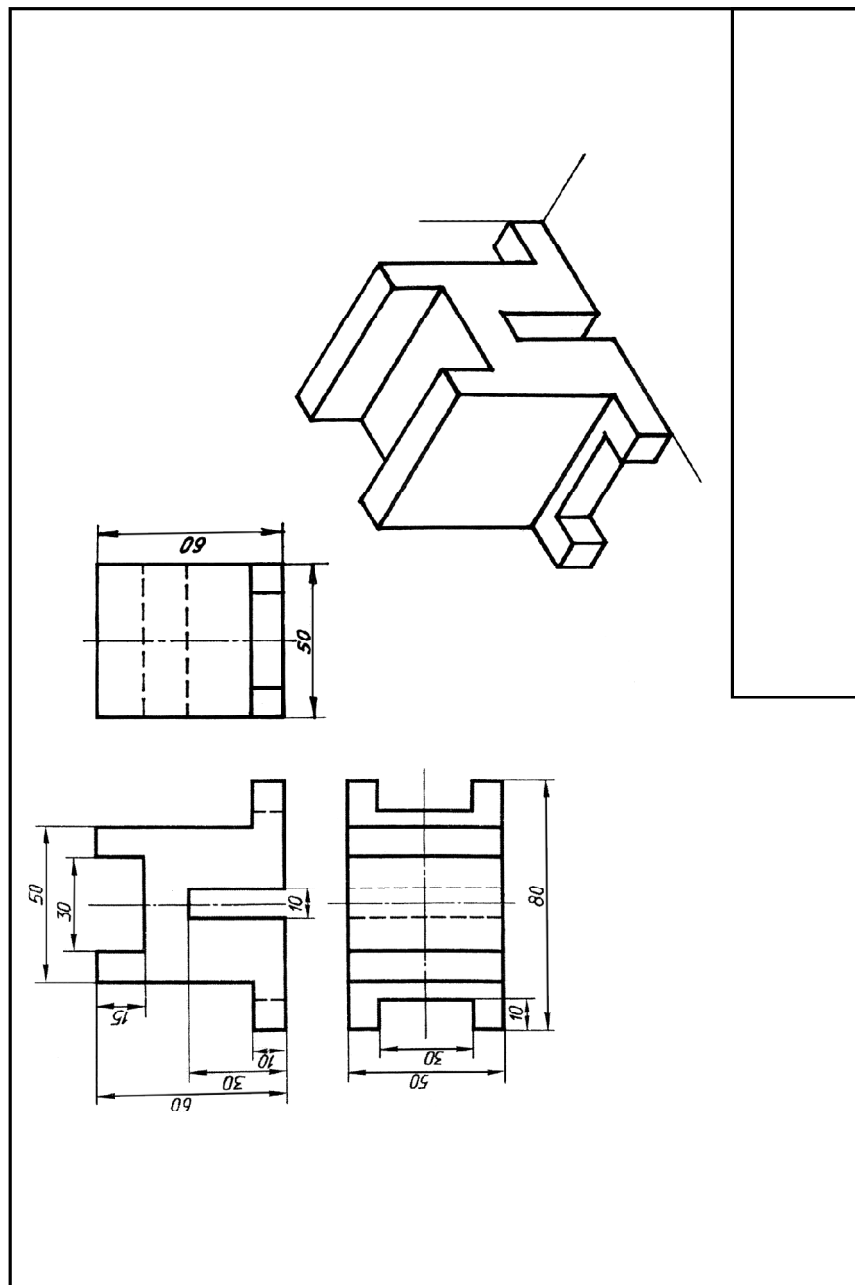
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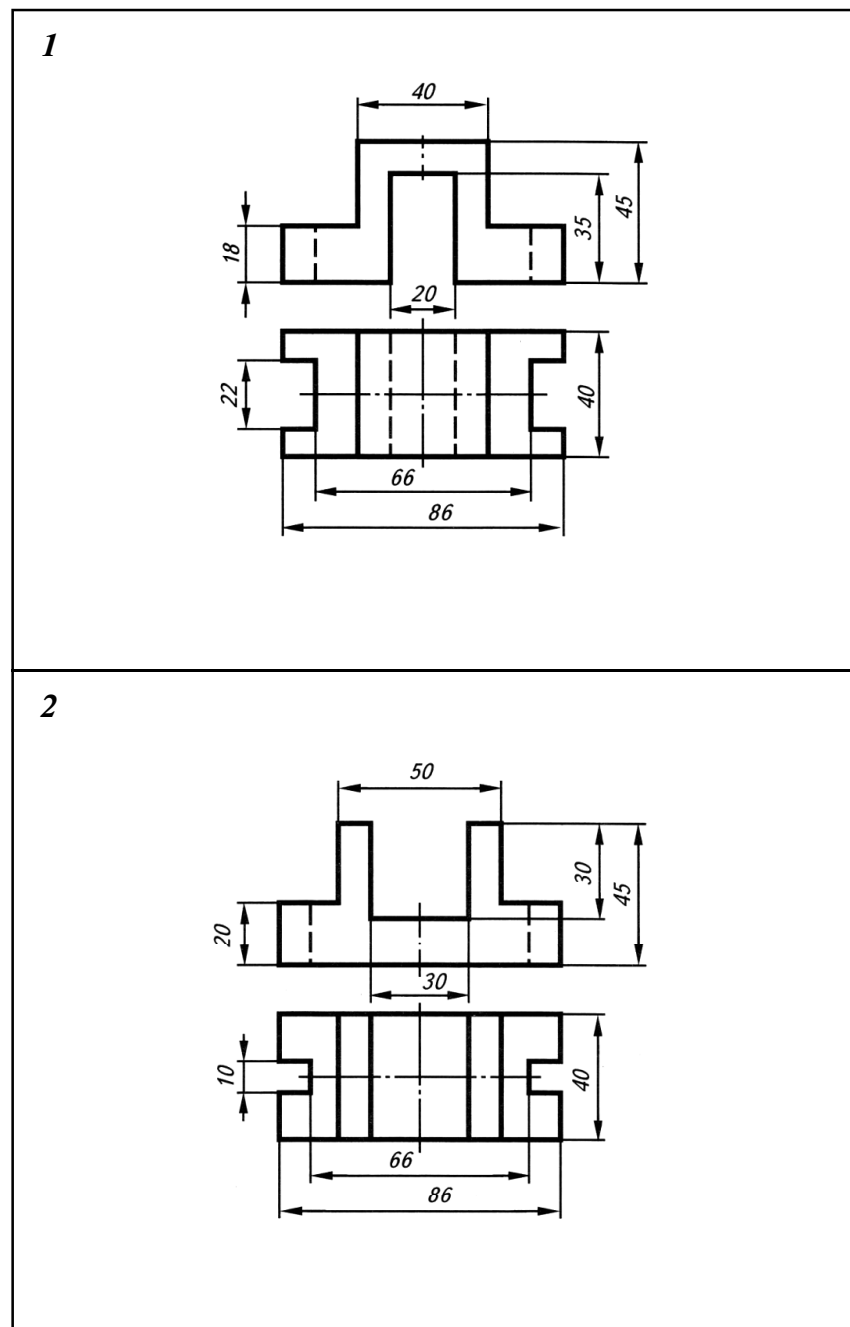
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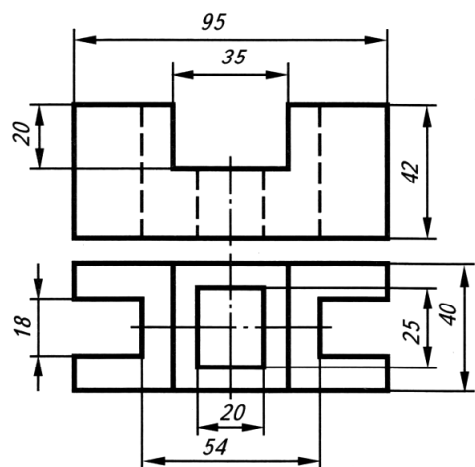
**11-topshiriq – «Detalning izometrik proyeksiyasini bajarish»
namunasi**



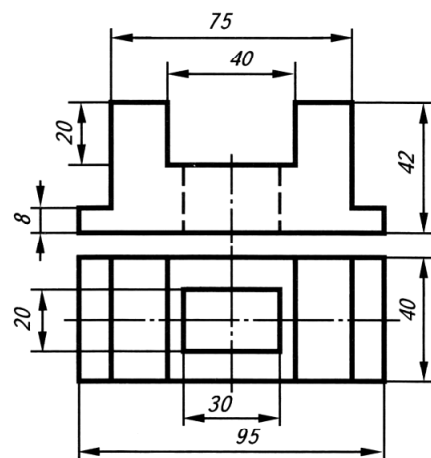
11-topshiriq variantlari



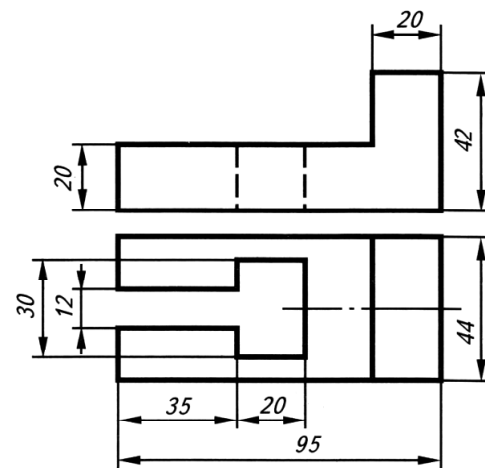
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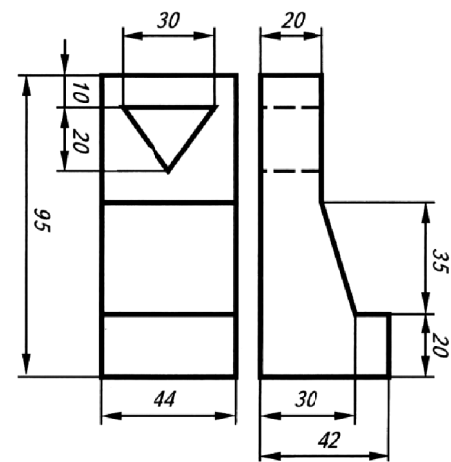
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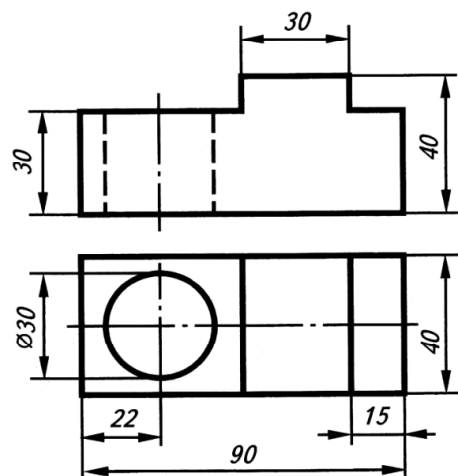
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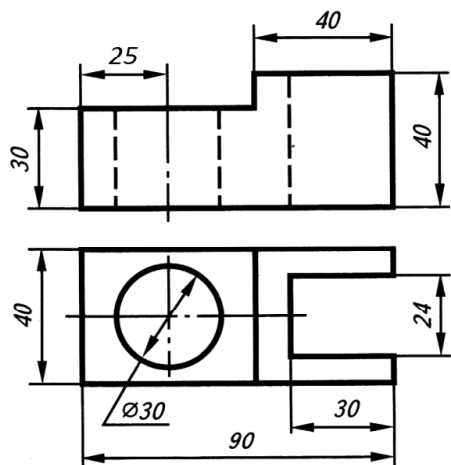
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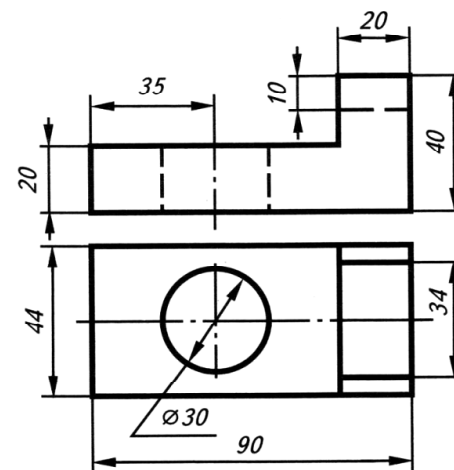
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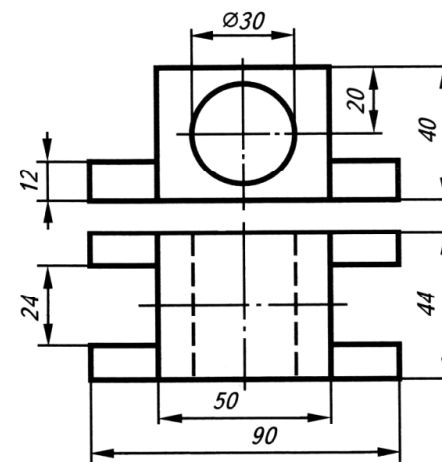
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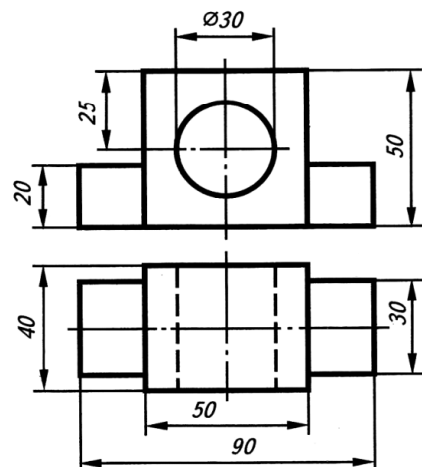
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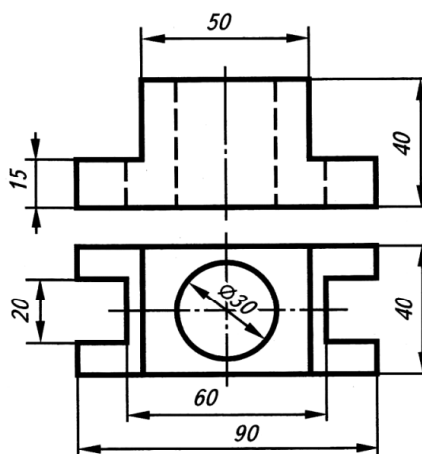
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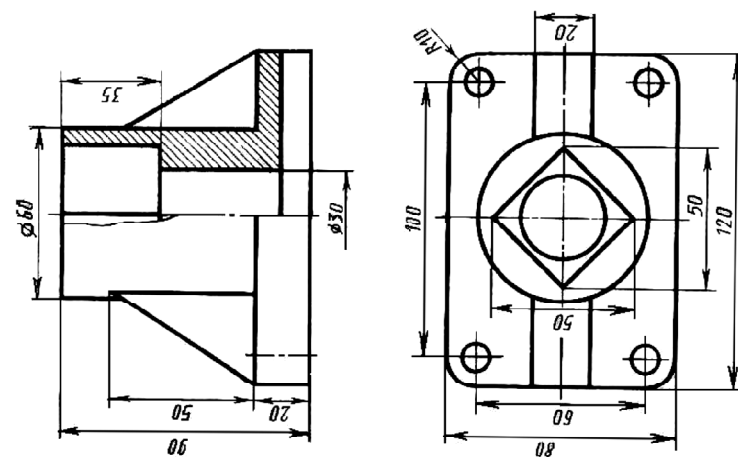
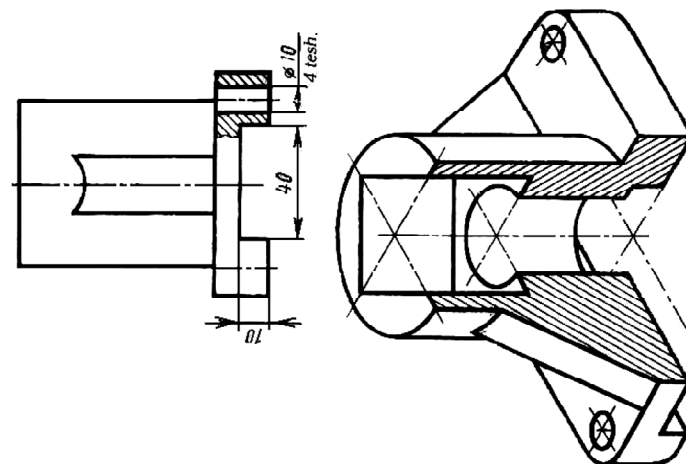
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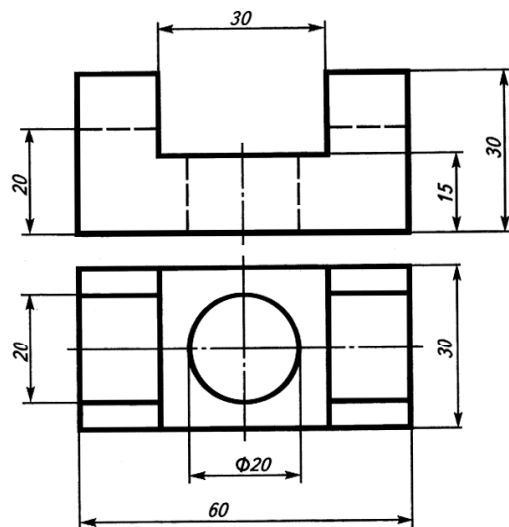


12-topshiriq — «Berilgan ikkita proyeksiyaga ko‘ra yetishmovchi proyeksiyani topish, qirqim va izometrik proyeksiyani bajarish» namunasi

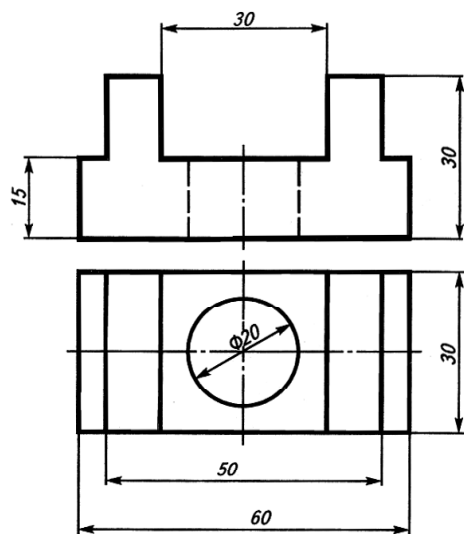


12-topshiriq variantlari

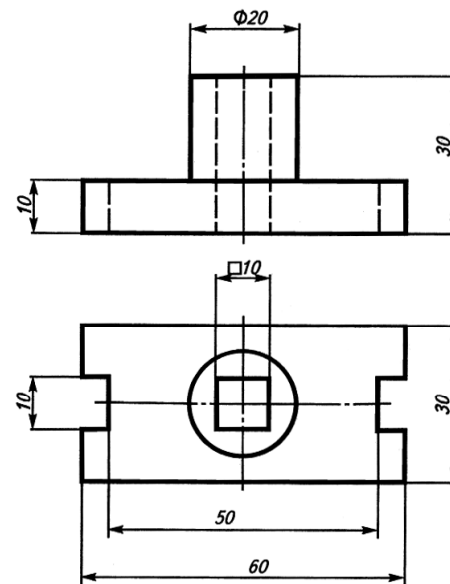
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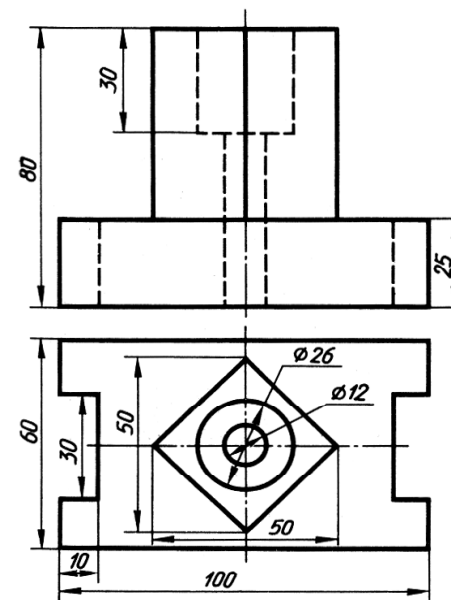
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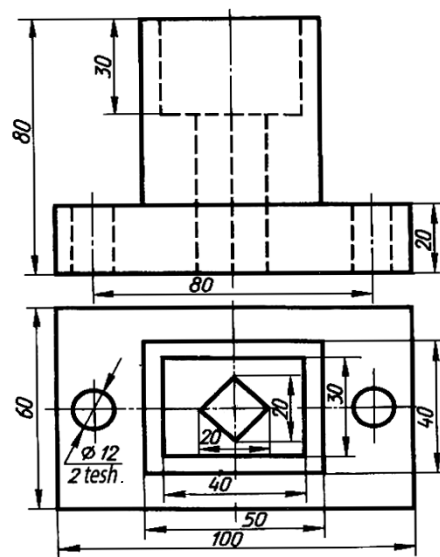
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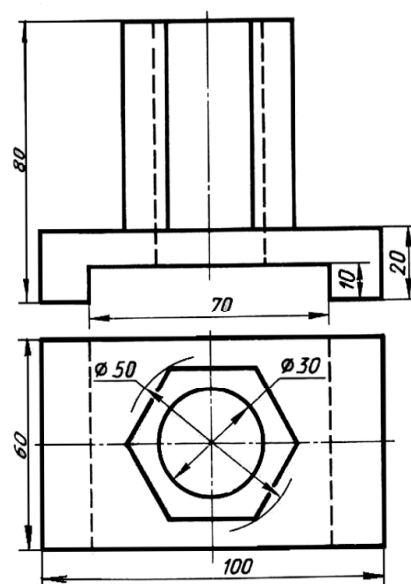
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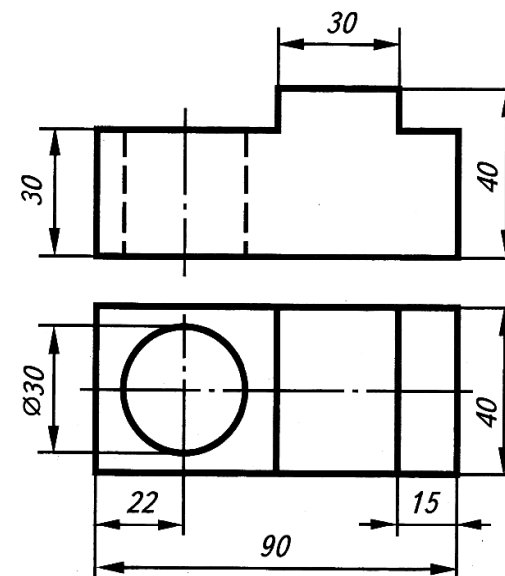
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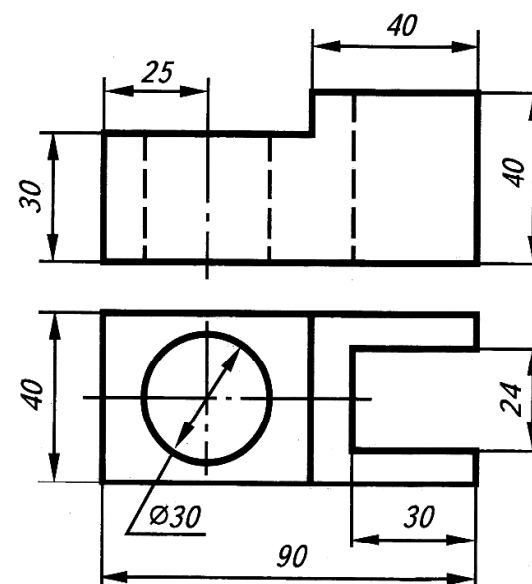
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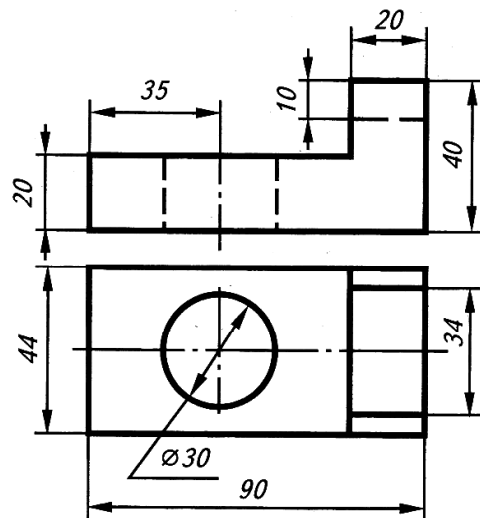
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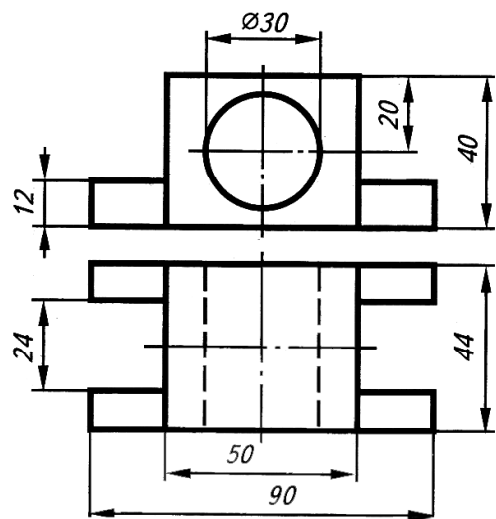
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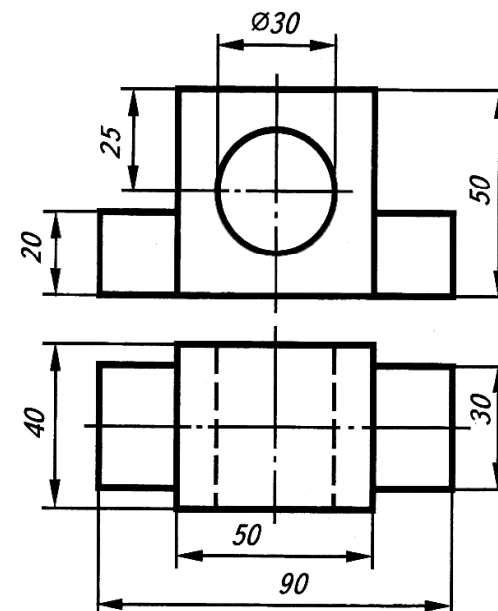
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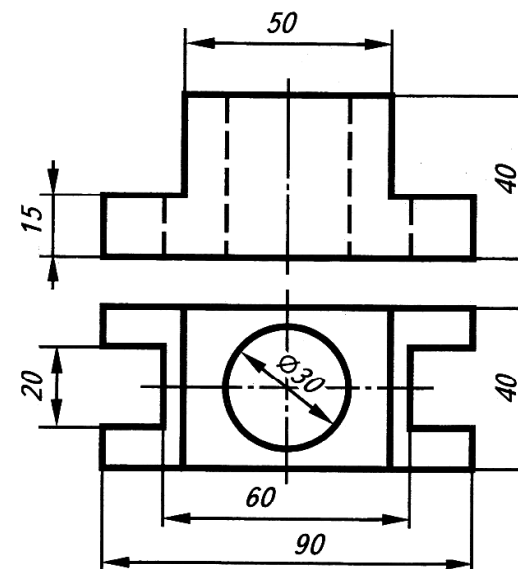
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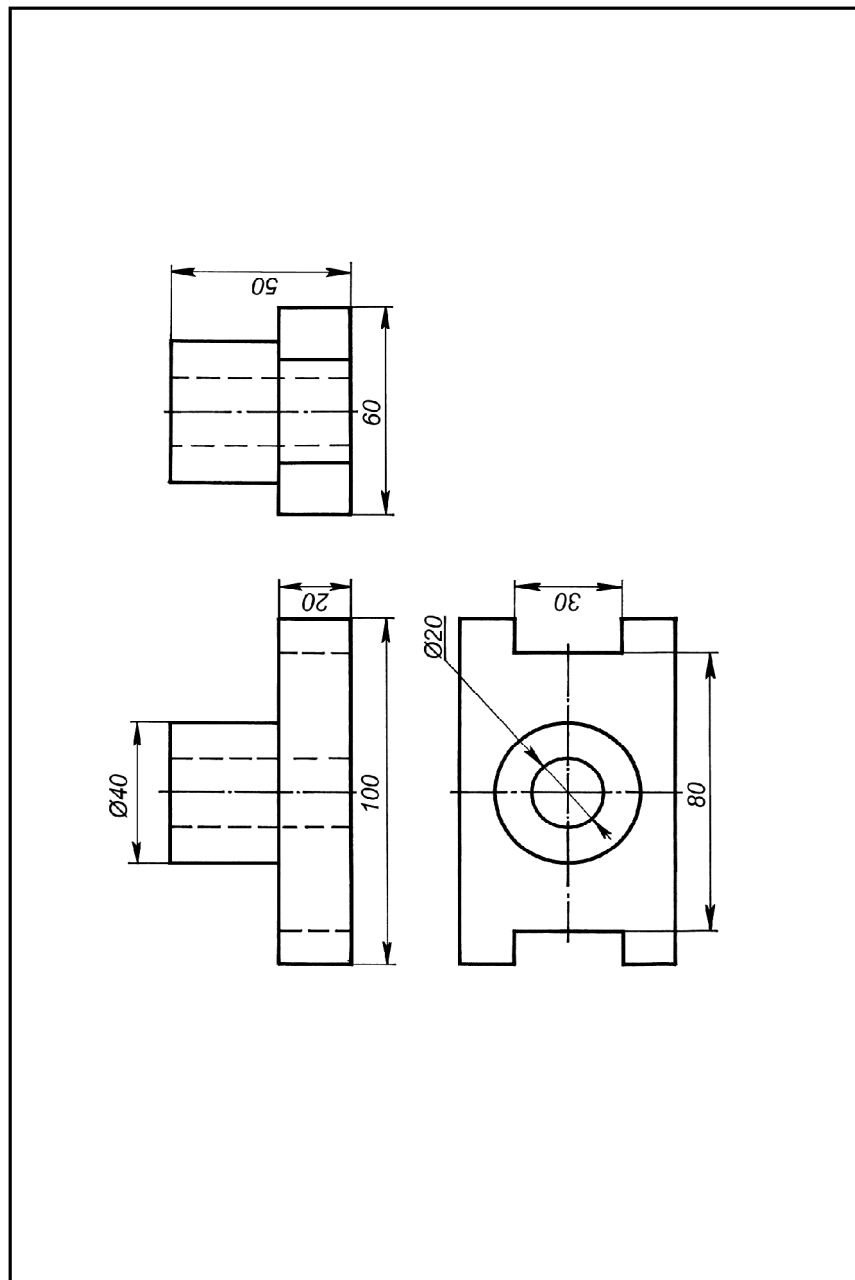
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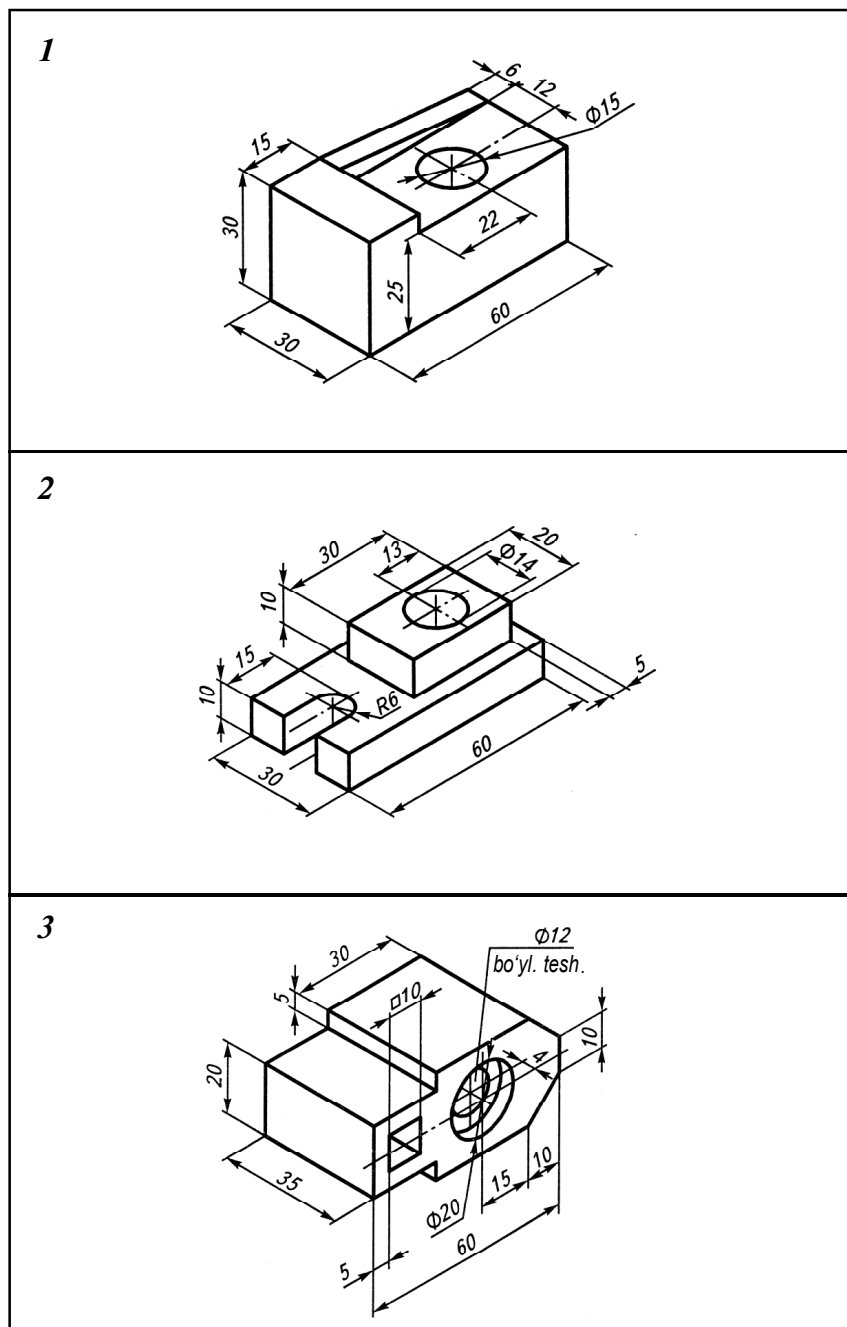
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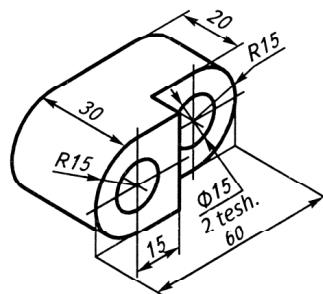
13-topshiriq — «Detalning yaqqol tasviri bo'yicha eskizini bajarish» namunasi



13-topshiriq variantlari

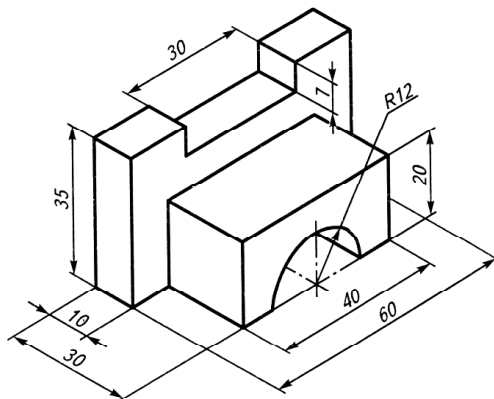


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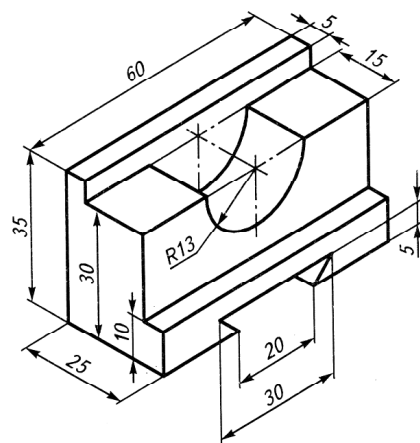


Ø15 - bo'yl. tesh.

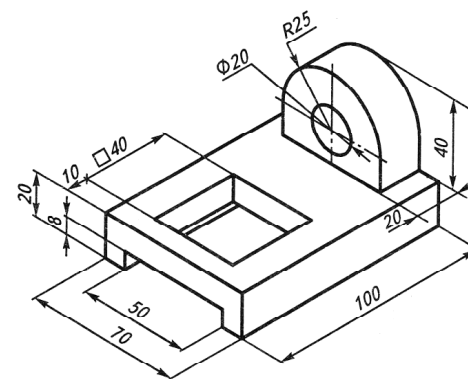
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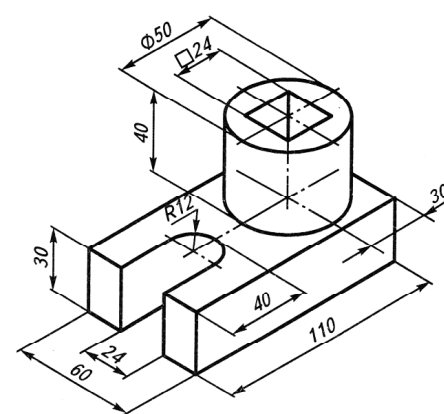
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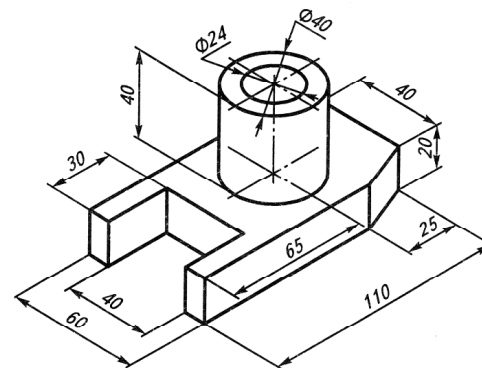
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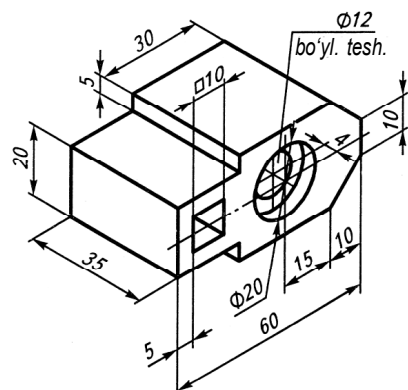
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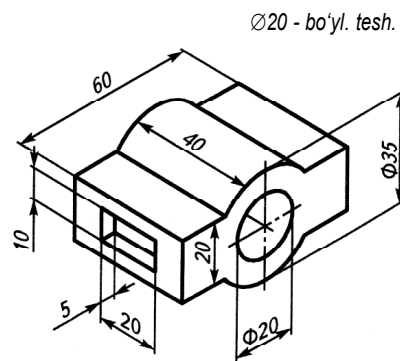
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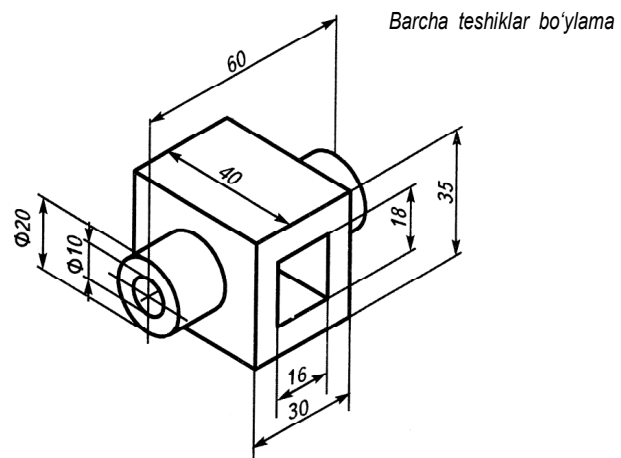
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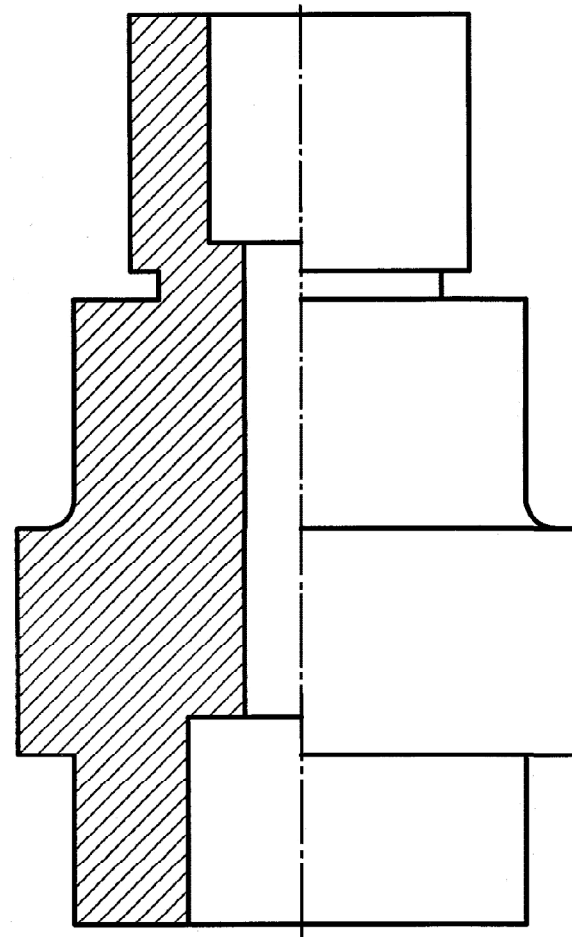


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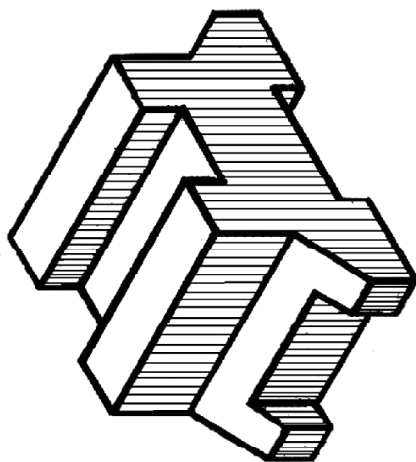
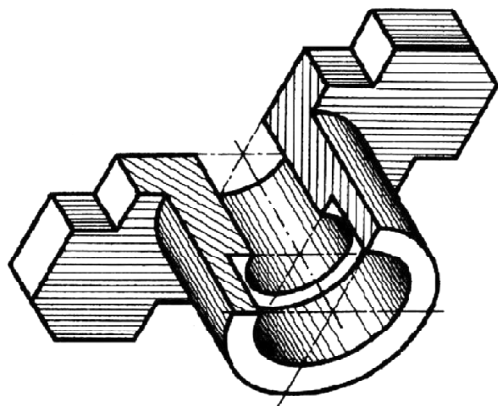
92

14-topshiriq – «Ko‘rinishning yarmi bilan qirqimning yarmini birlashtirishdagi yetishmovchi chiziqlarini bajarish» namunasi



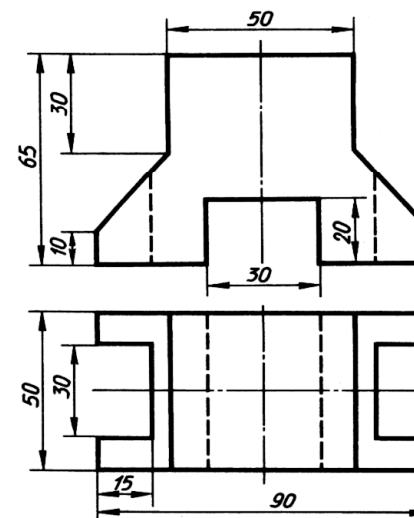
93

15-topshiriq – «Detalning ikkita ko‘rinishiga asosan uning texnik chizmasini bajarish» namunasi

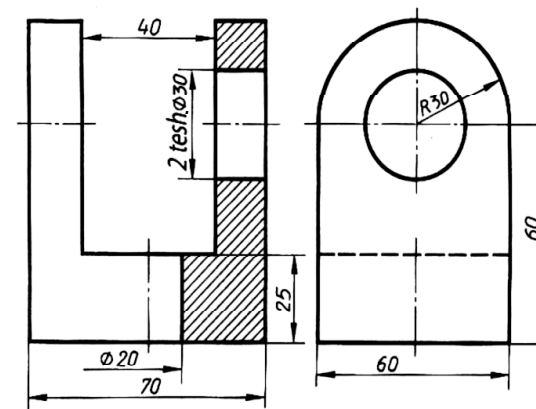


15-topshiriq variantlari

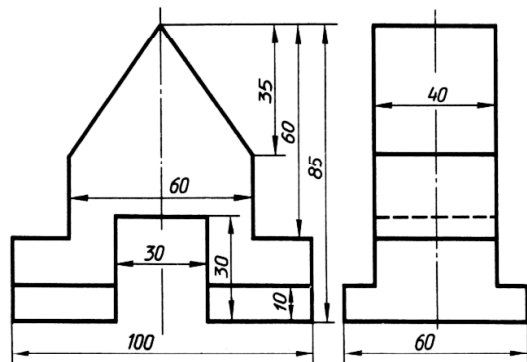
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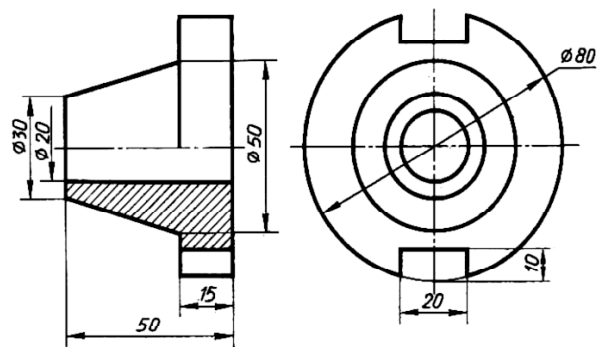
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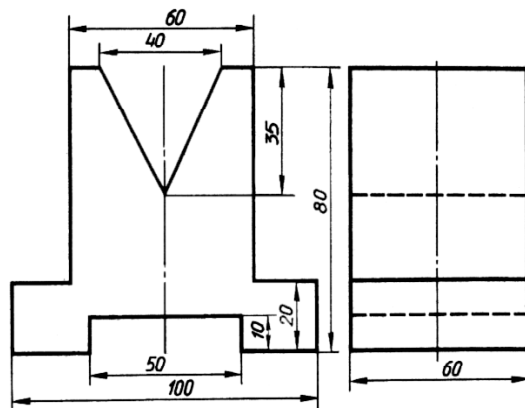
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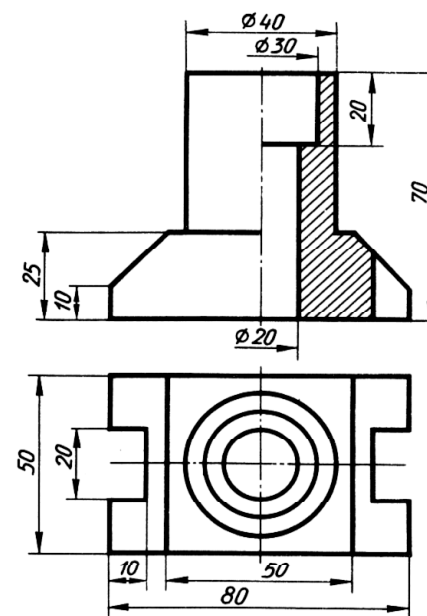
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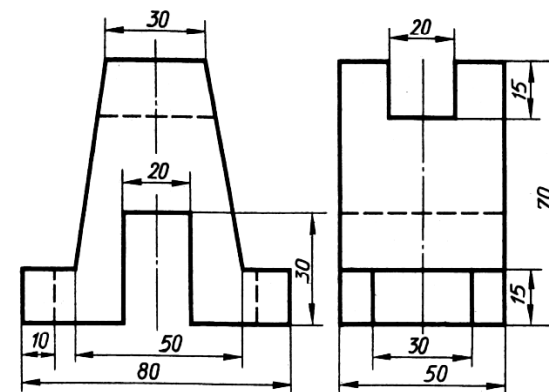
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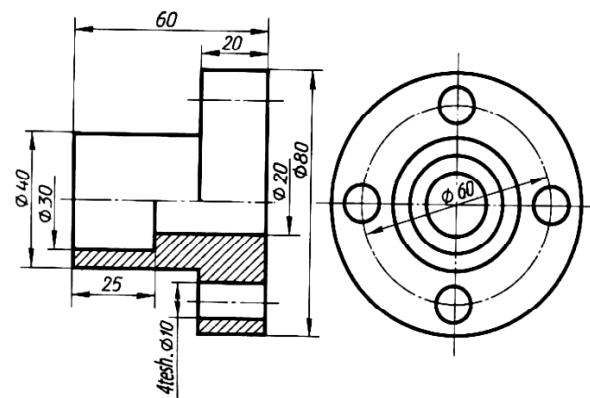
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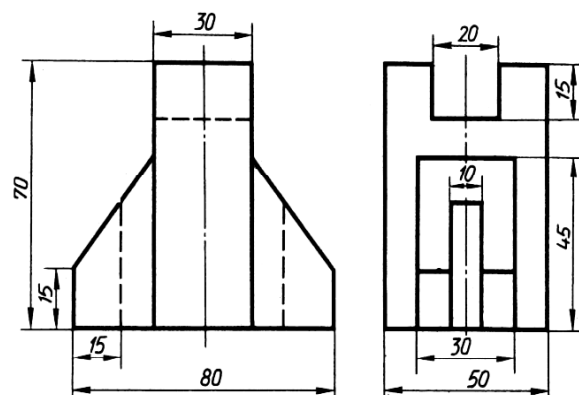
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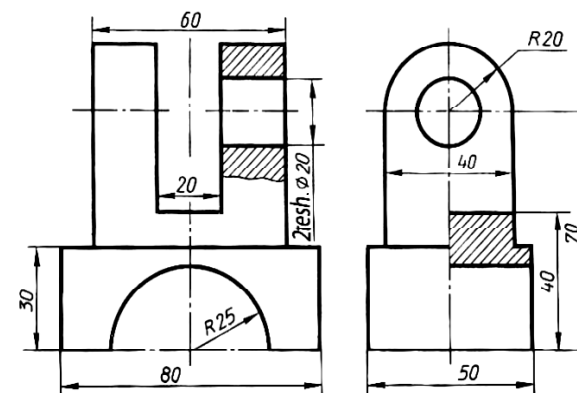
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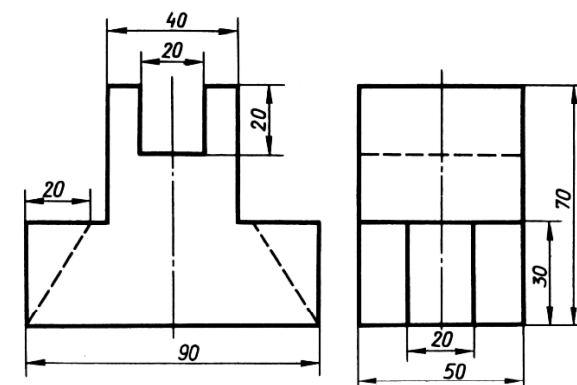
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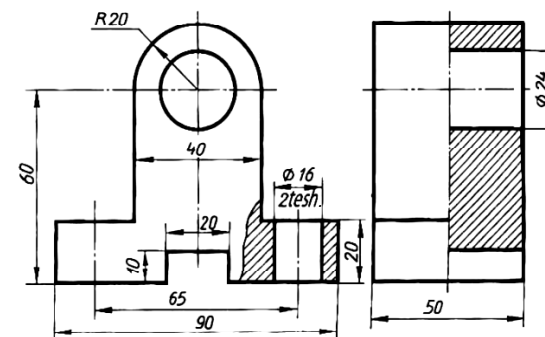
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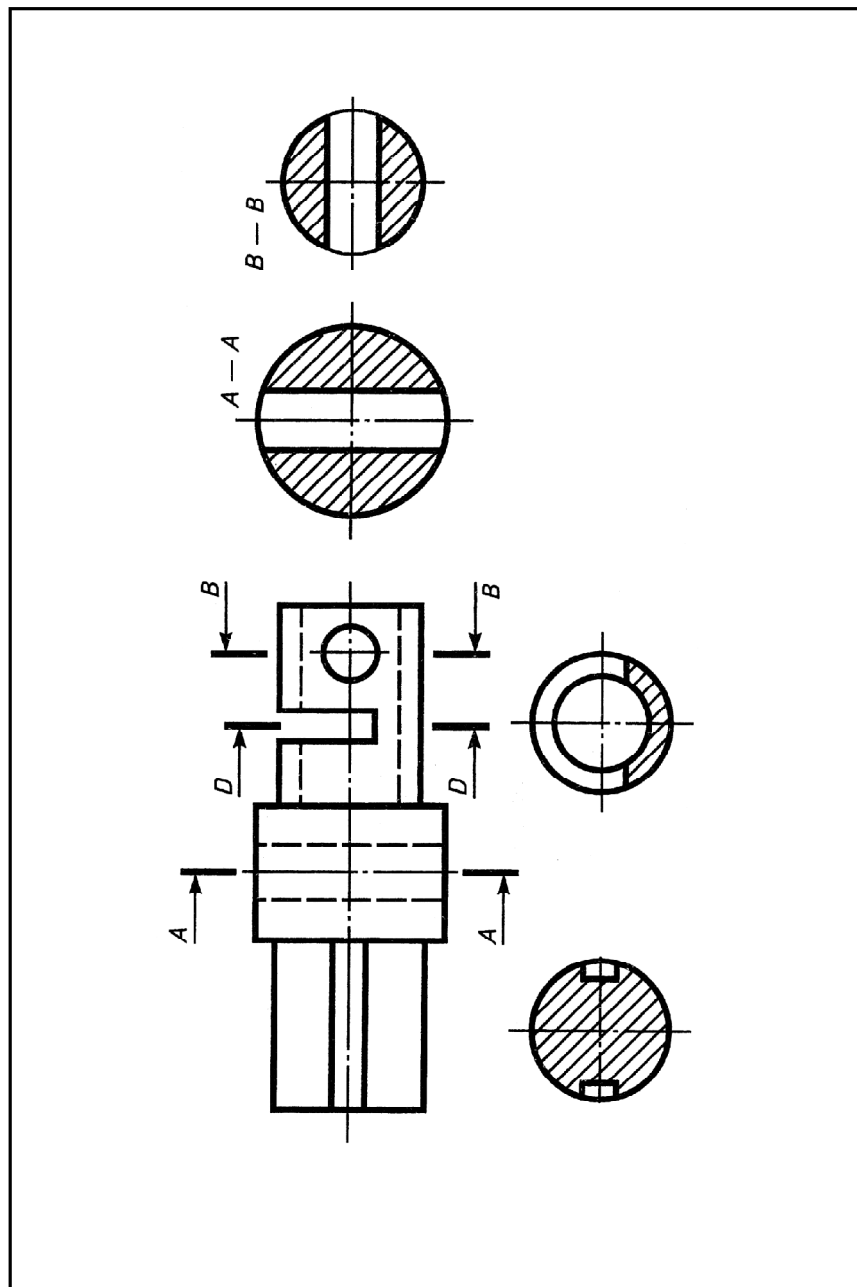
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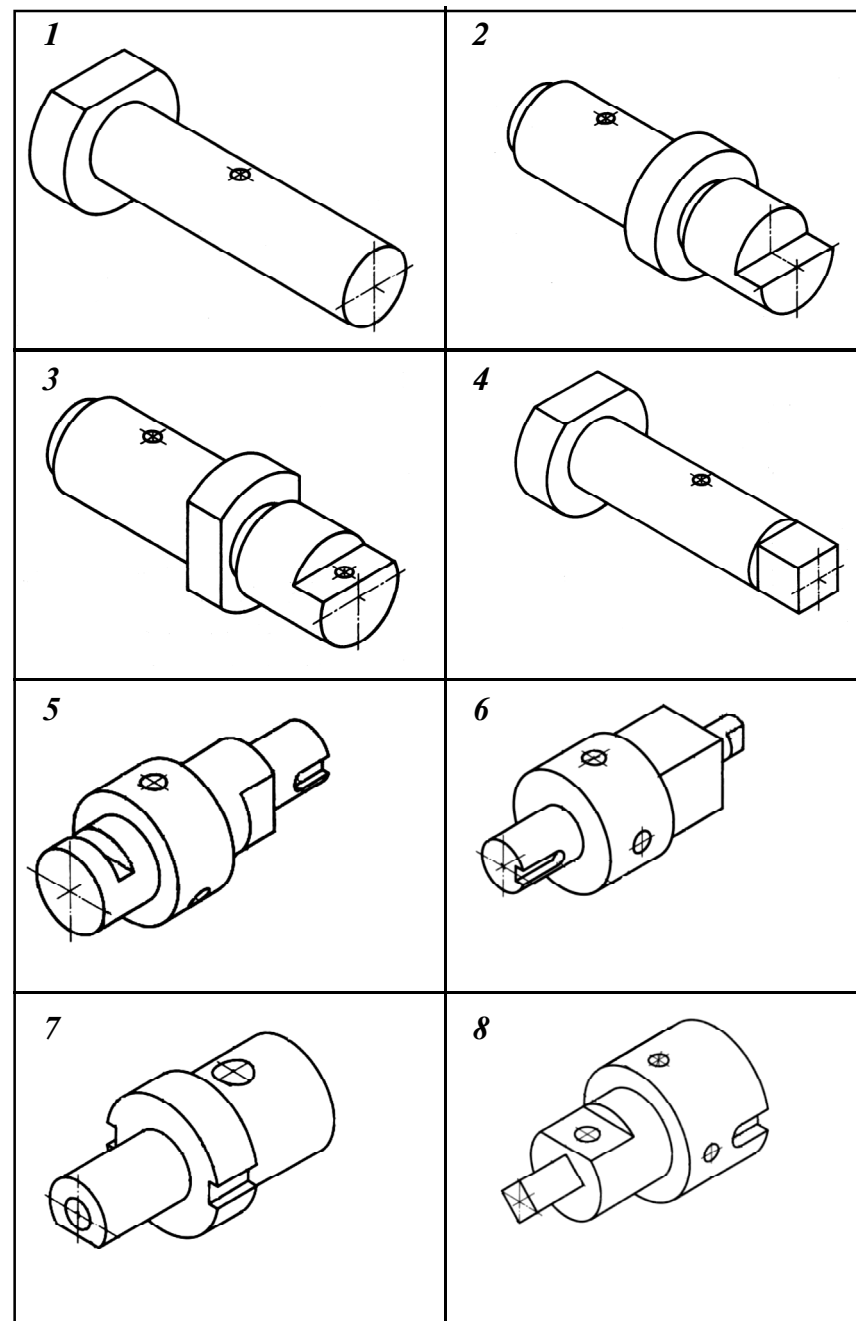
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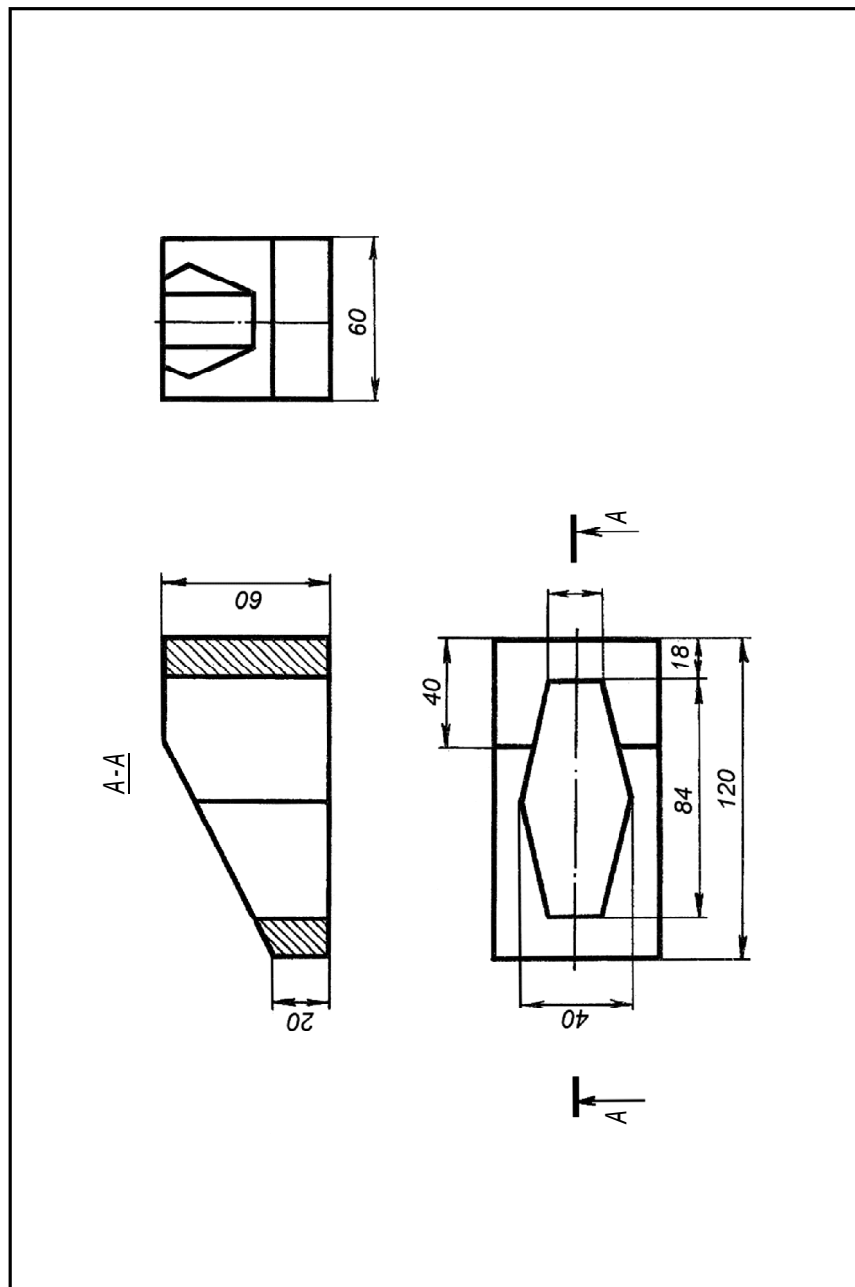
16-topshiriq — «Yaqqol tasvir bo'yicha tarkibida kesim tasvirlangan detal chizmasini bajarish» namunasi



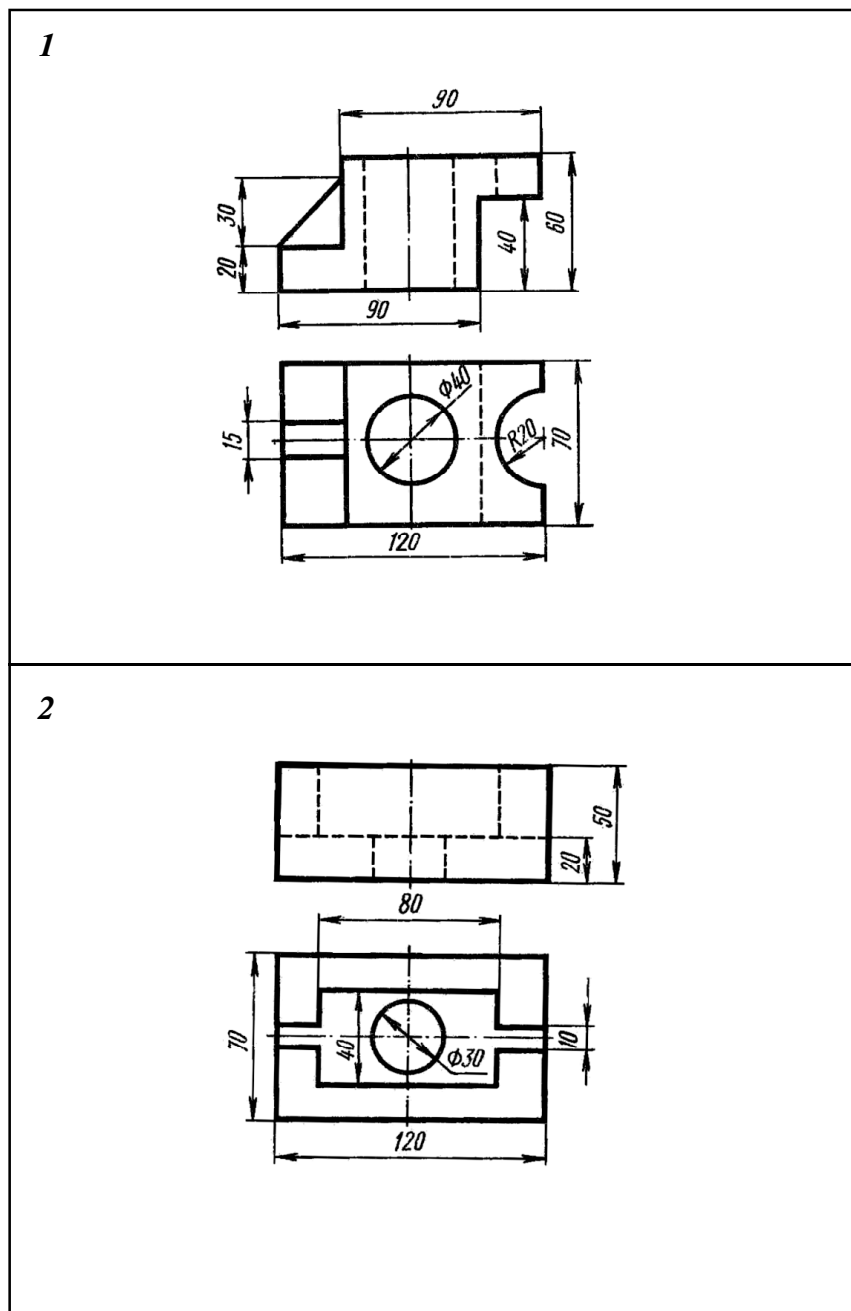
16-topshiriq variantlari



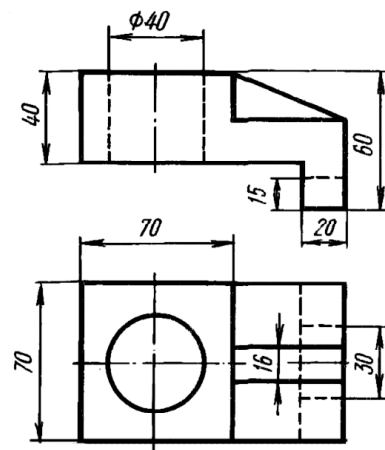
17-topshiriq — «Oddiy qirqim chizmasini bajarish»
namunasi



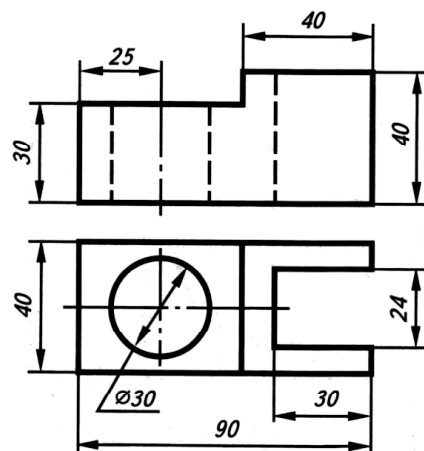
17-topshiriq variantlari



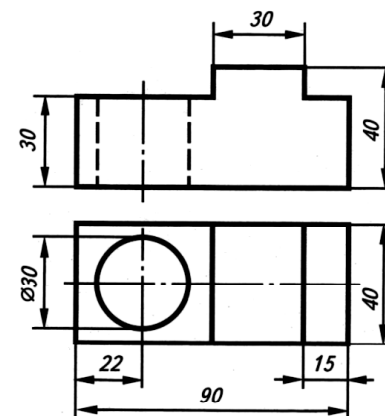
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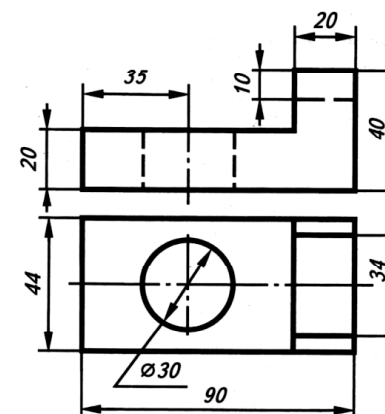
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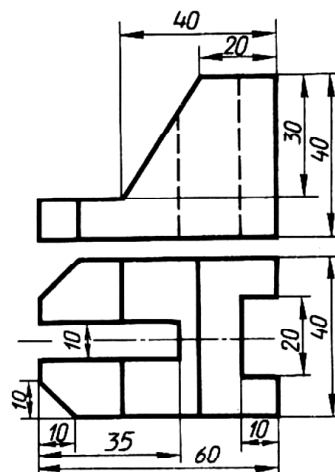
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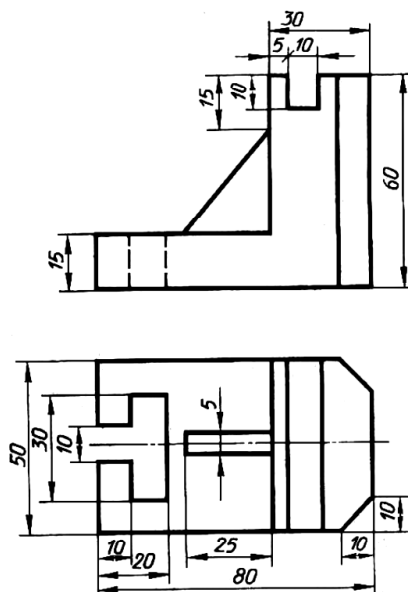
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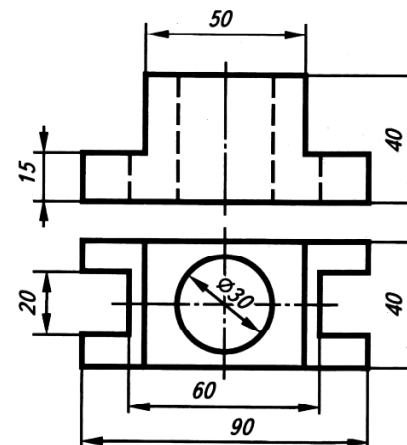
7



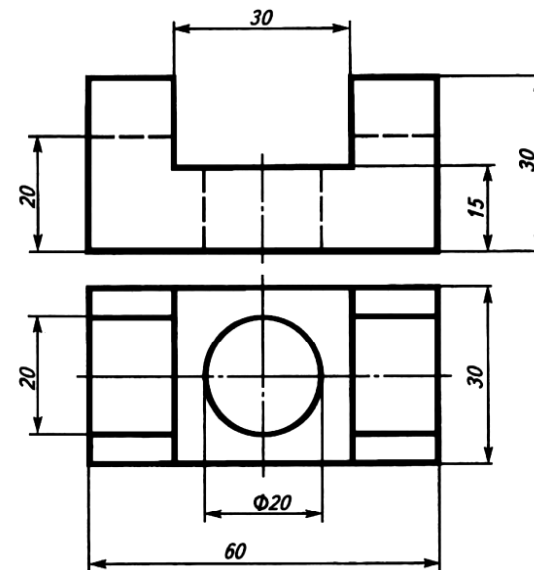
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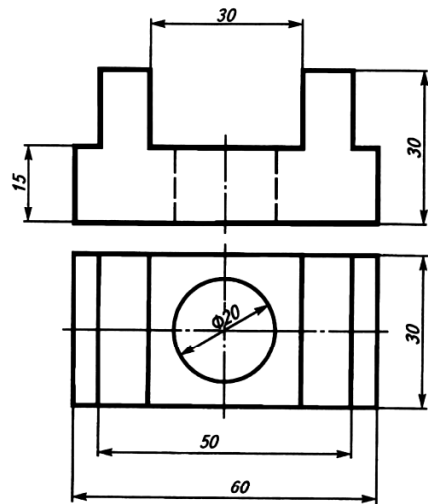
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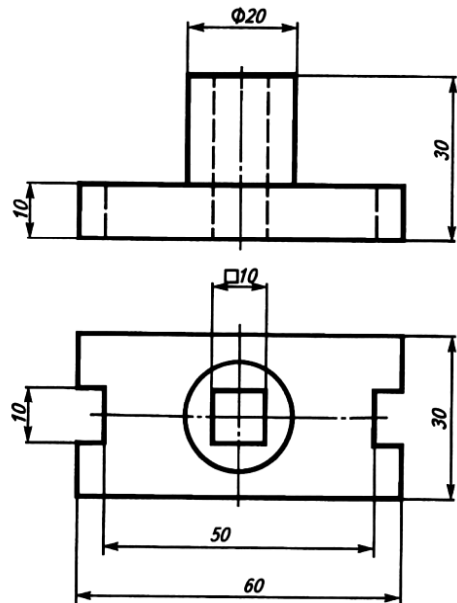
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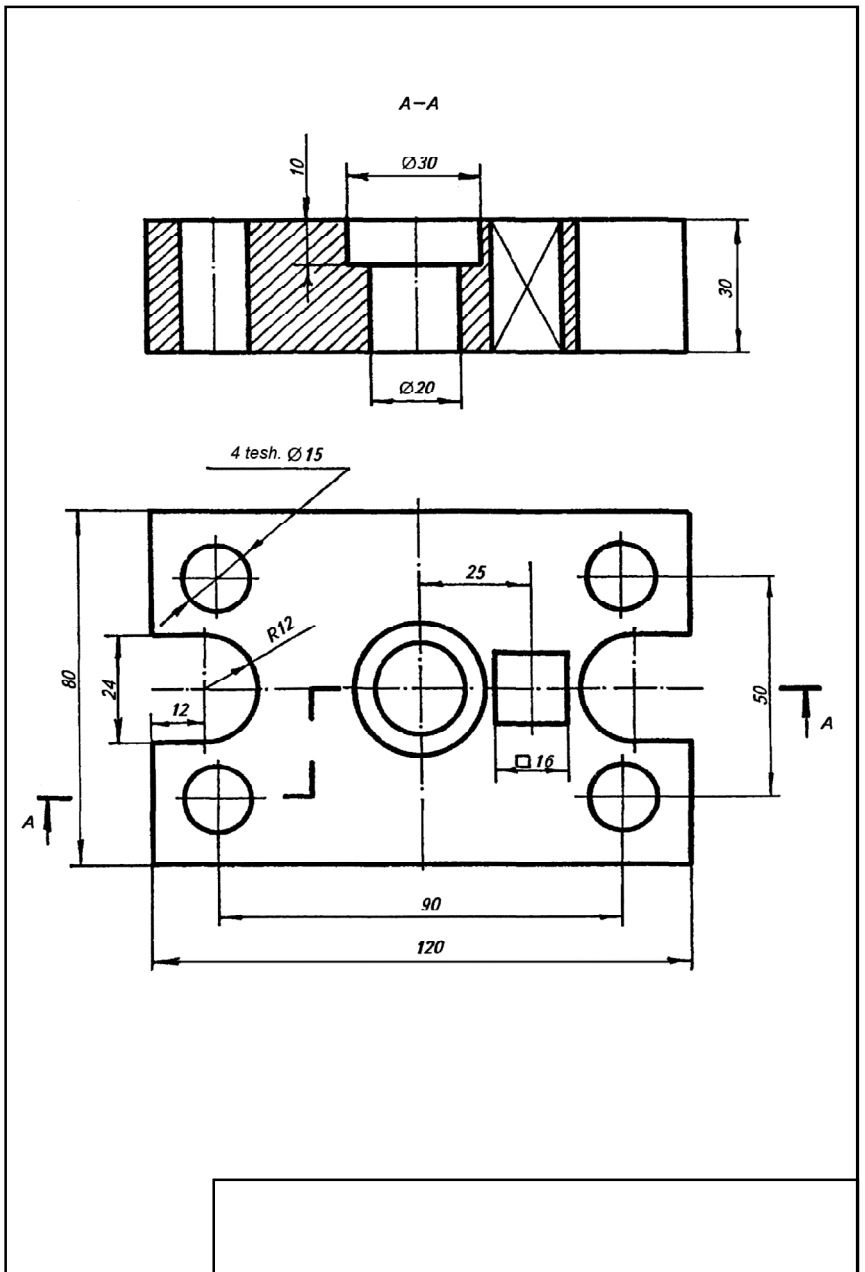
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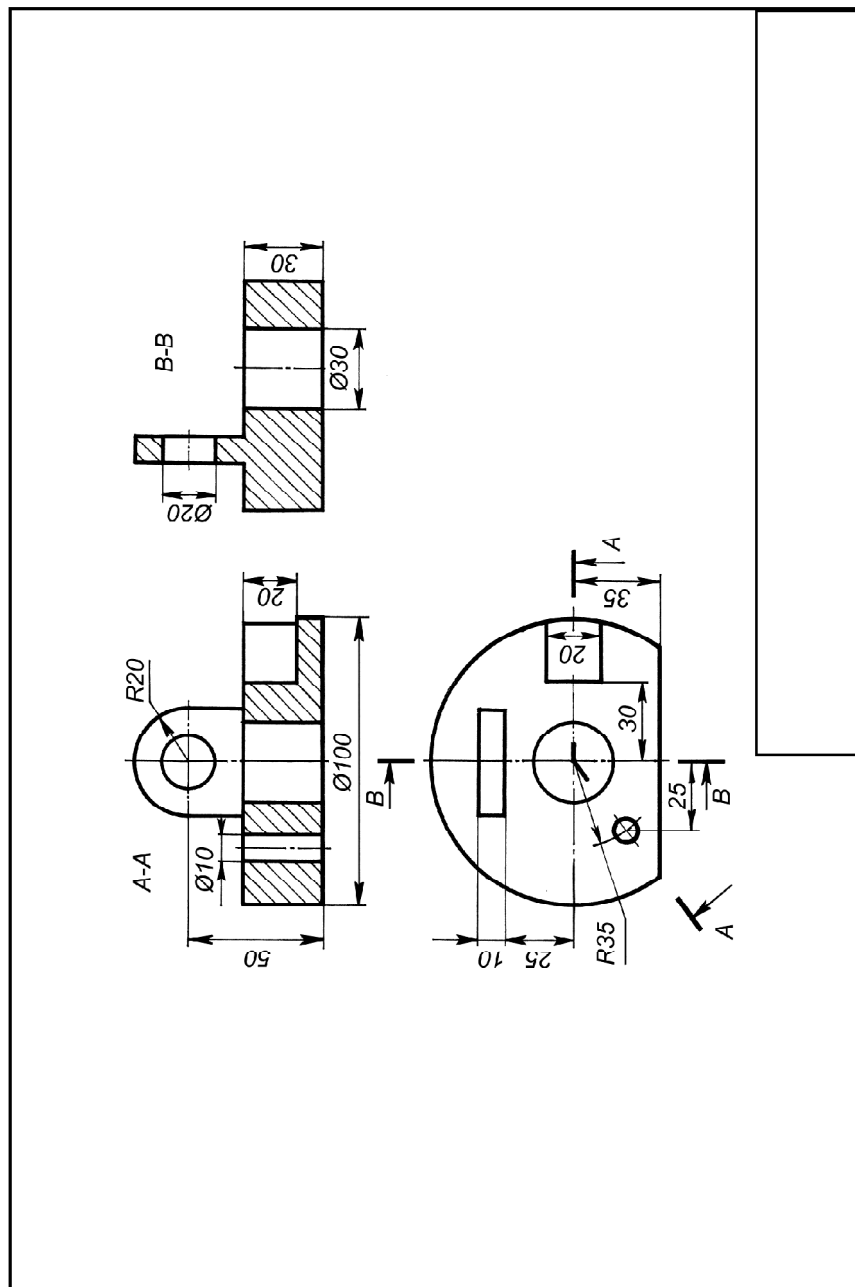
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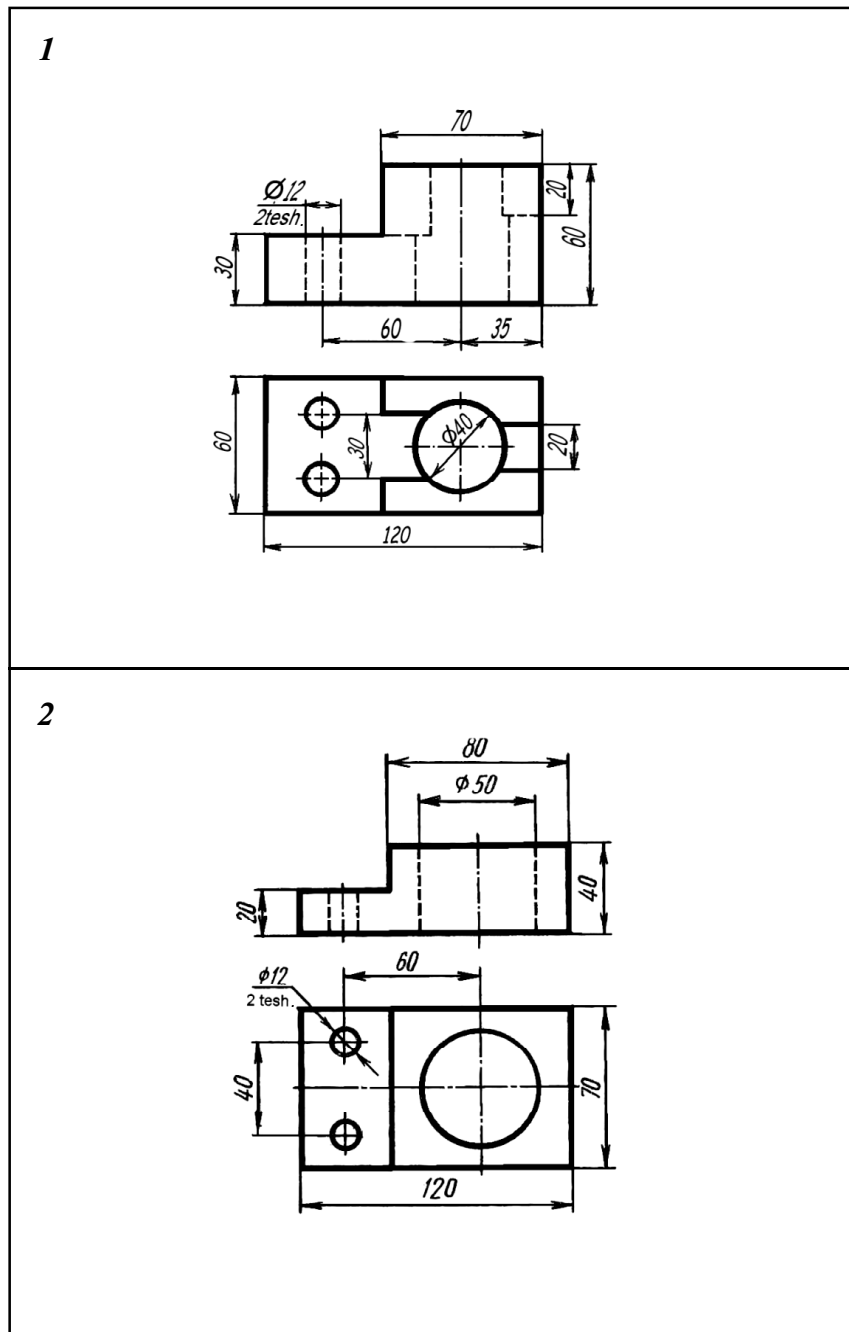
18-topshiriq – «Murakkab qirqim chizmasini bajarish»
namunasi (1–6-variantlar uchun)



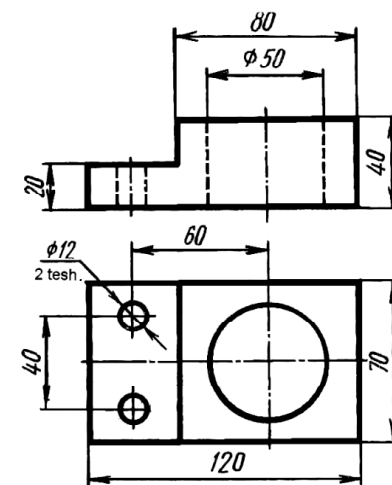
**18-topshiriq — «Murakkab qirqim chizmasini bajarish»
namunasi (7–12-variantlar uchun)**



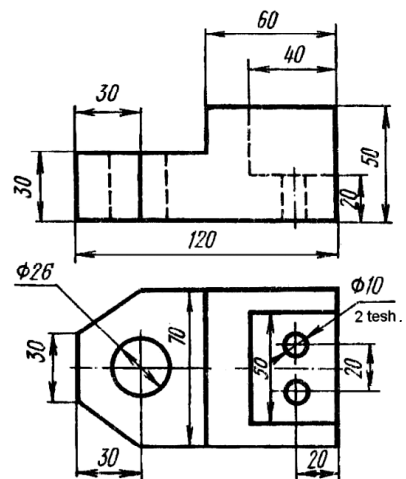
18-topshiriq variantlari



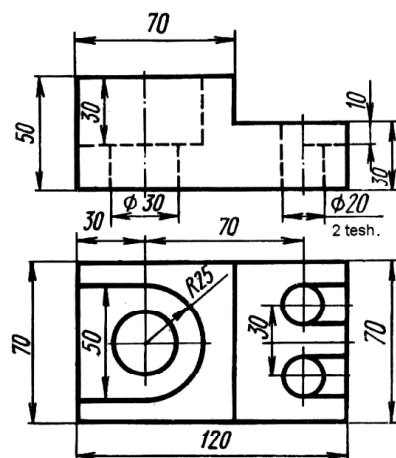
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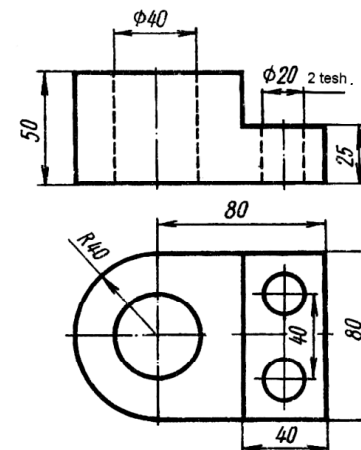
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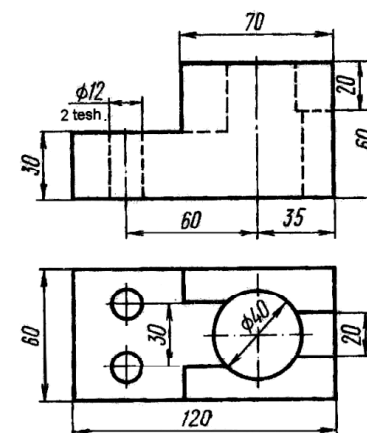
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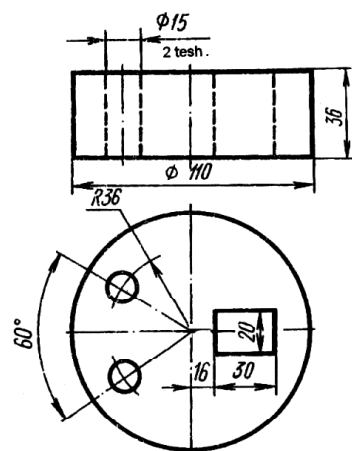
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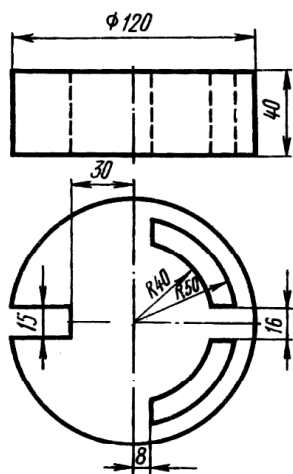
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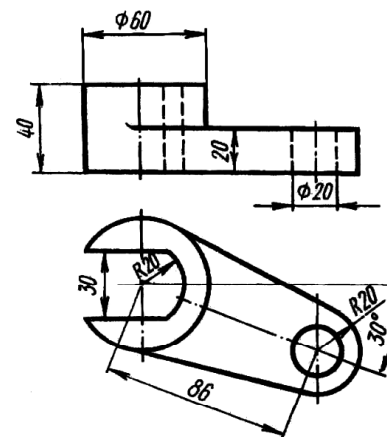
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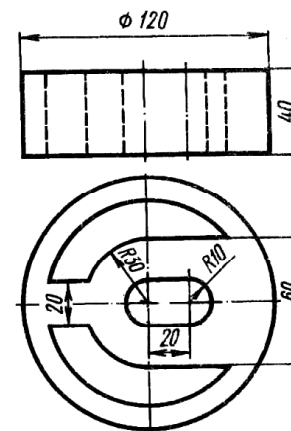
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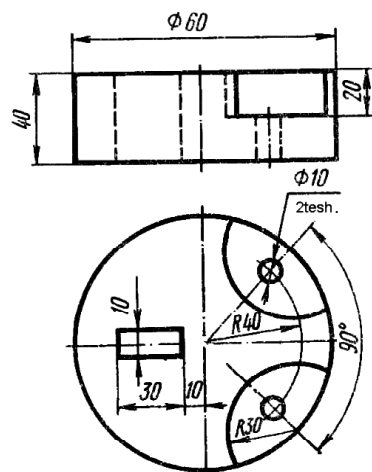
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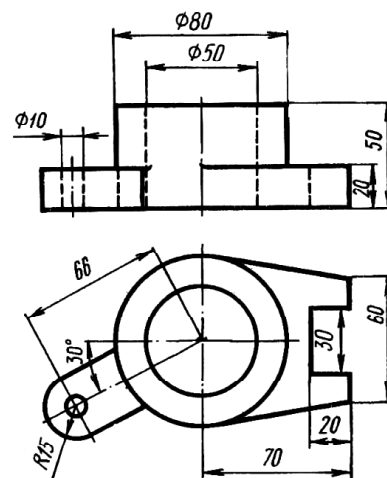
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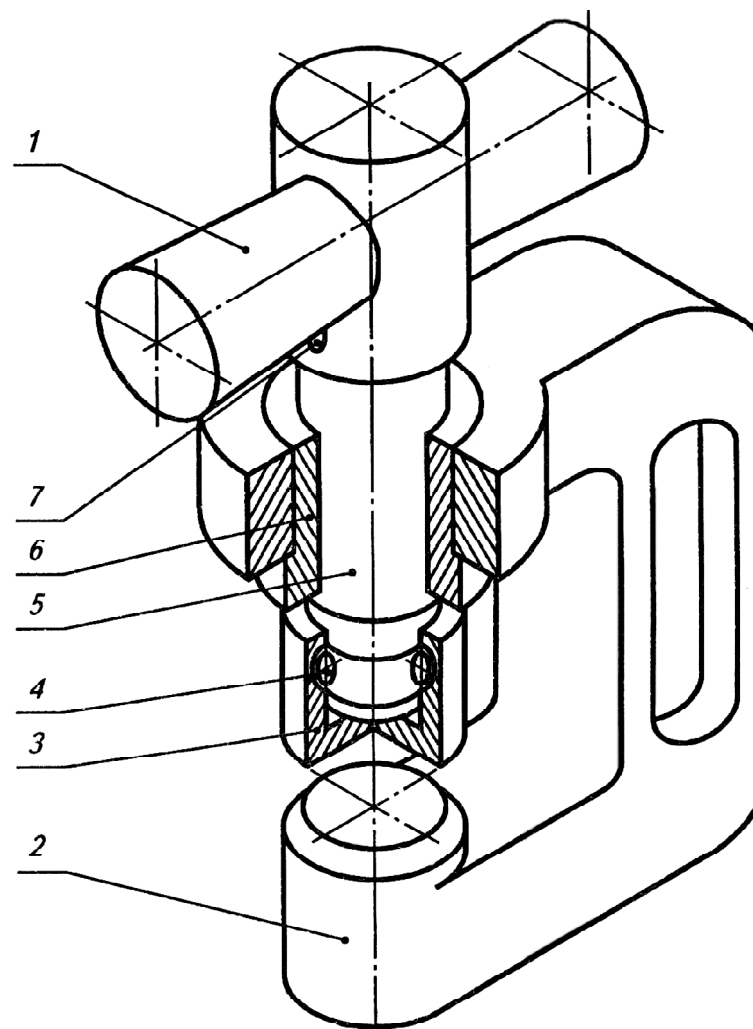
11



12



IV QISM. MASHINASOZLIK CHIZMACHILIGI



19–23-topshiriqlarning qisqacha bayoni

19-topshiriq. Rezbalarni chizmada tasvirlash

Topshiriq A4 formatli qog‘oz varag‘ida bajarilib, o‘quvchilarda rezbali chizmalarni bajarish ko‘nikmalarini shakllantirishga mo‘ljallangan. Ushbu topshiriqda rezbalarning chizmada tasvirlanishi bilan birgalikda ularning o‘lchamlari chizmada to‘g‘ri tasvirlanishiga ham e‘tibor qaratiladi. Topshiriqni bajarishga kirishishdan oldin o‘quvchilarning nazariy bilimlarini quyidagi savollar orqali tekshirib ko‘rish tavsiya qilinadi:

1. Metrik rezbalar chizmada qanday tasvirlanadi?
 2. Sterjenga o‘yilgan rezbaning katta (tashqi) diametri qanday chiziqli tasvirlanadi? Kichik (ichki) diametri-chi?
- Yaqqol tasvirdan foydalanib detal chizmasini bajaring, o‘lchamlarini qo‘ying.

20-topshiriq. Rezbalarni chizmada tasvirlash

Ushbu topshiriq mazmunan oldingi topshiriqning mantiqiy davomi bo‘lib, unda o‘quvchilarda teshikka o‘yilgan rezbalar chizmalarini bajarish ko‘nikmalarini shakllantirish ko‘zda tutilgan. Topshiriq varianti A4 formatli chizma qog‘oziga ko‘chirib olinganidan keyin chizmadagi belgilangan joyda ko‘rsatilgan diametrdagi rezbali teshik chizmada tasvirlanib, o‘lchamlari qo‘yiladi.

21-topshiriq. Rezba va rezbali birikmalar chizmalari

Topshiriq variantidagi yaqqol tasvirda rezbali birikma va teshikka o‘yilgan rezba tasviri keltirilgan. O‘quvchilardan ushbu topshiriqda zarur qirqimlardan foydalangan holda rezbali birikma chizmasini bajarish va o‘lchamlarini qo‘yish talab qilinadi.

O‘quvchilar bilimini tekshirish uchun savollar:

1. Qanday birikmalarga ajraladigan birikmalar deyiladi? Misollar keltiring.
2. Mahsulotlarni standartlashtirish qanday afzalliklarga ega?

3. Ajralmaydigan birikmalarga misollar keltiring. Qanday holda ajralmaydigan birikmalardan foydalaniladi?

22-topshiriq. Boltli va shpilkali birikmalar chizmalari

Rezbali birikmalar ajraladigan birikmalar ichida eng ko‘p tarqalgani hisoblanadi. Ularga boltli, shpilkali va vintli birikmalar kiradi. O‘qituvchi ko‘rsatmasi bo‘yicha boltli yoki shpilkali birikmalardan birining shartli soddalashtirilgan chizmasini bajaring.

23-topshiriq. Yig‘ish chizmalarini detallarga ajratish

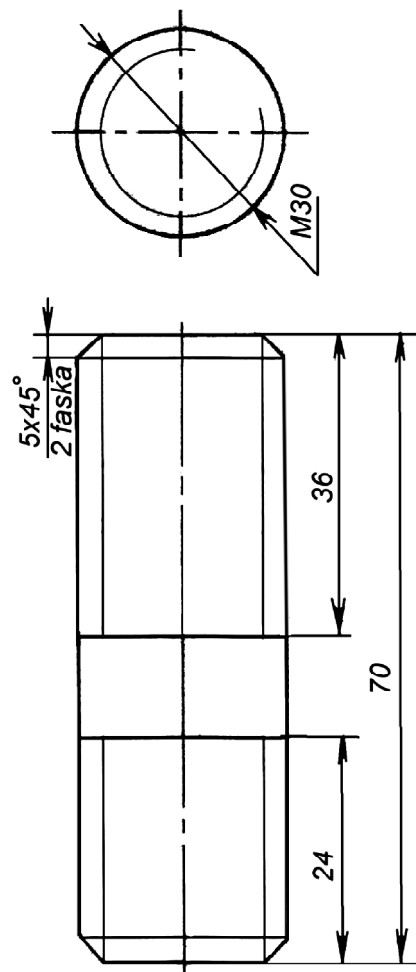
Har bir topshiriq variantida keltirilgan yig‘ish chizmasini o‘qish va ishlash prinsipini tushunishni osonlashtirish maqsadida tushuntirish matni, aksonometriya hamda tafsilotli ro‘yxat keltirilgan. Yig‘ish chizmalari variantlari sifatida o‘quvchilarga fizika, kimyo, mehnat va texnika to‘garaklari mashg‘ulotlarida ko‘p uchraydigan detallar va yig‘ish birliklari tanlab olingan.

Ushbu topshiriqni quyidagi tartibda bajarish tavsiya qilinadi:

1. Berilgan yig‘ish birligi va uning alohida qismlarining vazifalari va ishlash prinsipini ta’riflab bering. Yig‘ish birligi qanday ketma-ketlikda qismlarga ajratiladi va yig‘iladi?
2. Ikki-uchta detal chizmasini va ulardan birining aksonometrik proyeksiyasini bajaring.

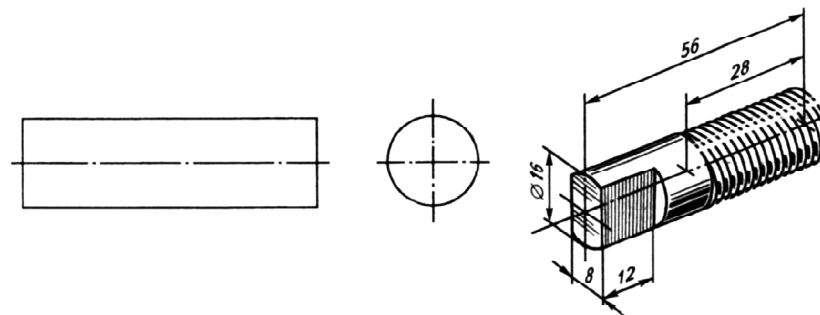
Standartlarga asosan yig‘ish chizmalariga minimal o‘lchamlar qo‘yilishi sababli yetishmaydigan o‘lchamlar grafik usul bilan (masalan, chiziqli masshtab yordamida) aniqlanadi.

**19-topshiriq – «Rezbalarni chizmada tasvirlash»
namunasi**

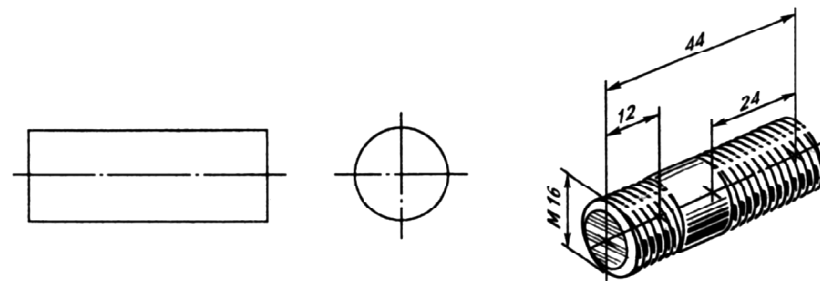


19-topshiriq variantlari

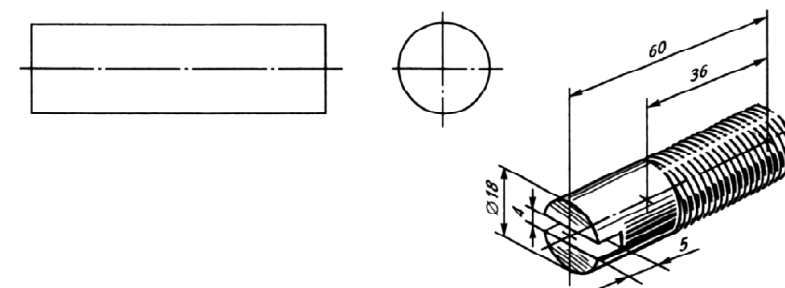
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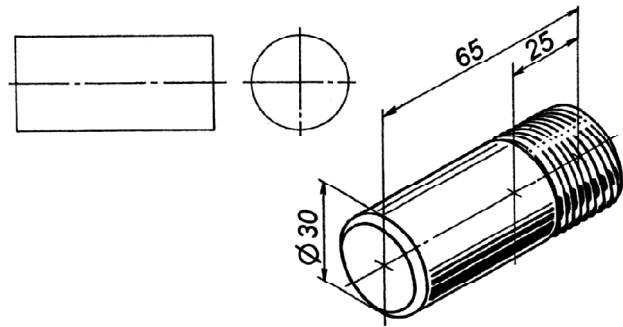
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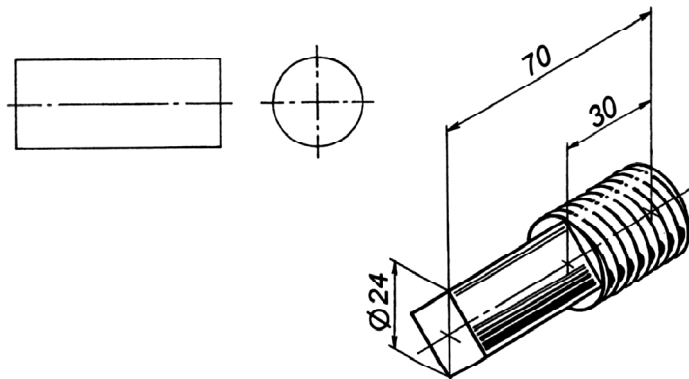
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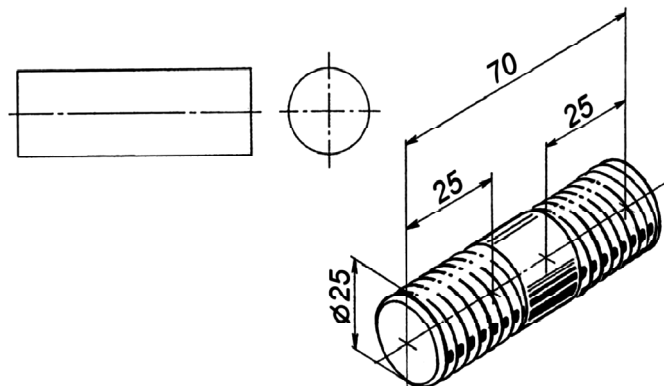
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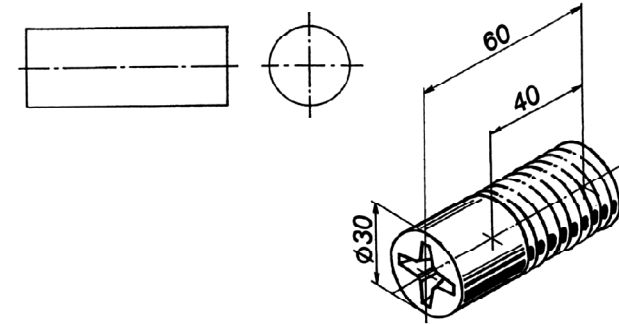
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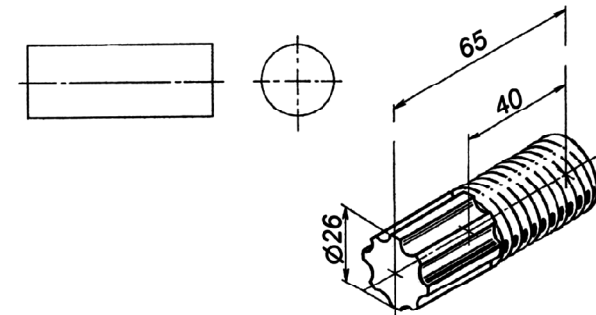
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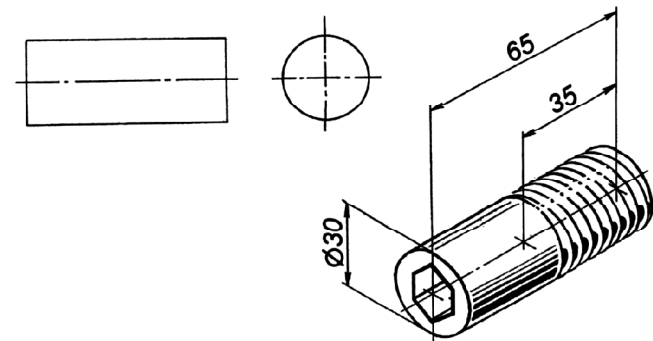
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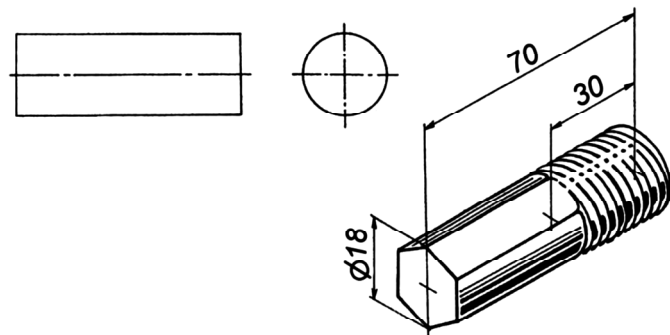
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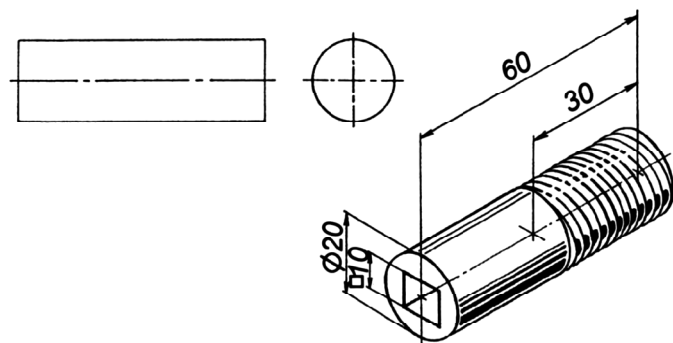
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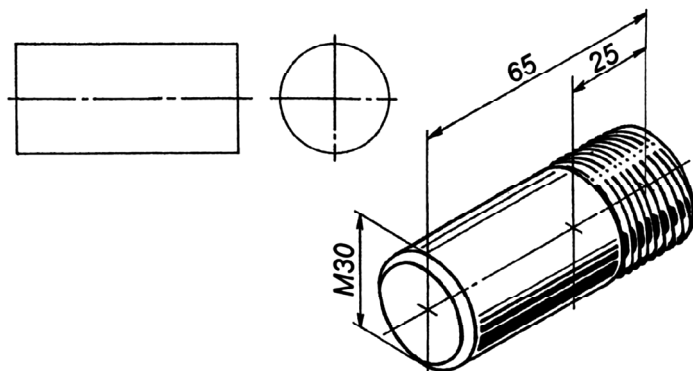
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11

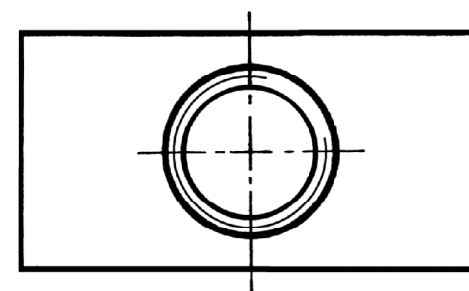
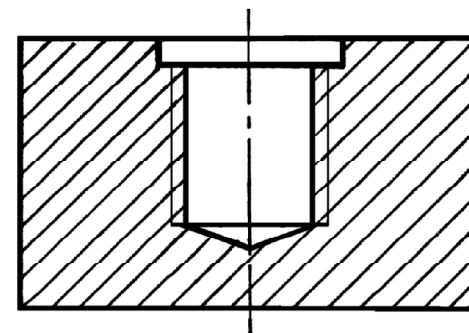


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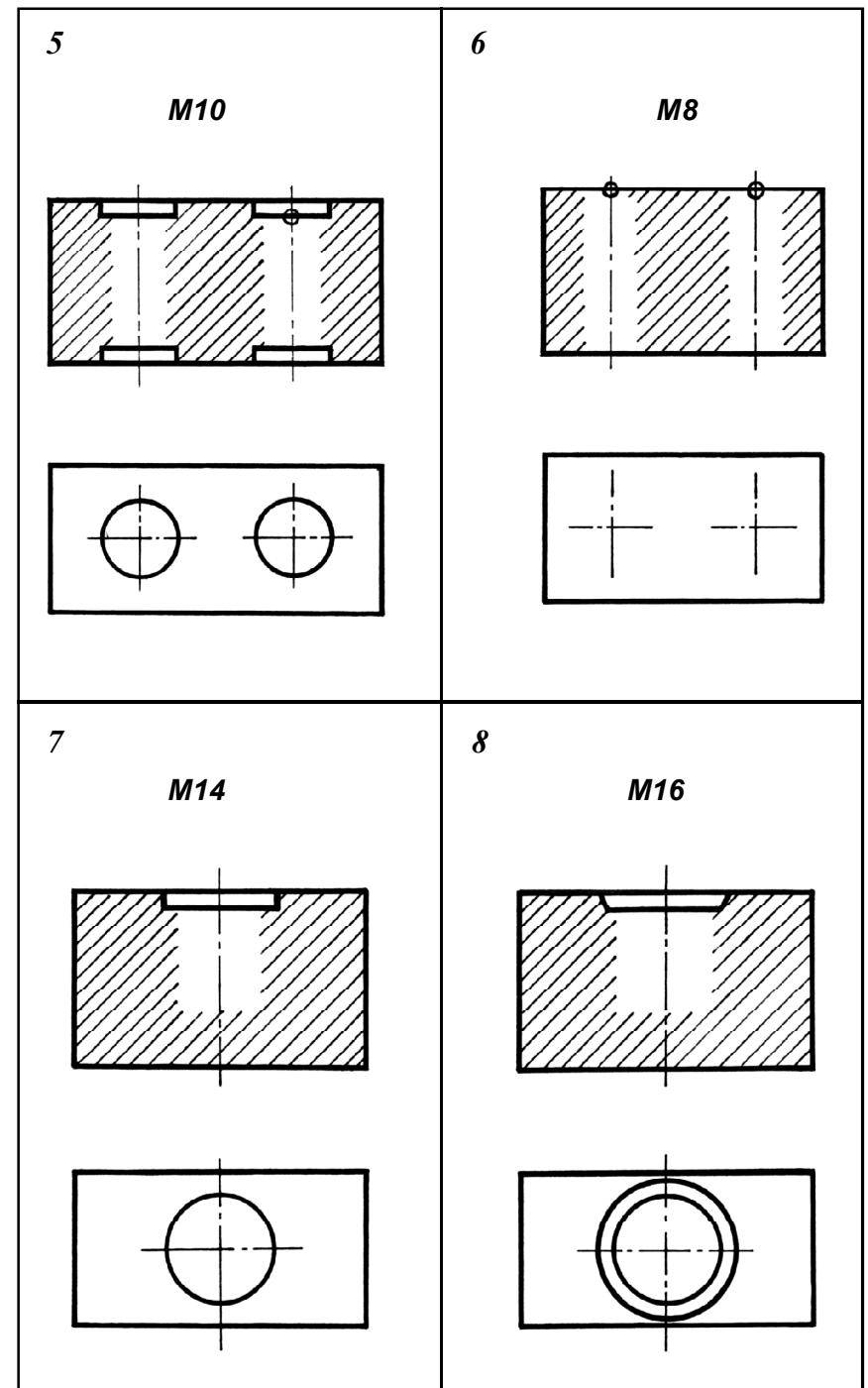
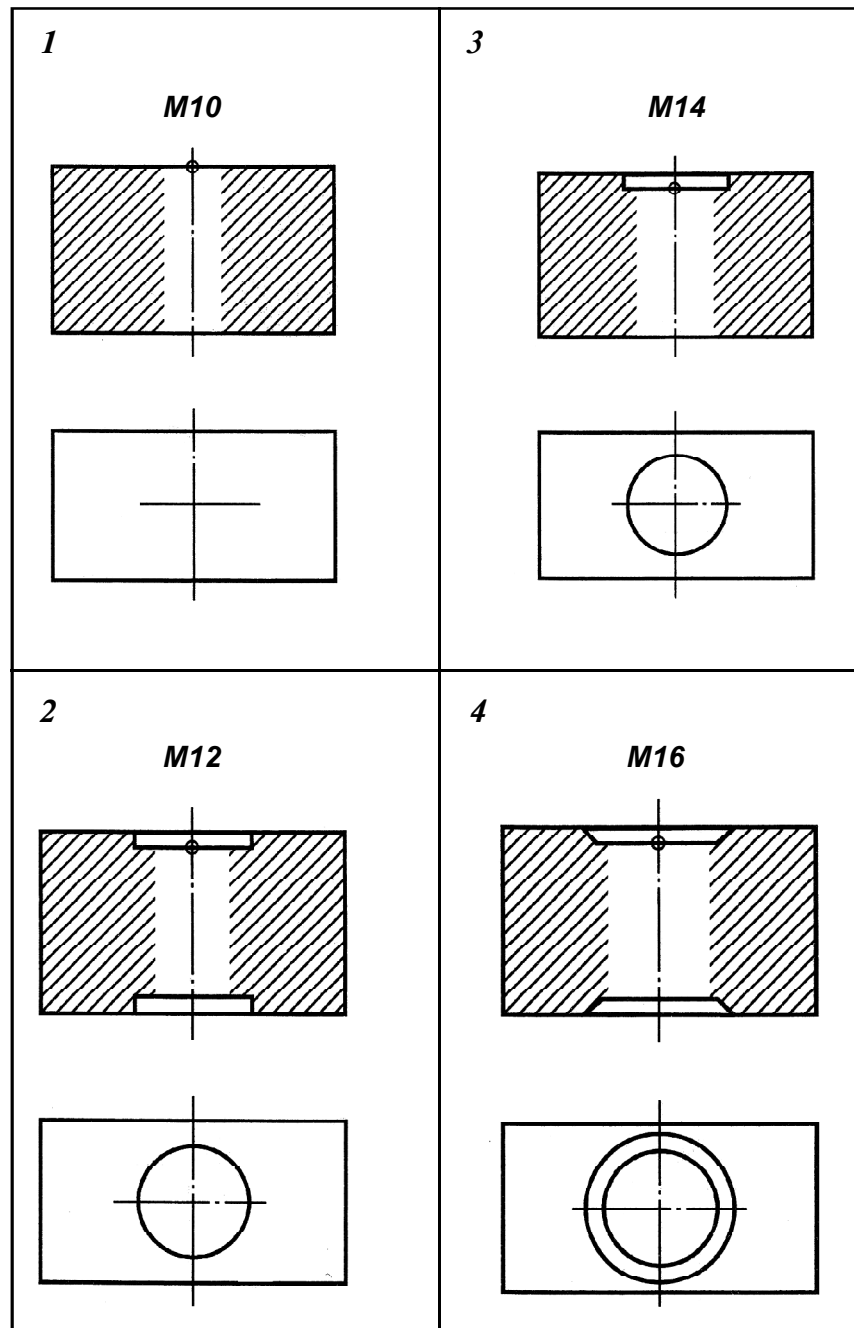


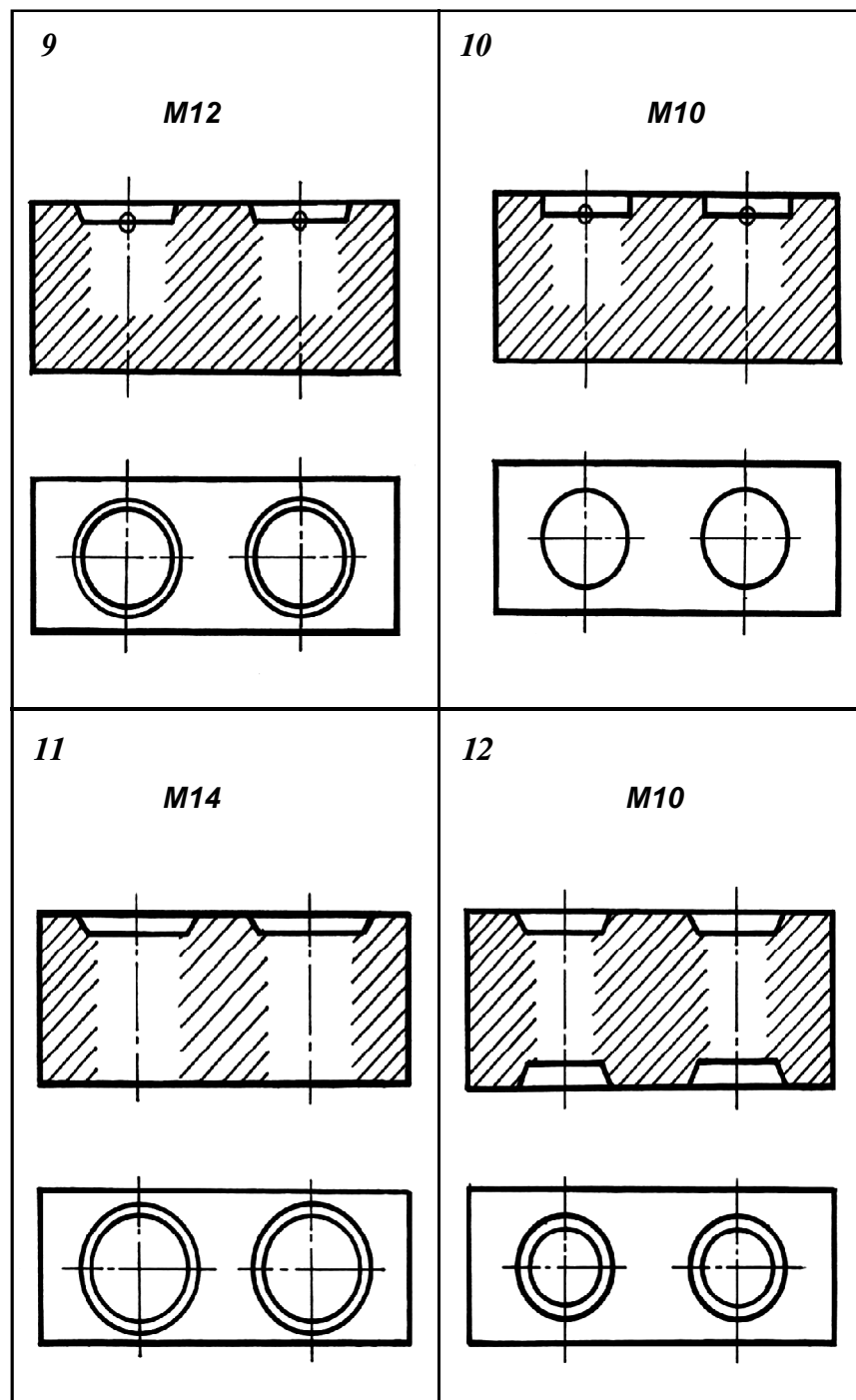
20-topshiriq — «Rezbalarni chizmada tasvirlash»
namunasi

M12

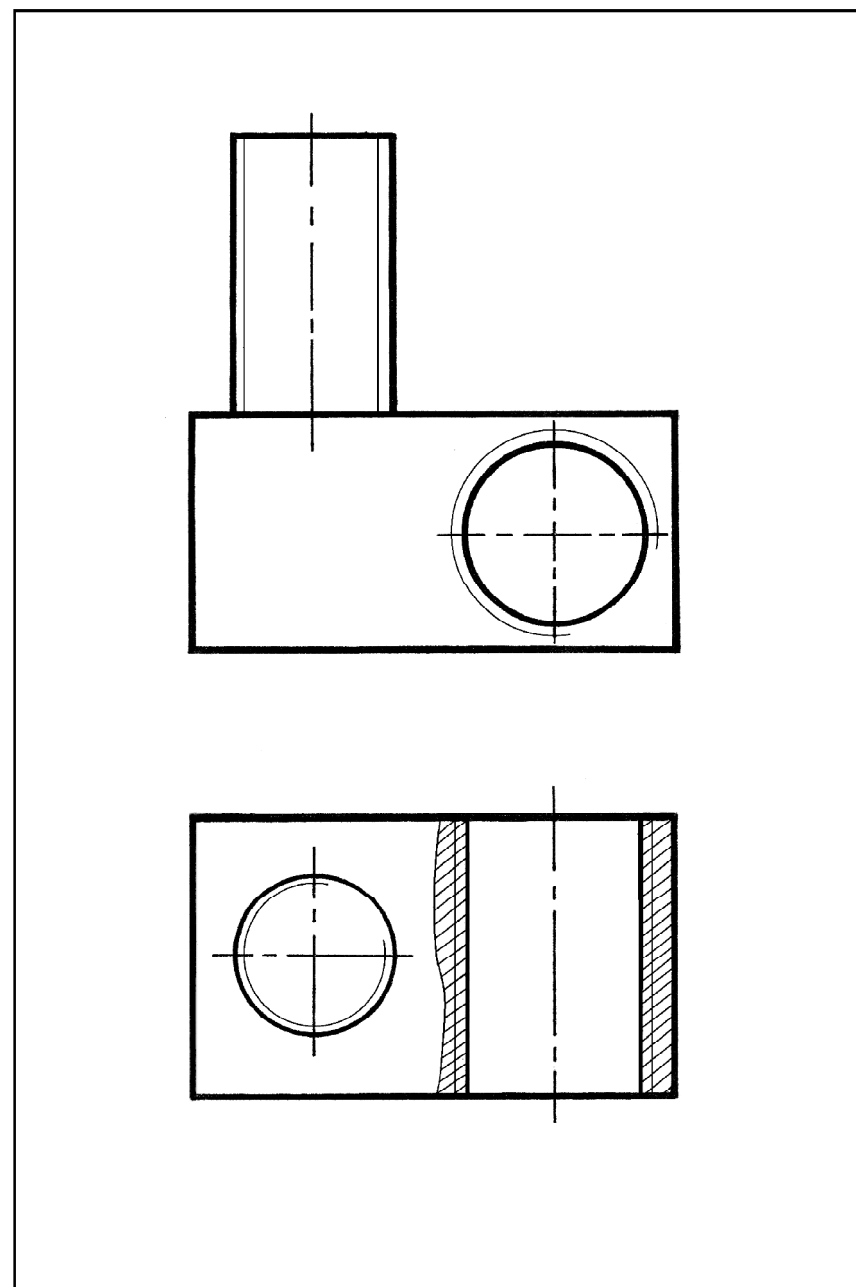


20-topshiriq variantlari





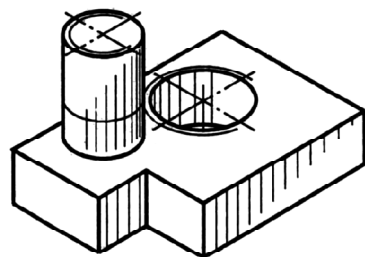
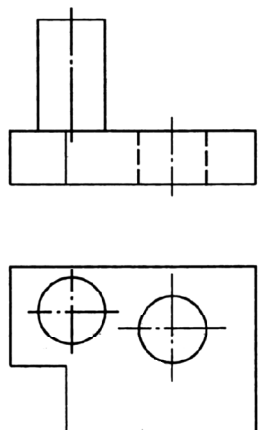
21-topshiriq – «Rezba va rezbali birikmalar chizmalari»
namunasi



21-topshiriq variantlari

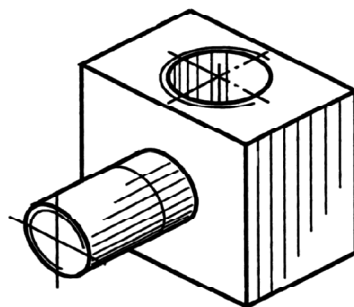
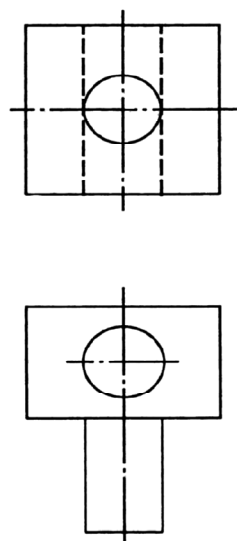
1

Sterjendagi rezba – M12
Teshikdagi rezba – M16



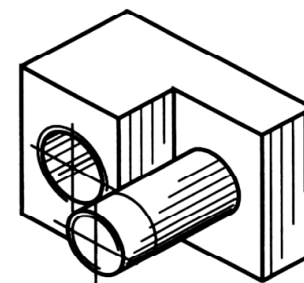
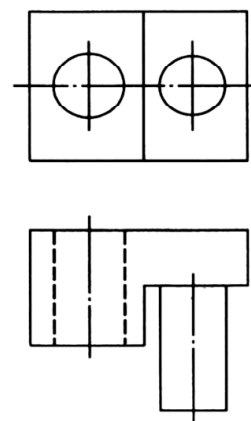
2

Sterjendagi rezba – M12
Teshikdagi rezba – M14



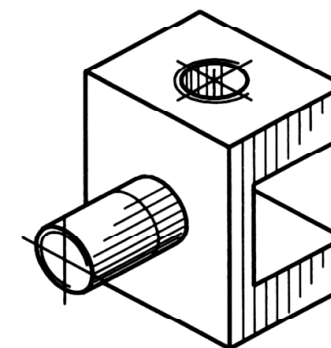
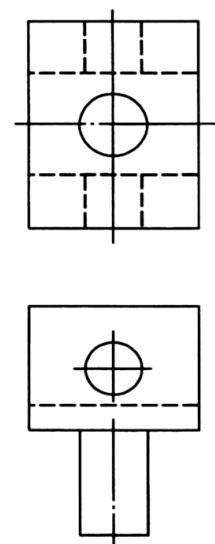
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Sterjendagi rezba – M12
Teshikdagi rezba – M16



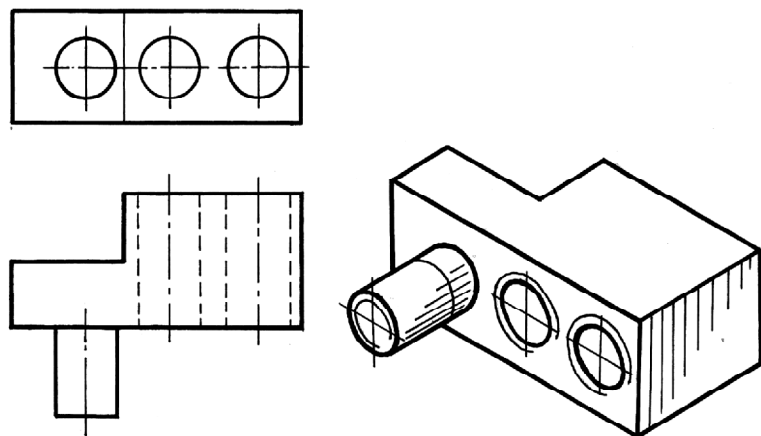
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Sterjendagi rezba – M12
Teshikdagi rezba – M12



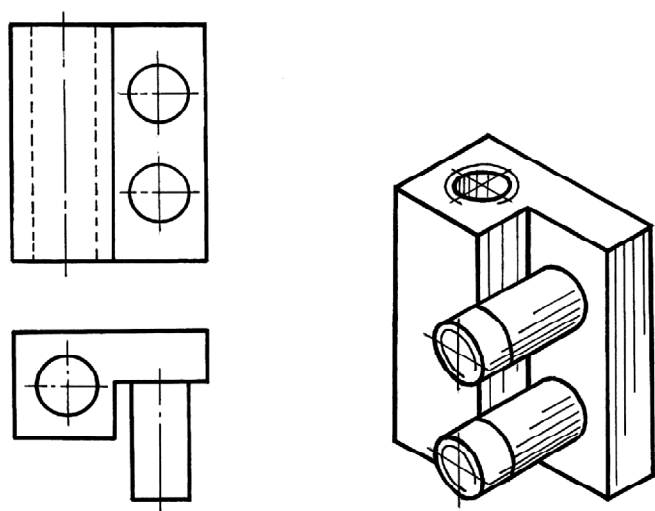
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Sterjendagi rezba – M14
Teshikdagi rezba – M14



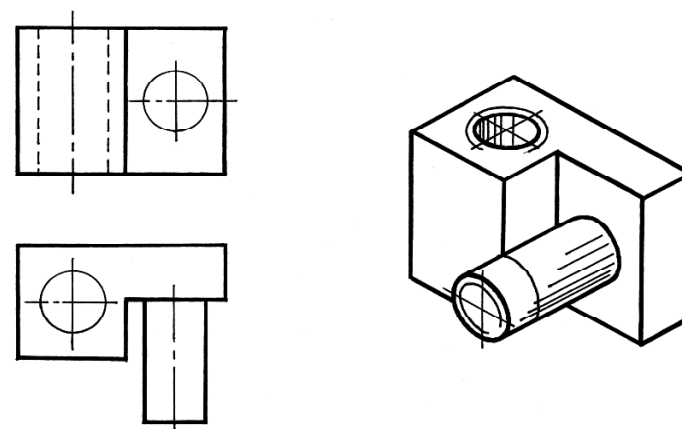
6

Sterjendagi rezba – M16
Teshikdagi rezba – M14



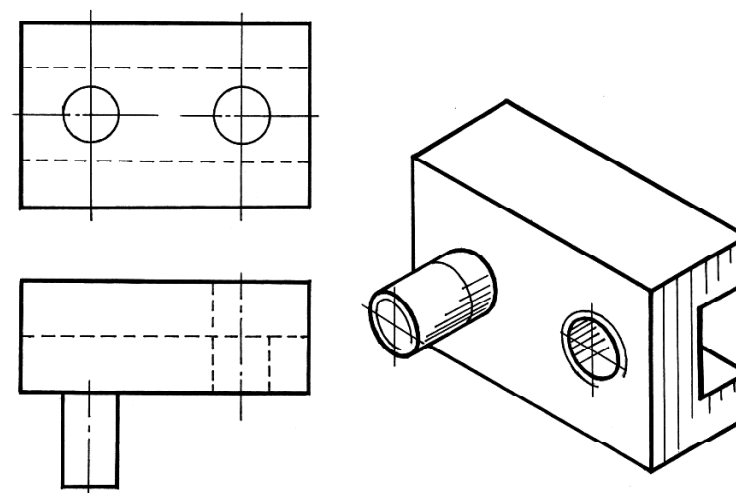
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Sterjendagi rezba – M16
Teshikdagi rezba – M14



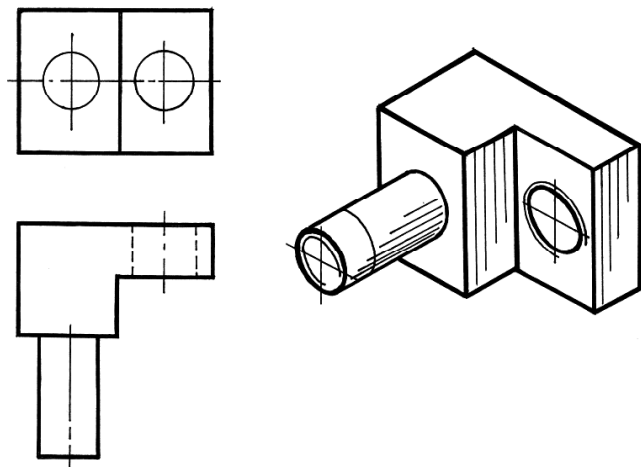
8

Sterjendagi rezba – M12
Teshikdagi rezba – M12



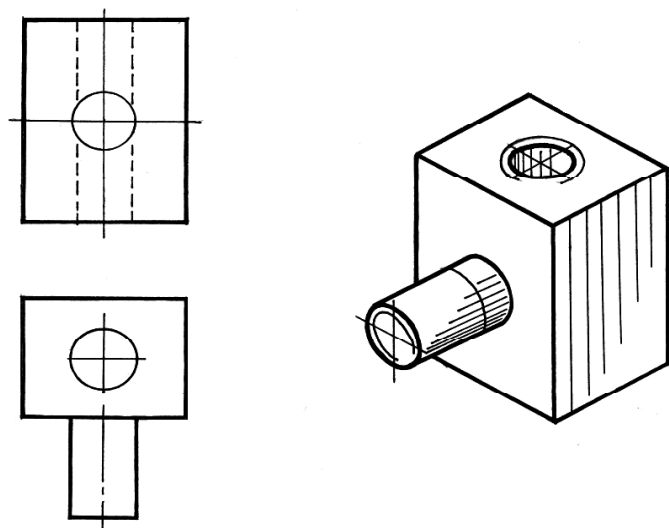
9

Sterjendagi rezba – M14
Teshikdagi rezba – M16



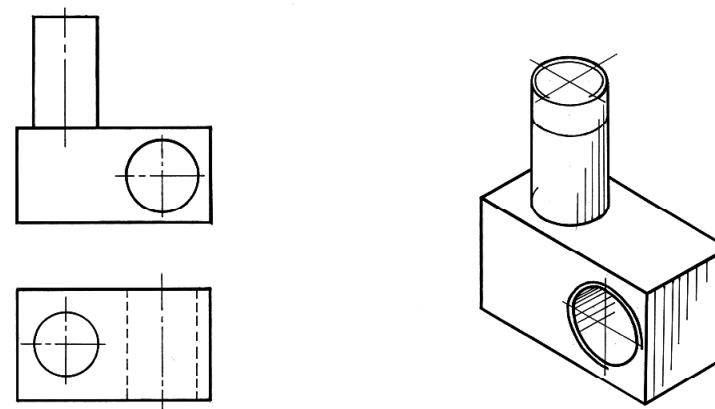
10

Sterjendagi rezba – M12
Teshikdagi rezba – M12



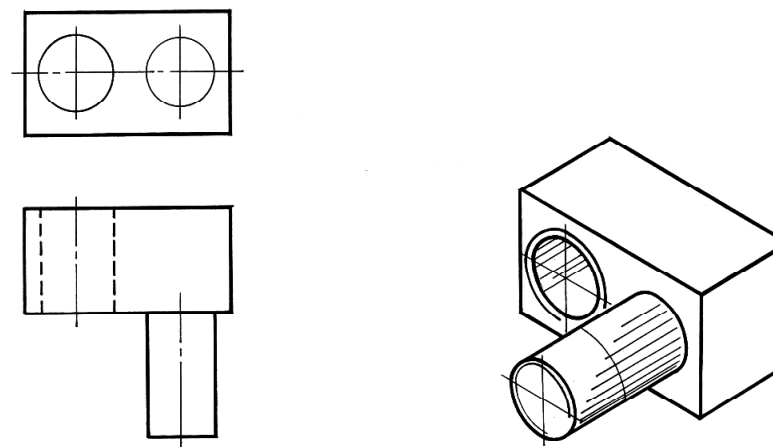
11

Sterjendagi rezba – M12
Teshikdagi rezba – M16

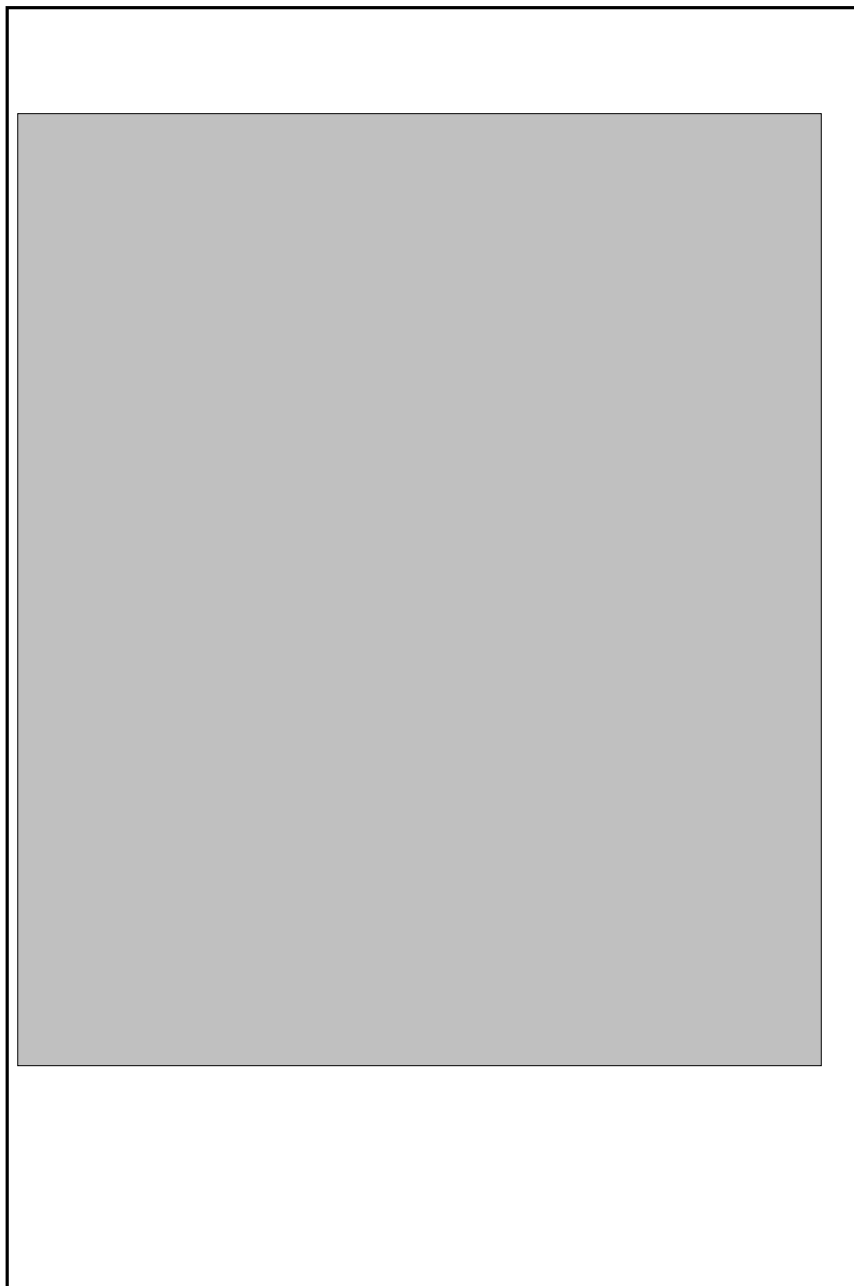


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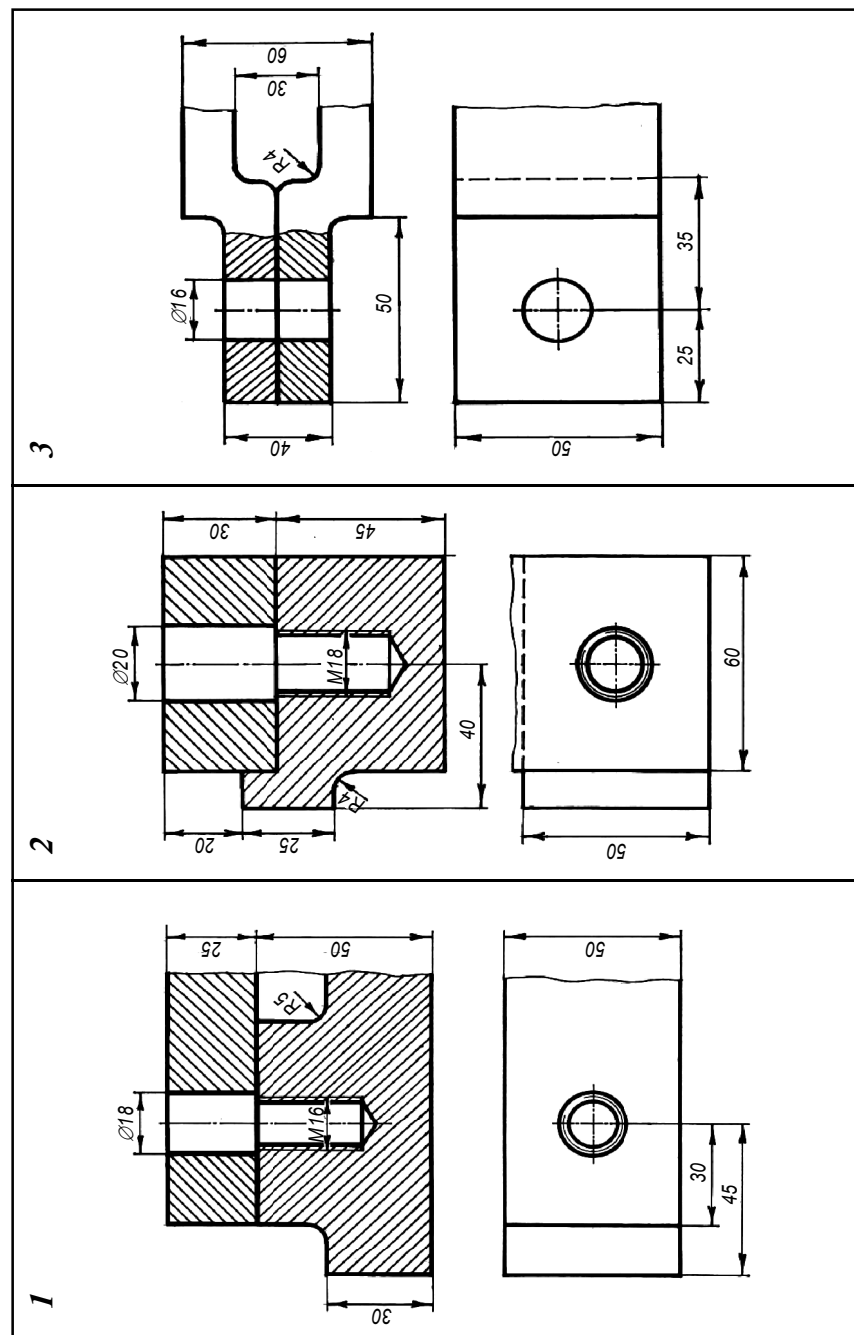
Sterjendagi rezba – M16
Teshikdagi rezba – M16

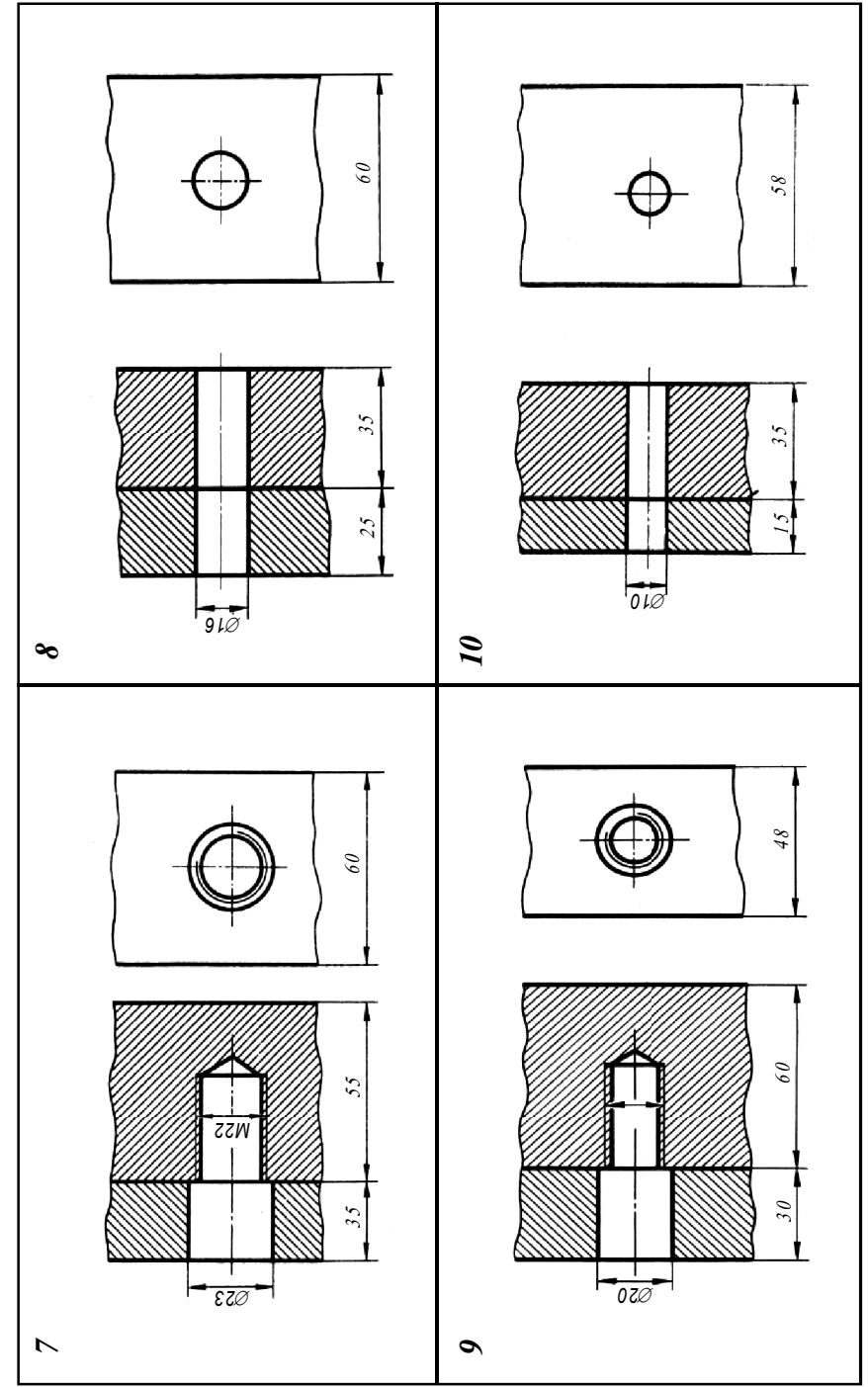
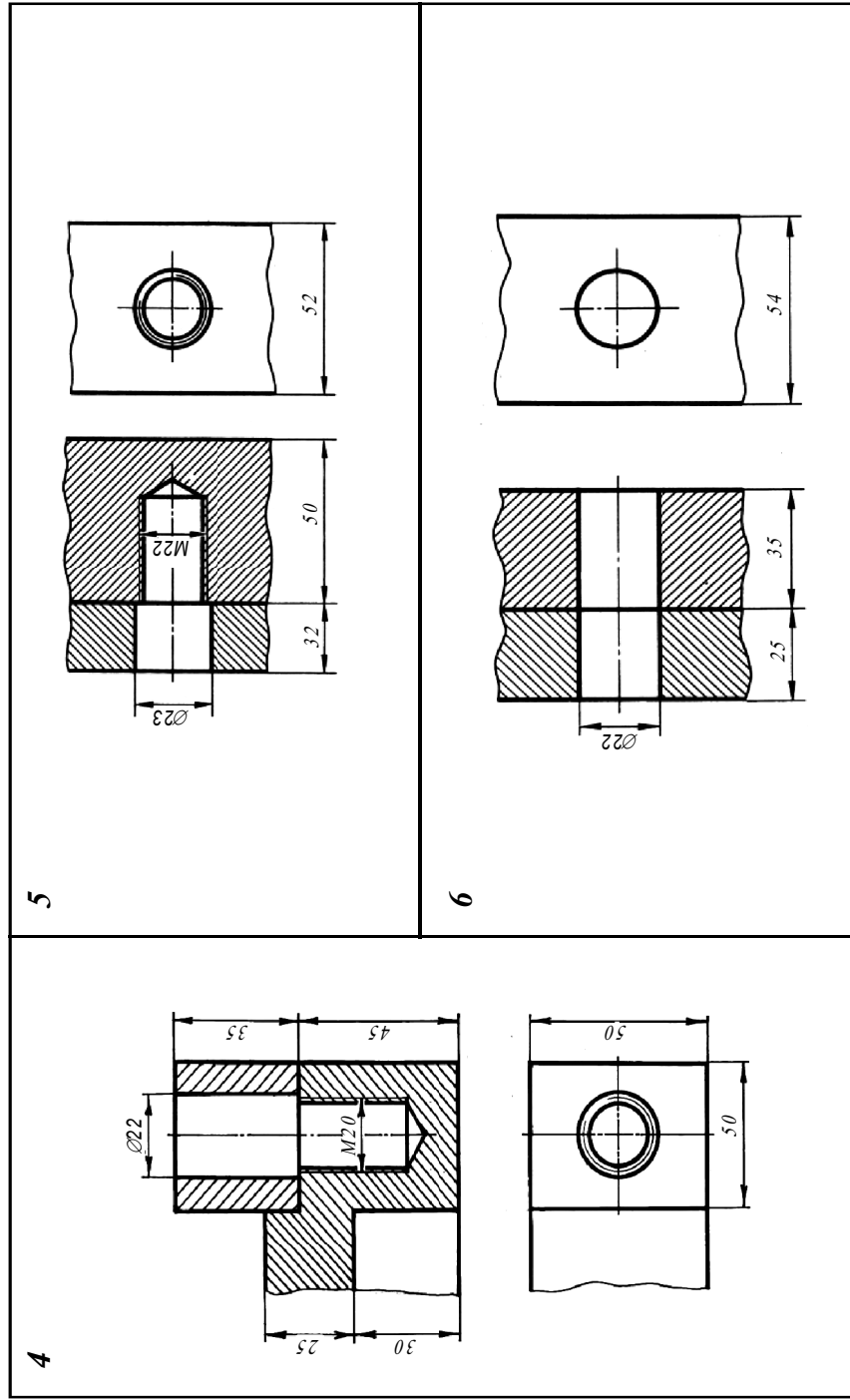


**22-topshiriq — «Boltli va shpilkali birikmalar chizmalari»
namunasi**



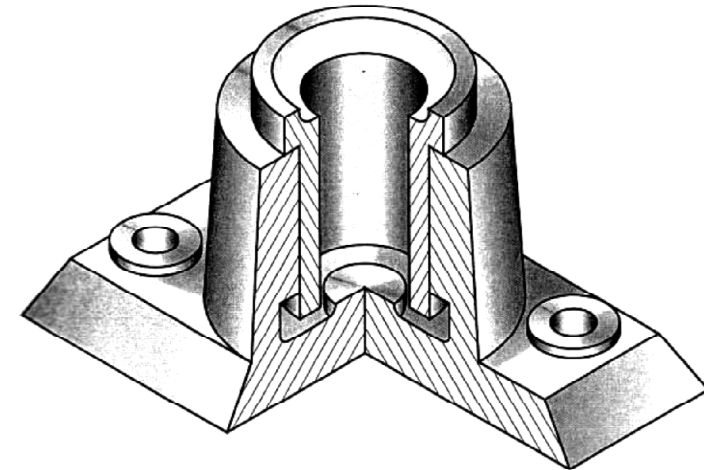
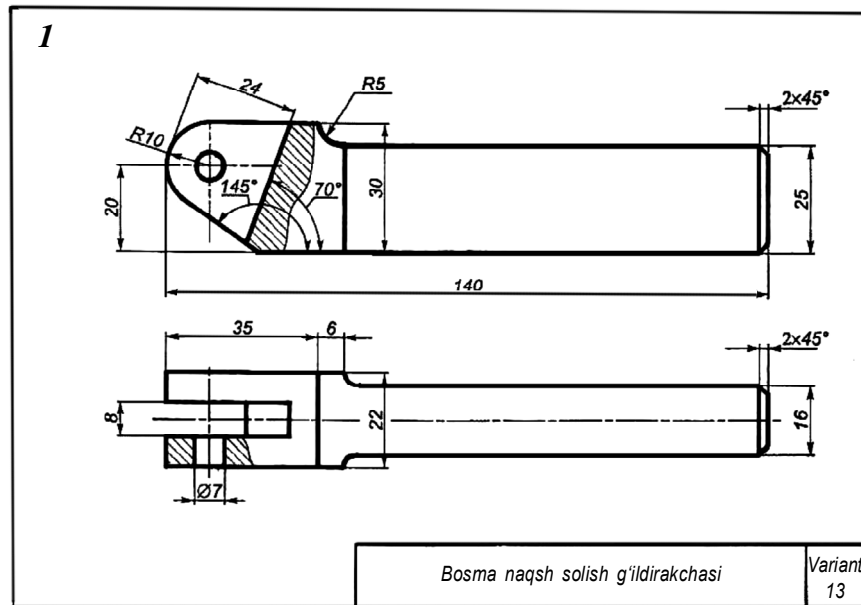
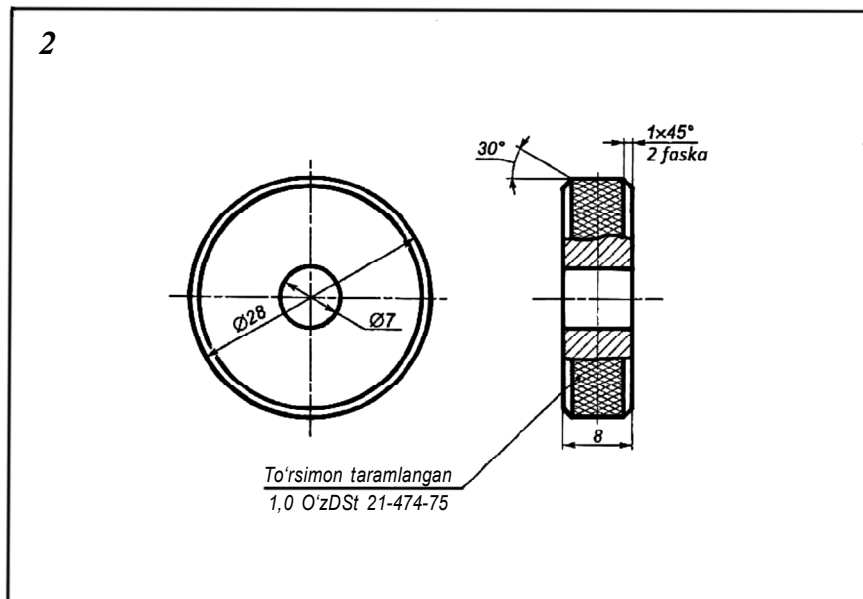
22-topshiriq variantlari





The image contains two technical drawings of a mechanical component. The main drawing is a perspective view of a long, rectangular arm. At one end, there is a mounting bracket with a central hole and a threaded section. A small gear or pinion is visible at the end of the arm. To the right, there is a cross-sectional detail view showing the internal structure of the arm, including a central shaft and a gear mechanism.

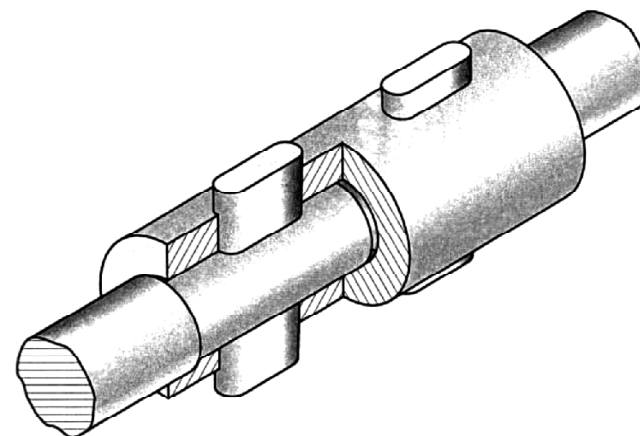
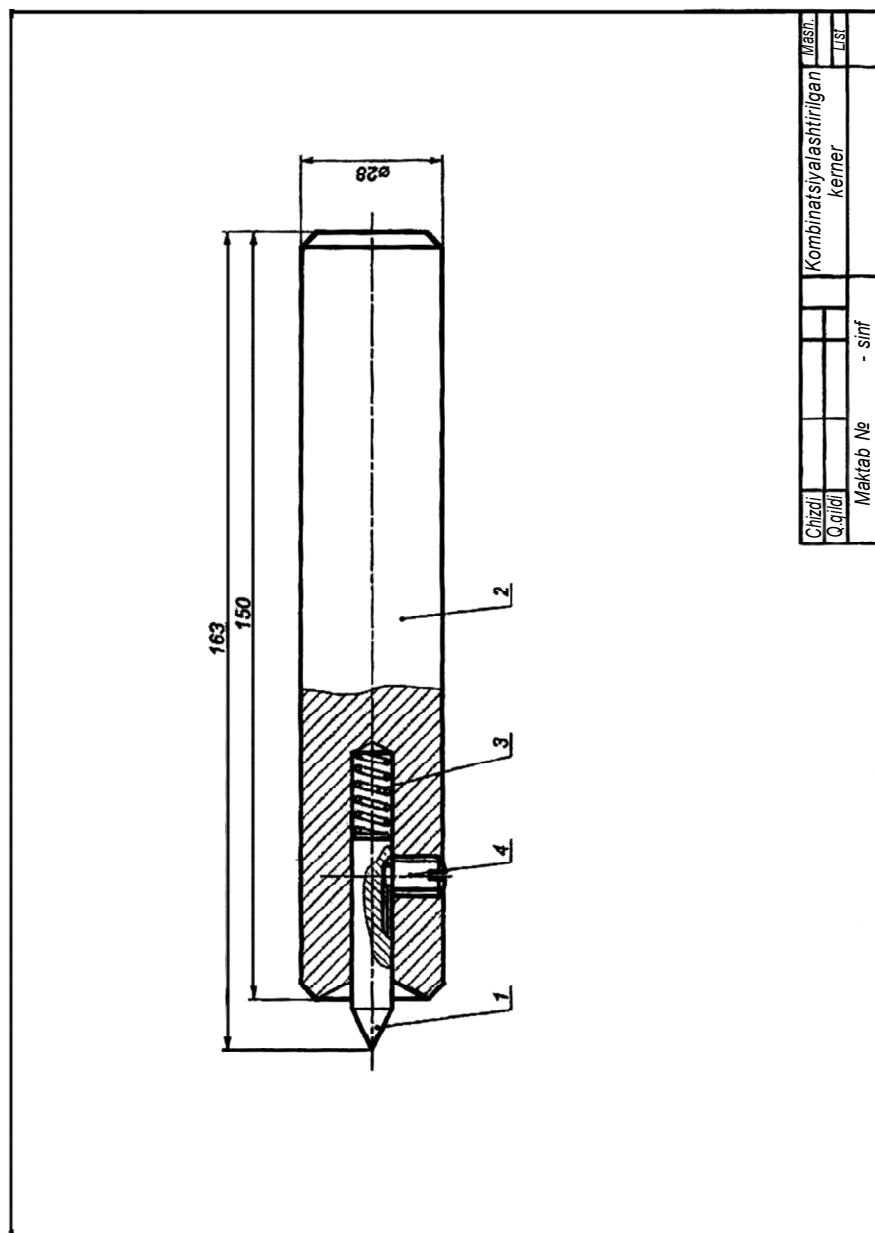
23-topshiriq variantlari

[illegible]

1. Tîrgak

Tirgak – val o‘qi bo‘ylab yuzaga keladigan kuchlanishni qabul qiladigan tirgovuch podshipnik. Podshipnik – val va aylanuvchi o‘qlarning tayanchi hisoblanadi. Ishqalanish turlariga ko‘ra podshipniklar sirpanuvchi va tebranuvchi bo‘ladi.

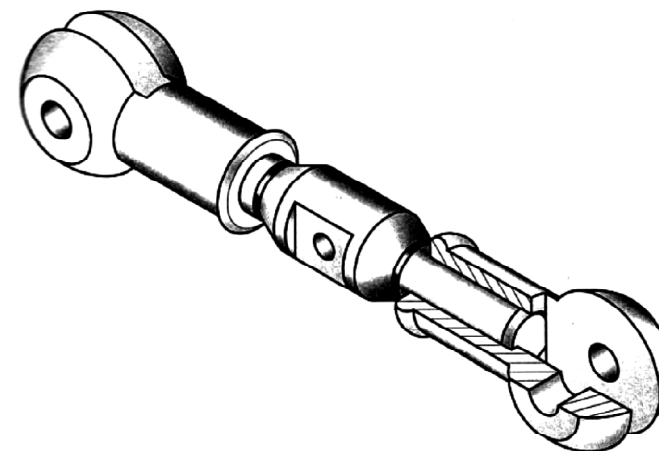
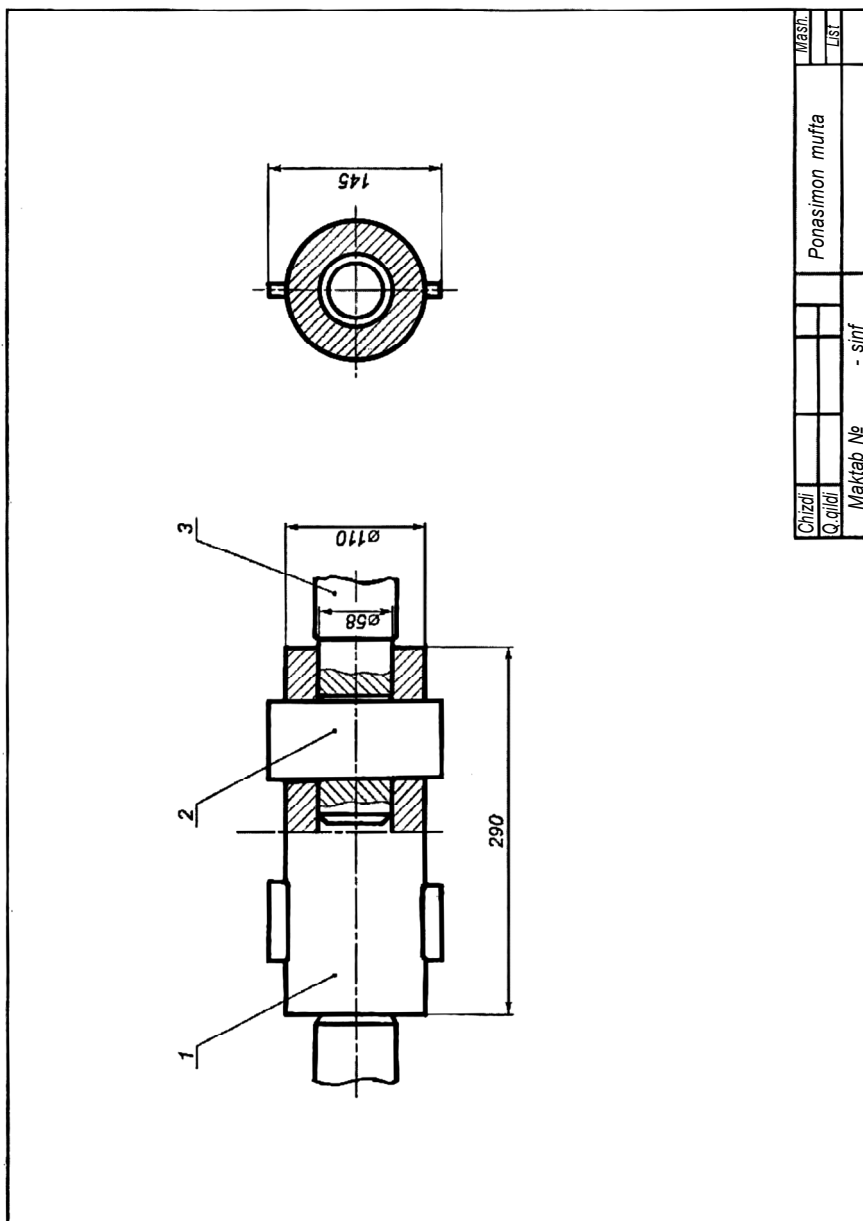
Chizmada sirpanuvchi tirgovuch podshipnik (подпятник) tasvirlangan. Uning korpusi 1 ga oldin vkladish 2 va undan keyin korpus pastki qismining chiqig'iga tiraladigan val uchi o'rnatiladi.



O'ri	Nomi	Soni	Material	Eslatma
	Hujjatlar			
	Yig'ish chizmasi			
	Detallar			
1	Mufta	1	Po'lat 40	
2	Pona	2	Po'lat 40	
3	Val	2	Po'lat 2	
Chizdi			Ponasimon mufta	Mash.
Qildi				List
Maktab №	- sinf			

3. Ponasimon mufta

Ponasimon mufta — vallarni qismlarga ajraladigan holda biriktiruvchi moslama. Biriktirishda val uchlarini muftaga shunday joylashtirish kerakki, bunda vallar 3 dagi teshiklar mufta 1 tuy-nugiga to'g'ri kelishi kerak. Shundan keyin ponalar 2 o'rnatilib, vallar birlashtiriladi.



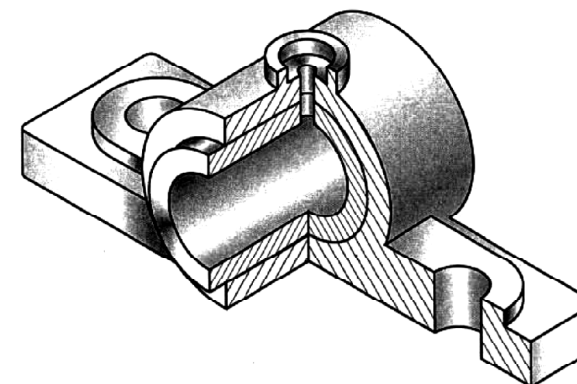
O'rni	Nomi	Soni	Material	Eslatma
	Hujjatlar			
	Yig'ish chizmasi			
	Detallar			
1	Halqa	2	Po'lat 20	
2	Tortma	1	Po'lat 20	
Chizdi Tortma Mash. Q.qildi List Maktab № - sinf 				

4. Tortma

Vintli *tortma* (farkopf) – po'lat sim uchlarini taranglashda ishlatiladigan moslama.

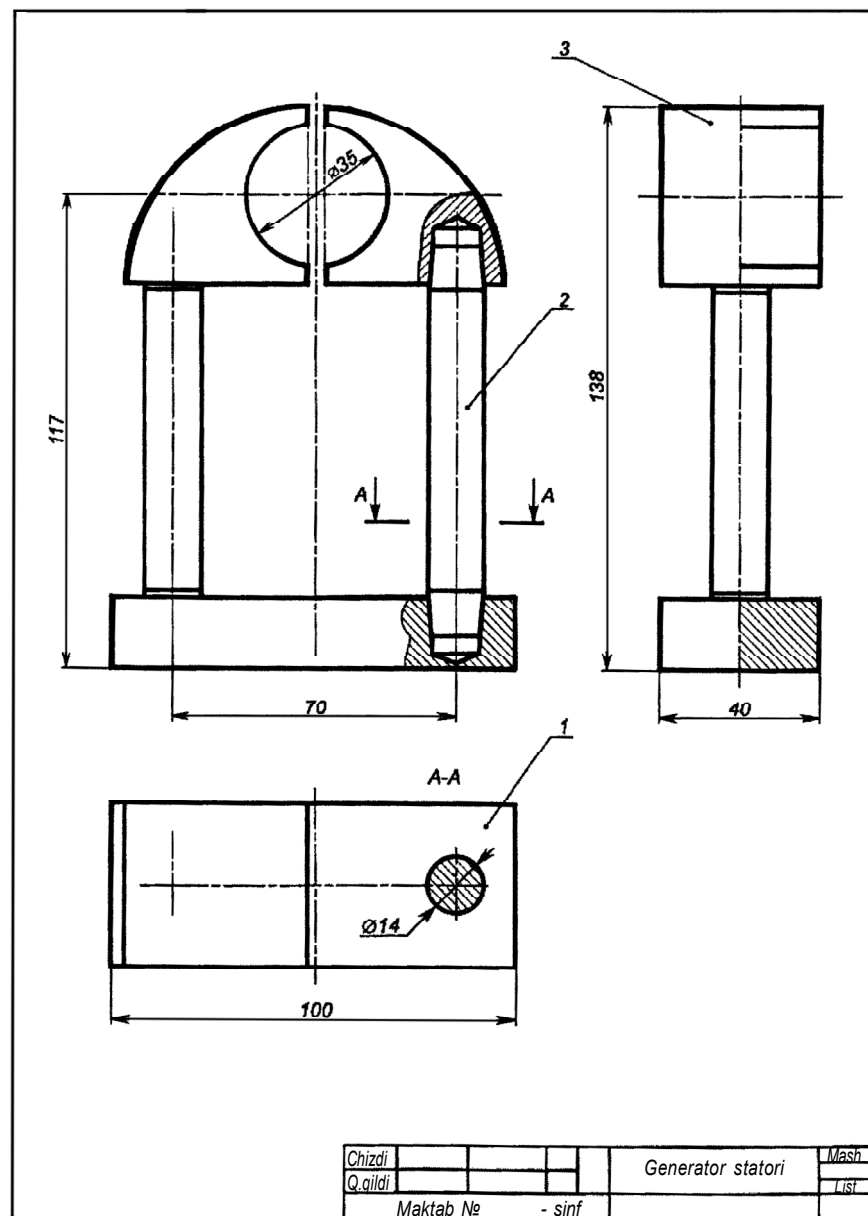
O'ng va chap rezkali *tortma* 2 ga halqa 1 lar burab o'rnatiladi. Halqalarga po'lat sim uchlari mahkamlanadi.

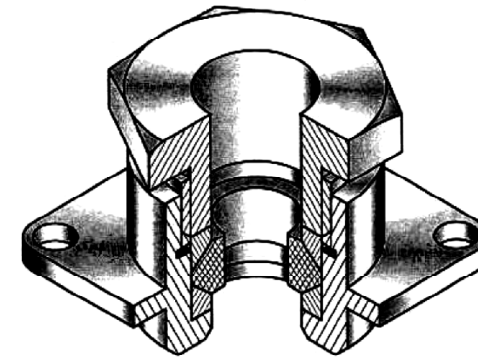
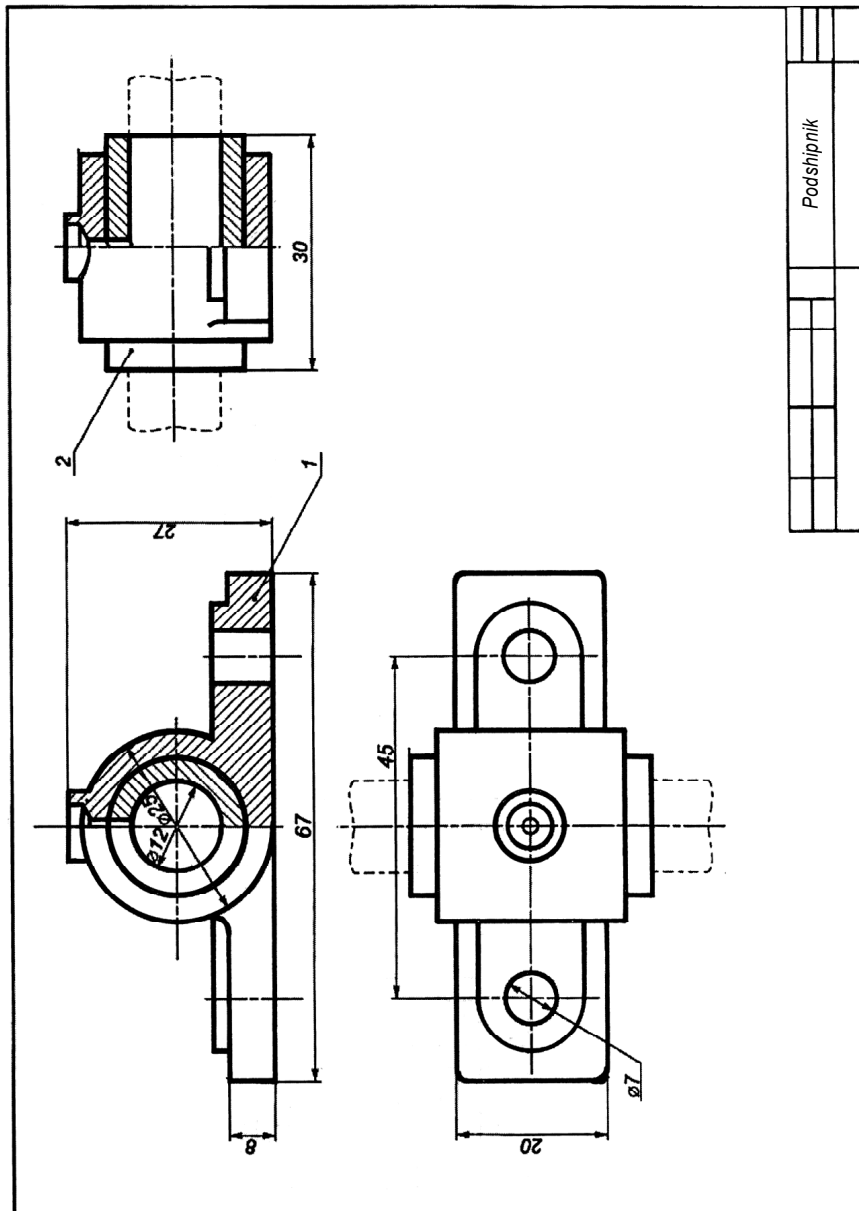
Tortmadagi teshikka mos kalit yoki shu teshikka tiqiladigan richag yordamida *tortma* buralib, halqalar bir-biriga yaqinlashtiriladi va shu usul bilan sim arqon taranglanadi.

[illegible]

6. Podshipnik

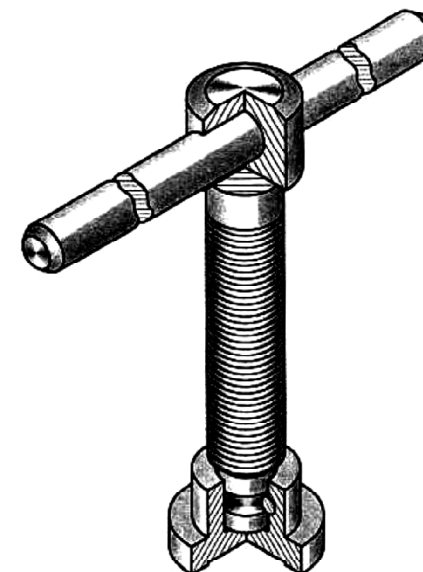
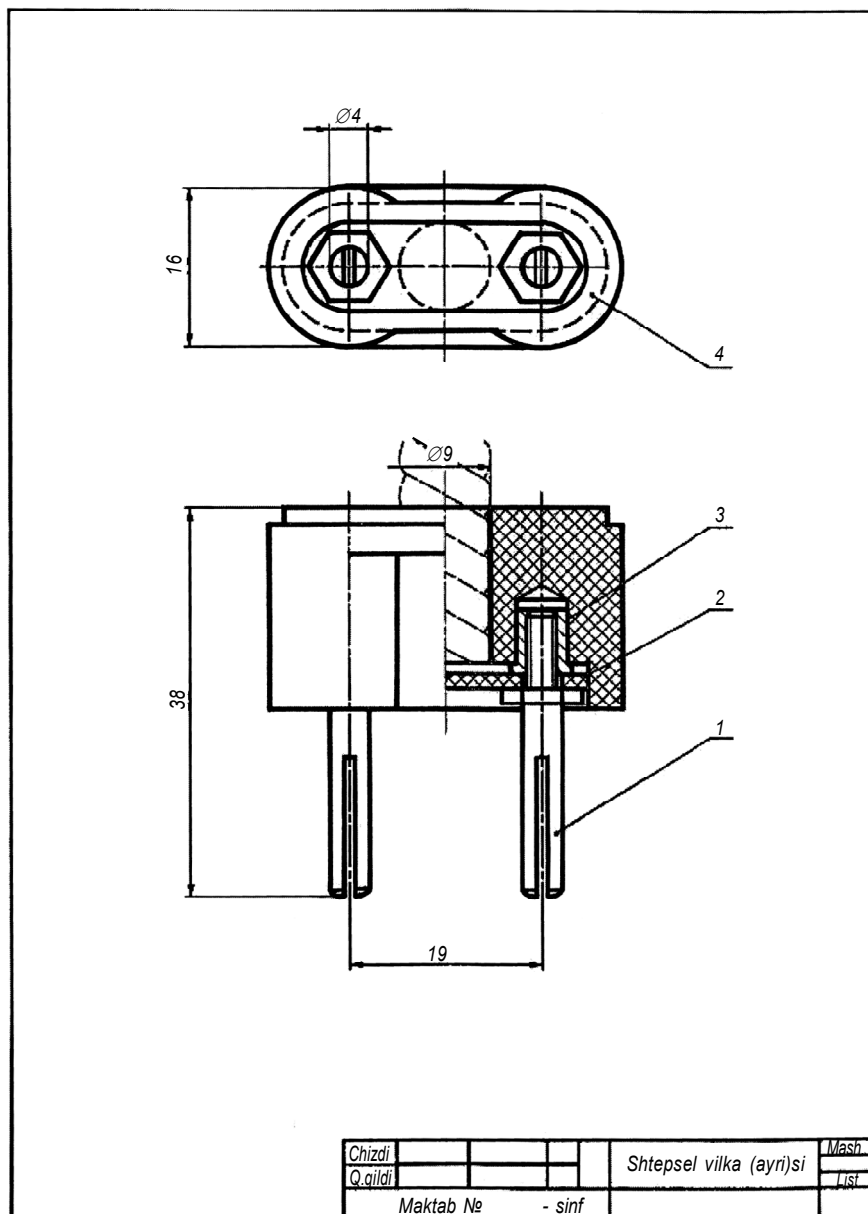
Podshipnik – val va aylanadigan oʻqlarning tayanchi. Ishqalanish turiga koʻra tebranuvchi va sirpanuvchi podshipniklar boʻladi. Chizmada ajralmaydigan sirpanish podshipnigi tasvirlangan. Korpus 1 ning ustki qismi va unga mahkamlangan vkladishda vaqt-vaqti bilan moylab turish uchun teshik qoldirilgan.



[illegible]

Salnik – qurilmaning harakatlanuvchi va qo‘zg‘almas qismlari opasidagi zazor (tirgish)ni germetiklab, zichlovchi moslama.

Ushbu salnik yoki o'tkazuvchi elektr toki o'tkazish kabeli yoki simini asboblarning korpus devorlari orqali kiritishga mo'ljallangan. Kabelga mo'ljallangan salnik tuzilishi bo'yicha bir tomoni konus sirti shaklida bo'lgan ikkita bir xil vtulka 2 joylashtirilgan korpus 1, zichlovchi rezina halqa 4 va gaykadan tuzilgan.

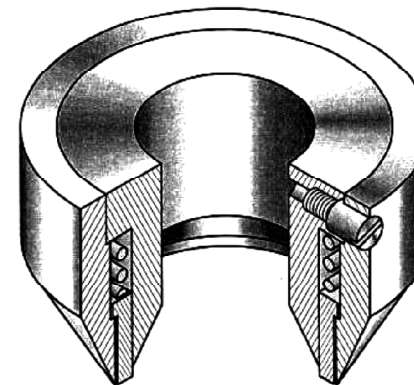
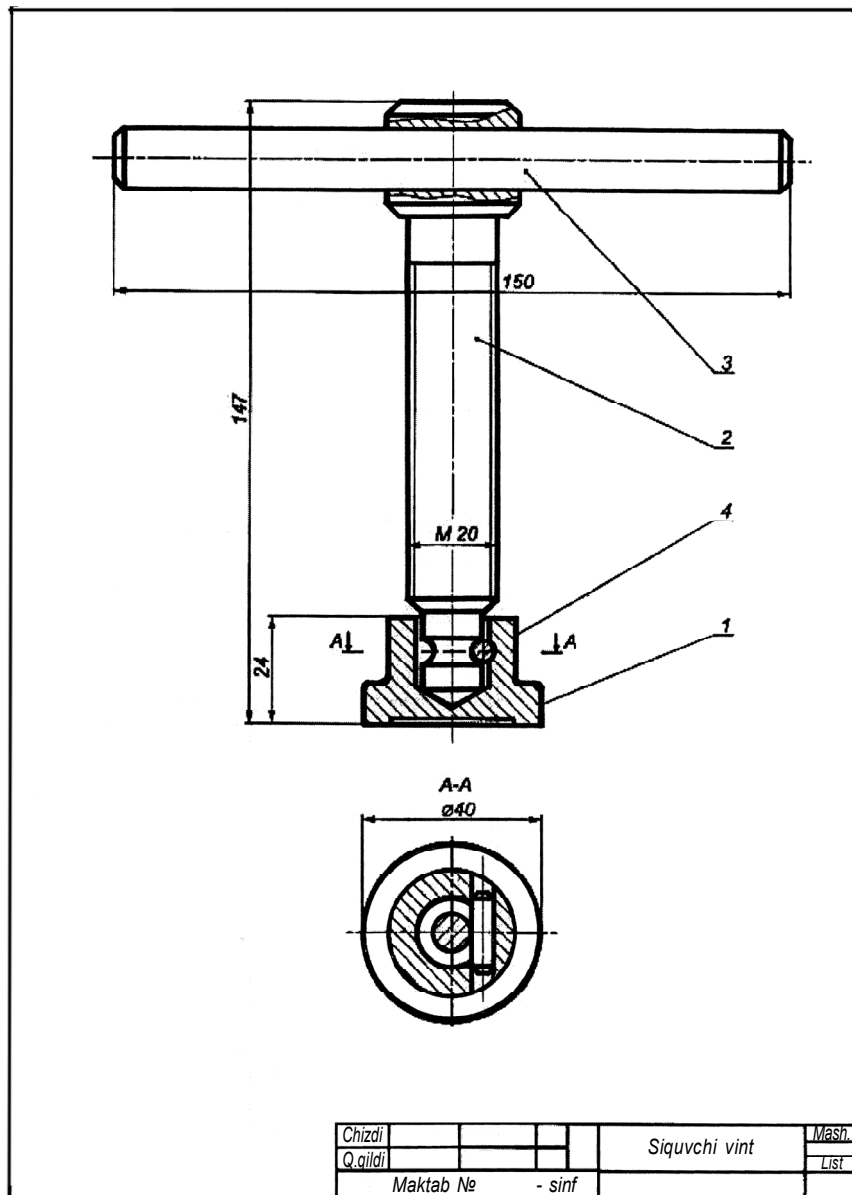


O'ri	Nomi	Soni	Material	Eslatma
	Hujjatlar			
	Yig'ish chizmasi			
	Detallar			
1	Tayanch (tovon)	1	Po'lat 10X	
2	Vint M20	1	Po'lat 10X	
3	Dasta	1	Po'lat 10	
	Standart mahsulotlar			
4	Shtift 4x20	1	Po'lat St3	
Chizdi				Mash
Q.ildi				List
Maktab №		- sinf		

9. Siquvchi vint

Qo'zg'almas dastali *siquvchi vint* — detallarni birlashtirishda cho'zish yoki siqishda ishlatiladigan moslama.

Vint 2 kallagiga dasta 3 presslab mahkamlangan. Vint detallardan biriga burab kiritilganidan keyin uning ikkinchi tarafidan shtift yordamida tayanch qo'shiladi.

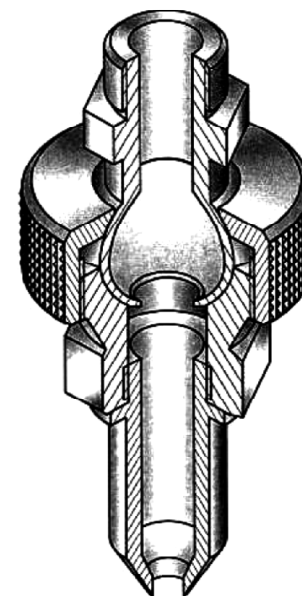
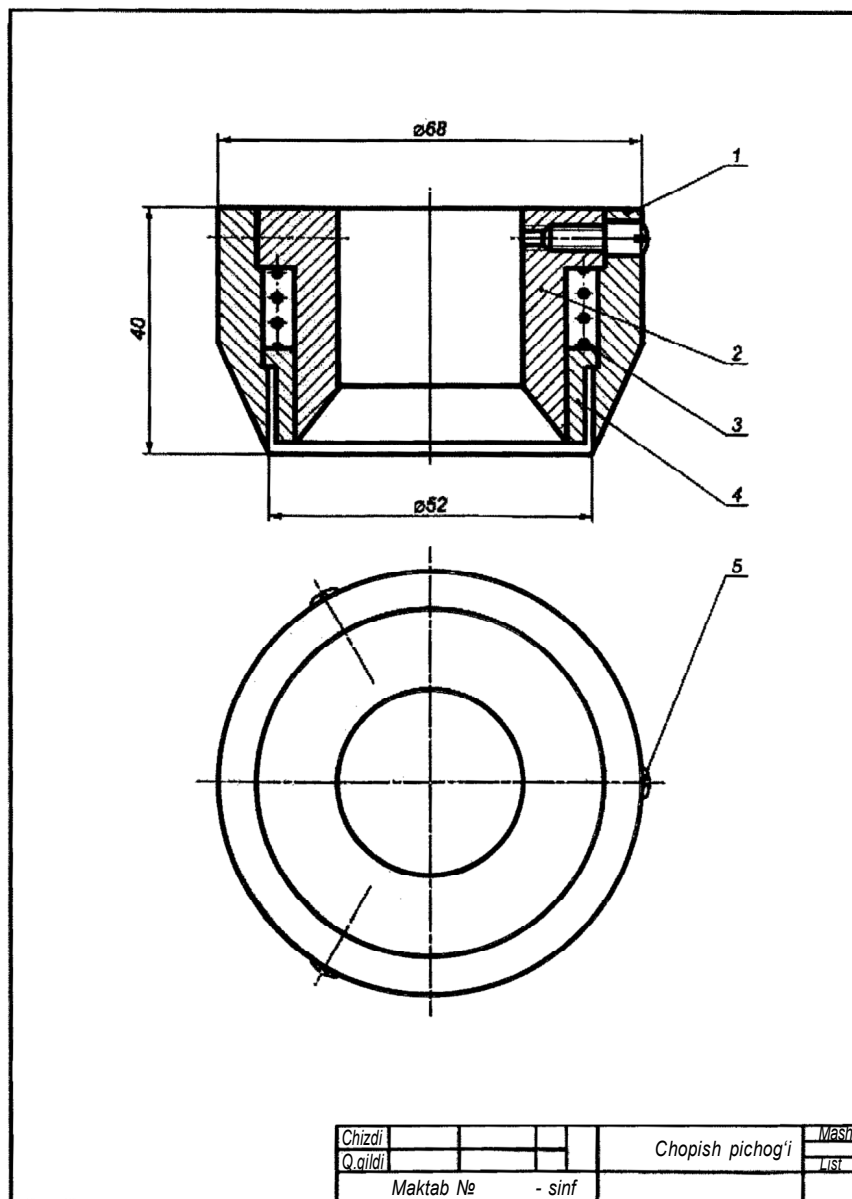


O'ri	Nomi	Soni	Material	Eslatma
	Hujjatlar			
	Yig'ish chizmasi			
	Detallar			
1	Tashqi pichoq	1	Po'lat UVA	
2	Ichki pichoq	1	Po'lat UVA	
3	Prujina	1	Po'lat 65G	
4	Itarib chiqargich	1	Po'lat 15	
	Standart mahsulotlar		Po'lat 15	
5	Vint M8			
Chizdi			Chopish pichog'i	Mash.
Q.ildi				List
Maktab № - sinf				

10. Chopish pichog'i

Pichoq rezinadan halqasimon namunalarni maxsus mashinalarda sinovdan o'tkazish uchun qirqib olishga mo'ljallangan.

Uchta vint 5 bilan birlashtirilgan tashqi pichoq 1 va ichki pichoq 2 orasidagi halqasimon ariqchada itarib chiqargich 4 va prujina 3 joylashgan. Tepadan berilgan zarbadan keyin avval tashqi pichoq, undan keyin ichki pichoq rezinani qirqadi. Itarib chiqargich pichoqlardan kesilgan halqasimon namunani ajratadi.



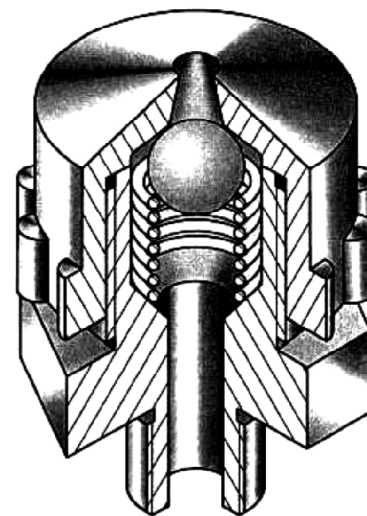
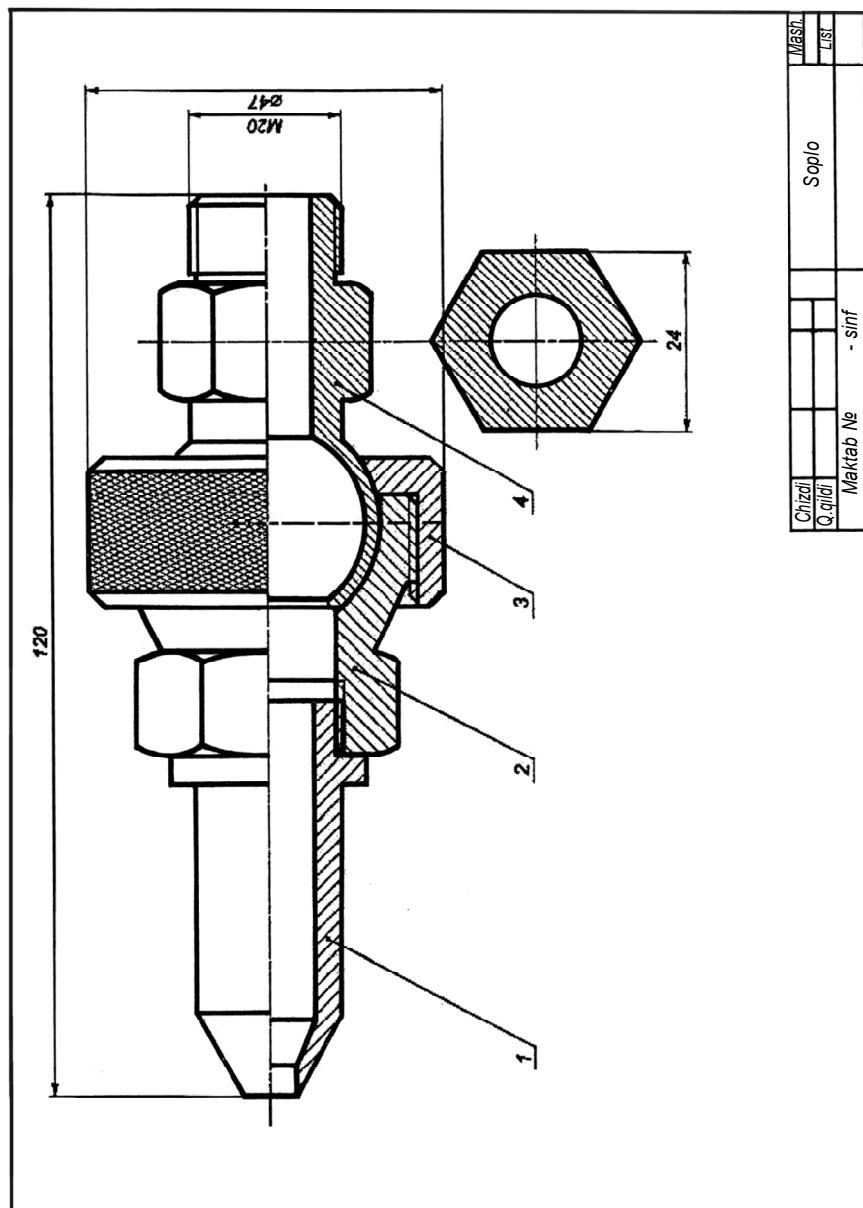
O'ri	Nomi	Soni	Material	Eslatma
	Hujjatlar			
	Yig'ish chizmasi			
	Detallar			
1	Igna	1	Po'lat 30X	
2	Korpus	1	Po'lat 30X	
3	Qopqoq	1	Po'lat 30X	
4	Shar	1	Po'lat 30X	
Chizdi			Soplo	Mash
Qildir				List
Maktab № - sinf				

11. Soplo

Soplo – oqib chiqayotgan suyuqlikni yo'naltirish va tezligini oshirishda qo'llaniladi.

Ushbu soplo katta tezlikda aylanadigan silliqlovchi diskka sovituvchi suyuqlik uzatishda qo'llaniladi.

Shar 4 ning korpus 2 bilan sharli birikmasi suyuqlik oqimi yo'nalishini igna 1 yordamida o'zgartirishga imkon beradi. Qopqoq 3 korpus bilan rezkali birikkan va sharli birikmani tutib turadi.

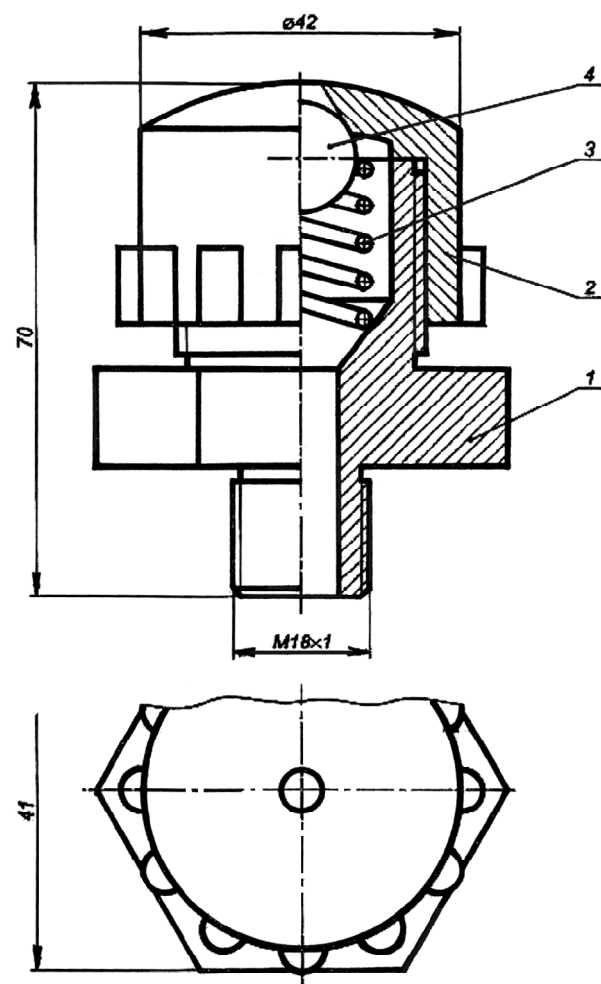


O'ri	Nomi	Soni	Material	Eslatma
	Hujjatlar			
	Yig'ish chizmasi			
	Detallar			
1	Korpus	1	Po'lat 10	
2	Qopqoq	1	Po'lat 10	
3	Prujina	1	Po'lat 65G	
4	Sharik Ø16	1	Po'lat 15	
Press-maydon				
Chizdi				Mash.
Q.ildi				List
Maktab № - sinf				

12. Press-moydon

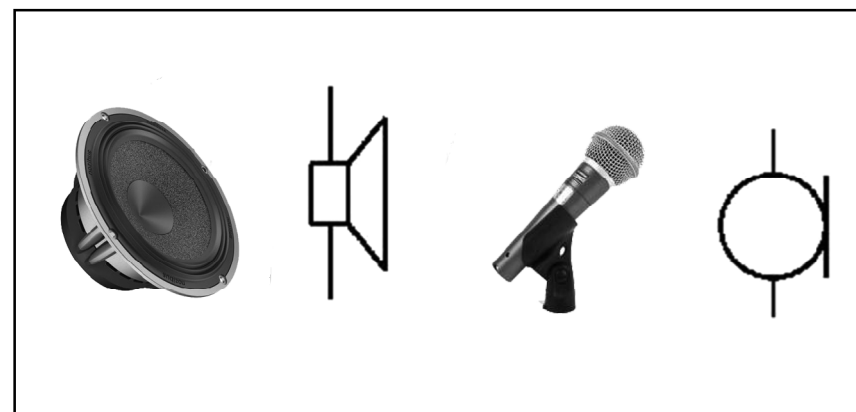
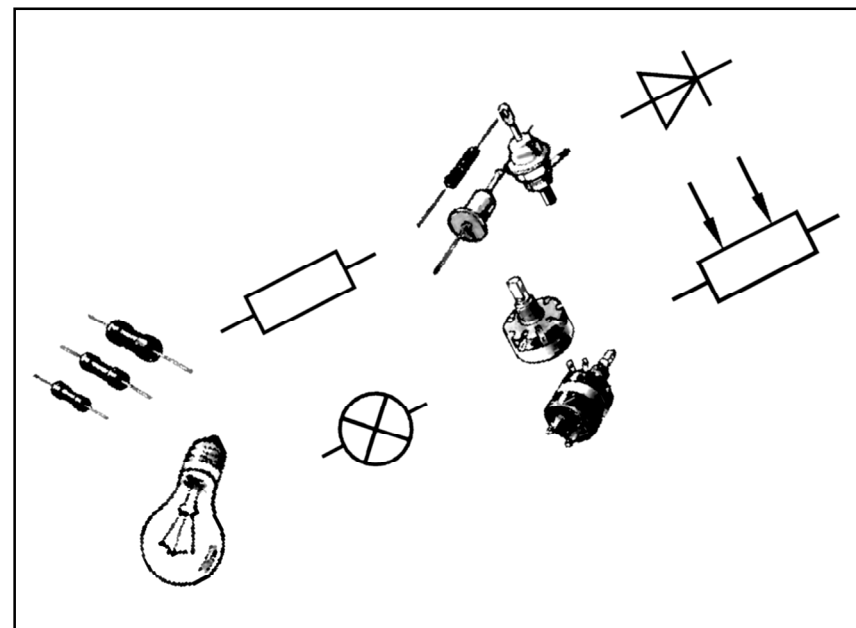
Press-moydon — ishqalanuvchi sirlarga texnik moy surtuvchi moslama.

Moydon korpusi 1 ga qopqoq 2 ni yechib olmasdan maxsus qurilma bilan moy quyiladi. Buning uchun prujina 3 bilan korpusga tiralib turgan sharik 4 moydon qurilmasi ichiga surib turiladi.



Chizdi					Press-moydon	Massh.
Q.qlai						List
Maktab №				- sinf		

V QISM. SXEMALAR



24-topshiriqning qisqacha bayoni

24-topshiriq. Elektr sxemalari chizmasini bajarish

Ko'p yo'nalishlar bo'yicha mutaxassislar tayyorlashda o'quvchilarni elektr sxemalarni bajarishga o'rgatish ko'zda tutilgan. O'quvchilar darslikdan prinsipial elektr sxemalarini bajarishga qo'yiladigan talablar, sxemalarda qo'llaniladigan shartli grafik belgilar, shuningdek, elementlarning tuzilishi va ishlash prinsipiga tegishli elementar ma'lumotlar va ularni bajarishga doir materiallarni o'rganganlaridan keyin topshiriqni bajarishga kirishadilar.

Topshiriqlarda o'quvchilarda kundalik turmushda uchrayb turadigan, tanish bo'lgan elementlarni o'z ichiga olgan variantlar tanlangan. Topshiriqni bajarishdan maqsad sxematik chizmalar bajarishning o'ziga xos xususiyatlarini o'rganish va o'quvchilarni sxemalarda ishlatiladigan shartli belgilar bilan tanishtirishdan iborat.

Topshiriq A3 yoki A4 formatli chizma qog'ozida quyidagi ketma-ketlikda bajariladi:

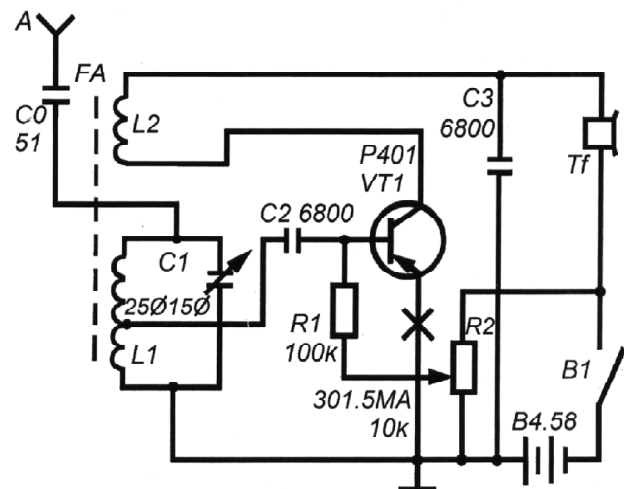
1. Darslik yoki standartlardan prinsipial elektr sxemalariga tegishli ma'lumotlar o'rganiladi.
2. Sxemalar tushunarli, o'qish uchun qulay va ixcham bajarilishi kerak. Sxemalardagi bog'lanish chiziqlarining qayrilish va ularning o'zaro kesishish joylari iloji boricha kam bo'lishi kerak. Qo'shni joylashgan parallel chiziqlar orasidagi masofa 3 mm dan kam bo'lmasligi kerak.
3. Chizma ramkasini chizib, asosiy yozuvni bajaring. Asosiy yozuv tepasidagi joydan tafsilotli ro'yxat uchun bo'sh o'rin qoldiring.
4. Uzib qo'yilgan holatdagi sxemani chizing, bunda chiziqlar 0,2–0,6 mm qalinlikda tanlanadi. Har bir element harf-raqamli pozitsion belgiga ega bo'lishi kerak.
5. Elementlar ro'yxati keltirilgan jadvalni to'ldiring.

24-topshiriq — «Elektr sxemalari chizmasini bajarish» namunasi

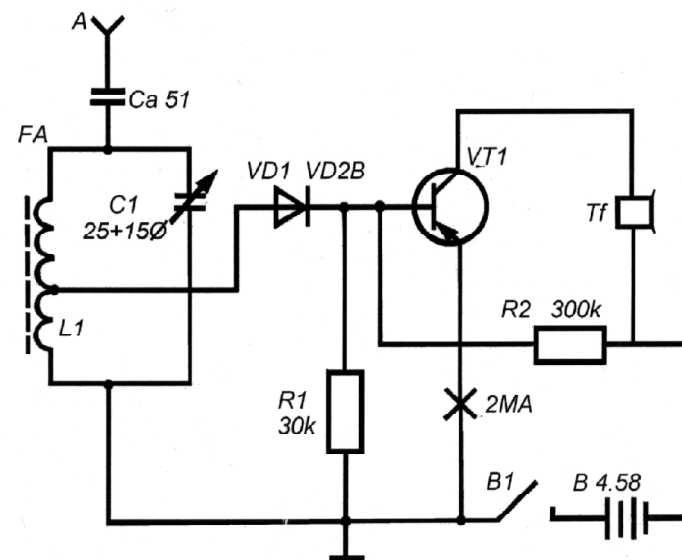
Belgi Til	Nomi	Izoh
FU1 FU2	Erunchan to'ldirgichli PVD1-23 saqlagich PRS-BUZ-ps	
M	PVD1-2U3	2
	Harakatlantirgich (divigate) 4A8QA6U3	1
		$n=100$ Ob
KM	Ishga tushirgich PML-12300	1
	Transformator OSM-0, 063U3 220/369	1
	Lampa KM 48/50GOST6940-74	2
	Avtomatik o'chirib qo'ygich (viklyuchatel) BA-5125	1
SB1	Elektr issiqlik rele'si	1

Chizma Sobirova S	Imzo	Prinsipial elektrik sxema
Chizma Sobirova S		
Tekshiruvchi		
Qildi		

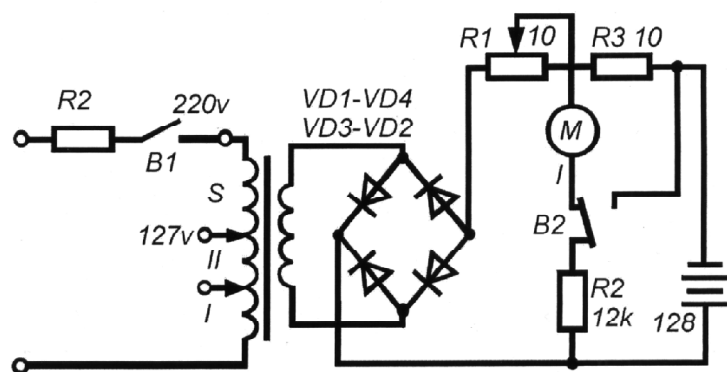
1-variant



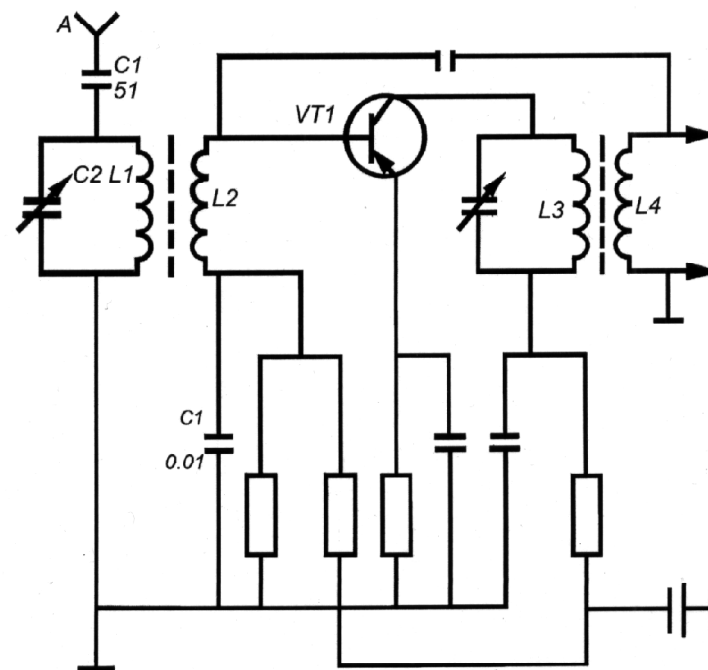
3-variant



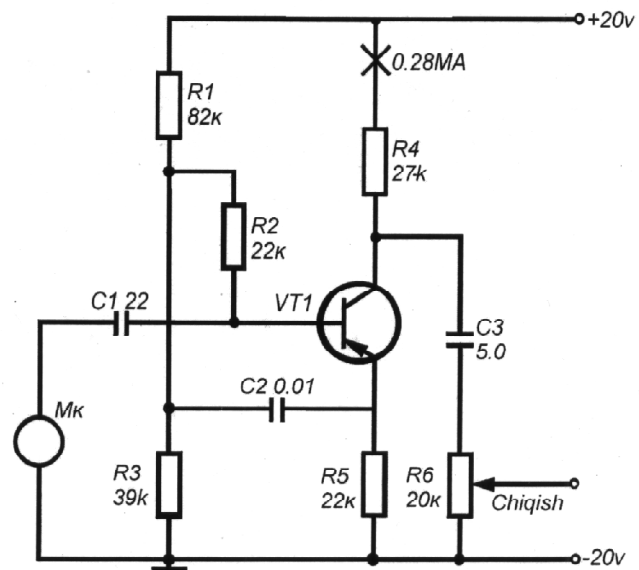
2-variant



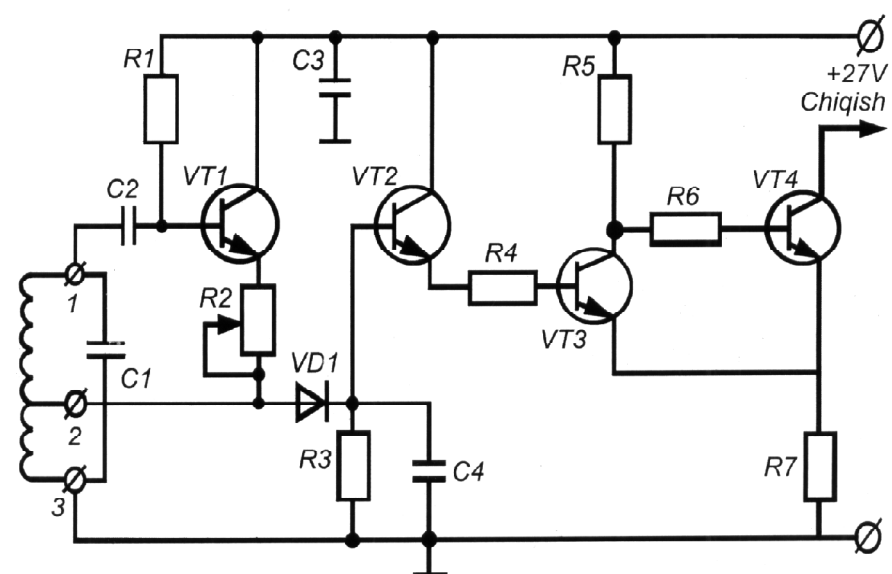
4-variant



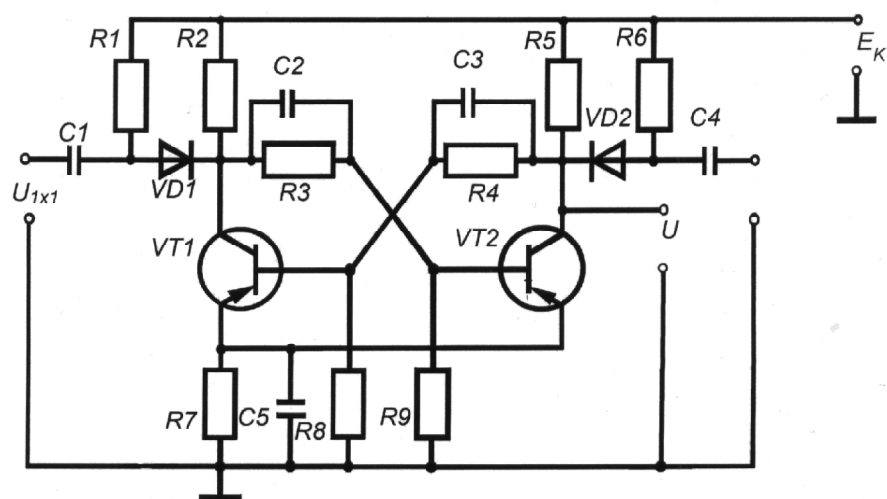
5-variant



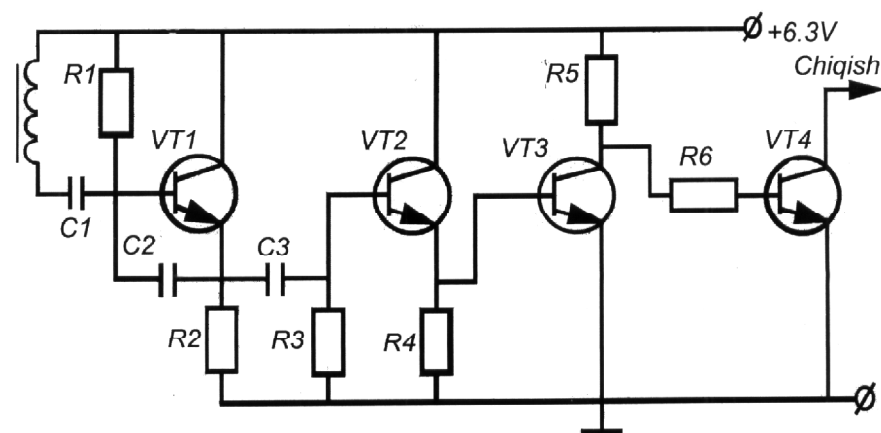
7-variant



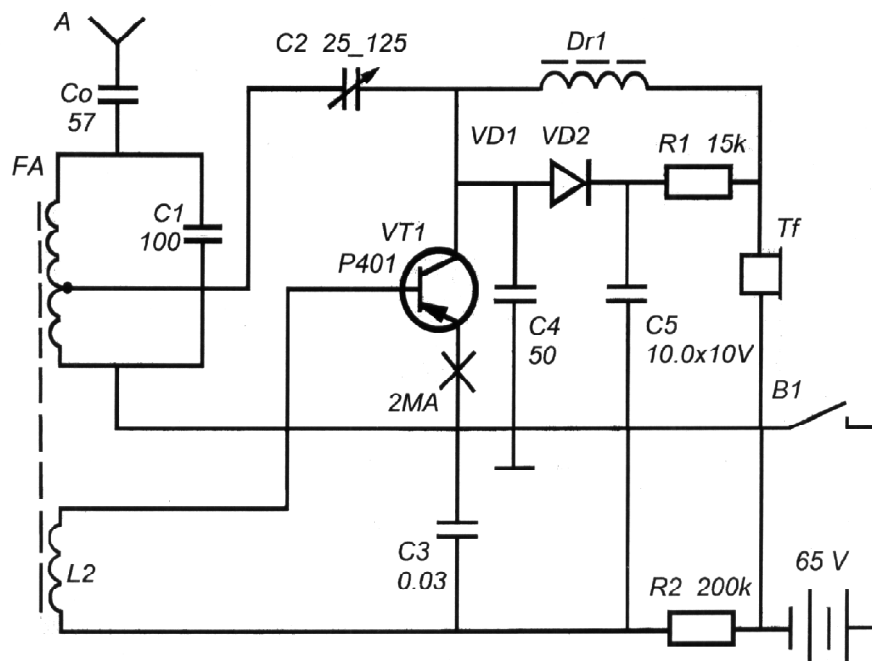
6-variant



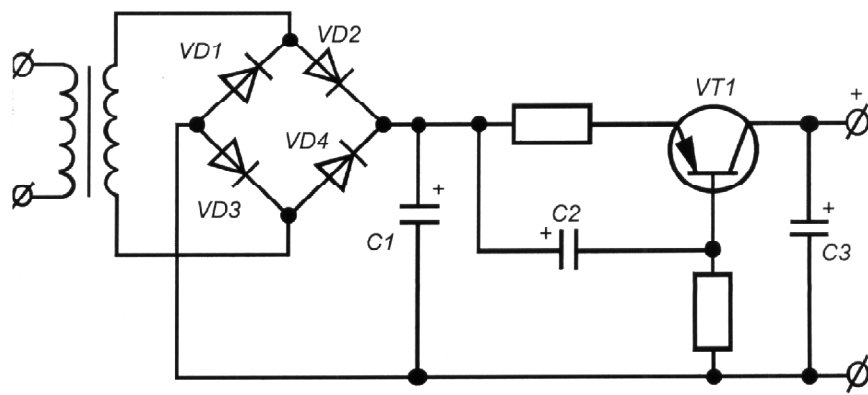
8-variant



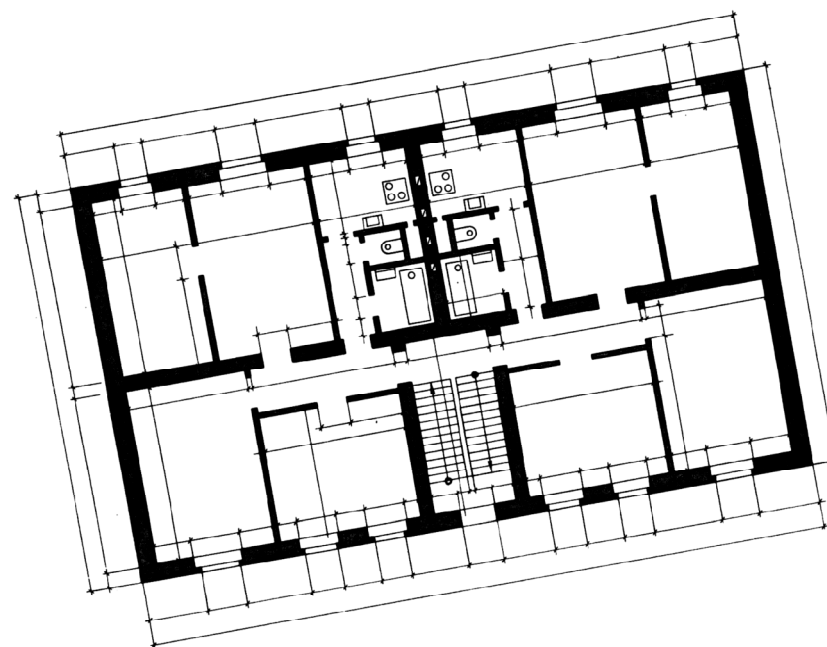
9-variant



10-variant



VI QISM. ARXITEKTURA-QURILISH CHIZMACHILIGI



25–26-topshiriqlarning qisqacha bayoni

25-topshiriq. Bino plani chizmalarini o‘qish. Tom plani chizmasini bajarish

1. Berilgan perspektiv tasvirga asosan tasvirlangan bino planini aniqlang.
2. Aniqlangan tasvirda xonalarni raqamlar bilan belgilab chiqing va ularning tafsilotli ro‘yxatini (eksplikatsiya) tuzing.

Tafsilotli ro‘yxat (eksplikatsiya)

_____	_____
_____	_____
_____	_____
_____	_____

3. Har bir plandagi eshik va derazalarning turlarini aniqlang, javoblarni jadvalga yozing.

№	Eshiklar soni	Eshiklar turi va ularning soni	Derazalar soni	Derazalar turi va ularning soni
1				
2				
3				

4. Perspektiv tasvir va bino planiga asosan tom planini aniqlang va uning chizmasini bajaring.

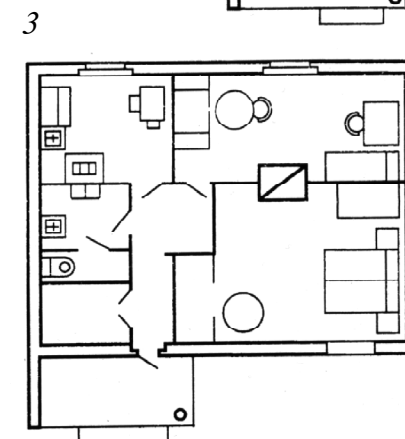
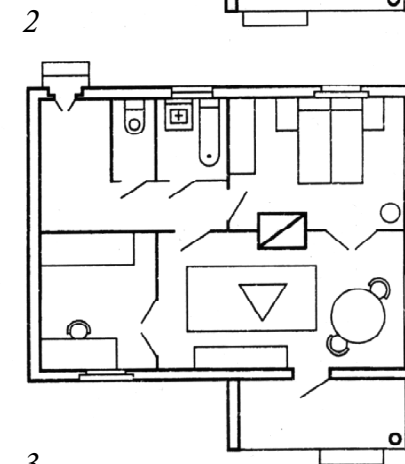
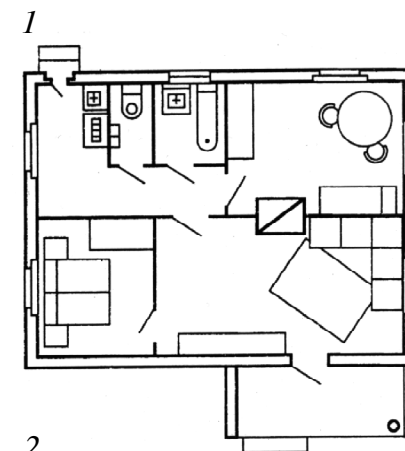
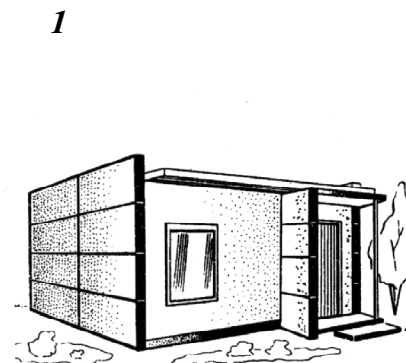
5. Binoning asosiy (bosh) fasadini aniqlang va uni perspektiv tasvirda belgilang.

26-topshiriq. Bino plani, fasadi va qirqimi chizmasini bajarish

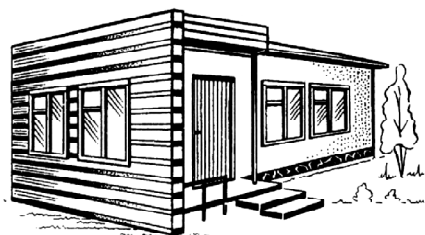
Tasvirlarda bino fasadi va qirqimining tugallanmagan chizmalari hamda planining sxemashtirilgan chizmasi keltirilgan. Eshik va deraza o‘rinlarining o‘lchamlari jadvalda berilgan.

Keltirilgan ma’lumotlardan foydalanib, bino plani, fasadi va qirqimi chizmalarini yakunlang.

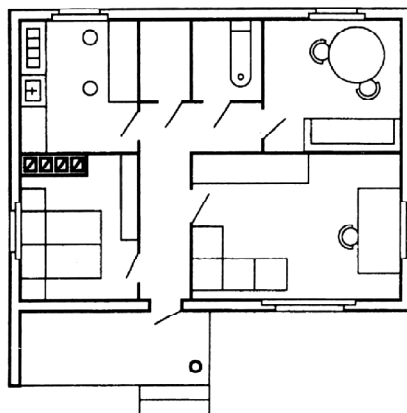
25-topshiriq variantlari



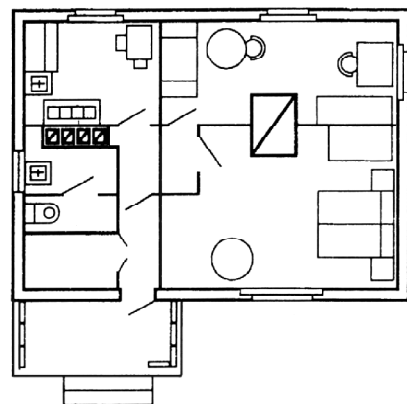
2



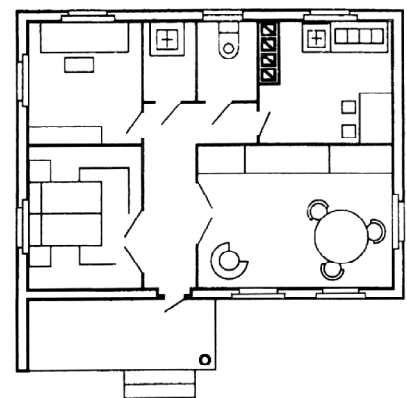
1



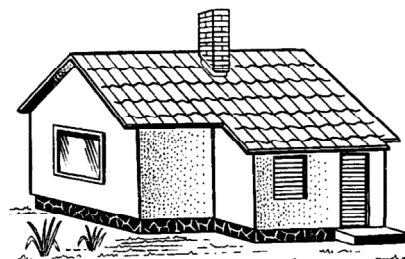
2



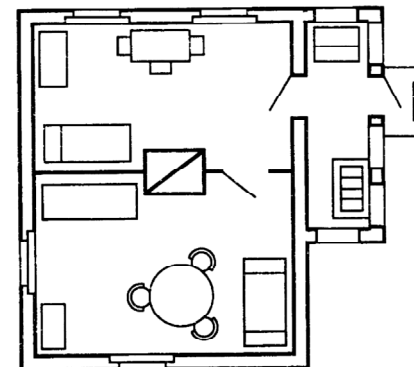
3



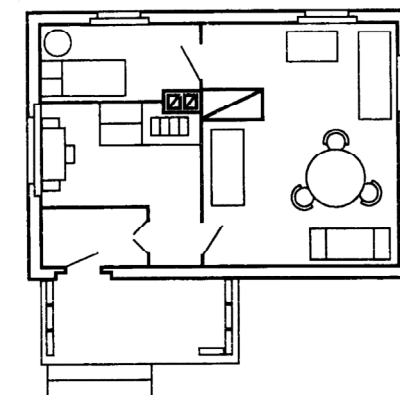
3



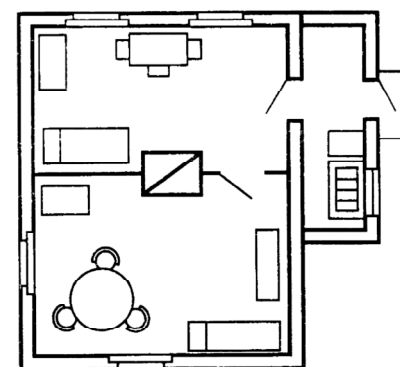
1



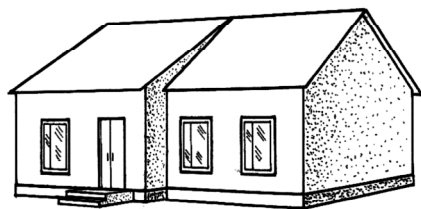
2



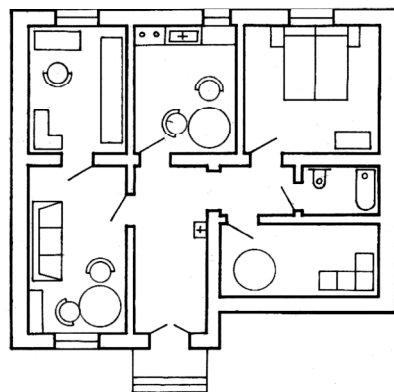
3



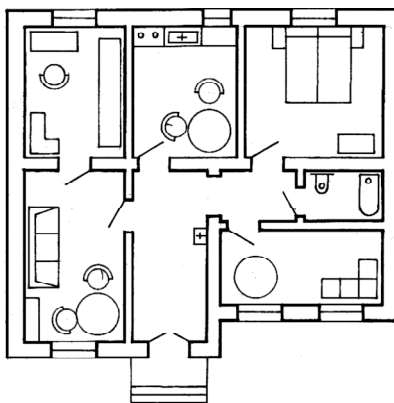
4



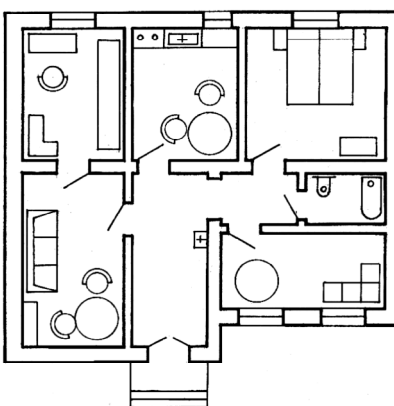
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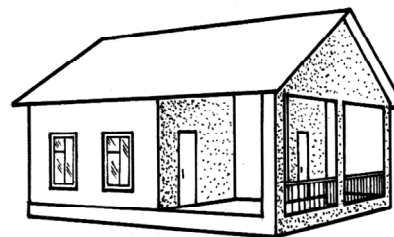
2



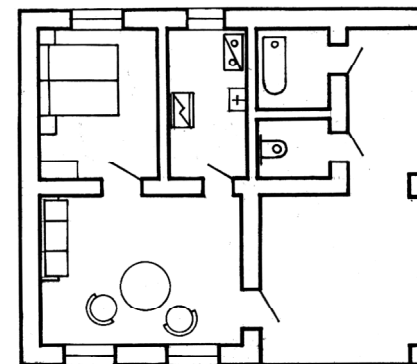
3



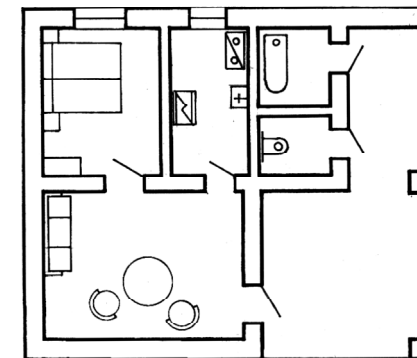
5



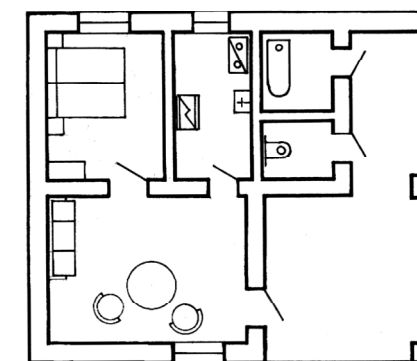
1



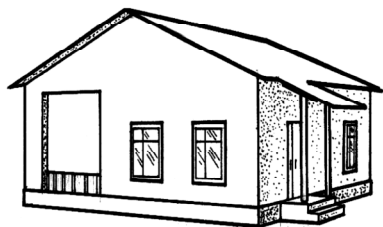
2



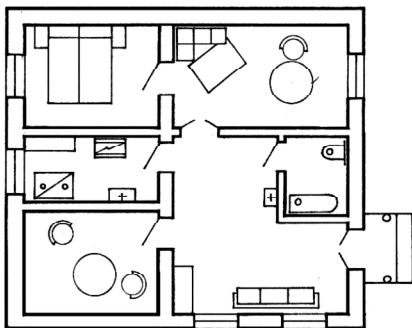
3



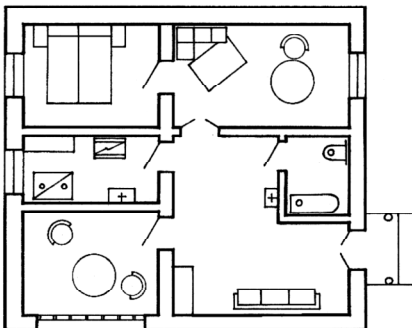
6



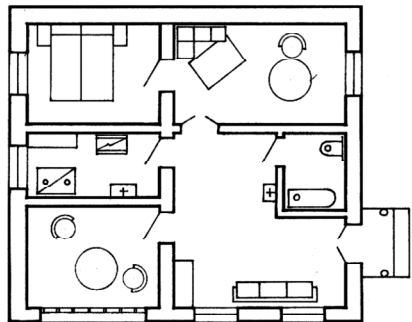
1



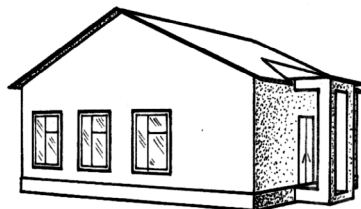
2



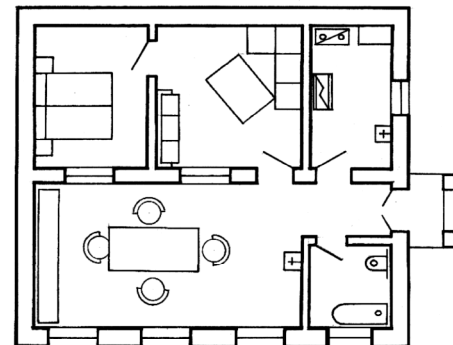
3



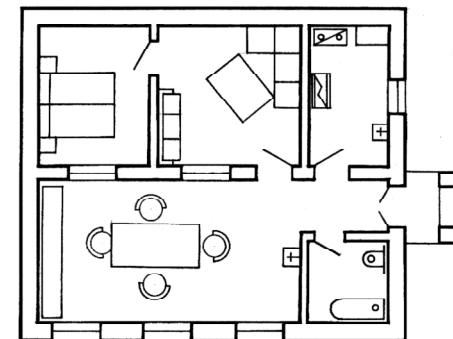
7



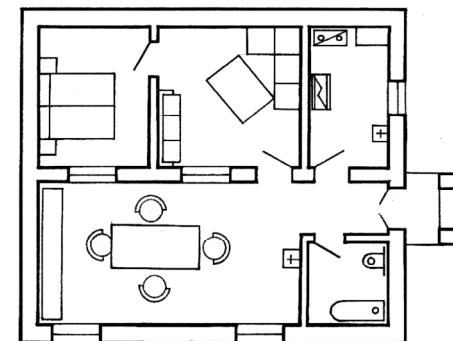
1



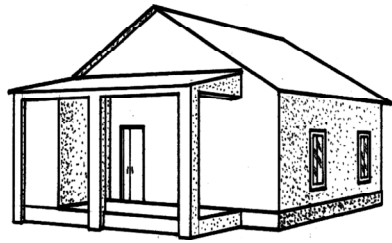
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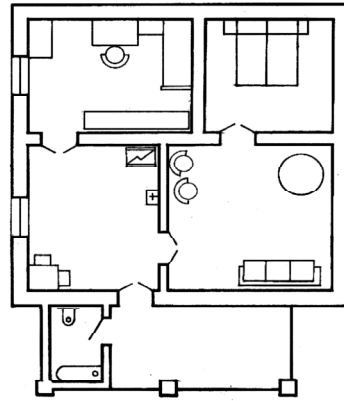
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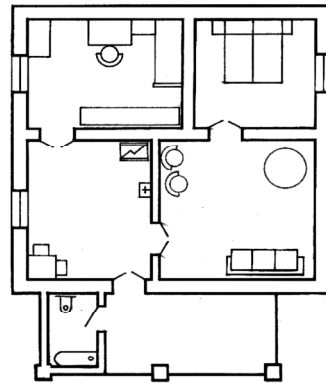
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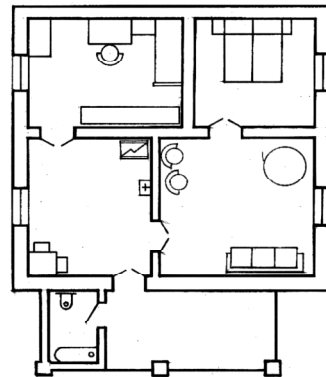
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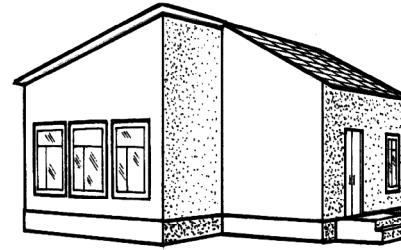
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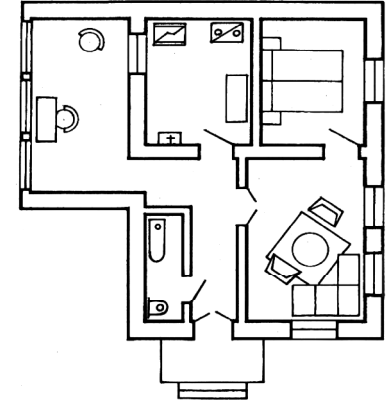
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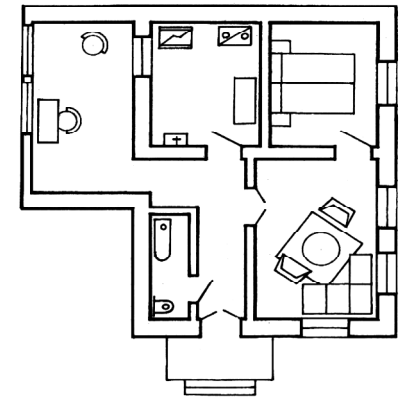
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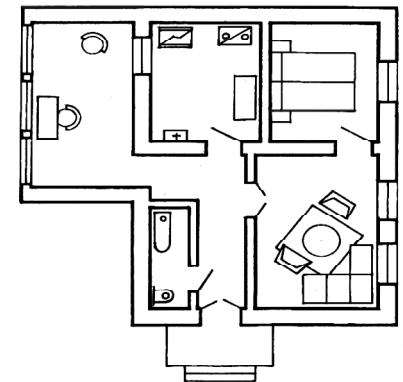
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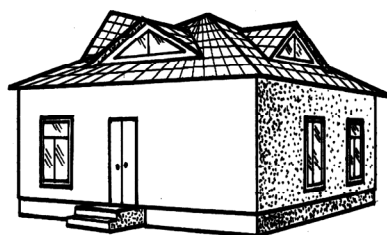
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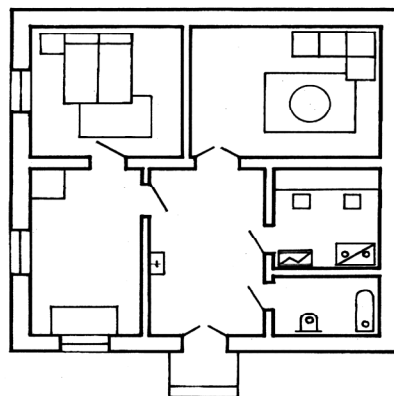
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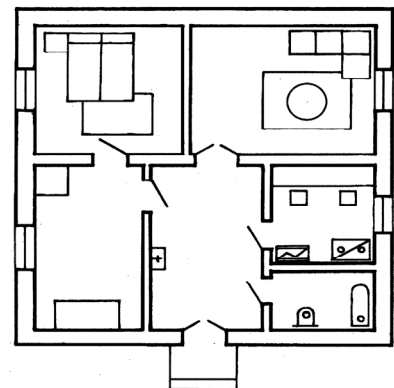
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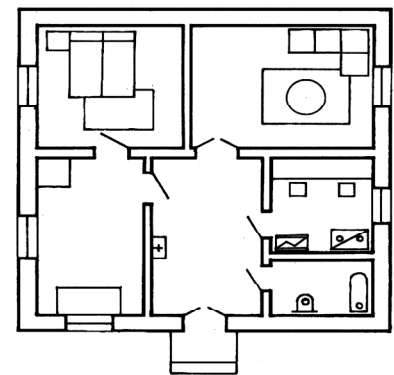
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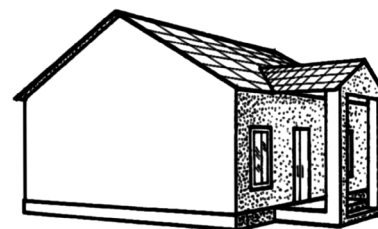
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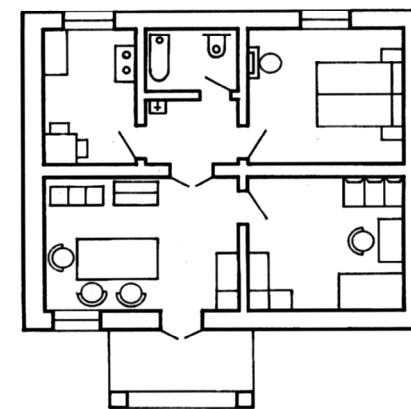
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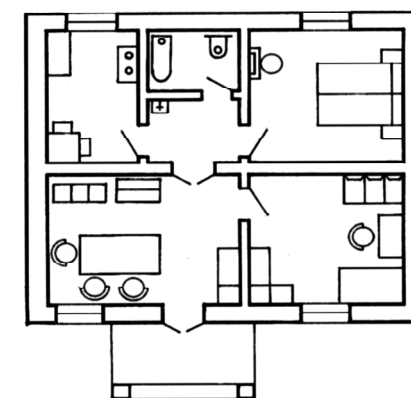
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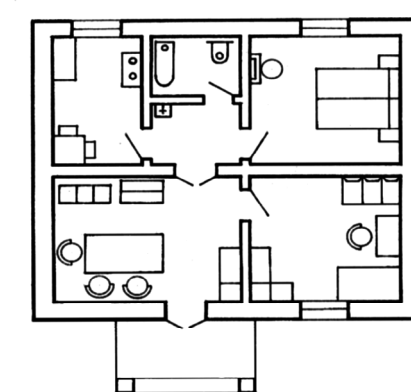
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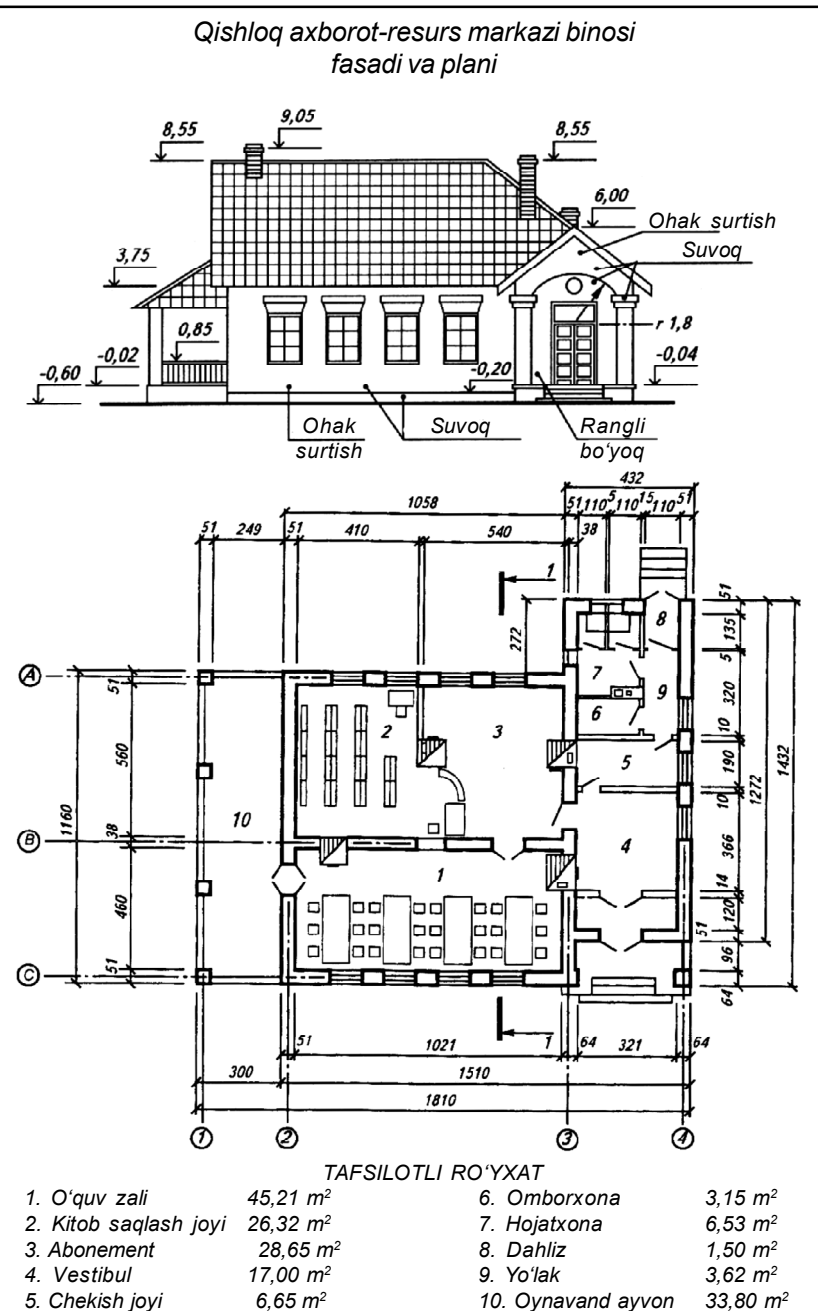
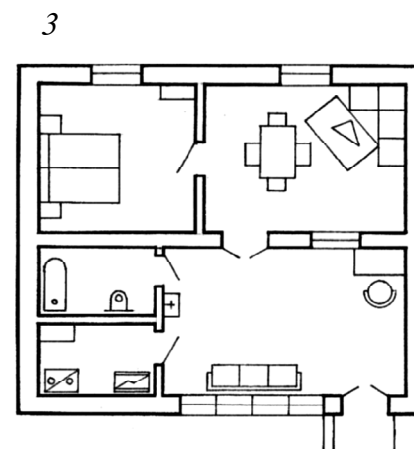
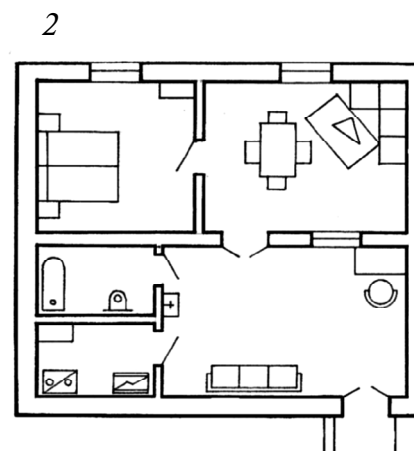
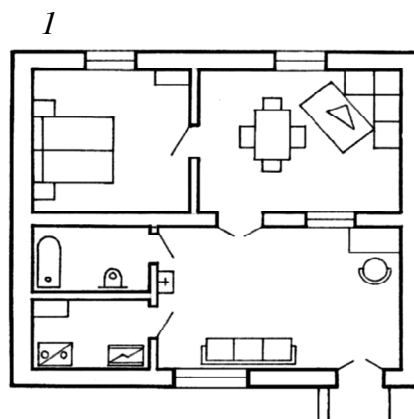


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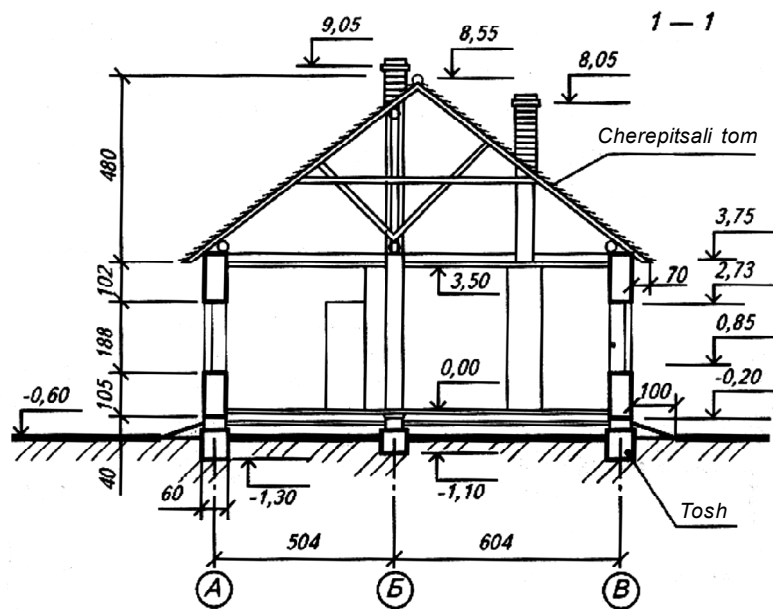


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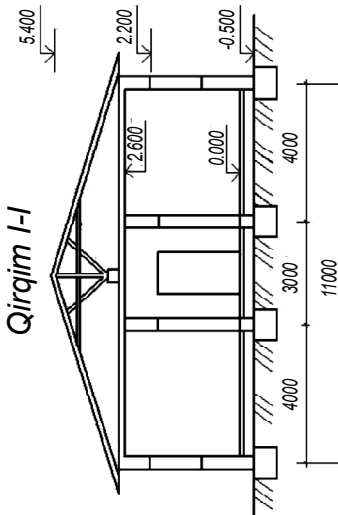


Qishloq axborot-resurs markazi binosi qirqimi



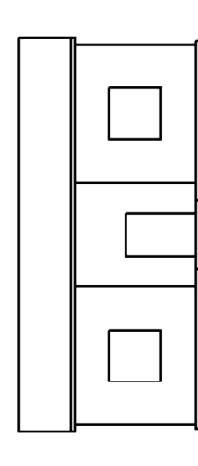
26-topshiriq variantlari

Qirgim I-I

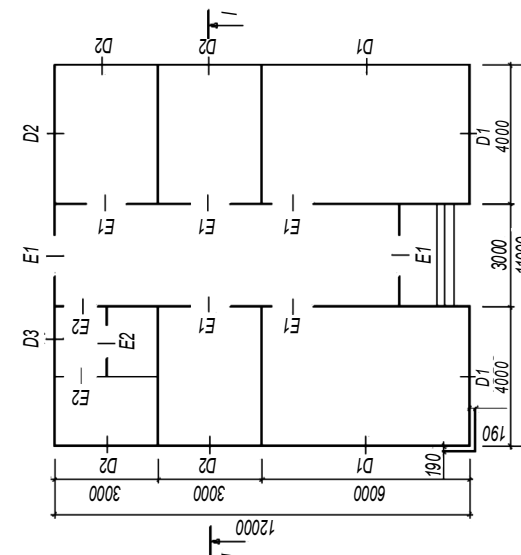


E4	2000 X 800	D4	1460 X 875
E3	2000 X 900	D3	1460 X 1175
E2	2000 X 1100	D2	1460 X 1320
E1	2000 X 1200	D1	1460 X 1475

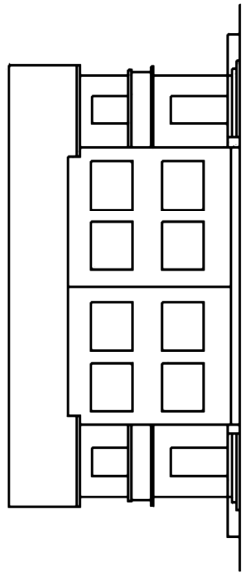
Fasad



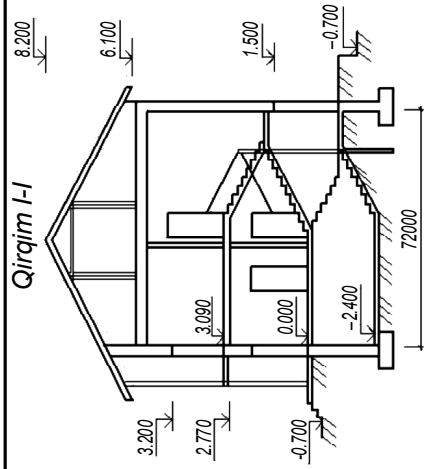
Plan



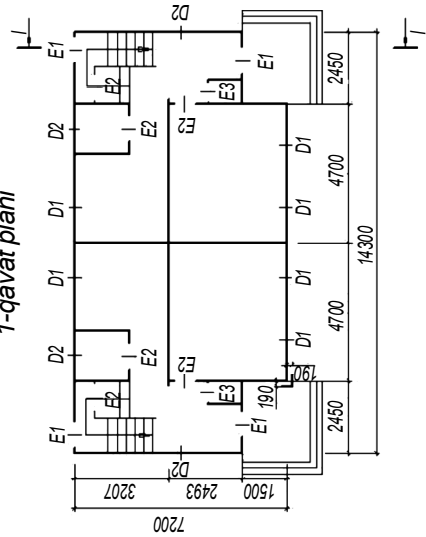
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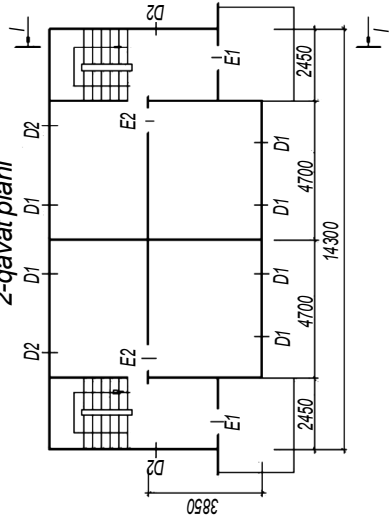
Qirgim I-I



1-qavat plani

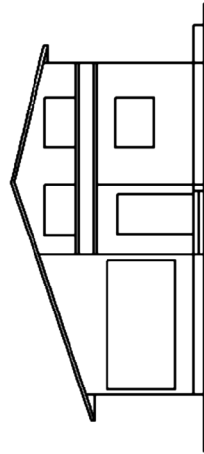


2-qavat plani

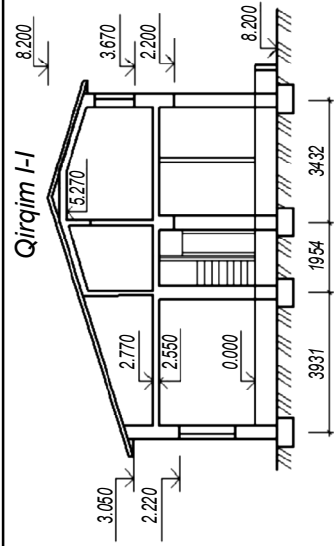


E1	2000 X 1200
E2	2000 X 1100
E3	2000 X 900
E4	2000 X 800
D1	1460 X 1470
D2	1460 X 1320
D3	1460 X 1175
D4	1460 X 875

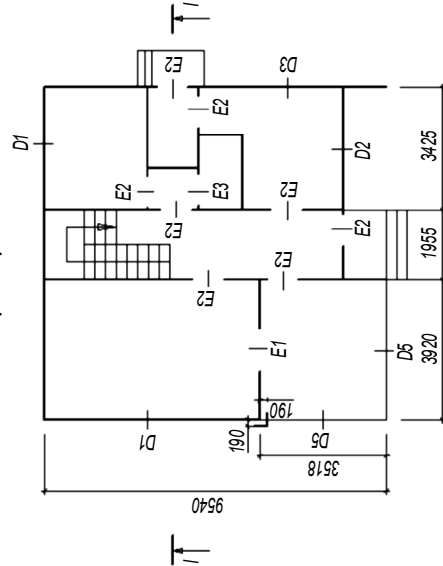
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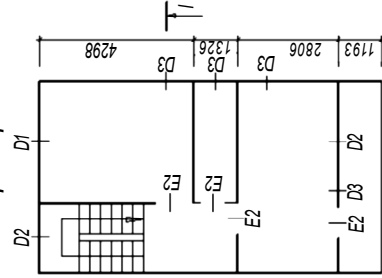
Qirgim I-I



1-qavat plani

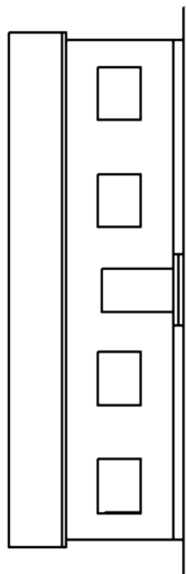


2-qavat plani

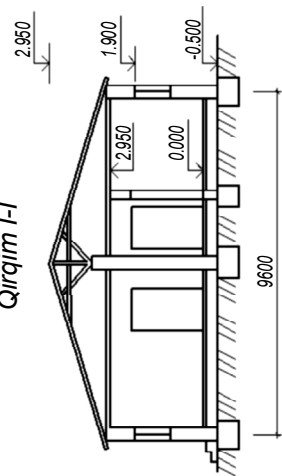


E1	2000 X 1200
E2	2000 X 1100
E3	2000 X 900
E4	2000 X 800
D1	1460 X 1470
D2	1460 X 1320
D3	1460 X 1175
D4	1460 X 875
D5	1660 X 3200

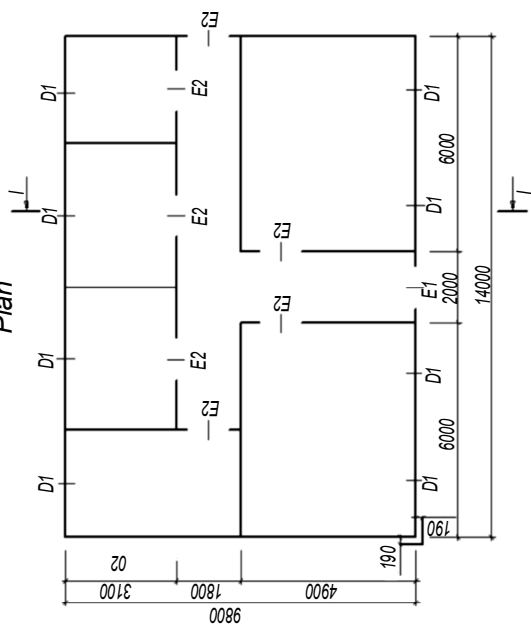
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Qirgım I-I

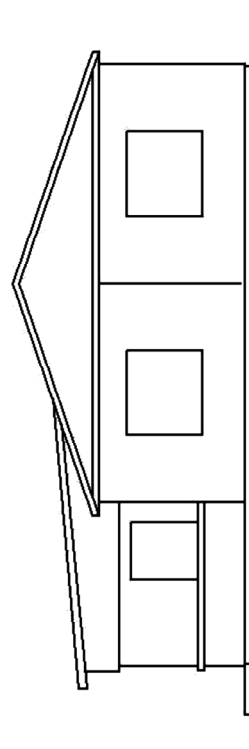


Plan

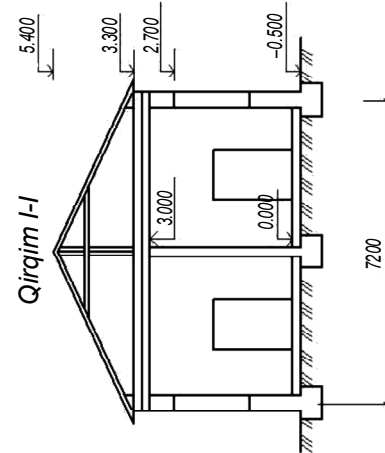


E1	E2	E3	E4
2000 X 1200	2000 X 1100	2000 X 900	2000 X 800
D1	D2	D3	D4
1460 X 1475	1460 X 1320	1460 X 1175	1460 X 875

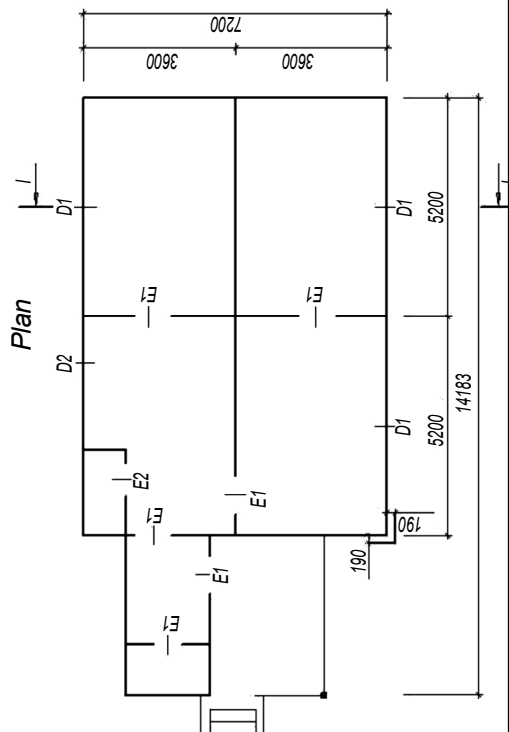
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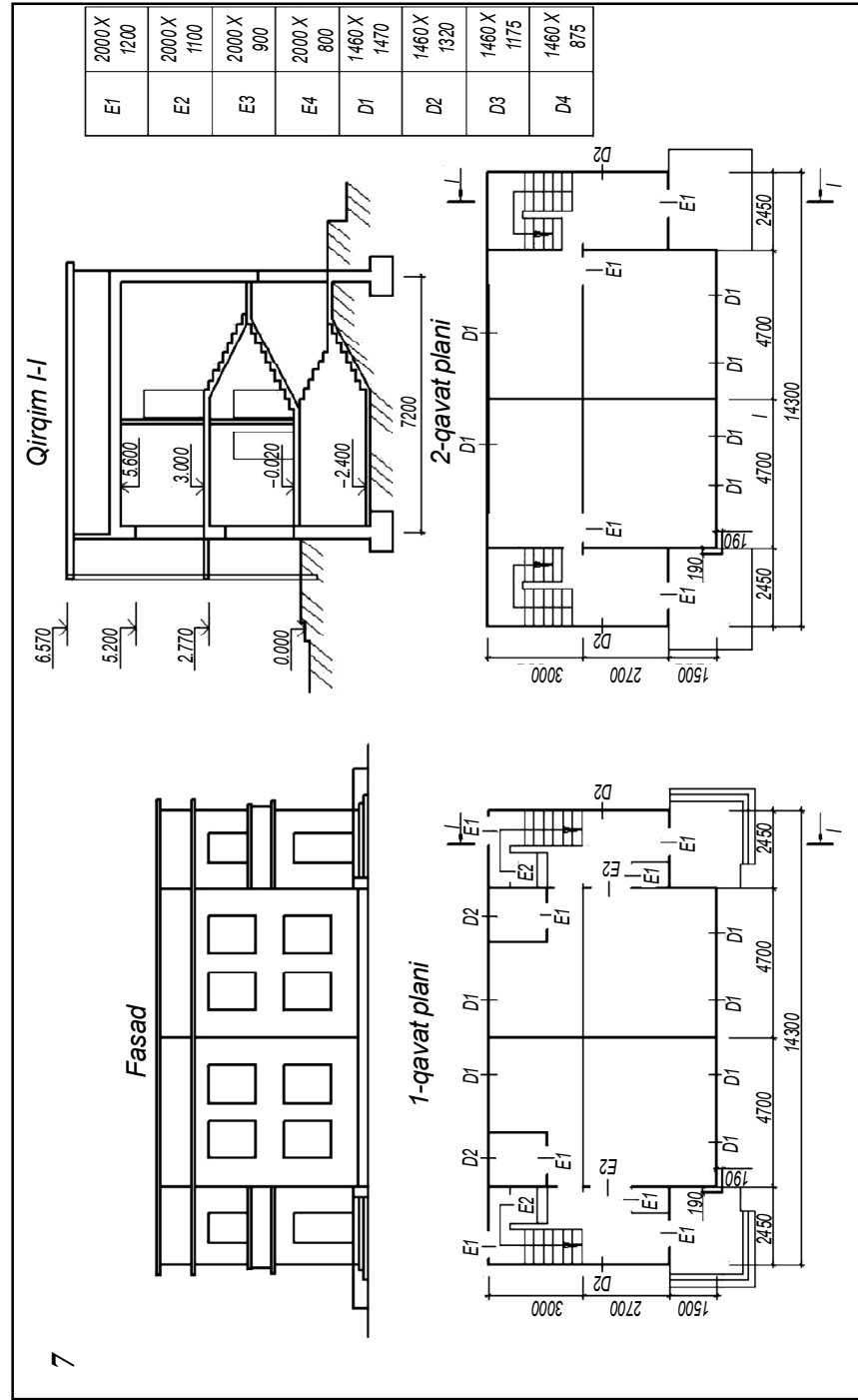
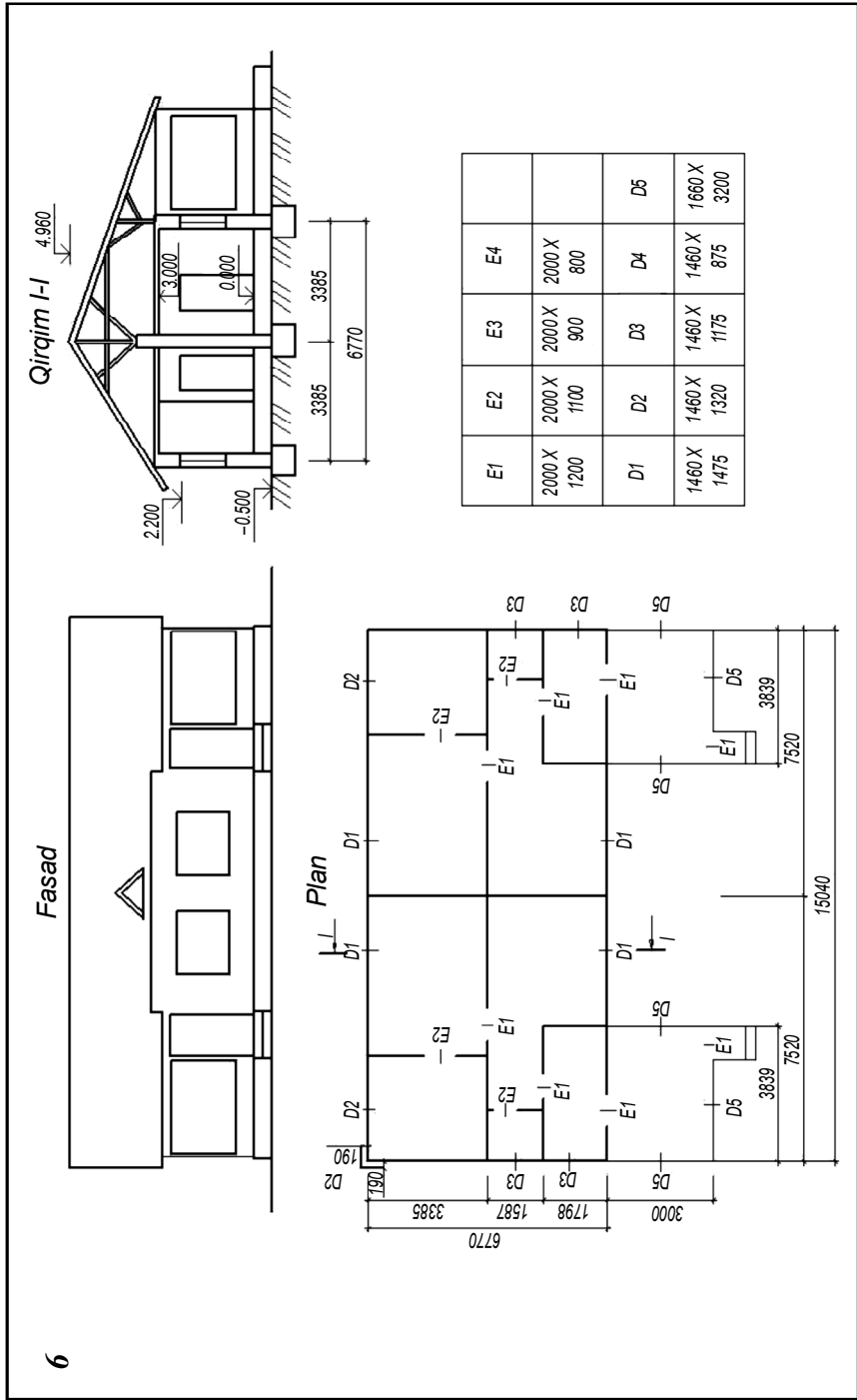
Qirgım I-I

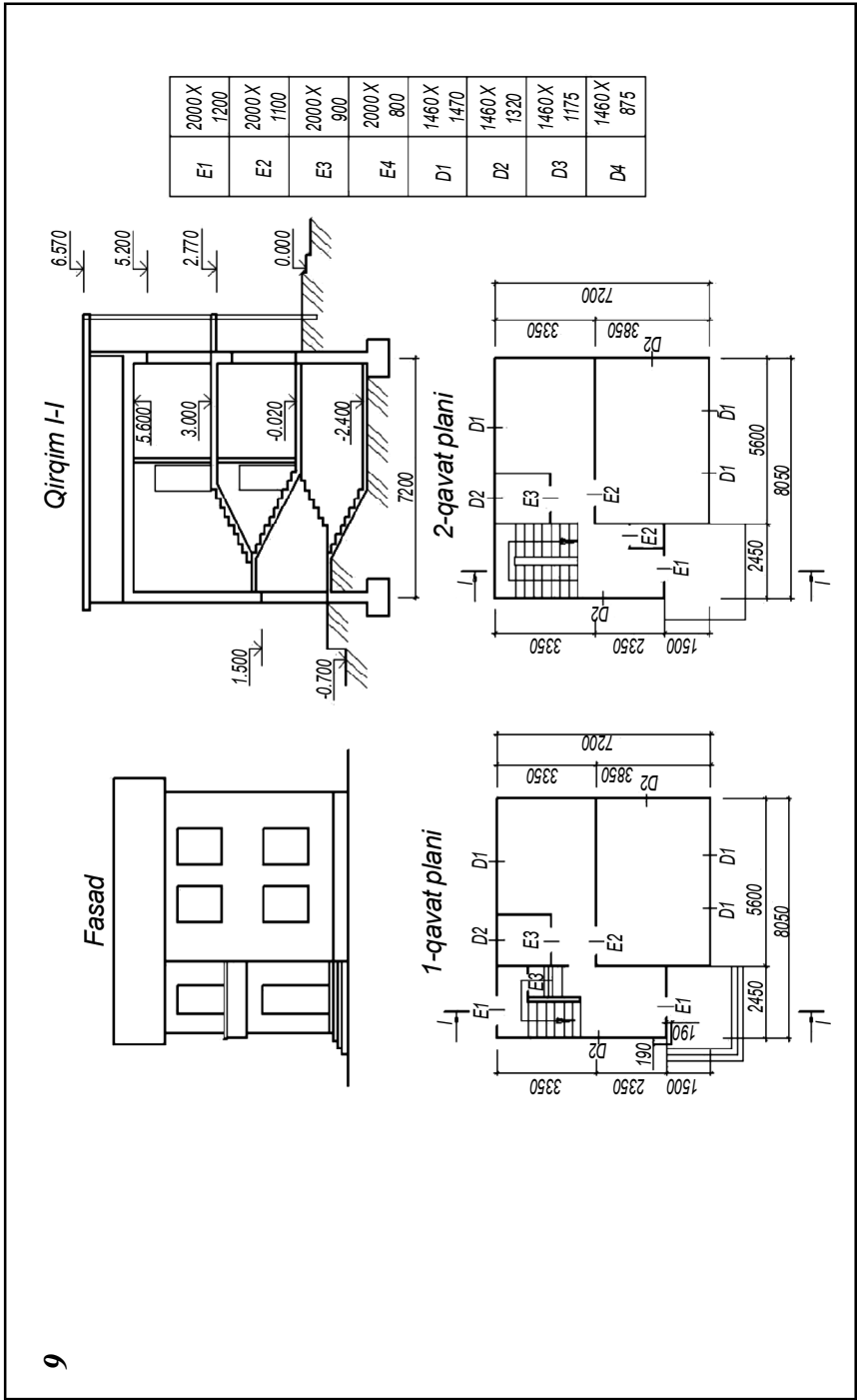
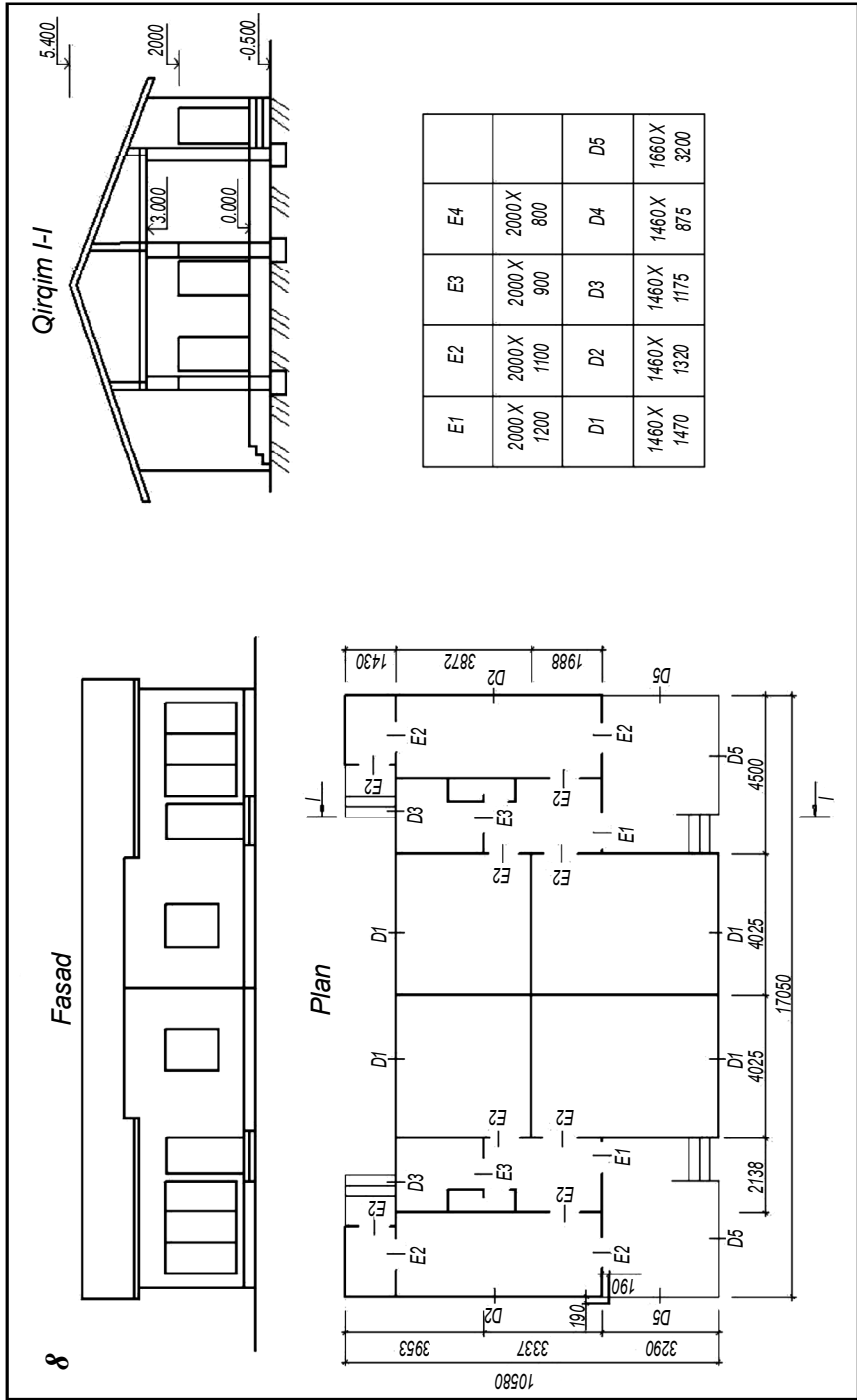


Plan

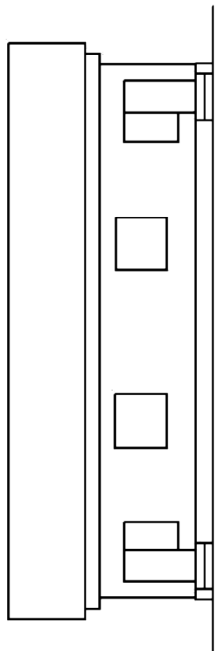


E1	E2	E3	E4
2000 X 1200	2000 X 1100	2000 X 900	2000 X 800
D1	D2	D3	D4
1460 X 1475	1460 X 1320	1460 X 1175	1460 X 875

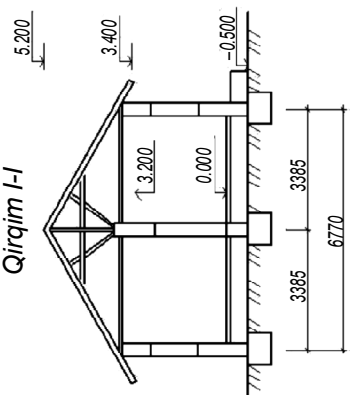




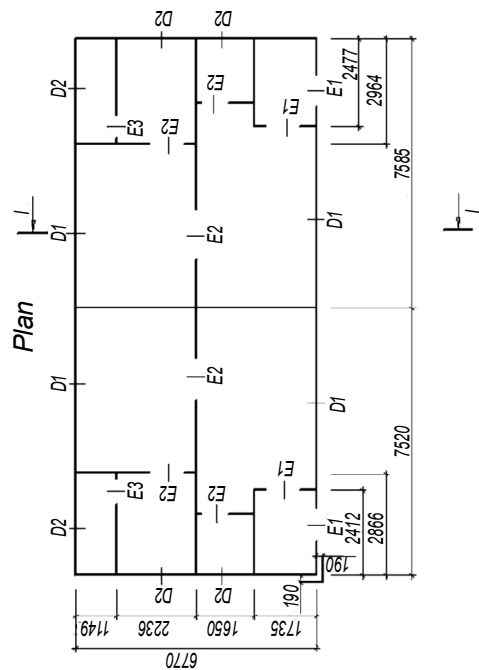
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Qirgim I-I

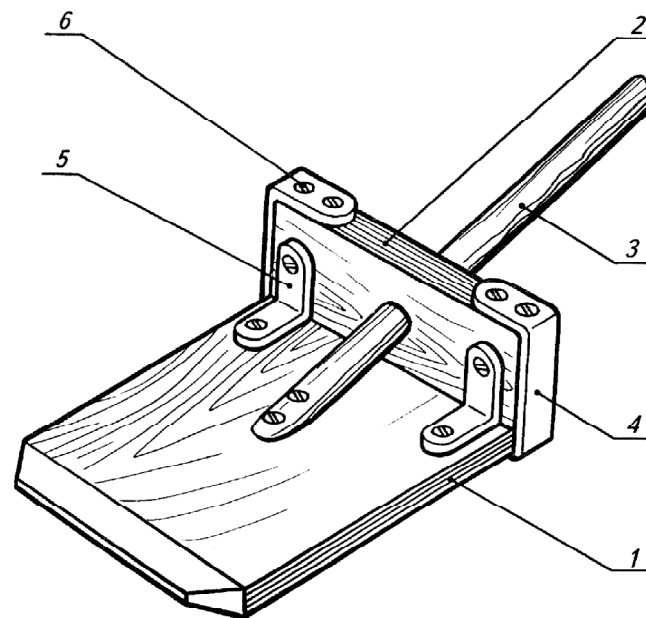
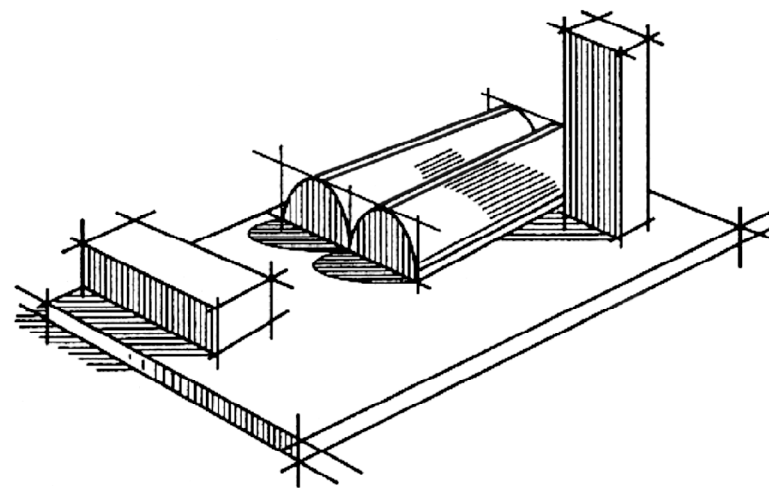


Plan



E1	E2	E3	E4
2000 X 1200	2000 X 1100	2000 X 900	2000 X 800
D1	D2	D3	D4
1460 X 1475	1460 X 1320	1460 X 1175	1460 X 875

VII QISM. MODELLASHTIRISH, KONSTRUKSIYALASH VA IJODIY YO'NALISHDAGI TOPSHIRIQLAR

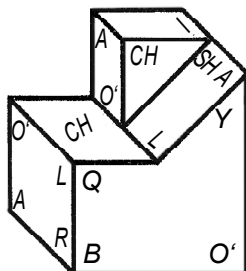
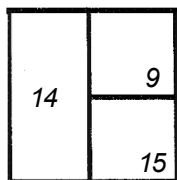
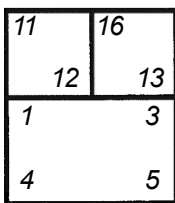
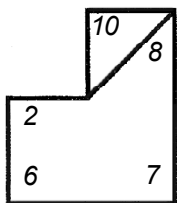


4. Shaklda detalning uchta proyeksiyasi va aksonometrik tasviri berilgan. To'g'ri burchakli proyeksiyalardan raqamlarni tartib bo'yicha olib, ularni aksonometrik tasvirdagi mos elementlardagi harflar bilan almashtirib, «aksonometriya» so'zining grekchadan tarjimasi qanday bo'lishini aniqlang.

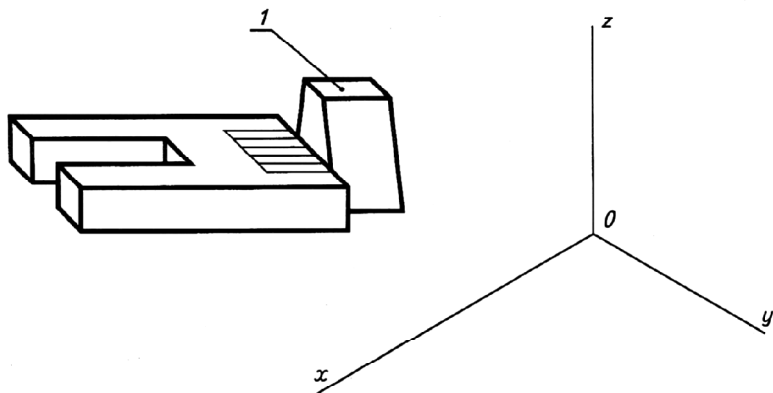
Aksonometriya (grek.) –

1	2	3	4	5	6	7	8

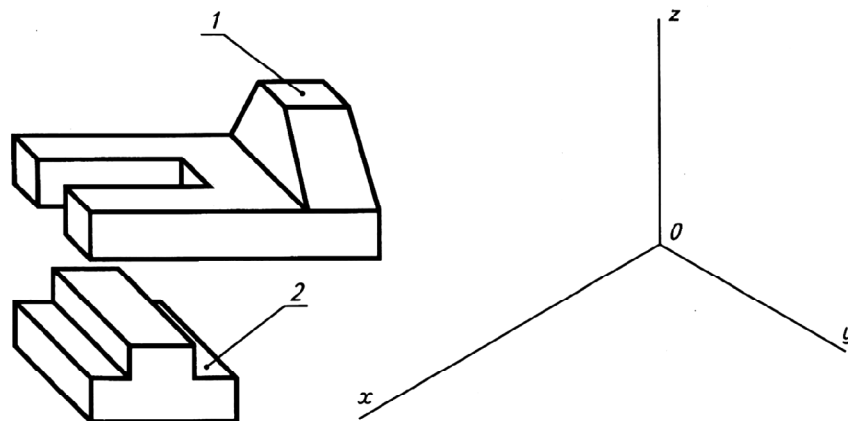
9	10	11	12	13	14	15	16



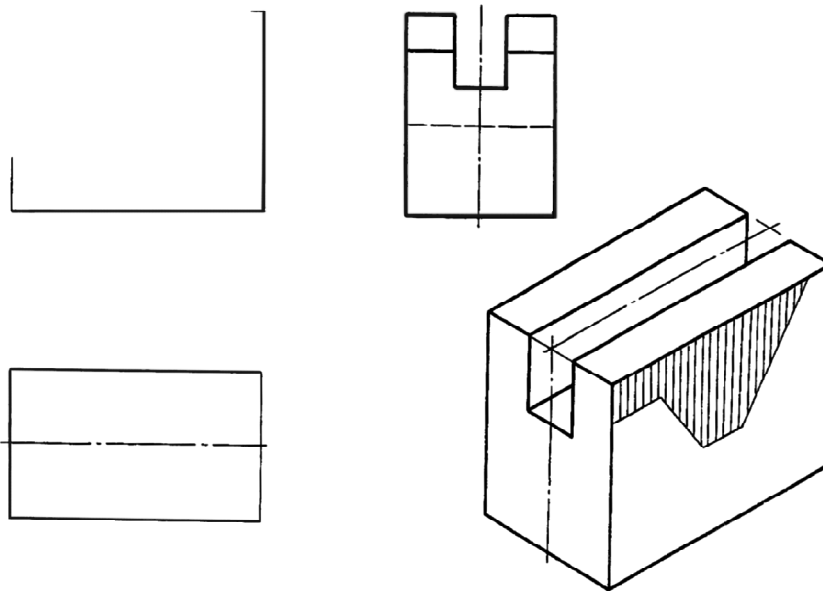
5. 1-elementni shtrixlangan joyga ko'chirib o'rnatish. Yangi detalning izometrik proyeksiyasini quring.



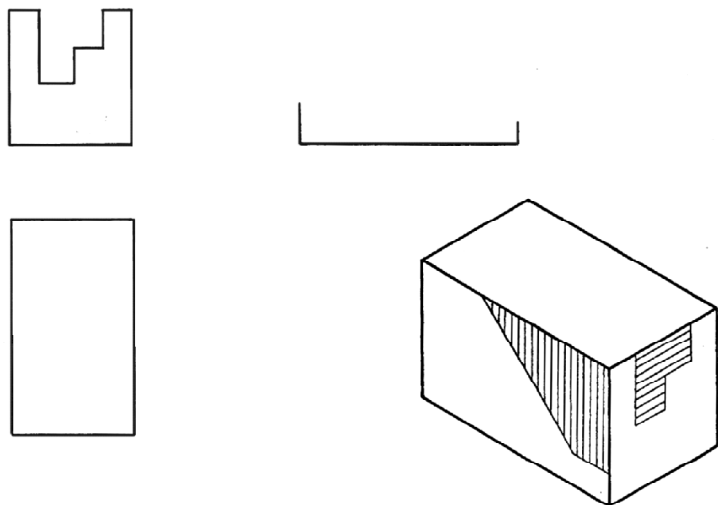
6. 1-elementning o'rniga 2-elementni o'rnatish. Hosil bo'lgan detalning izometrik proyeksiyasini quring.



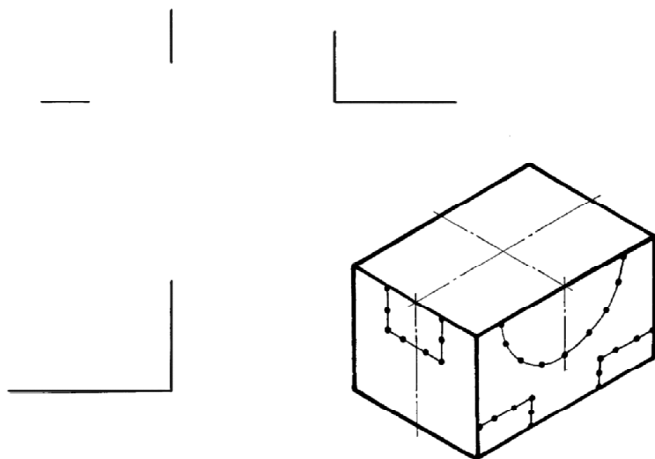
7. Shtrixlangan qismni buyumning hamma qismidan to'la-ligicha olib tashlang. Hosil bo'lgan detalning yetishmaydigan ko'rinishlarini quring.



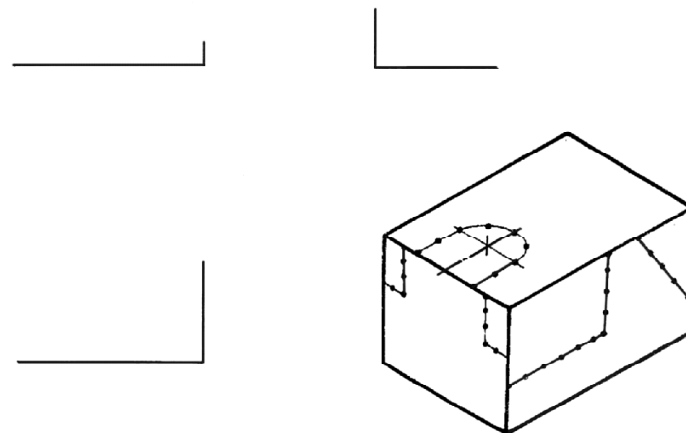
8. Shtrixlangan qismni buyumning hamma qismidan to'raligicha olib tashlang. Hosil bo'lgan detalning uchta ko'rinishini bajarib, o'lchamlarini qo'ying.



9. Rejalashtirish chizig'i bilan belgilangan qismlarni buyumning hamma qismidan to'raligicha olib tashlang. Hosil bo'lgan detalning uchta ko'rinishini bajarib, o'lchamlarini qo'ying.

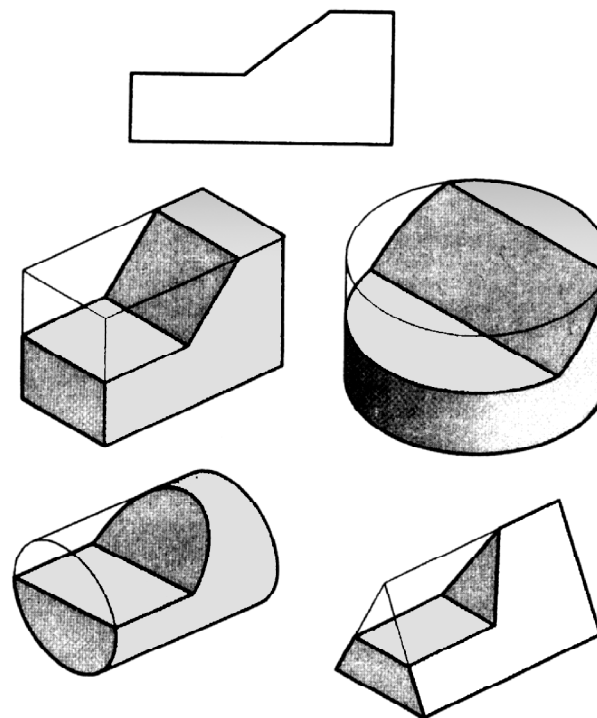


10. Rejalashtirish chizig'i bilan belgilangan qismlarni buyumning hamma qismidan to'raligicha olib tashlang. Hosil bo'lgan detalning uchta ko'rinishini bajarib, o'lchamlarini qo'ying.

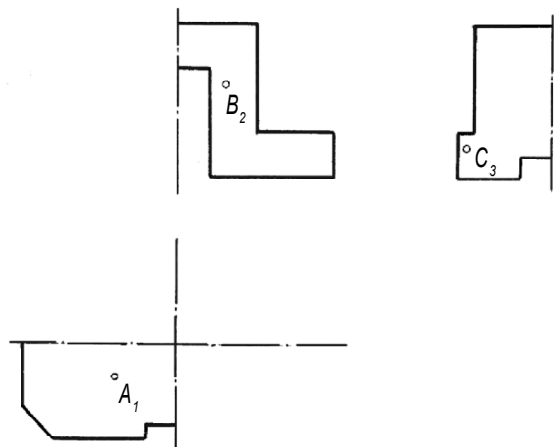


11. Ushbu to'rtta jism bir-biriga o'xshamaydi, lekin ular umumiy ortogonal proyeksiyaga ega. Bunga o'xshash jismlardan yana ko'plab misollarni keltirish mumkin.

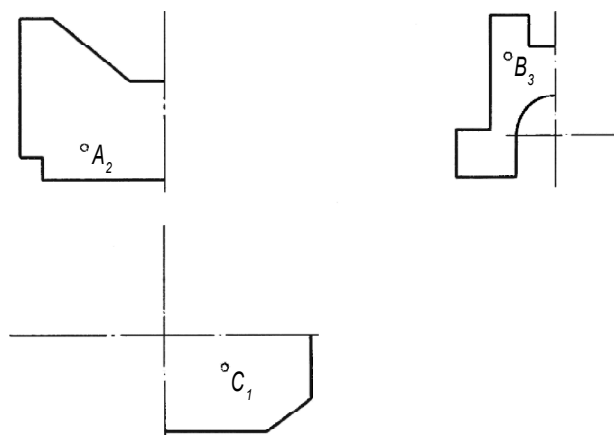
Tasvirlangan ortogonal proyeksiyaga mos keladigan jismlarning texnik rasmlarini bajaring.



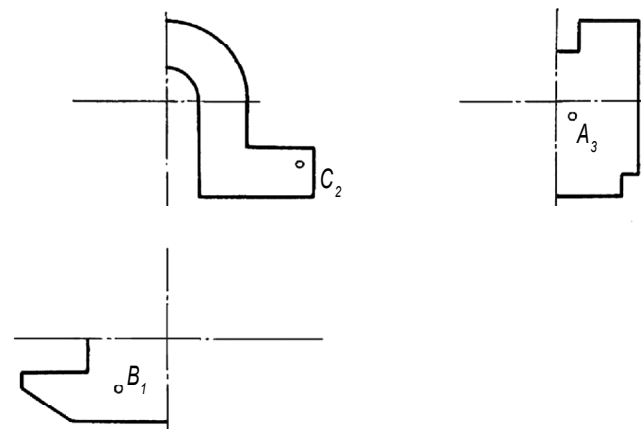
12. Simmetrik detal (qopqoq) uchta ko'rinishining har biridan faqat bir qismi berilgan. Ko'rinishlarda yetishmaydigan chiziqlarni chizib, ularning kontur chiziqlarini bajaring. Qopqoq sirtida joylashgan nuqtalarning yetishmaydigan proyeksiyalarini quring. Nuqtalar proyeksiyalarining ko'rinar-ko'rinmasligini aniqlang. O'lchamlarini qo'ying. Zarur kesimlarni bajaring.



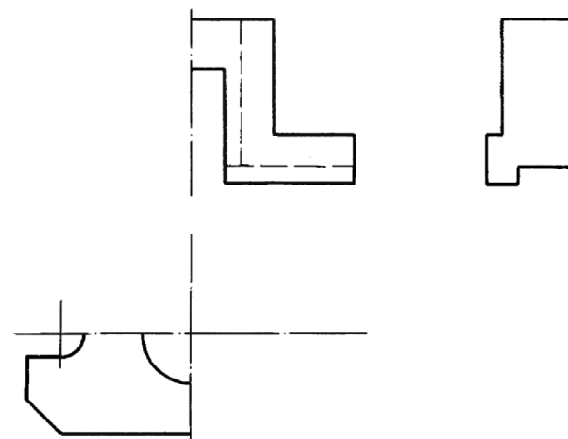
13. Simmetrik detal (qopqoq) uchta ko'rinishining har biridan faqat bir qismi berilgan. Ko'rinishlarda yetishmaydigan chiziqlarni chizib, ularning kontur chiziqlarini bajaring. Qopqoq sirtida joylashgan nuqtalarning yetishmaydigan proyeksiyalarini quring. Nuqtalar proyeksiyalarining ko'rinar-ko'rinmasligini aniqlang. O'lchamlarini qo'ying. Zarur kesimlarni bajaring.



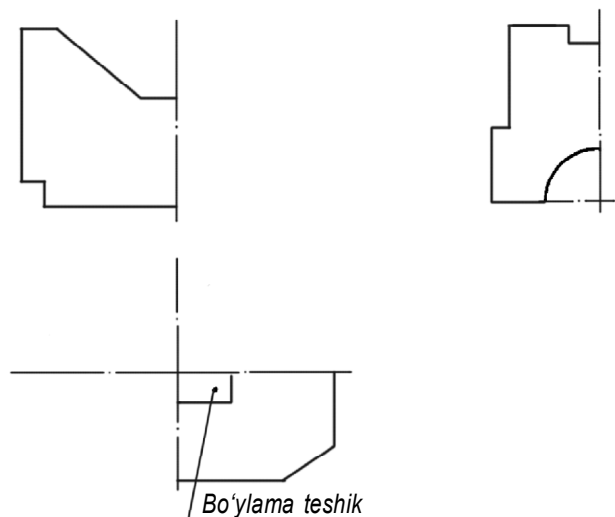
14. Simmetrik detal (qopqoq) uchta ko'rinishining har biridan faqat bir qismi berilgan. Ko'rinishlarda yetishmaydigan chiziqlarni chizib, ularning kontur chiziqlarini bajaring. Qopqoq sirtida joylashgan nuqtalarning yetishmaydigan proyeksiyalarini quring. Nuqtalar proyeksiyalarining ko'rinar-ko'rinmasligini aniqlang. O'lchamlarini qo'ying. Zarur kesimlarni bajaring.



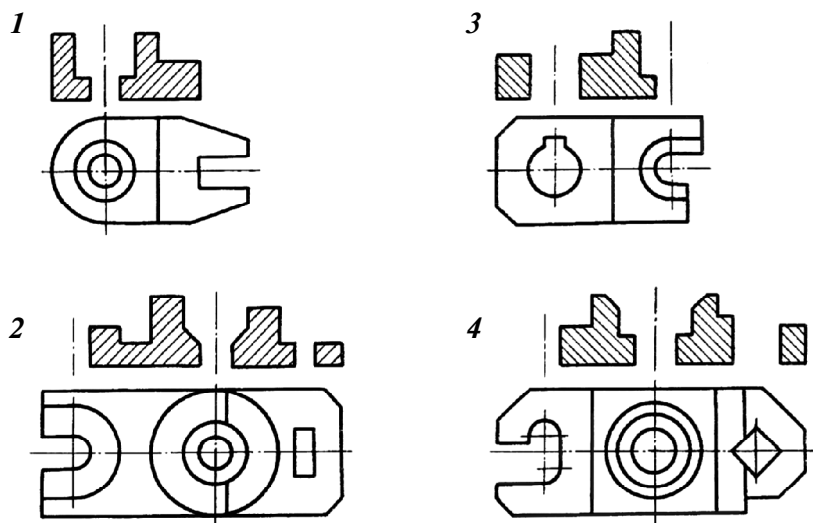
15. Qopqoqning olddan ko'rinishining tugallanmagan yarmi, ustdan ko'rinish shaklining choragi va chapdan ko'rinish shaklining yarmi berilgan. Detal tasvirining yetishmaydigan qismlarini quring, yetishmaydigan zarur chiziqlarni tiklang, kerakli joylarda ko'rinishning bir qismi bilan qirqimning bir qismini birlashtirib, foydali qirqimlarni bajaring. Qopqoq ikkita simmetriya tekisligiga ega. O'lchamlarini qo'ying.



16. Qolipning olddan ko'rinish shaklining yarmi, ustdan ko'rinish shaklining choragi va chapdan ko'rinish shaklining yarmi berilgan. Detalning yetishmaydigan qismlarining shaklini qurib yakunlang, yetishmaydigan zarur chiziqlarni tiklang, zarur joylarda ko'rinish bilan birgalikda foydali qirqimlarini bajaring. Qopqoq ikkita simmetriya tekisligiga ega. O'lchamlarini qo'ying.



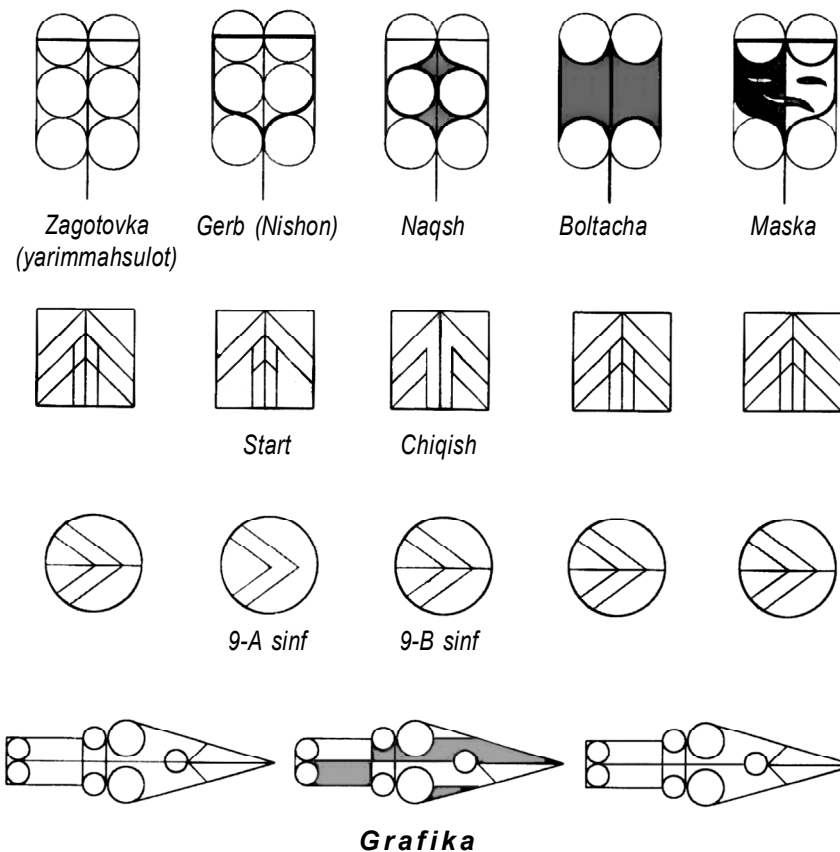
17. Ustdan ko'rinish va kesim bo'yicha frontal qirqimni yakunlang. Zarur bo'lgan o'rinlarda qirqimlarning belgilanishini tasvirlang.



18. Berilgan grafik ishlanmaning ustidan turli qalinlikdagi chizma chiziqlari bilan yurguzib chiqib, grafik obraz-belgi: logotip, ramz, tovar belgisi va h.k. loyihasini bajaring. Loyihalashda yordamchi vosita sifatida konturni rang bilan bo'yash yoki obrazlarning kichik shakllarini tushirishdan foydalanish mumkin. Hosil bo'lgan obrazni nomlang.

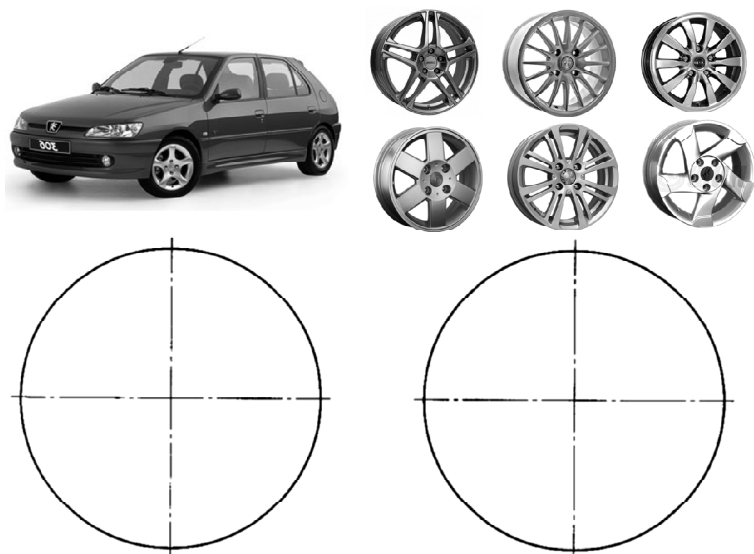
Fantaziyangizni sinab ko'ring — u qanchalik boy bo'lsa, shuncha ko'p obraz variantini yaratasiz.

Ishga kirishishdan oldin misollarni tahlil qilib, o'rganishni tavsiya qilamiz.

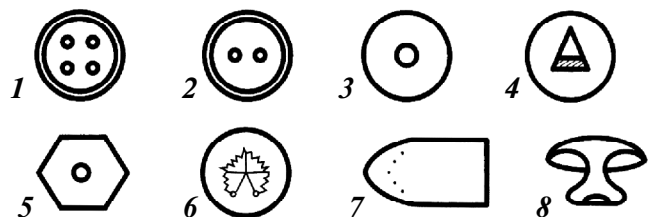


19. Avtomobil g'ildiragi pokrishka, kamera va diskdan tashkil topgan. Har bir avtomobil kompaniyasi diskning original dizaynini o'ylab topib, tayyorlangan disk bilan avtomobillarni yanada chiroyli ko'rinishini ta'minlashga harakat qiladi. Tasvirda keltirilgan disklardan birini tanlab olib, uning chizmasini bajaring.

Agar bu mavzu sizni qiziqtirib qolgan bo'lsa, bir necha disklar eskizini ishlab, mualliflik variantingiz loyihasini bajaring.

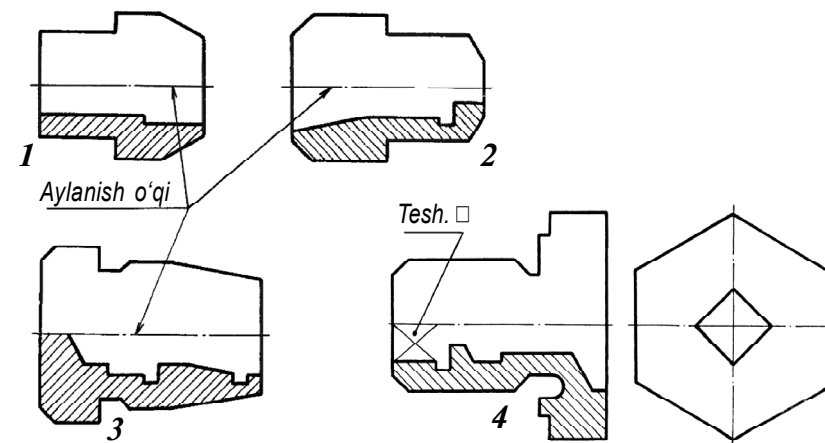


20. Shaklda qanday buyumlar tasvirlanganini jadvalga yozing. O'zingiz biladigan boshqa buyumlarni o'ylab, ularning tasvirini bajaring va nomini jadvalga yozing.

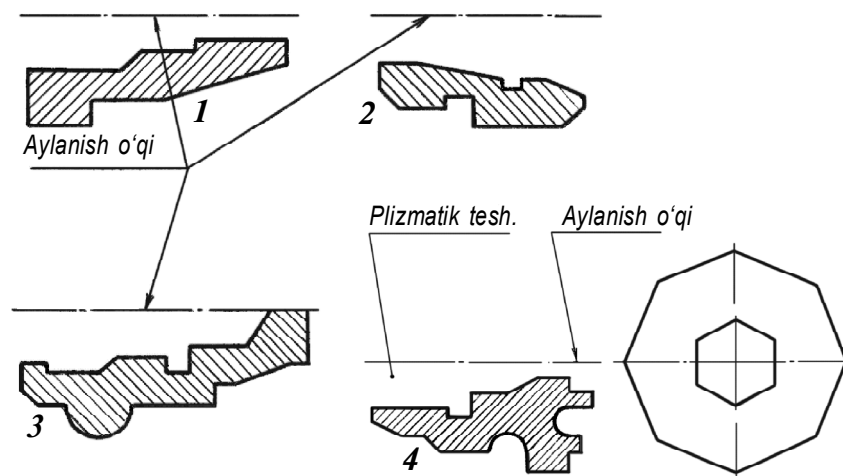


1		5		9	
2		6		10	
3		7		11	
4		8		12	

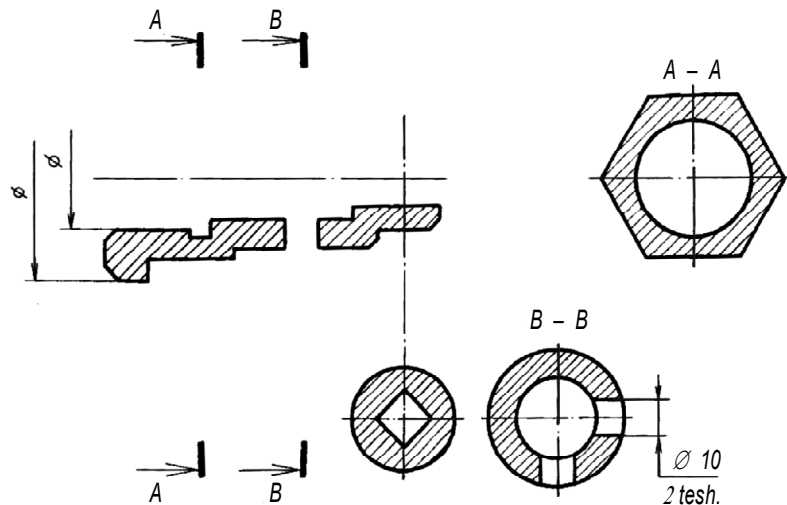
21. 1–3-detallarning aylanish o'qi va 4-detallning 2 ta proyeksiyasi tasvirlaridan foydalanib frontal qirqimni yakunlang.



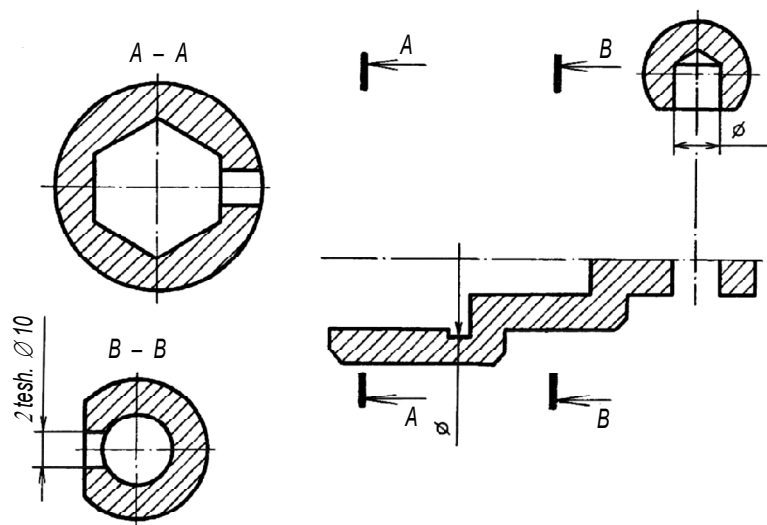
22. 1–4-shaklda berilgan kesimlarning aylanish o'qi atrofida harakatidan hosil bo'ladigan detal shaklini tasvirlang. 4-vazifada 2 ta istisno mavjud: chapdan ariqchagacha bo'lgan teshik oltiburchakli to'g'ri prizma shaklida bajarilgan; o'ngda – kallak sakkiz burchakli prizma ko'rinishida. Detallarning asosiy tasvirini asosiy ko'rinishning yarmi bilan frontal qirqimning yarmini birlashtirib tasvirlang. Bunda 4-vazifada kichik qismda simmetriya o'qi bilan asosiy tutash chiziq – kallak tashqi tomonlarining kesishish chizig'i ustma-ust tushadi.



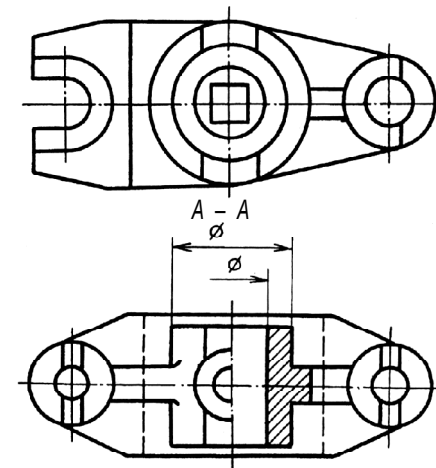
23. Detal qirqimi tarkibiga kiruvchi kesim va chiqarilgan kesimlar berilgan. Qo'yilgan o'lcham va belgilarni hisobga olib detalning asosiy tasvirini quring. Ushbu holda asosiy tasvir bosh ko'rinishning yarmi bilan frontal qirqimning yarmidan iborat bo'lishi mumkinmi? O'lchamlarini qo'ying.



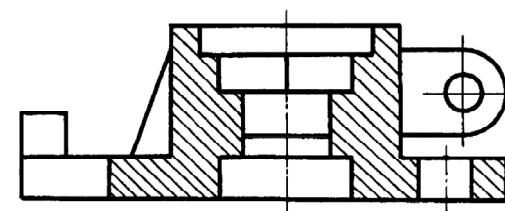
24. Detal qirqimi tarkibiga kiruvchi kesim va chiqarilgan kesimlar berilgan. Qo'yilgan o'lcham va belgilarni hisobga olib detalning asosiy tasvirini quring. Ushbu holda asosiy tasvir bosh ko'rinishning yarmi bilan frontal qirqimning yarmidan iborat bo'lishi mumkinmi? O'lchamlarini qo'ying.



25. Detalning ustdan ko'rinishi berilgan. Ushbu detal shaklining kamida ikkita variantini xayolan tasavvur qiling va har birining asosiy tasvirini chizing.



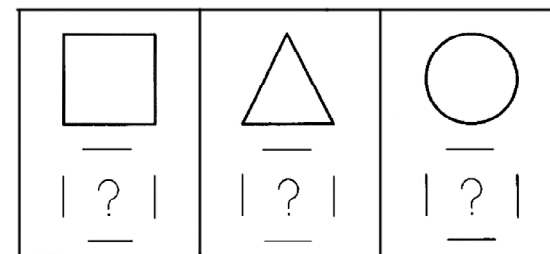
26. Berilgan frontal qirqim bo'yicha detal konstruksiyasining kamida ikkita variantining ustdan ko'rinishi chizmasini bajaring.

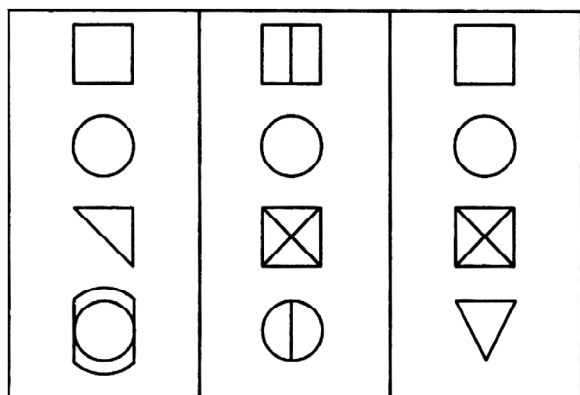


Quyida fazoviy tasavvurlarni rivojlantirishga mo'ljallangan topshiriqlar va ular yechimlarining ayrim variantlari keltirilgan. Qo'yilgan vazifa va keltirilgan yechim variantlarini tahlil qilib, vazifa yechimining yangi variantlarini toping.

27. Olddan ko'rinishning berilgan shaklida ustdan ko'rinish qanday bo'lishi mumkin?

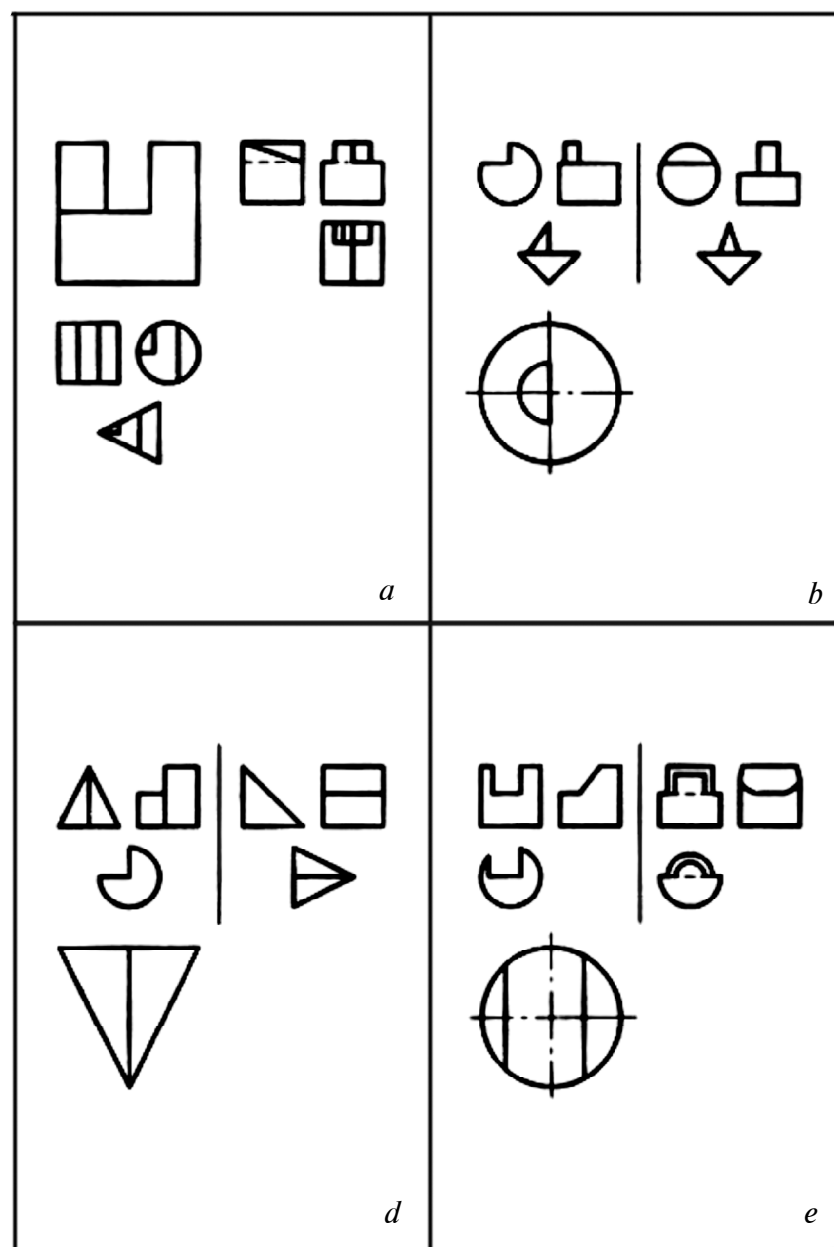
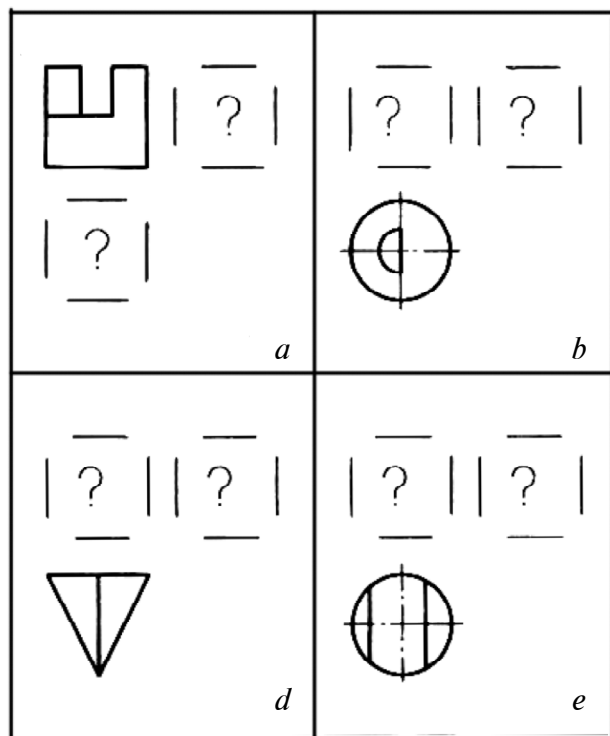
Vazifa. Olddan ko'rinish va ustdan ko'rinishning gabariti berilgan bo'lsa, jismlar chizmalarining ikkita ko'rinishlarini bajaring.



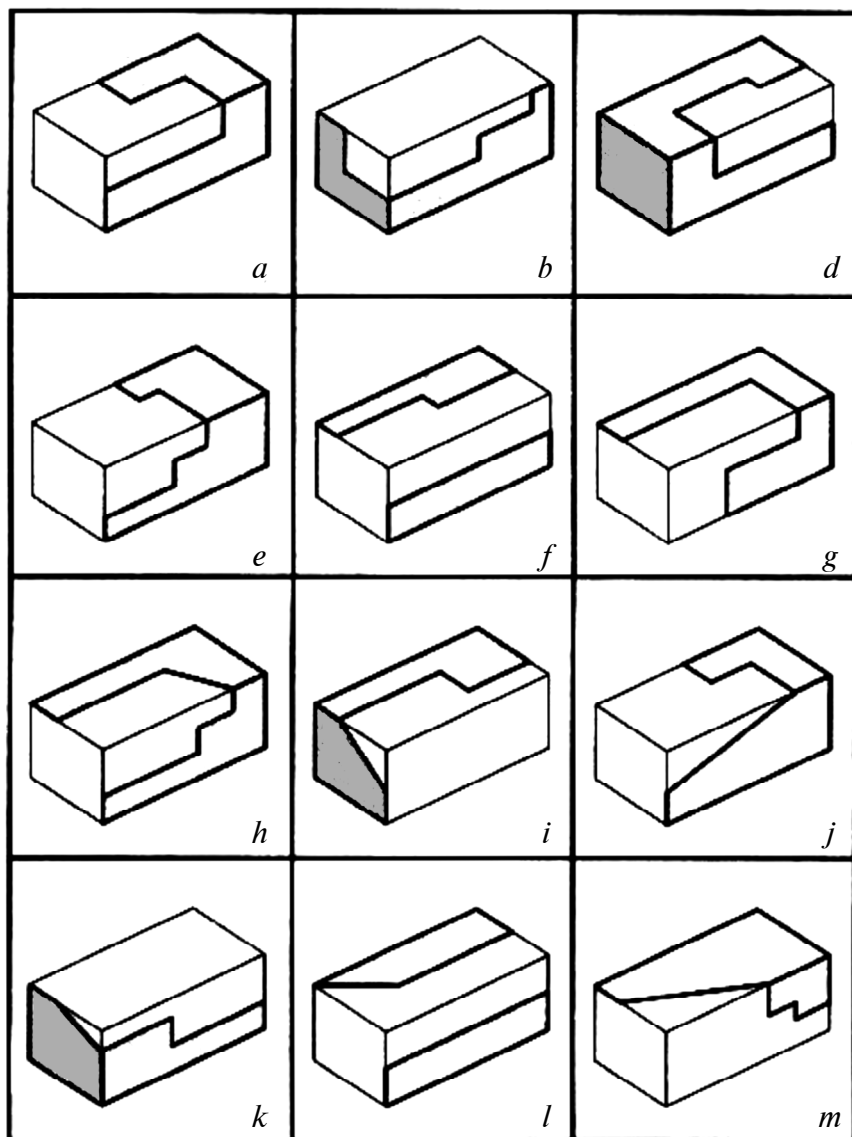


28. Jism ko'rinishlaridan biri va qolgan ikkita ko'rinishining gabaritlari ma'lum bo'lsa, jism chizmasini bajaring.

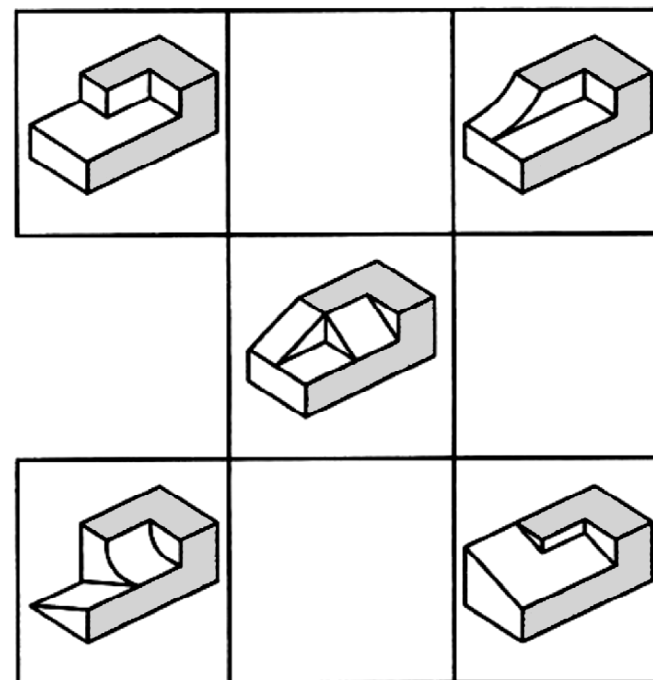
Eslatma. Ko'rinishning berilgan shaklini o'zgartirish mumkin emas.



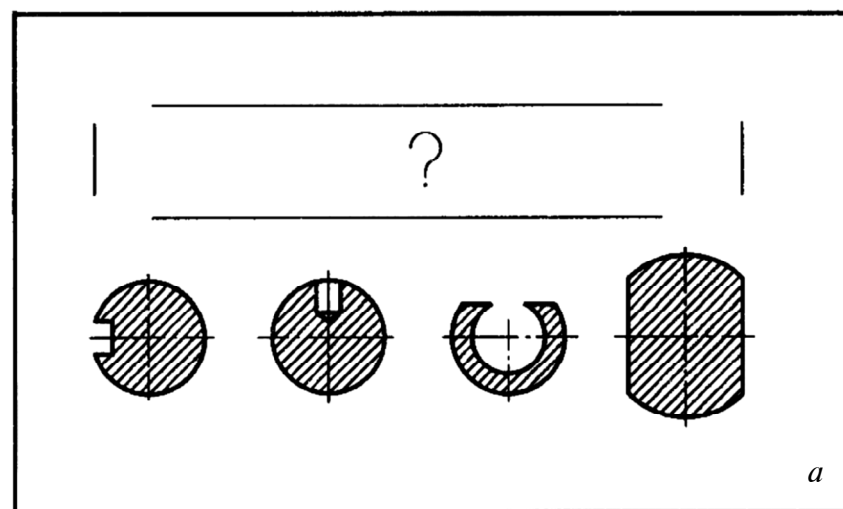
29. Jismning texnik rasmini yakunlang.

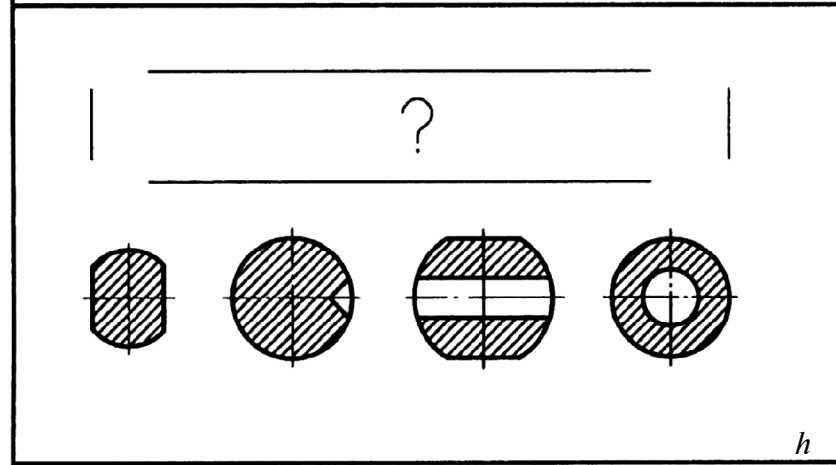
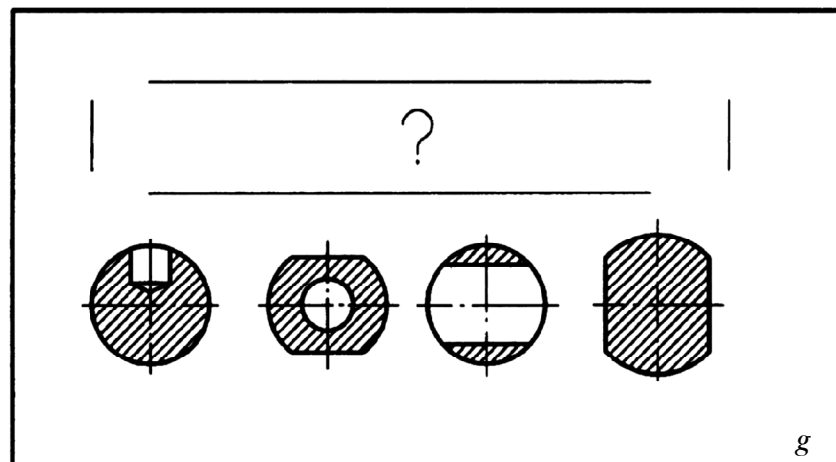
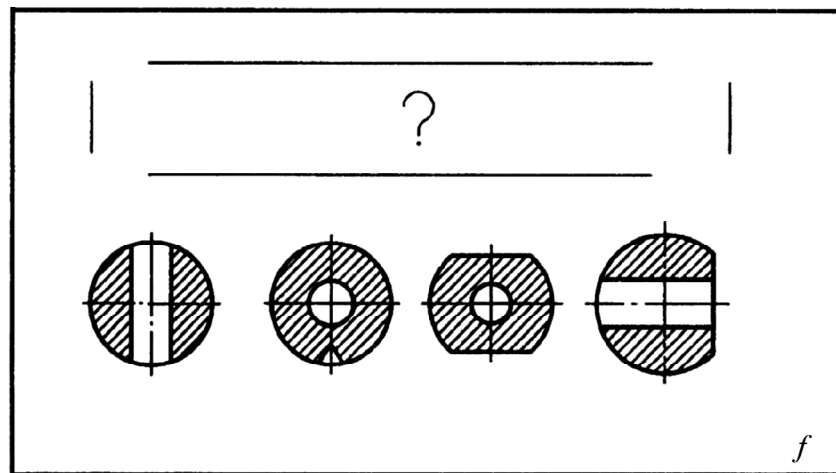
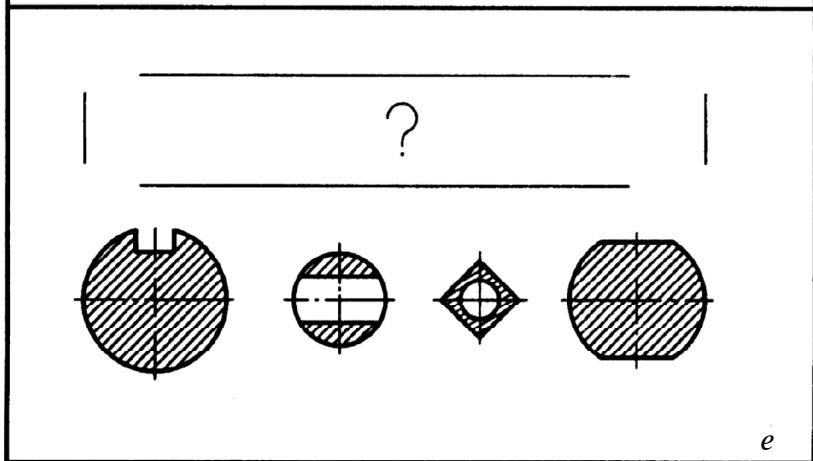
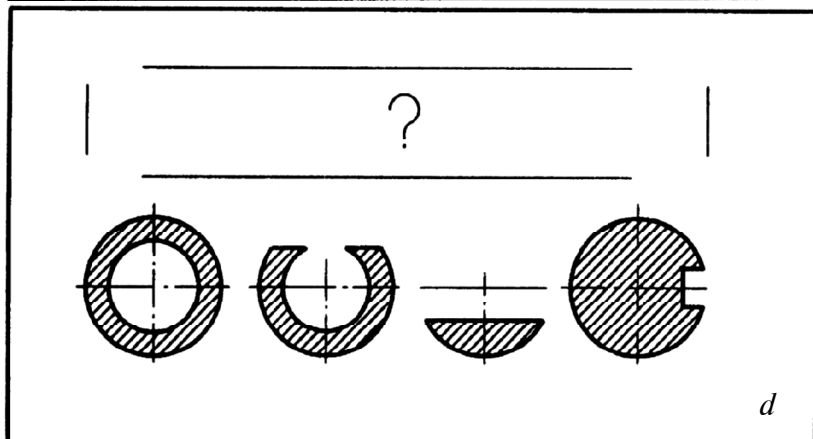
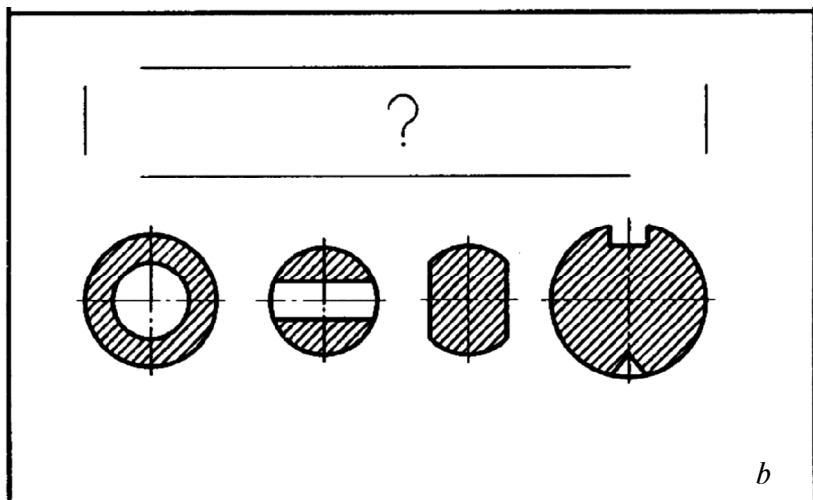


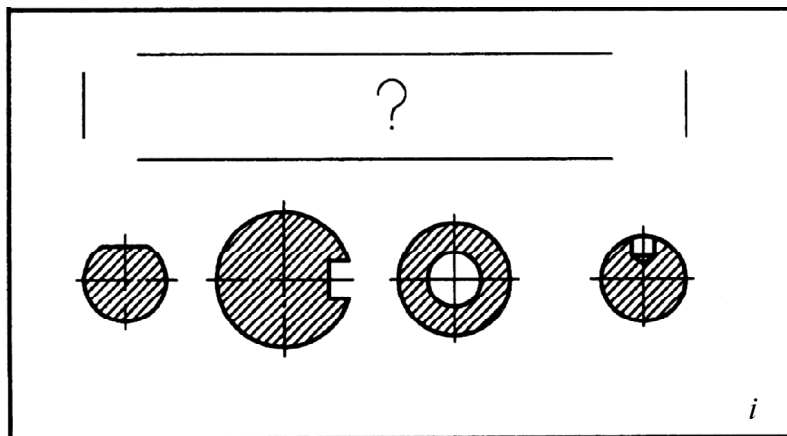
Vazifa yechimi variantlari



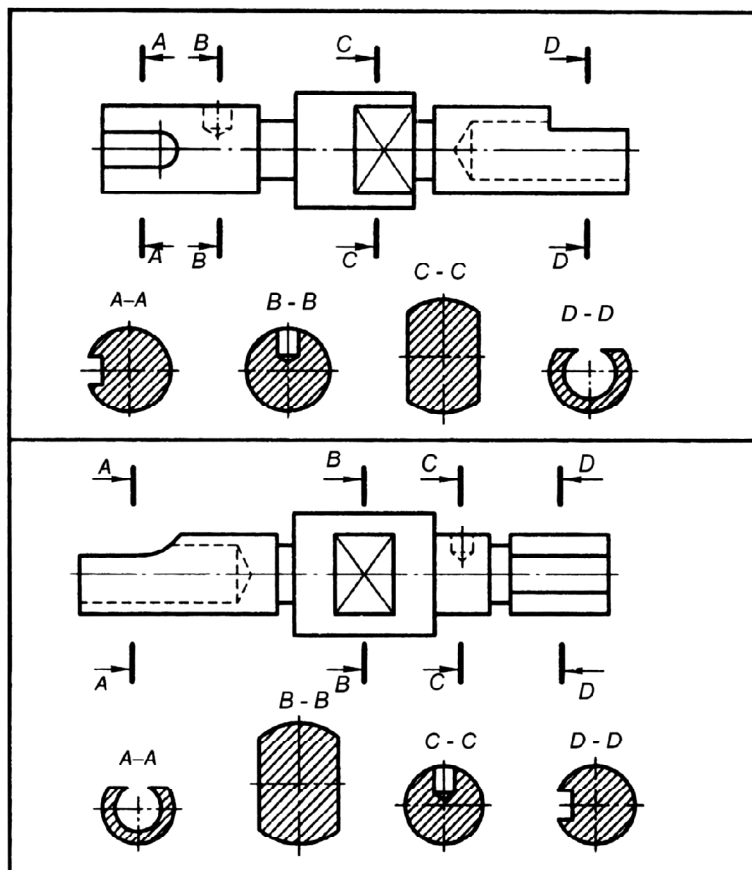
30. Berilgan kesimlar va bosh ko'rinishning gabaritlari bo'yicha jism chizmasini bajaring; kesim belgilarini tasvirlang.







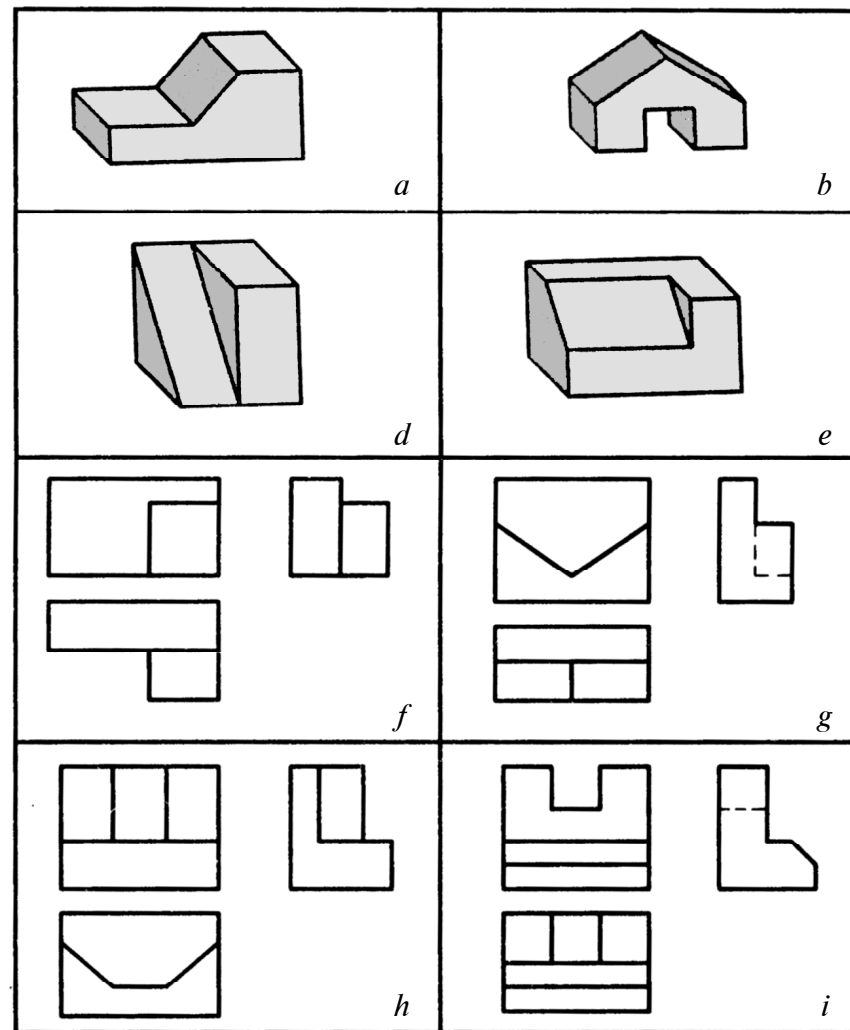
Vazifa yechimi variantlari



31. Yaqqol tasvir yoki obyekt chizmalari bo'yicha yoyilma bajarish.

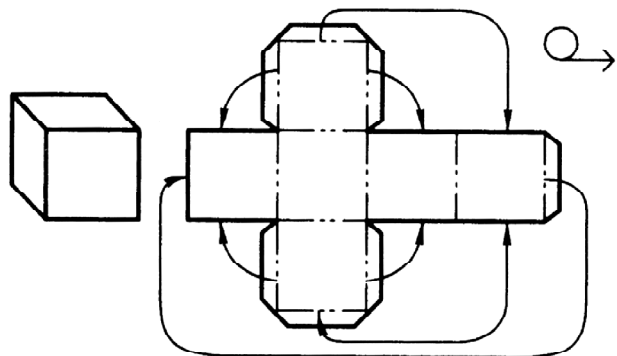
Vazifa. Yelimlash uchun qopqoqlarning vaziyati va elementlarining uchrashish sxemasini tasvirlab proyeksiyalashni o'rganish uchun model yoyilmasi chizmasini bajaring.

Eslatma. Yoyilma yaxlit shakldan iborat bo'lishi kerak.



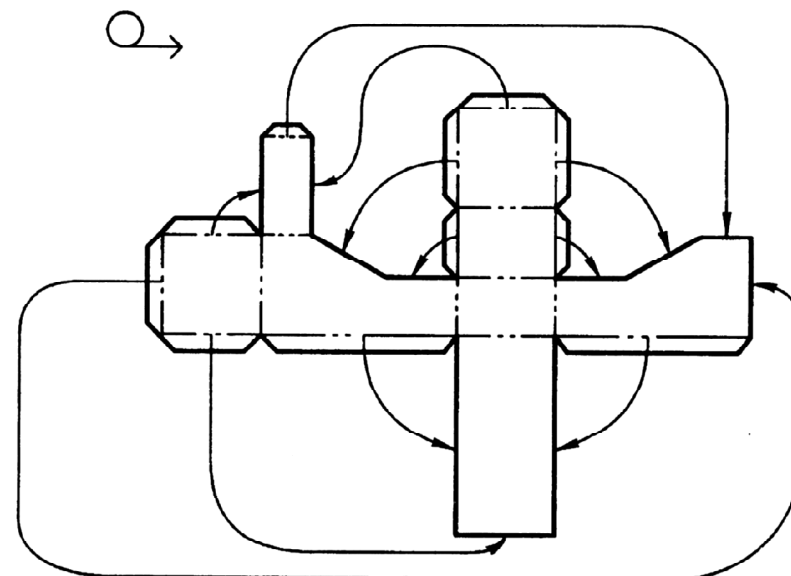
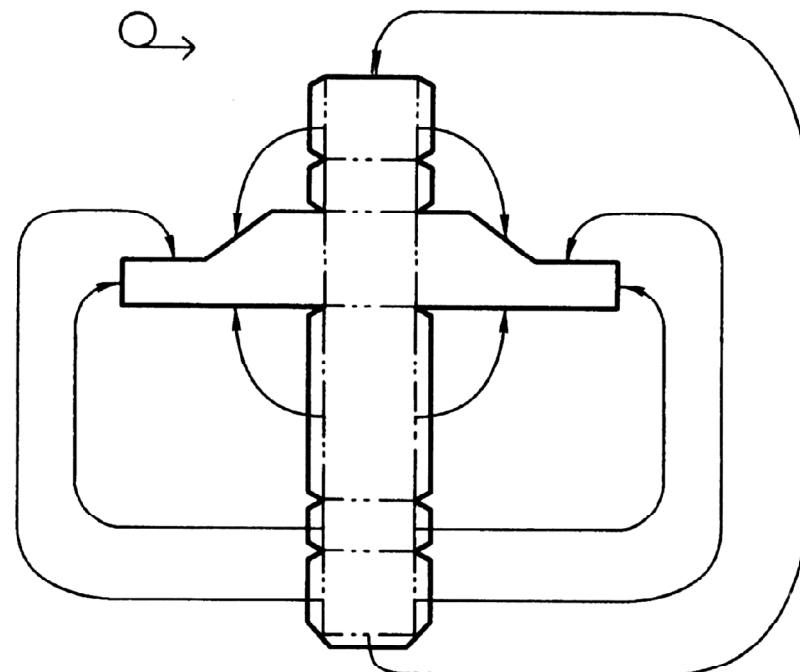
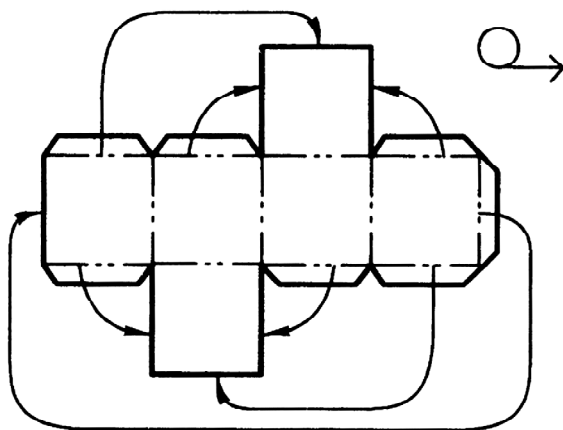
Kub yoyilmasi chizmasini bajarish.

Qog'oz yoki kartondan kub tayyorlash uchun avval uning yoyilmasini chizib olish kerak. Zarur joylariga yelim surtishga qopqoqchalarni qoldirib ketish uchun yoyilmani buklaganda qanday qismlari bir-biri bilan uchrashishini tasavvur qilish kerak bo'ladi. Chizmada bu strelka bilan ko'rsatilgan.

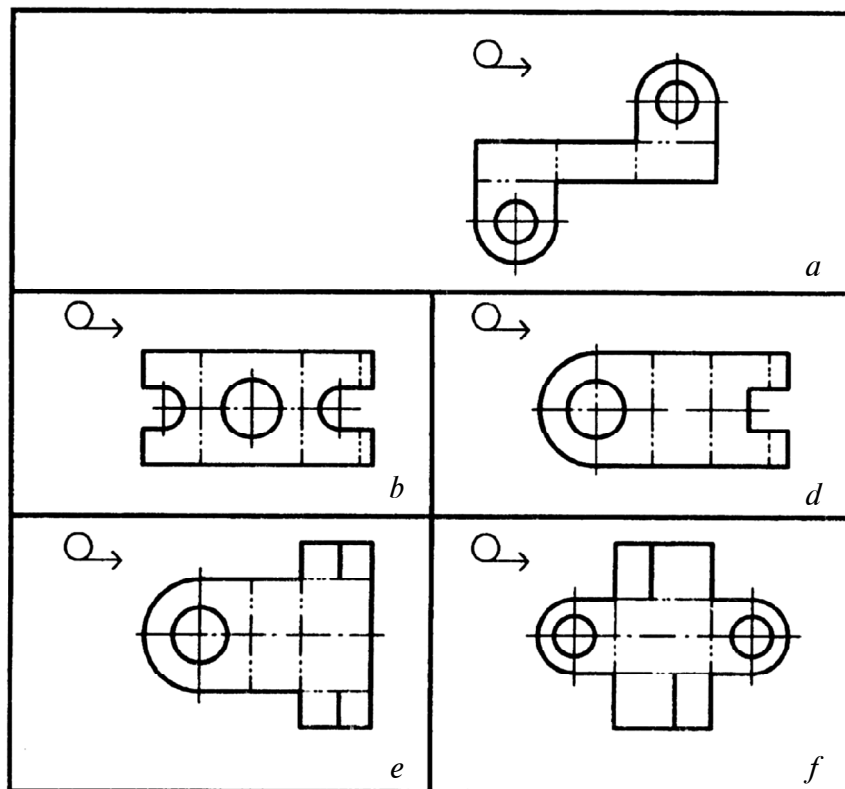


32. Kub tomonlarining vaziyatini yoyilmada o'zgartirish imkoniyatini qidirib ko'ring.

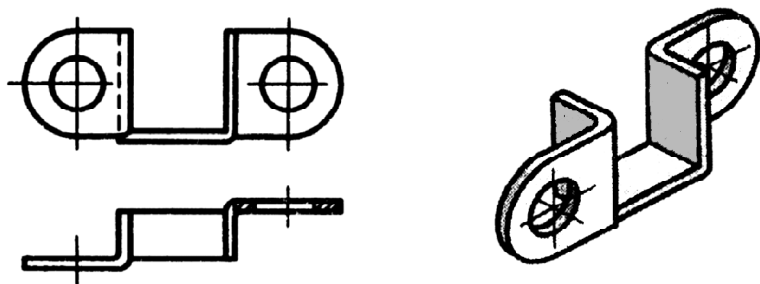
Vazifa. Tomonlari va yelimlash uchun qoldirilgan qopqoqlarining vaziyatlari o'zgartirilgan kubning yoyilmasini chizing. Kub modelini yelimlashda yoyilma elementlarining uchrashish sxemasini strelkalar bilan ko'rsating.



33. Yoyilmasi bo'yicha detal chizmasi va texnik rasmini bajarish.
Vazifa. Detalning yoyilmasi bo'yicha chizmasi va texnik rasmini bajaring. Materialning qalinligi 1 mm atrofida qabul qilinadi.



Vazifa yechimi varianti

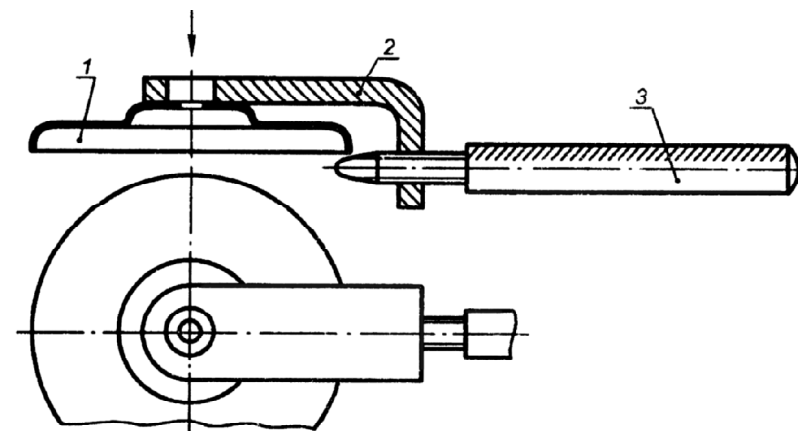


34. Uy sharoitida konservalash moslamasi konstruksiyasini yakunlash.

Moslama metall qopqoqlarni idishlarga qotirib mahkamlashda qo'llaniladi. Moslamani ishlatishda strelka yo'nalishi bo'yicha tayanch tutqich ustidan bosib, dasta 3 begunok 2 bilan birgalikda aylantiriladi. Bir vaqtning o'zida dasta buralib valsevatel bilan birgalikda begunokka buralib kiritib boriladi.

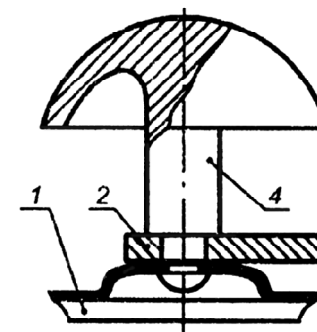
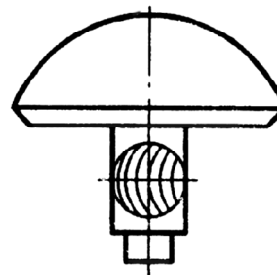
Vazifa. 1. Oboyma (halqa) 1 bilan qo'zg'almas qilib biriktirilgan tayanch tutqich konstruksiyasini ishlab chiqing. Begunok 2 dasta 3 bilan vertikal o'q atrofida erkin aylanishi kerak.

2. Tayanch tutqichning boshqa detallar bilan birikish joyi tasvirlangan yig'ish chizmasining fragmentini bajaring.



1-shart yechimi varianti

2-shart yechimi varianti

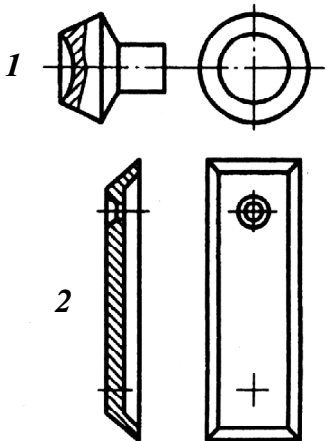
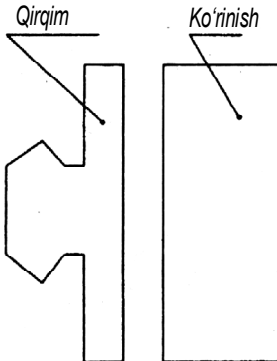
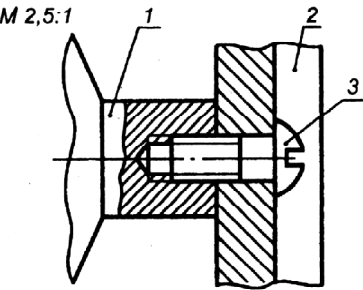
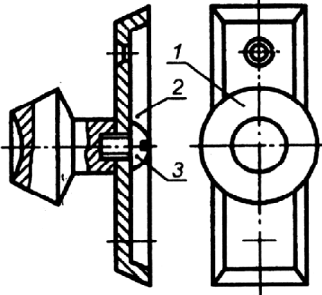


37. Eshik tutqichi konstruksiyasini yakunlash.

Vazifa. 1. Tutqich 1 ni eshik tutqichi asosi 2 ga vint 3 bilan biriktirish usulini ishlab chiqing.

2. Detallarning birikish joylari ko'rsatilgan yig'ish chizmasining fragmentini bajaring.

3. Eshik tutqichi yig'ish chizmasini bajaring.

Topshiriqning grafik shakli	Grafik ish shaklining sxemasi
	
2-shart yechimi varianti	3-shart yechimi varianti
	

38. Chim keskich konstruksiyasini yakunlash.

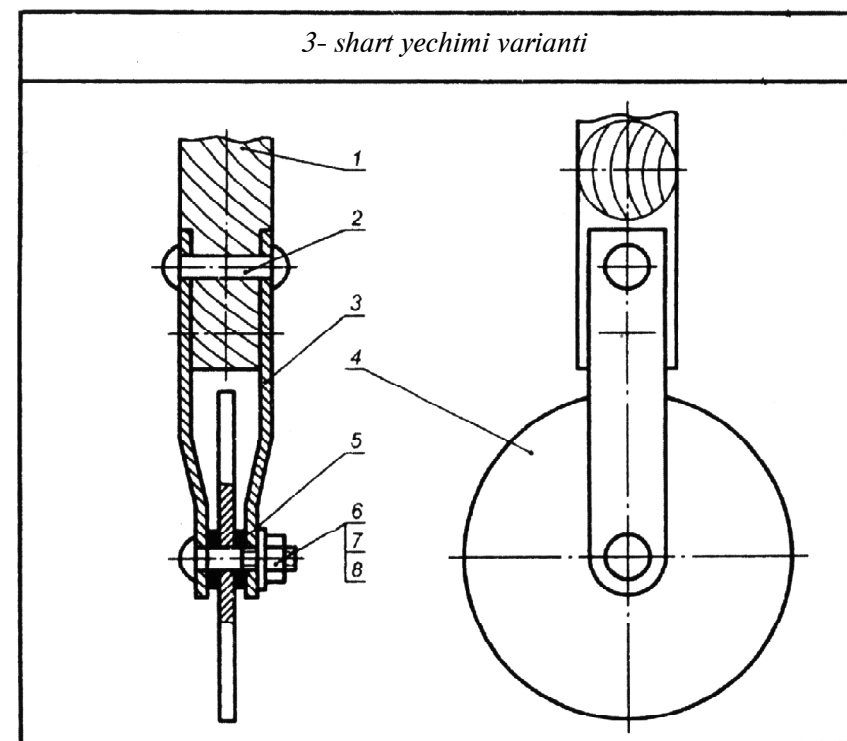
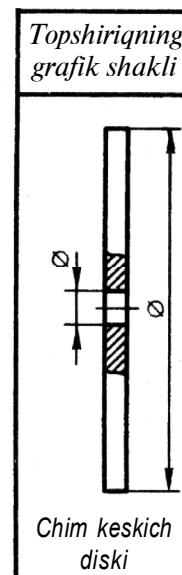
Ayrim yerlarning ustki qatlamlarida o'simliklarning ildizlari (chim) chirmashib ketganligi sababli bunday yer qatlamlarini qazish va chopish qiyin bo'ladi. Chim keskich o'simlik ildizlarini kesib yerga ishlov berishni osonlashtirishga xizmat qiladi. Shaklda chim keskichning kesuvchi diski tasvirlangan.

Vazifa. 1. Disk tutqichi konstruksiyasini ishlab chiqing.

2. Konstruksiyaning asosiy detallari chizmalarini bajaring.

3. Chim keskich yig'ish chizmasini bajaring.

Eslatma. Ushbu va keyingi topshiriqlar va ularni bajarish namunalarida matnda keltirib o'tilmagan pozitsiya (detallarning joylashish vaziyati) raqamlaridan foydalanish mumkin.



39. Shtativ konstruksiyasini yakunlash.

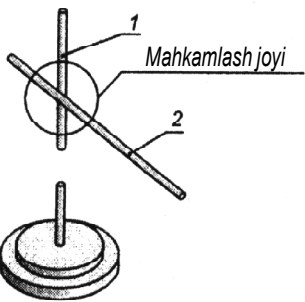
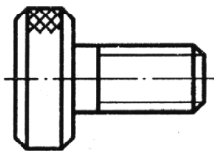
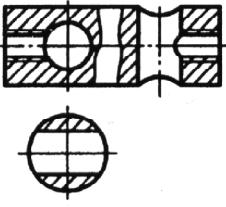
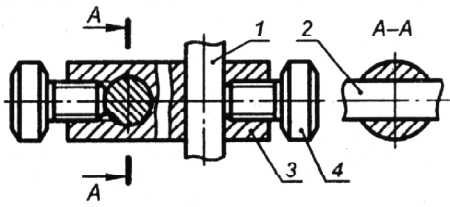
Laboratoriyalarda turli ishlar uchun shtativlardan foydalaniladi. Shtativ yuqoriga va pastga, shuningdek, o'ngga va chapga harakatlanadigan vertikal tayoqcha 1 va gorizontaal tayoqcha 2 lardan tashkil topgan bo'ladi.

Vazifa. 1. Berilgan yo'nalish bo'yicha 2-detalni 1-detalg nisbatan ko'chirish imkonini beradigan suriladigan mahkamlash vositasi konstruksiyasini ishlab chiqing.

2. Vertikal va gorizontaal tayoqchalarni biriktiradigan asosiy detal chizmasini bajaring.

3. Mahkamlash tuguni yig'ish chizmasini bajaring.

4. Shtativning yig'ilgan vaziyatdagi texnik rasmini bajaring.

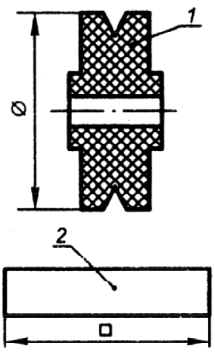
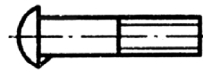
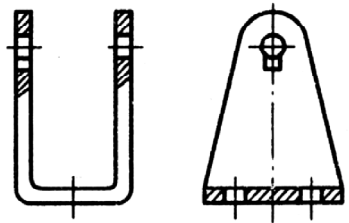
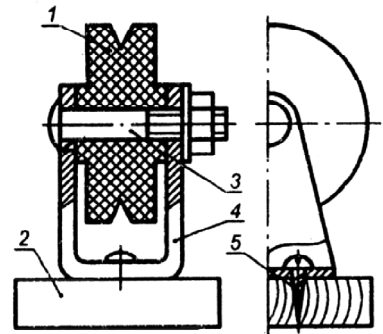
Topshiriqning grafik shakli	Tavsiya qilinadigan vint
	
2- va 3-shartlar yechimlari variantlari	
	

40. Rolik konstruksiyasini yakunlash.

Vazifa. 1. Rolik 1 ga, yog'och asos 2 ga parallel o'q atrofida aylanish imkonini beradigan ustun konstruksiyasini ishlab chiqing.

2. Ustun chizmasini bajaring.

3. Orqaga buralishiga qarshilik qiladigan mo'ylovchali bolt va shuruplardan foydalanib rolikning yig'ish chizmasini bajaring.

Topshiriqning grafik shakli	Tavsiya qilinadigan detallar
	a) mo'ylovli bolt  b) yarimaylana kallakli bolt 
2- va 3-shartlar yechimlari variantlari	
	

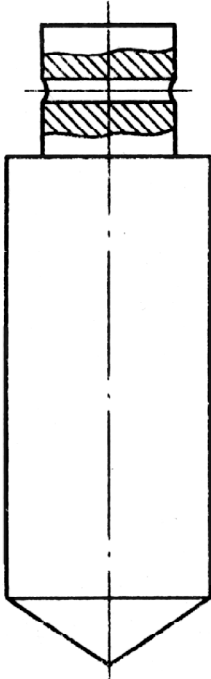
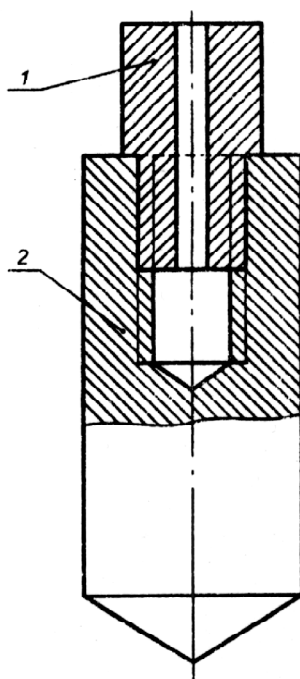
41. Shoqul konstruksiyasini takomillashtirish.

Shoqul konstruksiyalar va ular elementlarining vertikal vaziyatini tekshirishda qo'llaniladi.

Vazifa: 1. Shoqul tuzilishini o'rganing, uning asosiy kamchiligini aniqlab ayting.

2. Shoqul konstruksiyasini shunday takomillashtiringki, bunda, chilvir tuguni korpus ichida ko'rinmaydigan bo'lib joylashsin, korpus o'qi esa chilvir yo'nalishi bilan ustma-ust tushsin.

3. Mahsulotning konstruksiyasi o'zgargandan keyingi chizmasini bajaring.

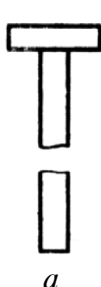
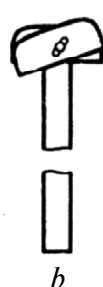
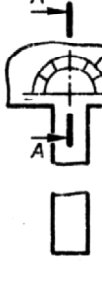
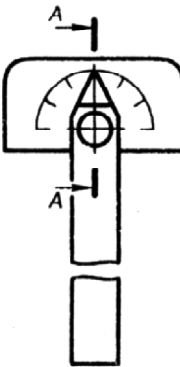
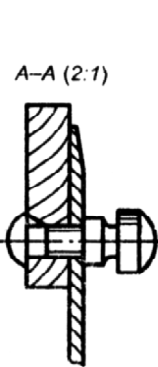
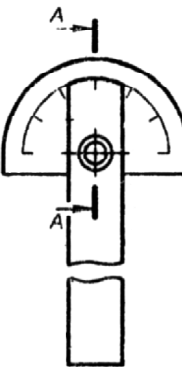
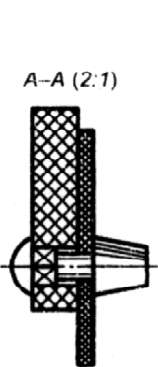
Topshiriqning grafik shakli	Yechim varianti
	

42. Reysshina konstruksiyasini takomillashtirish.

Vazifa: 1. Reysshinaning ishlatilish sohasi va tuzilishini o'rganing (a – o'quvchilar uchun, b – mutaxassislar uchun). Reysshinalarning ushbu konstruksiyalaridagi asosiy kamchiliklarni aniqlab, ayting.

2. Reysshina konstruksiyasini shunday takomillashtiringki, uning yordamida berilgan har qanday burchak ostidagi o'zaro parallel chiziqlarni o'tkazish mumkin bo'lsin.

3. Kombinatsiyalashtirilgan reysshinaning yig'ish chizmasi (eskizi)ni bajaring.

Topshiriqning grafik shakli	Tayyor detallar	Grafik ish shaklining sxemasi
 a	 b	 Bo'lishlar ko'ndalangiga o'tkazilgan A-A (2:1)
Yechim variantlari		
 a	 A-A (2:1)	 A-A (2:1)
		 b

43. Tiski dastasi konstruksiyasini takomillashtirish.

Parmadasta 1 ning uchi urib yapaloqlanib, unga kiritilib mahkamlangan ikkita tayanch shayba 3 lar bilan vint 2 dan tushib ketmasdan turadi. Bunday usulda biriktirilgan detallarni qismlarga ajratib bo'lmaydi. Bundan tashqari, parmadasta tez aylantirilganida metallning qattiq taqillagan ovozi — ustaxonada baland shovqin manbasi paydo bo'ladi.

Vazifa. 1. Ko'rsatilgan qurilmaning kamchiliklarini aniqlab ayting.

2. Tiskida ishlagan paytda paydo bo'ladigan shovqinni yo'qotish zaruriyatini e'tiborga olgan holda parmadasta va shaybaning qismlarga ajraladigan konstruksiyasini ishlab chiqing (shakldor gayka, tutqich va h.k.).

3. Yig'ish chizmasining parmadastaning birikish joyi fragmentini bajaring.

Topshiriqning grafik shakli	Grafik ish shaklining sxemasi
Yechim variantlari	

44. Proporsional sirkul konstruksiyasini takomillashtirish.

Asbobdan tasvirlarni proporsional ravishda kattalashtirish yoki kichraytirishda foydalaniladi. Asbobning tuzilishiga ko'ra masshtab o'zgarishining uchta variantidan foydalanish mumkin.

Vazifa. 1. Ko'rsatilgan qurilmaning kamchiligini aniqlab, ayting.

2. Asbob tuzilishini shunday o'zgartiringki, bunda masshtablarni o'zgartirish soni cheklanmagan bo'lsin.

3. Asbobning asosiy detallari texnik rasmi yoki chizmasini bajaring.

4. Proporsional sirkul konstruksiyasi takomillashgandan keyingi yig'ish chizmasini bajaring.

Topshiriqning grafik shakli	Tayyor detal
4-shart yechimi varianti	

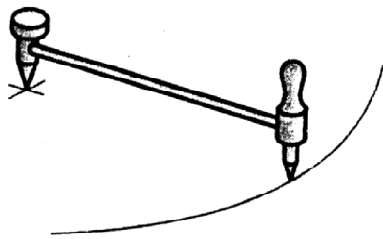
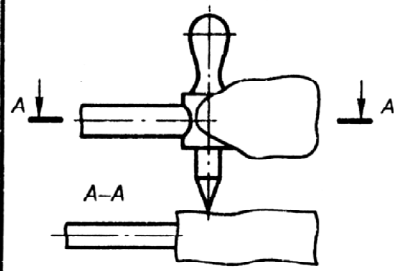
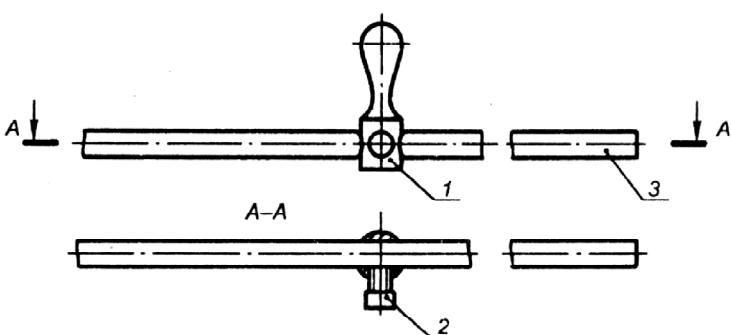
45. Rejalash sirkuli konstruksiyasini takomillashtirish.

Ushbu sirkuldan o'zgarma radiusli katta aylanalarni rejalashda foydalaniladi.

Vazifa. 1. Tasvirlangan qurilmani o'rganib chiqing va asosiy kamchiligini aniqlab, ayting.

2. Sirkul tuzilishini shunday o'zgartiringki, bunda uning yordamida ixtiyoriy radiusdagi aylanalarni rejalashtirish mumkin bo'lsin.

3. O'zgartirilgandan keyingi qurilma fragmentining chizmasini bajaring.

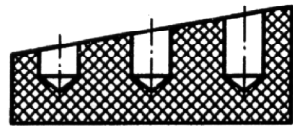
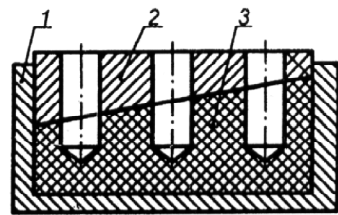
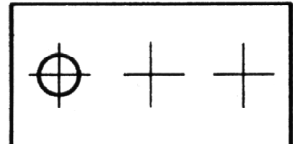
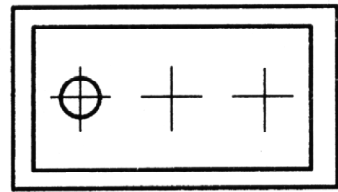
Topshiriqning grafik shakli	Grafik ish shaklining sxemasi
	
Yechim variantlari	
	

46. Qiya sirtida teshik parmalash uchun moslama loyihalash.

Parma teshik ochiladigan joydan surilib ketmasligi uchun uni shu joyga perpendikular joylashtirish zarur bo'ladi.

Vazifa. 1. Berilgan detalning qiya tarafidan teshik ochishda foydalanish mumkin bo'lgan moslama konstruksiyasini loyihalang.

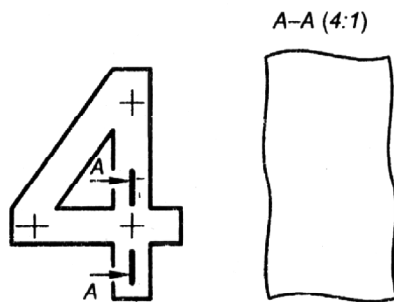
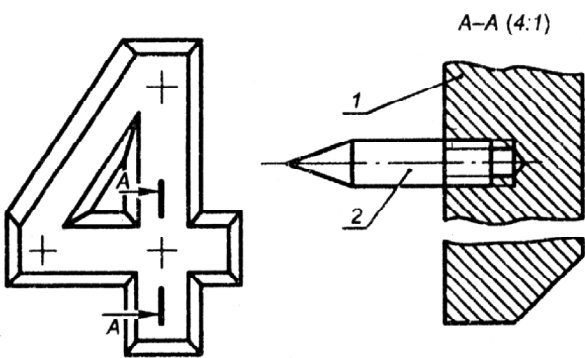
2. Moslamaning yig'ish chizmasini bajaring.

Topshiriqning grafik shakli	Yechim varianti
	
	

47. Kirish eshiklariga hajmli raqamlarni mahkamlash usulini ishlab chiqish.

Vazifa. 1. Aluminij qotishmasidan tayyorlangan raqamlarni eshik taxtasiga mahkamlash usulini ishlab chiqing.

2. Mahkamlashning taklif qilinayotgan usulini tushuntiruvchi chizma bajaring.

Topshiriqning grafik shakli	Grafik ish shaklining sxemasi
	
Yechim varianti	
	

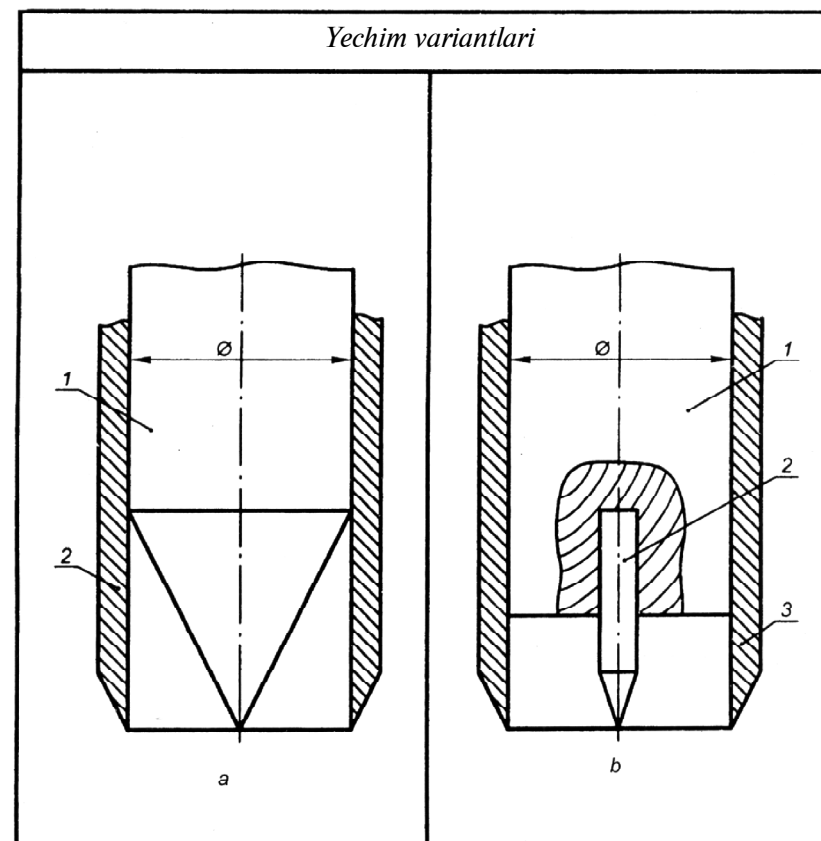
48. Fanerda teshik ochish moslamasini loyihalash.

Fanerda (ayniqsa, diametri katta bo'lgan) teshik ochish uchun yupqa devorli po'lat trubka (quvur)lardan foydalanish mumkin.

Vazifa. 1. Parmalashda teshik markaziga nisbatan trubkaning siljishini oldini oladigan yo'naltirgich konstruksiyasini loyihalang.

2. Yo'naltirgich chizmasini bajaring.

3. Fanerda teshik parmalaydigan moslamaning chizmasi (eskizi)ni bajaring.

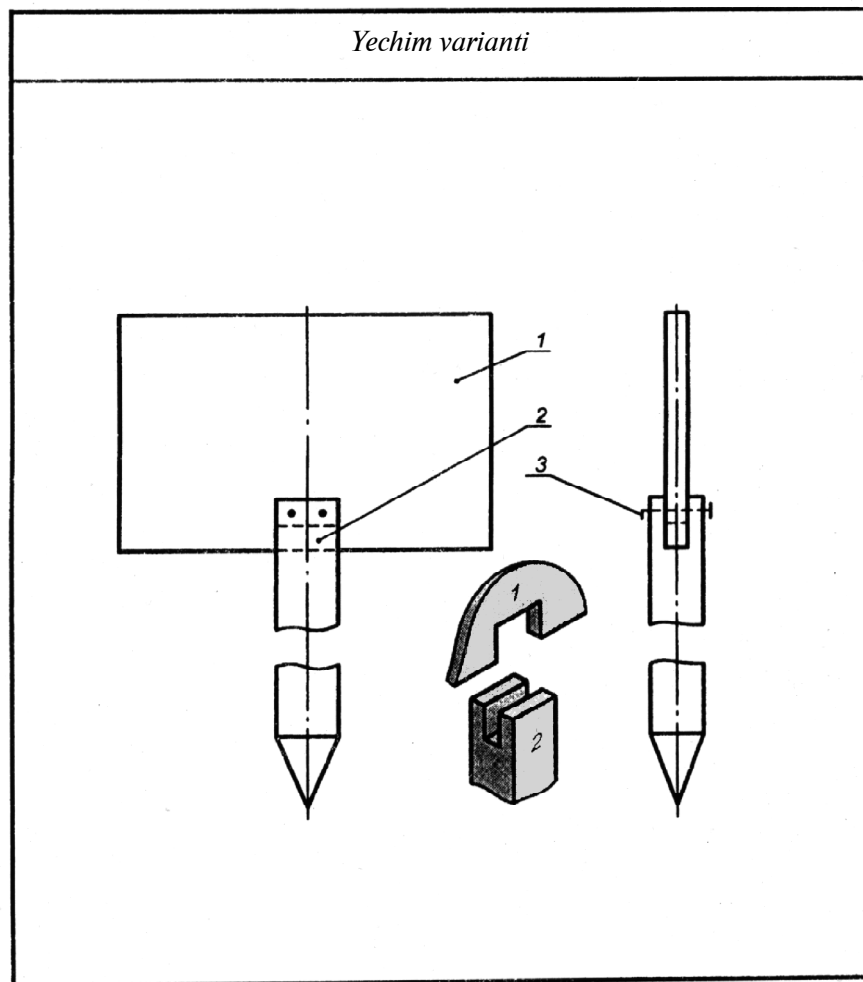


49. Polizga o'rnatiladigan ma'lumot yozilgan taxtacha tayyorlash.

Vazifa. 1. Polizga o'rnatiladigan ma'lumot yozilgan taxtacha loyihasini ishlab chiqing. Taxtacha $160 \times 100 \times 3$ mm li faner plastinkasidan va 200 mm uzunlikdagi oyoqchadan iborat bo'lishi kerak. Detallarni mahkamlash usulini mustaqil tanlang.

2. Taxtacha detallarining chizmalarini bajaring.

3. Mahsulotning yig'ish chizmasini bajaring.



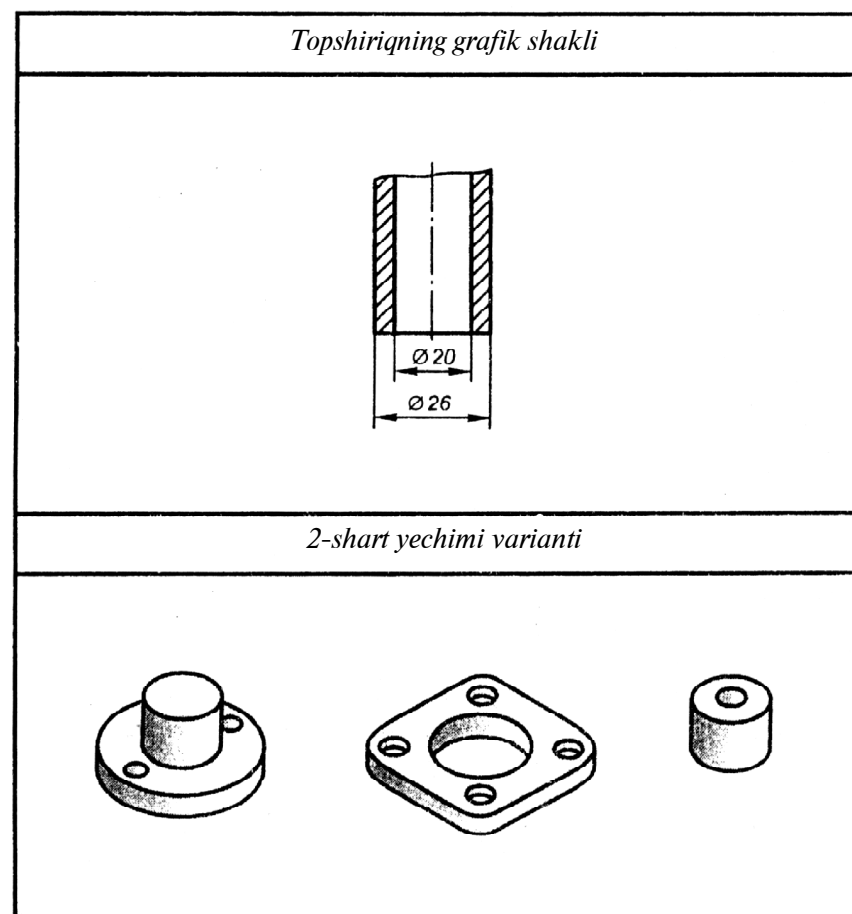
50. Chizmachilik kabineti stollari joylashish o'rnini belgilovchi qurilmani loyihalash.

Chizma stoli oyoqlari metall truba (quvur)lardan tayyorlanadi. Chizmada trubaning ichki va tashqi diametrlari millimetrlarda berilgan.

Vazifa. 1. Chizmachilik stolini xonani tozalash paytida ko'tarish va undan keyin avvalgi joyiga qaytarib qo'yish imkonini beradigan, uni polga mahkamlash qurilmasi konstruksiyasini loyihalang.

2. Mahkamlash asosiy detalining chizmasi yoki texnik rasmini bajaring.

3. Mahkamlashning yig'ish chizmasini bajaring.

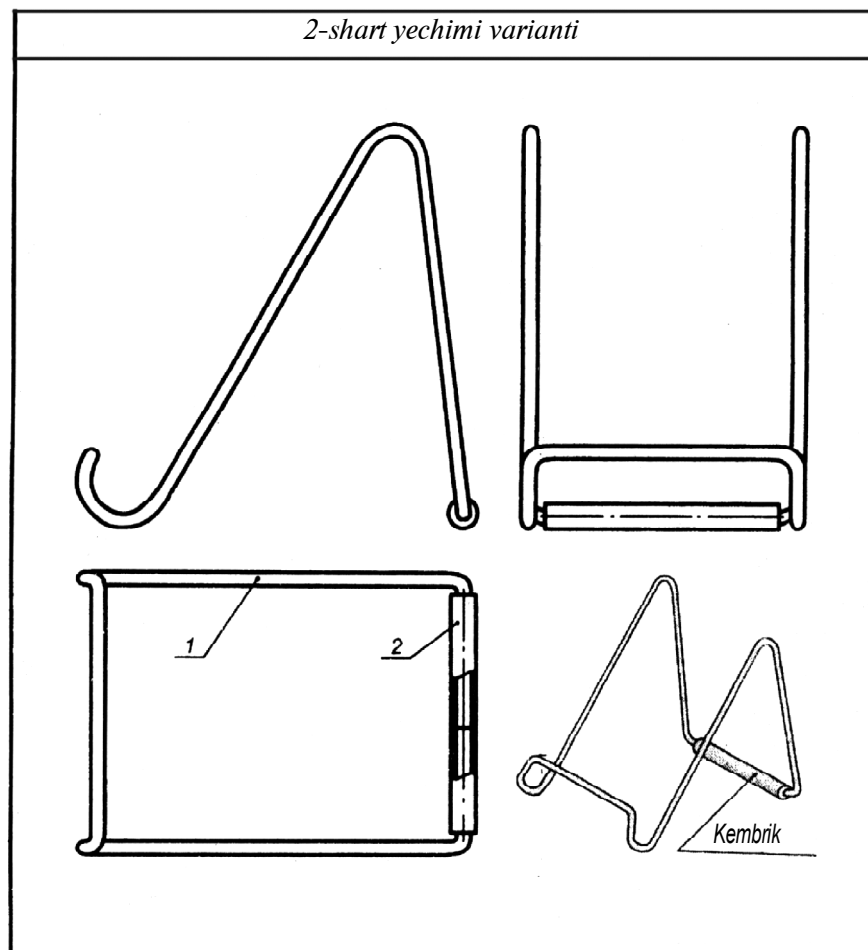


51. Kitob uchun taglik loyihalash.

Vazifa. 1. Simdan kitob uchun taglik konstruksiyasini ishlab chiqing.

2. Taglik chizmasini bajaring.

3. Taglik texnik rasmini bajaring.



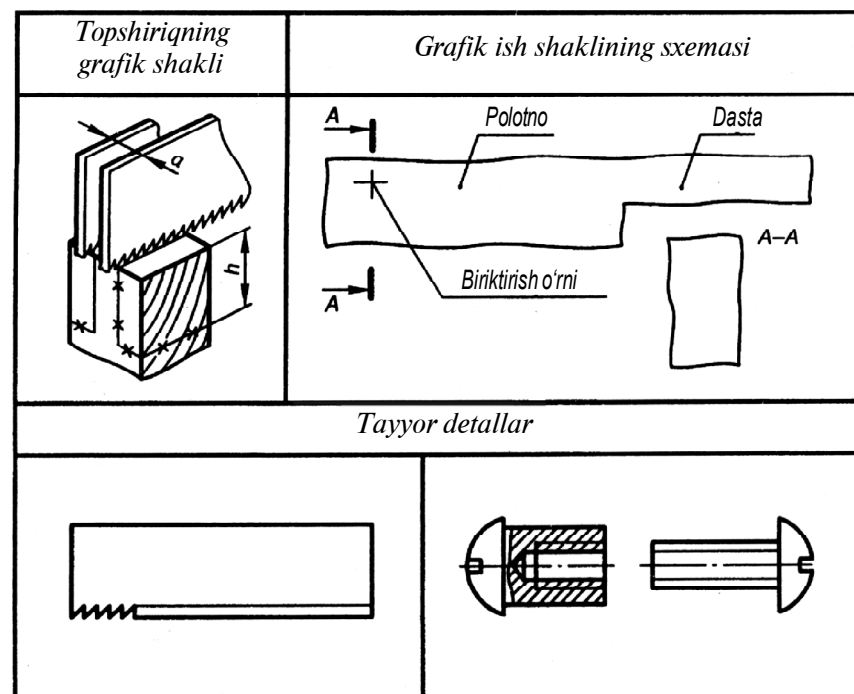
52. Yog'och materiallarga tirnoq kesish moslamasini loyihalash.

Yog'och birikmalarni tayyorlashda ularda tirnoqlar kesib biriktiriladi. Bu ishni juft arra ko'rinishidagi moslamada bajarish qulay. Arralar polotnolari orasidagi masofa tirnoq eniga teng bo'lishi, polotnolarni birlashtiruvchi kashak (ulagich) esa zarur balandlikdagi tirnoq kesish imkonini berishi kerak.

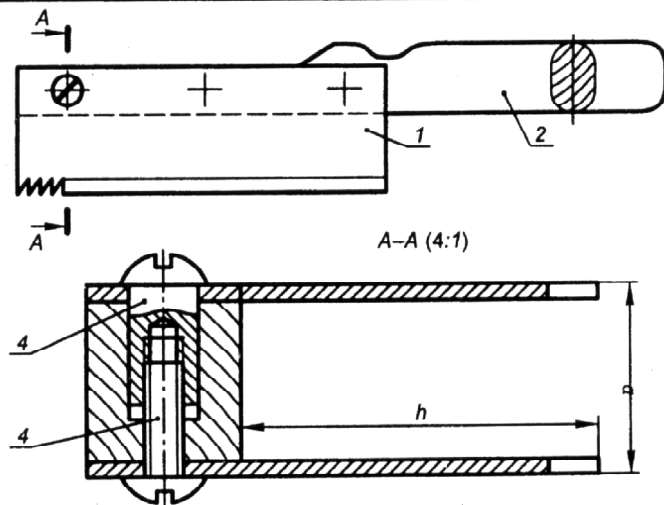
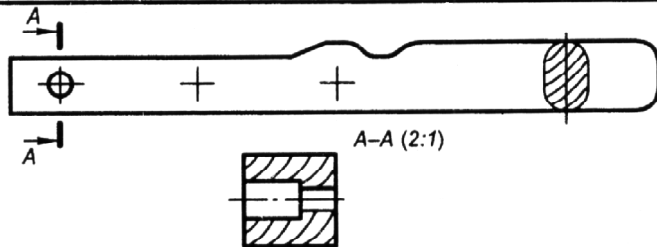
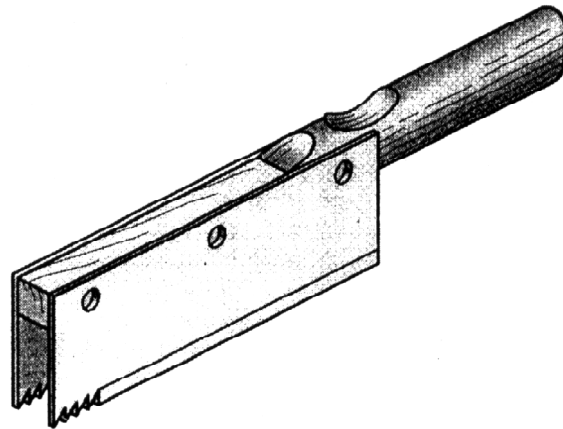
Vazifa. 1. Eni a va balandligi h bo'lgan yog'och materiallarga tirnoq kesish moslamasi konstruksiyasini loyihalang. Konstruksiya loyihasini bajarishda tavsiya qilinadigan tayyor materiallardan foydalanilsin.

2. Arra polotnolari orasida joylashgan kashak chizmasini bajaring.

3. Tirnoq kesish moslamasining texnik rasmi yoki yig'ish chizmasini bajaring.



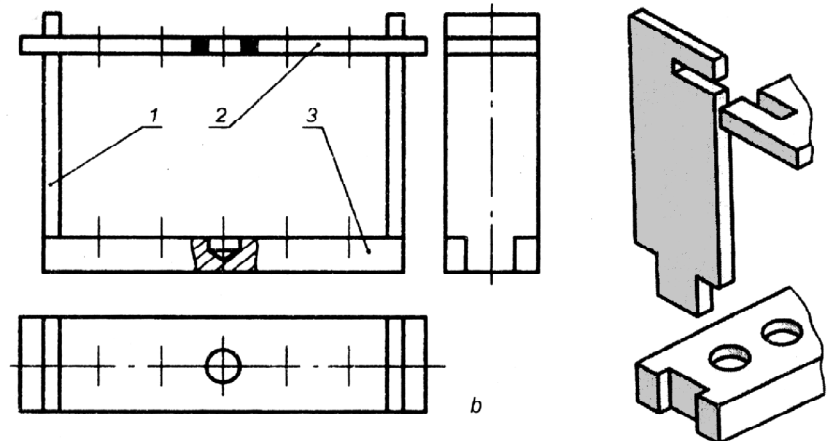
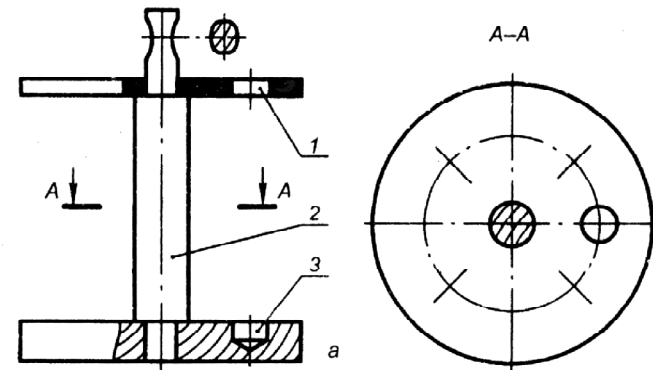
2- va 3- shartlarning yechim variantlari



53. Probirkalar uchun tirgak loyihalash.

- Vazifa. 1. Beshta probirka uchun tirgak loyihasini ishlab chiqing.
2. Tirgak detallarining chizmalari (texnik rasmlari)ni bajaring.
3. Tirgakning yig'ish chizmasini bajaring.

3-shart yechimi variantlari



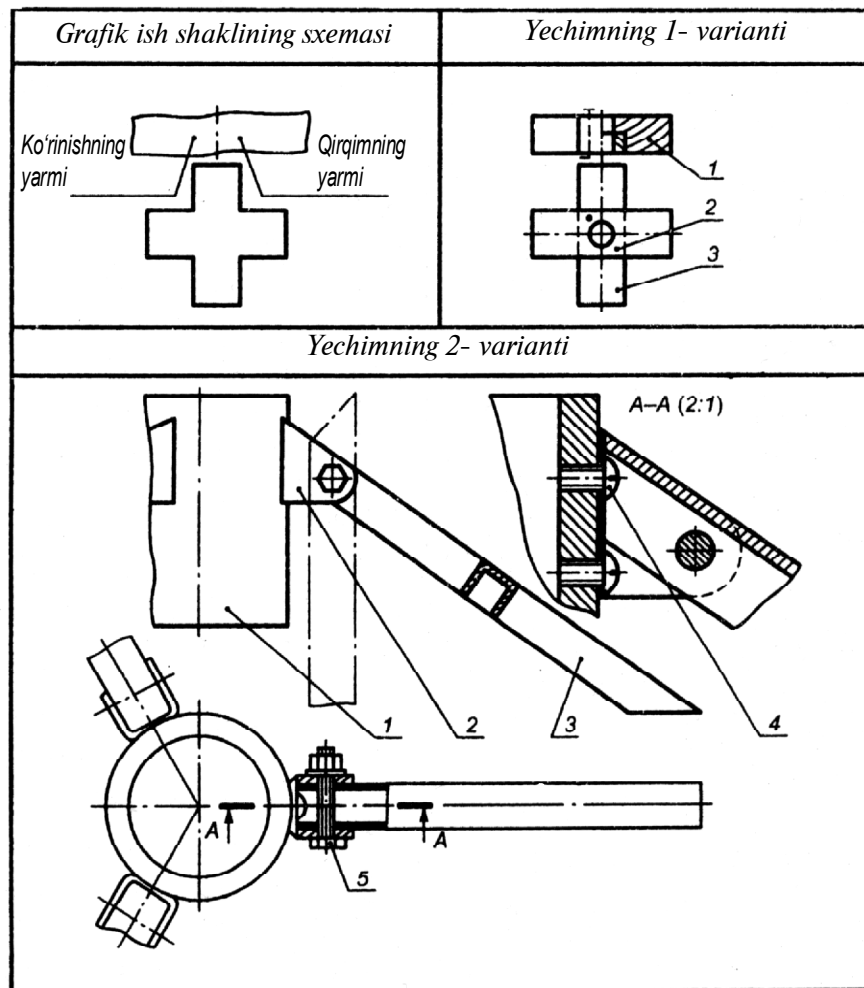
54. Archa o'rnatish uchun mahkamlagich loyihalash.

Vazifa. 1. Yangi yil archasini o'rnatish uchun xochsimon mahkamlagich loyihasini ishlab chiqing.

2. Yangi yil archasini o'rnatish uchun yig'ma metall konstruksiya loyihasini bajaring.

3. Mahkamlagichning asosiy detallari chizmasini bajaring.

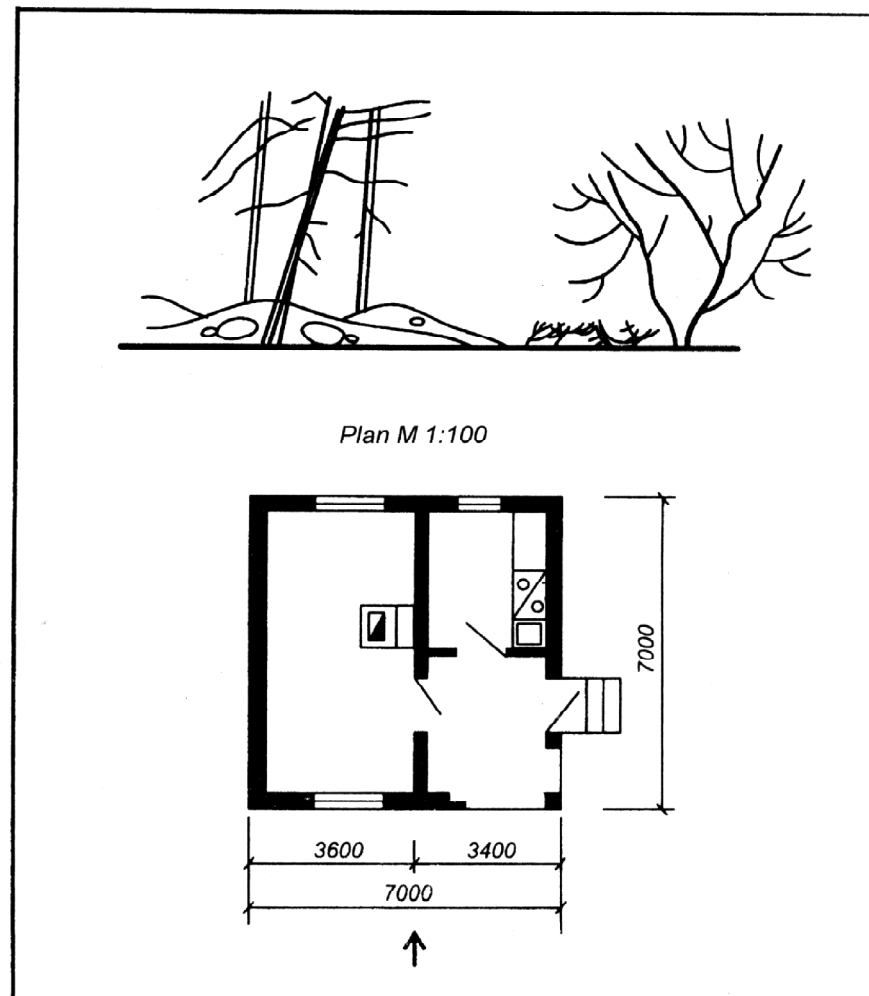
4. Mahkamlagichning yig'ish chizmasi va texnik rasmini bajaring.



55. Dala hovli plani bo'yicha fasadini loyihalash.

Vazifa. 1. Dala hovlining berilgan plani bo'yicha fasadini loyihalang.

2. Dala hovli chizmasini atrof-muhiti tasvirlangan shaklda bajaring.



Yechim variantlari (plan ko'rsatilmagan)



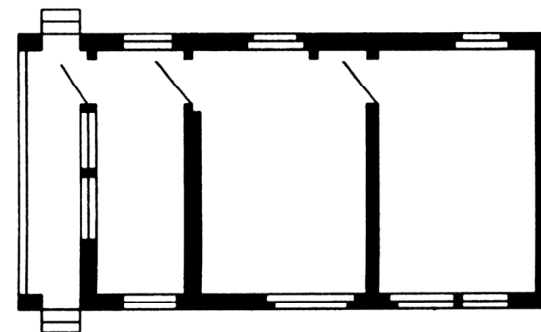
a



b

56. Bino tashqi ko'rinishi sifatini yaxshilash.

Vazifa. Bino planini o'zgartirmasdan, unga ko'proq arxitekturaliy ifodalilik va zamonaviy shakl berish maqsadida fasadini o'zgartiring.

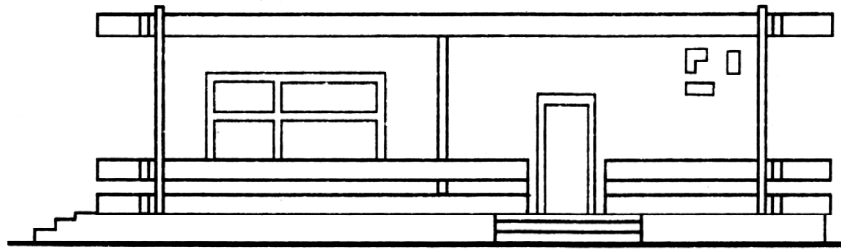


Yechim varianti



57. Dala hovli fasadi bo'yicha:

- 1) uning planini quring: plan va fasadda rejalash o'qlarini o'tkazib, belgilang; plan va fasadni belgilang;
- 2) bino ichki xonalarining joylashishini rejalashtirib, planda tasvirlang va ularning tafsilotli ro'yxatini tuzing, planda xonalarining joylashishini belgilab chiqing;
- 3) deraza va eshik o'rinlarini qanday shaklda tanlashingizni aniqlang va ularni planda tasvirlang;
- 4) bino qirqimini quring va qirqimda materiallarini belgilang;
- 5) bino xonalarida mebellarni joylashtirib, sanitar-texnik jihozlarni planda tasvirlang;
- 6) plan va fasadda bino gabarit o'lchamlarini ko'rsating.



58. Sodda arxitekturaviy kompozitsiyalar chizmalarini loyihalash va bajarish (hajmli kompozitsiya).

Topshiriq mazmuni turli darajadagi: grafik asosda (III) yoki grafik asossiz (IV) aniqlashtirilgan ko'rinishida shakllangan bo'lishi mumkin.

Vazifa III. 1. Asosiy ko'rinishi bo'yicha, qo'shilib turgan geometrik jismlardan tashkil topgan hajmli kompozitsiya loyihasini bajarang.

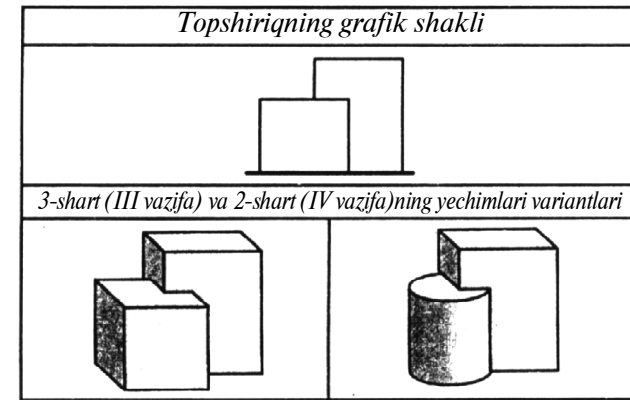
2. Asosiy ko'rinishni chizmani qayta qurish imkonini beradigan qo'shimcha tasvirlar bilan to'ldiring.

3. Kompozitsiya tasvirini aksonometriyada bajarang.

4. Kompozitsiya maketini uning elementlari yoyilmalari bo'yicha bajarang. Maketni kartonga yelimlang.

Vazifa IV. 1. Qo'shilib turgan quyidagi elementlardan tashkil topgan hajmli kompozitsiya loyihasini:

- a) parallelepipedlar;
- b) silindrlar;
- d) boshqa geometrik jismlarda bajarang.



2. Kompozitsiya tasvirini:

- a) ortogonal proyeksiyalarda;
- b) aksonometriya yoki texnik rasmini bajarang.

3. Kompozitsiya maketini uning elementlari yoyilmalari bo'yicha bajarang.

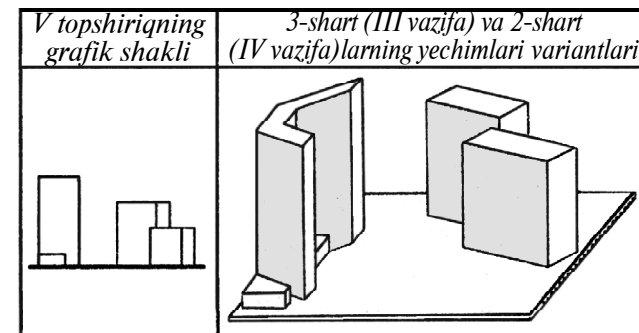
59. Sodda arxitektura kompozitsiyalari chizmalarini loyihalash va bajarish (hajmli-fazoviy kompozitsiya).

Topshiriq mazmuni turli darajadagi: grafik asosda (V) yoki grafik asossiz (VI) aniqlashtirilgan ko'rinishida shakllangan bo'lishi mumkin.

Vazifa V. 1. Asosiy ko'rinishi bo'yicha hajmli-fazoviy kompozitsiya loyihasini bajarang.

2. Asosiy ko'rinishni chizmani qayta qurish imkonini beradigan qo'shimcha tasvirlar bilan to'ldiring.

3. Ishlangan kompozitsiya tasvirini aksonometriya yoki texnik rasmda bajarang.



4. Kompozitsiya maketini uning elementlari yoyilmalari bo'yicha bajaring.

Vazifa VI. 1. Gorizontall tekislikda ixtiyoriy vaziyatda joylashgan prizmatik shakldagi elementlardan hajmli-fazoviy kompozitsiya loyihasini bajaring.

2. Kompozitsiya tasvirini:

a) ortogonal proyeksiyalarda;

b) aksonometrik proyeksiyalarda bajaring.

3. Kompozitsiya maketini uning elementlari yoyilmalari bo'yicha bajaring.

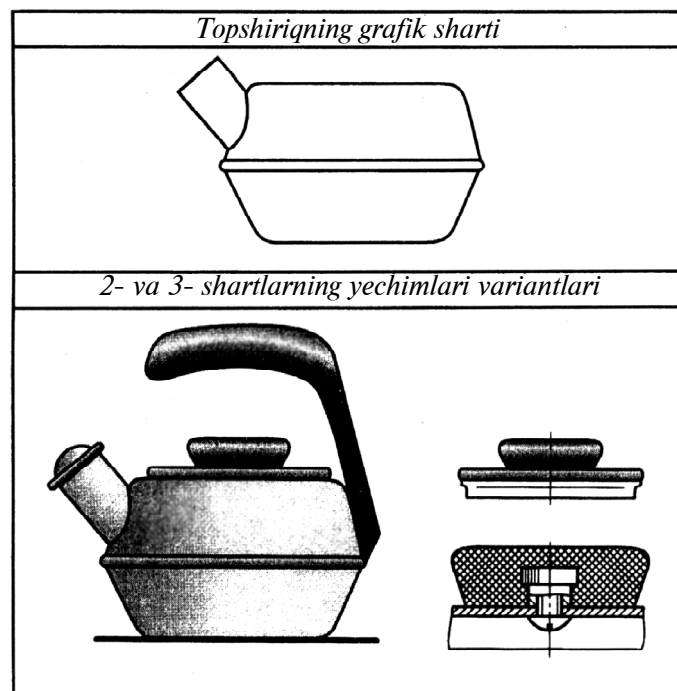
60. Choynak detallari shaklini mukammallashtirish.

Vazifa. 1. Choynak korpusining berilgan shakliga mos keladigan qopqoq (tutqich, hushtak)ning tashqi shaklini loyihalang.

2. Loyihalangan detallar shaklini aniqlashtirib, choynak tasvirini rangli qog'oz applikatsiyasi texnikasida bajaring.

3. Qopqoq chizmasini unga tutqich mahkamlanish usuli tasvirlangan ko'rinishda bajaring.

4. Choynak tutqichining uning korpusiga mahkamlanish tizimini ishlab chiqing va mahkamlanish joyi chizmasini bajaring.



61. Qanddon detallari shaklini mukammallashtirish.

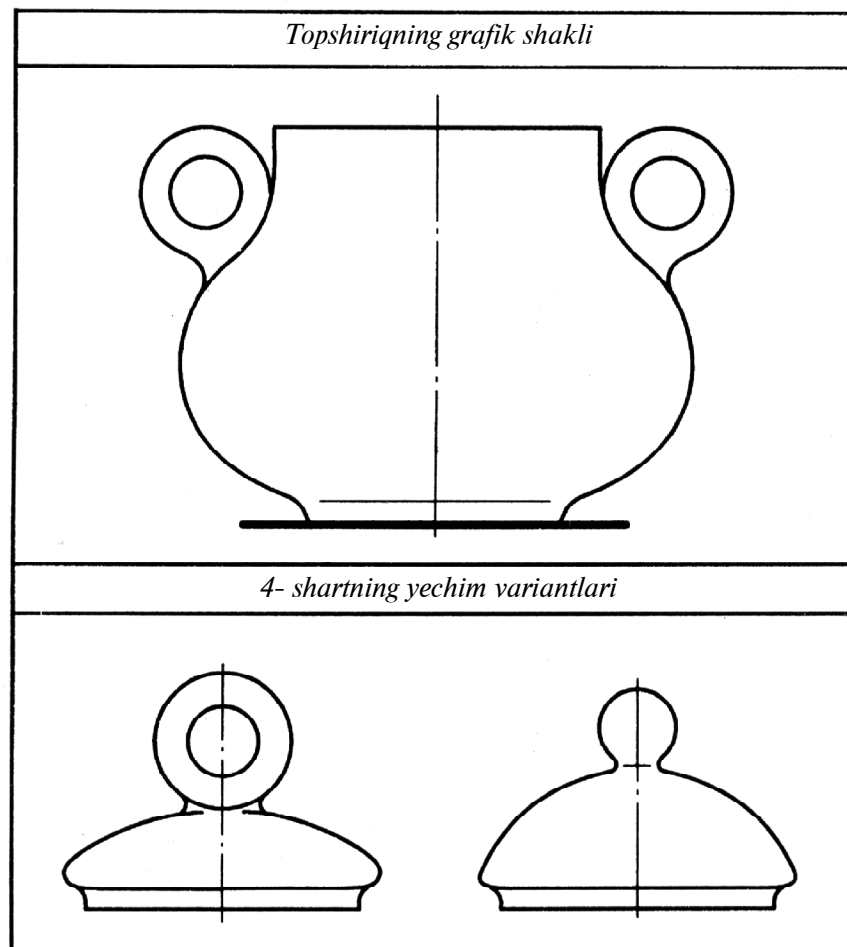
Vazifa. 1. Korpusning berilgan tasviriga o'lchamlarni qo'ying.

2. Korpusning berilgan shakli bo'yicha qanddon qopqog'i shaklini loyihalang.

3. Qopqoq eskizini o'lchamlari ko'rsatilgan holda tasvirlang.

4. Eskiz bo'yicha qopqoq chizmasini bajaring.

5. Tutashmalarni qurish yordamida qanddon chizmasini bajaring.

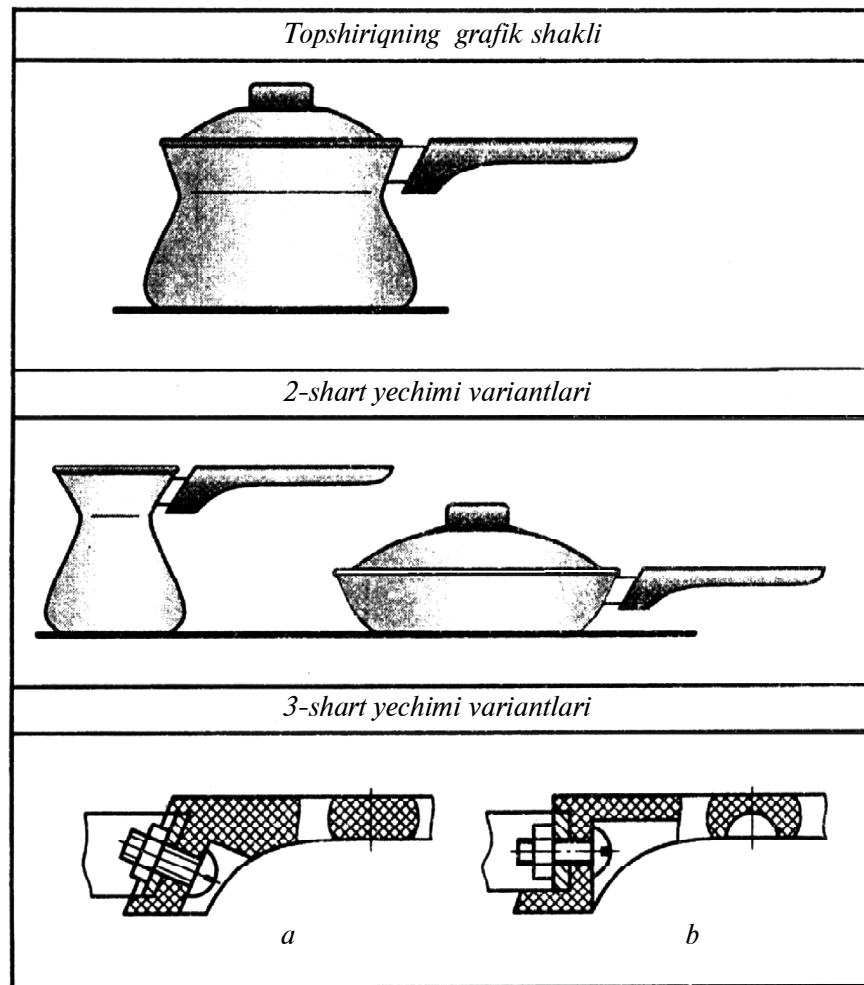


62. Birining stilistik belgilari bo'yicha buyumlar guruhi tashqi shaklini loyihalash.

Vazifa. 1. Kastrulkaning berilgan shakliga o'xshaydigan qahva qaynatgich va qopqoqli tovalarning tashqi shaklini loyihalang.

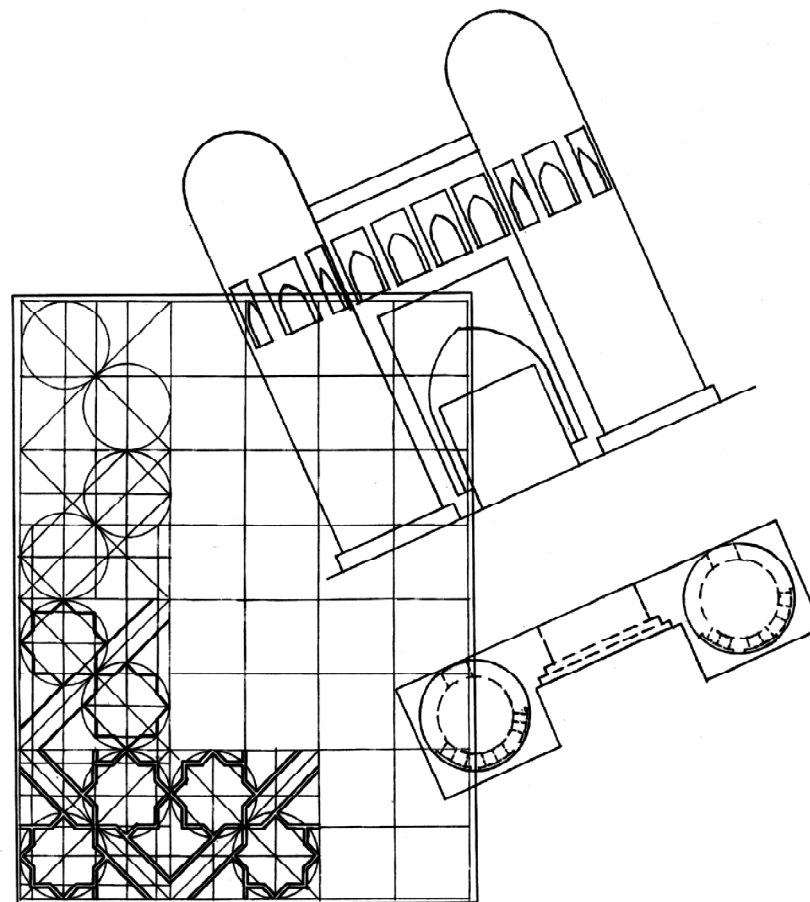
2. Loyihalangan buyumlarning chizmalarini bajaring.

3. Buyumlarning ixtiyoriy birining korpusiga tutqichni mahkamlash tizimini ishlab chiqing.



VIII QISM. AMALIY GRAFIKA VA ARXITEKTURAVIY LOYIHALASH ASOSLARI

(to'g'arak va fakultativ mashg'ulotlar uchun)



GRAFIK VA DIAGRAMMALAR

Grafik va diagrammalar axborot uzatishning bir shakli bo'lib, ular o'zining ixchamliligi, mazmunliligi, universalliligi va tushunarililigi bilan ajralib turadi. Ulardan insonlar kundalik turmushida va kasbiy faoliyatlarida foydalanadilar.

Grafik va diagrammalar fan, texnika, tibbiyot, maorif va turmushda keng qo'llaniladi. Fanda ular yordamida har xil murakkab jarayonlarning kechishi va qonuniyatlari o'rganiladi, tibbiyotda tashxis qo'yishda (kardiogrammalar va h.k.) foydalaniladi, ishlab chiqarish, maorif va shu kabilarda ma'lum bir davr mobaynida biror sohadagi ko'rsatkichlarning o'zgarishlari sodda va tushunarli shaklda ifodalanadi.

O'quvchilar grafik va diagrammalar bilan matematika, fizika, iqtisodiy bilim asoslari, mehnat ta'limi darslarida va shuningdek, gazeta hamda jurnallarni mutolaa qilish jarayonlarida tanishganlar. Shuning uchun biz grafik va diagrammalarni o'qish va bajarishni bilishning foydasi va zaruriyati haqida to'xtalib o'tirmaymiz.

Grafik (grek. *graphikos* — chizma) biror kattalik (funksiya)ning ikkinchi kattalik (dalil) o'zgarishiga bog'liq holda, o'zgarishining grafik shakldagi tasviridir (1-shakl).

Inson faoliyatining statistika, hisob-kitob va boshqa sohalarida grafiklar jarayonlarning miqdoriy bog'liqligini yaqqol tasvirlash uchun keng qo'llaniladi. Masalan, rejaning oylar yoki yillar bo'yicha bajarishning borishi grafigi, mamlakat aholi sonining yillar bo'yicha o'sishi grafigi va hokazolar.

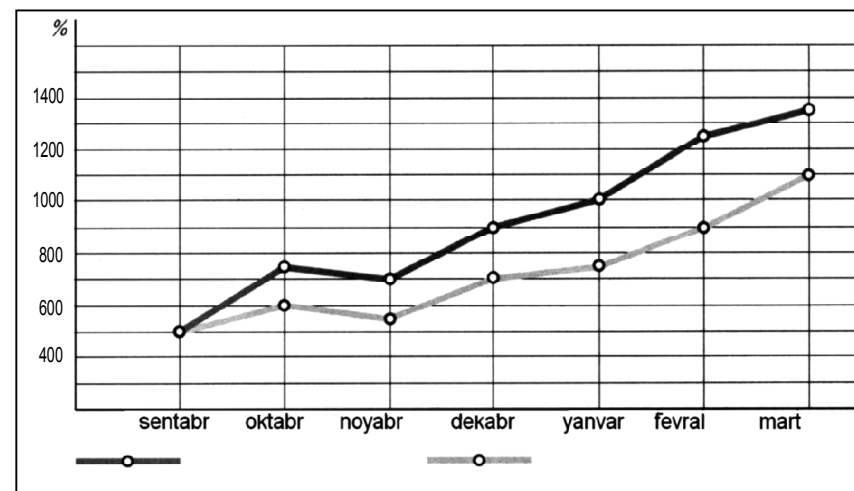
Diagrammalar ustunli yoki sektorli ko'rinishlarda bo'lishi mumkin. Ustunli diagrammalarda kattaliklar ustun shaklida masshtabli tasvirlanadi (2–3-shakllar). Sektorli diagrammalar odatda yaxlit bir butun tarkibiy qismlarning nisbatlarini tasvirlash maqsadida qo'llaniladi (4–8-shakllar). Bunday diagrammani qurish uchun aylana fikran 100 ta teng bo'lakka bo'linadi.

Quyida grafik va diagrammalar yordamida turli ma'lumotlarning sodda va yaqqol ifodalanishi va ularni bajarishga misollar keltiramiz:

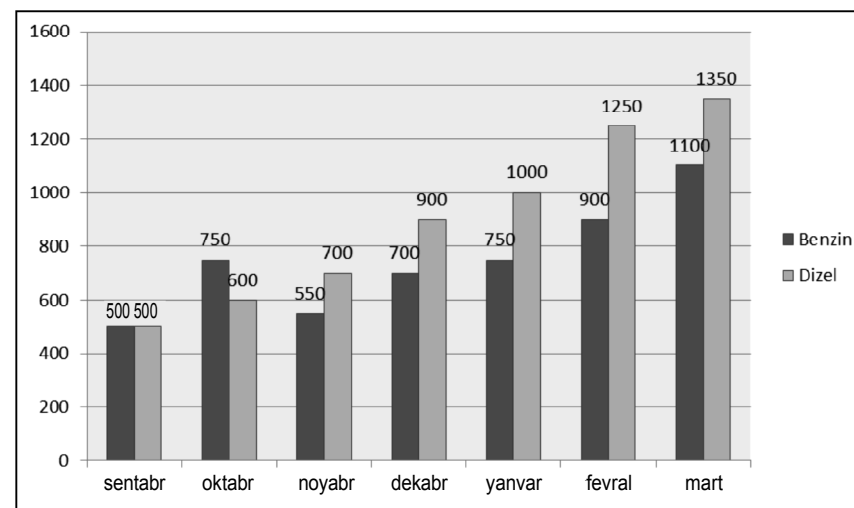
1-misol. Fermer xo'jaligining sentabr oyidan mart oyigacha bo'lgan davrda dizel yoqilg'isi va benzin olish bo'yicha tovar birjasi bilan tuzgan shartnomalarining o'zgarish grafigini tuzing (1-jadval).

Ushbu topshiriq yechimining uchta variantini keltiramiz.

Yaqqollikni ta'minlash maqsadida ustunli diagrammalardan ham foydalanish mumkin. Ularni bajarishda eni bir xil bo'lgan to'g'ri



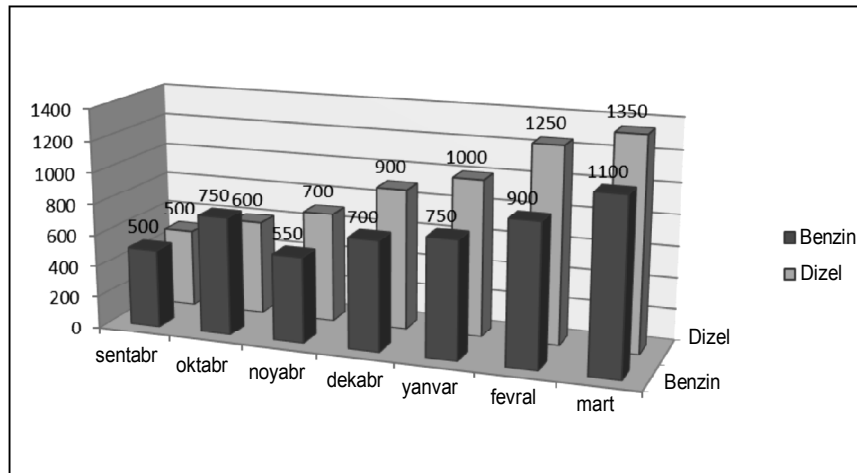
1-shakl. Transport yoqilg'isi iste'molining oylar bo'yicha o'zgarish grafigi.



2-shakl. Transport yoqilg'isi iste'molining oylar bo'yicha o'zgarishining ustunli diagramma shaklida tasvirlanishi.

1-jadval

Yoqilg'i turi	sentabr	oktabr	noyabr	dekabr	yanvar	fevral	mart
Benzin, litr	500	750	550	700	750	900	1100
Dizel, litr	500	600	700	900	1000	1250	1350



3-shakl. Transport yoqilg'isi iste'molining oylar bo'yicha o'zgarishining gistogramma (ustunli diagramma) shaklida tasvirlanishi.

to'rtburchaklardan foydalaniladi. To'g'ri to'rtburchaklarning bandligi solishtiriladigan kattaliklarning son birliklariga mos bo'ladi. To'g'ri to'rtburchaklarning yuzalarini shtrixlab chiqish yoki bo'yash kerak bo'ladi. To'g'ri to'rtburchaklarning ichiga yoki ustiga ularning son qiymatlari yoziladi. Ustunlar guruhlar orasidagi masofa taxminan bitta ustunning eniga teng qilib olinadi.

Ushbu ustunli diagrammani yaqqol tasvir (gistogramma) shaklida ham ifodalash mumkin (3-shakl).

2-misol. Maktab o'quvchilarining sutkalik vaqt taqsimotini sektorli diagrammada ifodalang. Bunda oldin o'quvchilar o'rtasida so'rov o'tkazilib, natijalar jadvalga kiritiladi va keyin diagramma chiziladi (2-jadval).

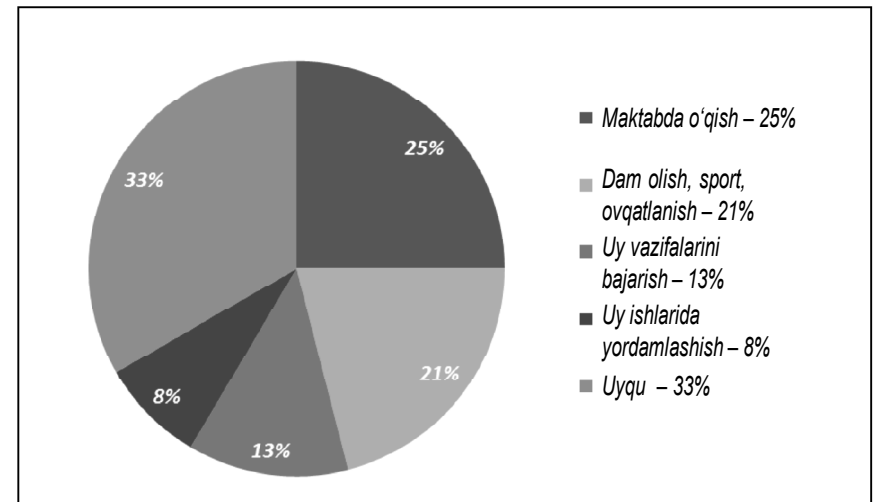
Topshiriqni har bir o'quvchi individual ravishda, o'z kun tartibi misolida bajarib, natijalarni solishtirishi ham mumkin.

Sutka davomida har xil mashg'ulotlarga sarflaydigan vaqtningizni hisoblang. Hisoblangan kattaliklarga asosan jadvalni to'ldiring va shu jadvaldan foydalanib sektorli diagramma chizing (topshiriqni bajarish namunasi 2-jadvalda va 4–6-shakllarda keltirilgan).

Grafik va diagrammalarni mavzuli chizma va rasm bilan badiiy bezash usullari. Grafik va diagrammalar kundalik turmush sohalarida ham keng qo'llanilmoqda. Kishilarning dam olish joylari, jamoat transporti, gazeta va jurnallardagi ishlab chiqarish sohasi

Sutka davomida har xil mashg'ulotlarga sarflanadigan vaqt taqsimoti jadvali

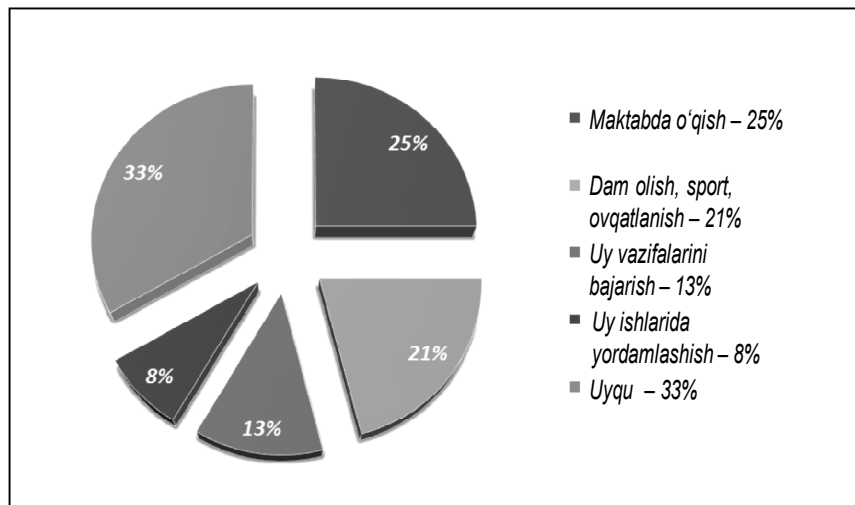
Mashg'ulot turi	Maktabda o'qish	Dam olish, sport, ovqatlanish	Uy vazifalarini bajarish	Uy ishlariga yordamlashish	Uyqu
Vaqt, soatda	6	5	3	2	8
Vaqt % da, r % (24 soat – 100 %)	25	21	12,5	8,2	33,3
Diagrammadagi burchak kattaligi (100% = 360) = r %	90	75	45	120	30



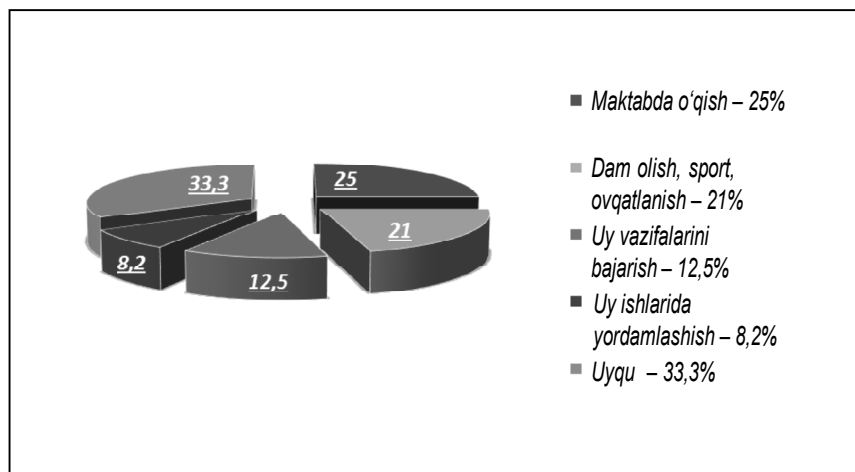
4-shakl. O'quvchilarning sutkalik vaqt taqsimotini diagrammada tasvirlash usullari (1-variant).

yoki korxonalar faoliyati rivojlanishi yoki o'sishini reklama qilishda grafik va diagrammalar maqsadni lo'nda va aniq ifodalash uchun xizmat qiladi.

Reklama maqsadida tayyorlanadigan grafik va diagrammalar o'quv va ilmiy adabiyotlardagi grafik va diagrammalardan o'zining ta'sirchanligi bilan farqlanadi. O'quv va ilmiy adabiyotlarda keltiriladigan grafik va diagrammalar faqat o'rganilayotgan jarayon



5-shakl. O'quvchilarning sutkalik vaqt taqsimotini diagrammada tasvirlash usullari (2-variant).



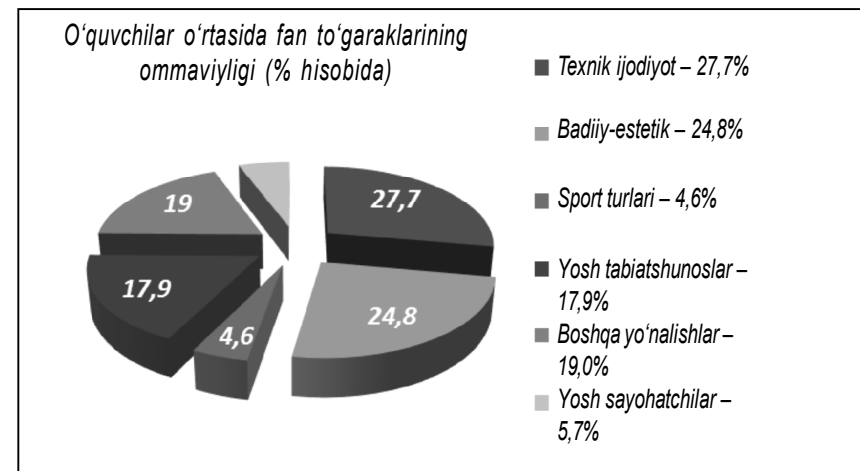
6-shakl. O'quvchilarning sutkalik vaqt taqsimotini diagrammada tasvirlash usullari (3-variant).

yoki qonuniyatdagi kattaliklar o'rtasidagi bog'lanishlarni ochib berishga xizmat qiladi. Ularda mavzuga aloqasi bo'lmagan, o'quvchining diqqatini chalg'itadigan hech qanday ortiqcha grafik tasvir yoki yozuv bo'lmashligi kerak.

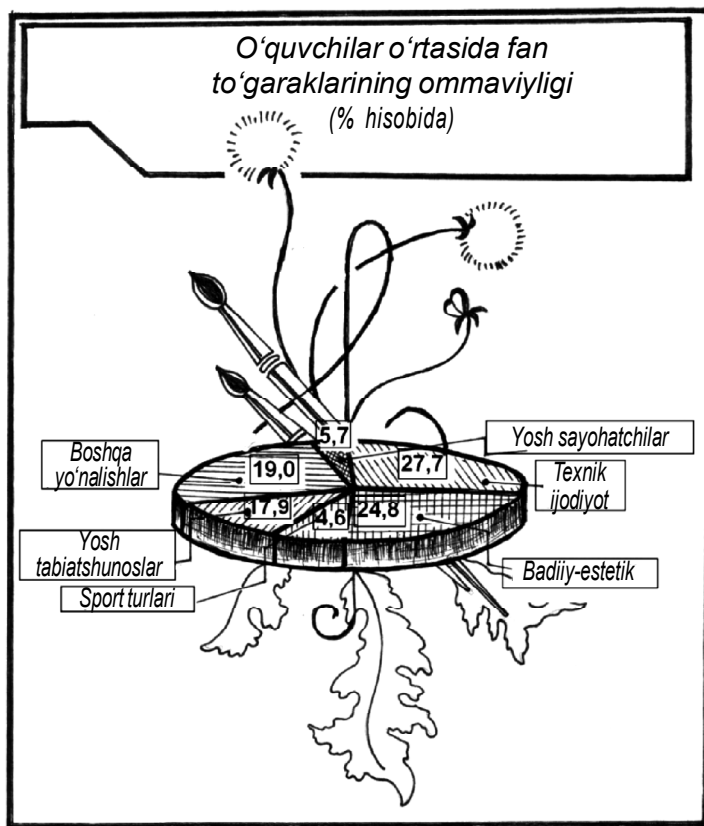
Reklama maqsadlari uchun jamoat joylari, matbuot va televideniya foydalanishga mo'ljallangan grafik va diagrammalarni tayyorlashga birmuncha boshqacharoq talablar qo'yiladi. Birinchi navbatda, ular to'plagan ommaviy axborot vositalari orasida o'zining grafik yechimi, ranglar uyg'unligi va bezaklarining originalligi bilan ajralib turib, kishilar e'tiborini o'ziga jalb qilishi kerak. Ikkinchidan, unda uzatilayotgan axborot hajmi (ma'lumot) keragidan ortiqcha bo'lmashdan, sodda va hamma uchun tushunarli bo'lishi zarur.

Ushbu talablarni bajarish uchun, avvalambor, kishilarni qiziq-tiradigan, shu kun uchun dolzarb bo'lgan mavzu tanlanib, o'zaro bog'liq bo'lgan statistik ma'lumotlar olinadi. Olingan ma'lumotlar asosida grafik va diagrammalar bajarilib, orqa fon uchun axborot mazmunini ochib beradigan grafik tasvir (fotomontaj, rasm, chizma, ...) bajariladi. 7–14-shakllarda ommabop mazmunlarda tayyorlangan grafik va diagrammalarga misollar keltirilgan.

Ta'lim tizimi (umumta'lim maktablari, akademik litsey, kasb-hunar kollejlari, ...)da badiiy bezakli grafik va diagrammalardan o'quv kabinetlarini jihozlash, devoriy gazetalardagi maqolalarga grafik ilovalar (rasm, chizma, ...) tayyorlashda foydalanish mumkin (9-10-shakllar).



7-shakl. An'anaviy usulda bajarilgan sektorli diagrammaga misol.

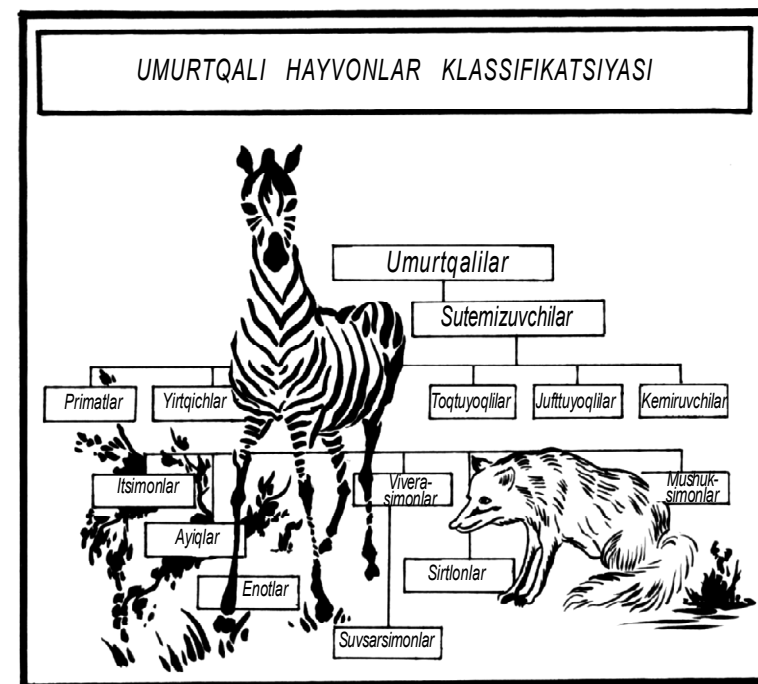


8-shakl. Badiiy bezash yordamida bajarilgan sektorli diagrammaga misol.

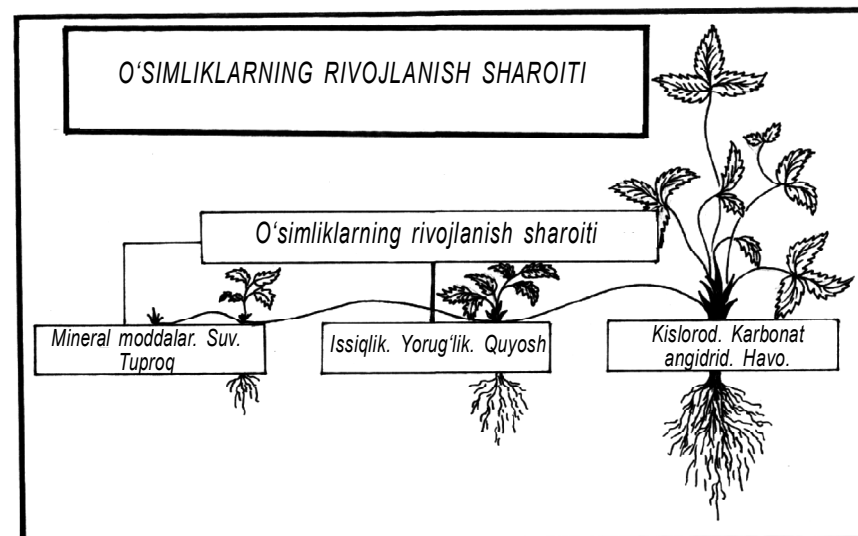
Ustunli va sektorli diagrammalar ko'pincha ma'lum bo'lgan biror statistik ma'lumotni ifodalashda xizmat qiladi.

Bunday diagrammalardan ijtimoiy sohalar bilan bog'liq fanlarni o'rganishda ko'p ishlatiladigan ma'lumotlarni eslab qolish uchun foydalaniladi.

Chiziqli grafiklar odatda o'zgaruvchan kattaliklar orasidagi bog'lanish va qonuniyatlarni ochib berishda qo'llaniladi. Bu grafiklar aniq fanlar (matematika, fizika, kimyo, ...)ni o'rganishda muhim o'rin tutishi bilan birgalikda, biror davr mobaynida kattalikning tashqi, iqtisodiy va ijtimoiy ta'sirlarga bog'liq aniq qonuniyatlarsiz o'zgarishini ifodalashda ham keng qo'llaniladi (mamlakat aholi sonining o'sishi aholining biror mahsulotga bo'lgan talabining ortib yoki kamayib borishi, ...).



9-shakl. Badiiy bezash yordamida bajarilgan sektorli diagrammaga misol.

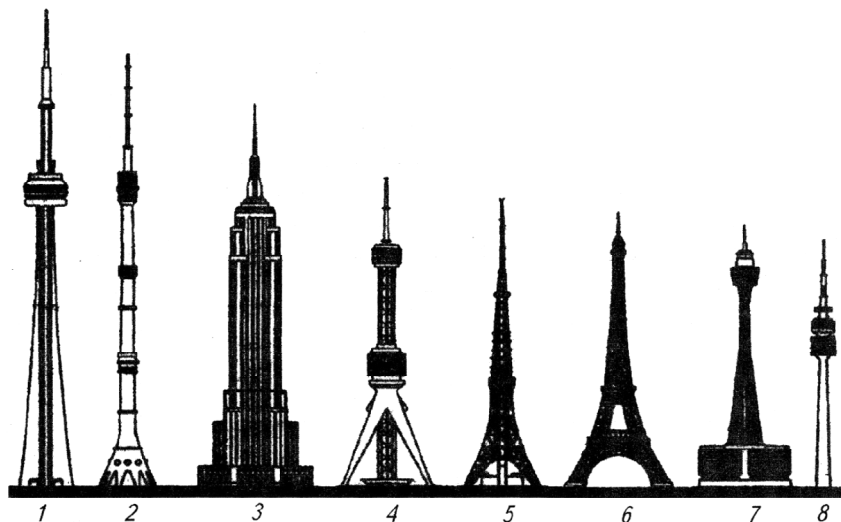


10-shakl. Badiiy bezash yordamida bajarilgan sektorli diagrammaga misol.

GRAFIK VA DIAGRAMMALAR BAJARISH BO'YICHA TOPSHIRIQLAR

1. 11-shaklda Xalqaro baland minoralar federatsiyasi a'zolari bo'lgan eng baland minoralarining tasvirlari ko'rsatilgan. Ular balandliklari o'lchamlarining chiziqli diagrammasini yasang. Topshiriqni yana qanday variantlarda bajarish mumkin?

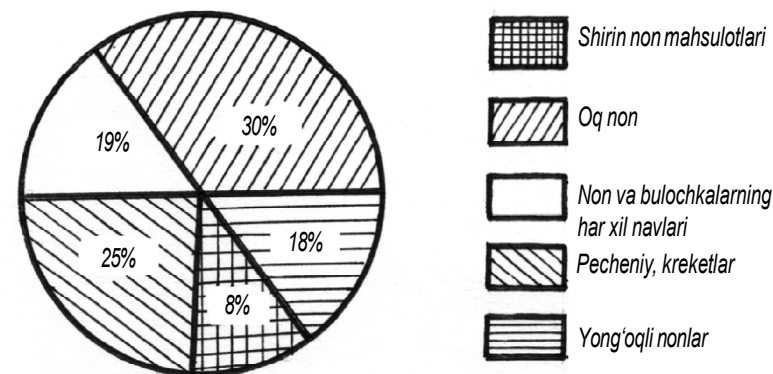
2. Sektorli diagrammada novvoychilik mahsulotlarining savdosi bo'yicha ma'lumotlar keltirilgan. Sektorli diagramma ma'lumotlaridan foydalanib, berilgan kattaliklar bo'yicha ustunli diagramma chizing. Har bir ustunni 1-sektor uchun chizib ko'rsatilgan ustunga o'xshatib hajmli ko'rinishda tasvirlang (12-shakl).



1. Torontodagi teleminora, Kanada – 553 m.
2. Moskvadagi «Ostankino» teleminorasi, Rossiya – 540 m.
3. Nyu-Yorkdagi «Empayer steyt bilding», AQSH – 443 m.
4. Toshkent teleminorasi, O'zbekiston – 375 m.
5. Tokio teleminorasi, Yaponiya – 333 m.
6. Parijdagi «Eyfel» minorasi, Fransiya – 320 m.
7. Sidneydagi minora, Avstraliya – 304 m.
8. Myunxendagi «Olimpiya» minorasi, Germaniya – 290 m.

2012- yil 22- mayda Yaponiya poytaxti Tokioda ishga tushgan «Osmon daraxti» teleminorasi (634 m) bugungi kunda eng baland teleminora hisoblanadi.

11-shakl. Eng baland minoralarining tasvirlari.



12-shakl. Novvoychilik mahsulotlarining savdosi diagrammasi.

Quyidagi ma'lumotlardan foydalanib grafik va chiziqli diagrammalar bajaring:

1. Tuproq namligining makkajo'xori hosildorligiga ta'siri.

Tuproq namligi, %	O'simlikning o'rtacha balandligi, sm	Barglarining yuzasi, sm ²
40	90	664
60	112	1270
80	118	2256
100	108	1589

2. Turli mineral o'g'itlarning o'simliklarning o'sishiga ta'siri.

Kunlar soni	O'simliklarning ishlatiladigan o'g'itga bog'liq holda o'sishi, sm		
	Kaliyli o'g'itlar	Fosfat uni	Azotli o'g'itlar
1	1	1	1
5	2,2	2,5	2,7
10	5,0	6,2	7,2
15	6,1	8,3	9,2
20	6,9	10,7	12,4
25	7,2	14,5	16,0

3. Ishlab chiqarish korxonasidagi mehnat unumdorligining 2006-yilga nisbatan o'sishi.

Yillar	Mehnat unumdorligining o'sishi, %		Yillar	Mehnat unumdorligining o'sishi, %	
	reja bo'yicha	amalda		reja bo'yicha	amalda
2007	112	116	2010	137,7	138,1
2008	120,0	125	2011	141,0	142,2
2009	126,6	127,4	2012	143,2	150,5

4. Do'konlarda sut va go'shtning 2006-yilga nisbatan sotilish miqdorining o'zgarishi.

Yillar	Mahsulotlarning 2006-yilga nisbatan sotilishi, %		Yillar	Mahsulotlarning 2006-yilga nisbatan sotilishi, %	
	sut	go'sht		sut	go'sht
2007	102	101,5	2010	109,2	105,7
2008	104	103	2011	111,8	108,2
2009	109	103,7	2012	115,6	109,2

5. Ko'chat o'tqazish tajribalarining natijalari.

Kunlar soni	Ko'chatning balandligi, sm		Kunlar soni	Ko'chatning balandligi, sm	
	1-tajriba	2-tajriba		1-tajriba	2-tajriba
5	3	2,5	13	10	11,7
7	5,6	4,5	15	12	13,8
9	6,5	7	17	12,5	14
11	8	8,5			

Quyidagi ma'lumotlardan foydalanib ustunli diagrammalarni yasang.

1. Qishloq xo'jaligiga mineral o'g'itlarning yetkazib berilishi.

Yil	O'g'itlar, mln. t
1995	0,8
2000	1,27
2005	1,85
2010	2,58

2. Hudud qishloq xo'jaligida elektr energiyasi iste'moli o'zgarishi.

Yil	Elektr energiyasi, mln kVt/s
2002	56, 8
2007	71,2
2012	78,5

3. Ayrim kimyoviy elementlarning atom og'irliklari.

Kimyoviy element	Atom og'irligi
Litiy	7
Natriy	28
Kaliy	39
Rubidiy	86
Seziy	133
Magniy	24
Bariy	137
Aluminiy	27
Mis	64

4. Insonning turli faoliyatlarda energiya sarflash miqdori.

Faoliyat turi	Energiya miqdori, kg ga kkal/s
Uyqu	0,93
O'qish	1,5
Uy ishlari	3,0
Piyoda yurish	3,2
Tekis yo'lda yugurish	6,0
Eshkak eshish	6,0
Velosiped haydash	8,0
Avtomashina haydash	1,5

5. 100 g mahsulotdagi oqsillar miqdori.

Go'sht	20,0
Baliq	16,0
Tuxum	10,6
Pishloq	30,0
Sut	3,0
Non	8,0
Kartoshka	1,7
Soya.....	34,0
No'xat	19,7

Berilgan ma'lumotlardan foydalanib sektorli diagramma quring.

Agar kattaliklar foizlarda keltirilmagan bo'lsa, hamma kattaliklarning yig'indisi 100% ga teng deb qabul qilinadi va tarkibiy qismlar foizlarda hisoblab chiqiladi. Sektorli diagrammani bajarish uchun 360° ni 100% ga teng deb qabul qilinadi hamda tarkibiy qismlari foizlariga mos ravishda graduslarda o'lchab qo'yiladi.

1. Havoning foizlardagi hajmiy tarkibi:

Azot	78,68	Karbonat angidrid	0,35
Kislorod	20,90	Boshqa gazlar	0,07

2. Kutubxonaga a'zo kitobxonlarning yoshlari bo'yicha tarkibi.

Yoshi, yillarda Kitobxonlar soni, kishi

15–20	12
21–30	20
31–40	24
41–50	21
51–60	13
60 dan katta	10

3. Qattiq qotishmalarning tarkibi.

Qotishma	Tarkibiy qismlari, % larda					
	Xrom	Nikel	Kremniy	Marganes	Uglerod	Temir
Sormayt 1	31	4,1	3,8	1,5	2,5	57
Sormayt 2	17	2,5	2,5	1,0	2,0	75

4. Sanoat mahsulotlarining turlari bo'yicha iste'mol qilinishi.

Sanoat turi	Umumiy mahsulotga nisbatan, %
Yengil	27,9
Oziq-ovqat	47,0
Og'ir	25,1

5. Fabrikadagi ishlab chiqarish bilan band xodimlar tarkibi (kishi).

Ishchilar	78
Shogirdlar	2
Muhandis va texniklar	12
Xizmatchilar	4

IJODIY TOPSHIRIQLAR

Quyidagi jadvallarda geografik bilimlar bilan bog'liq bo'lgan turli xil statistik ma'lumotlar keltirilgan. Shu ma'lumotlarni o'zida to'liq yoki qisman aks ettiradigan, o'quvchi e'tiborini o'ziga jalb qiladigan badiiy bezakli grafik yoki diagrammalarni bajaring.

1. Okeanlar

Okean nomi	Yuzasi, mln km ²	O'rtacha chuqurligi, m	Eng chuqur joyi, m	Hajmi, mln km ³
Atlantika	91,66	3597	8742	329,7
Hind	76,17	3710	7729	282,7
Tinch	178,68	3976	11022	710,4
Shimoliy Muz	14,75	1225	5527	18,1

Yer sharidagi eng yirik daryolar, orollar, eng baland tog'cho'qqilari, eng katta sahrolar va eng baland harakatdagi vulqonlarning xarakteristikalaridan foydalanib grafik yoki diagrammalar bajaring.

2. Eng yirik daryolar

Daryoning nomi	Uzunligi, km	Havzasining maydoni, ming km ²	O'rtacha suv sarfi, m ³ /s
Nil (Kagera bilan)	6671	2870	26 000
Missisipi (Missuri bilan)	6420	3268	19 000
Amazonka (Maranon bilan)	6400	7180	220 000
Yanszi	5800	1808	34 000
Ob (Irtish bilan)	5410	2990	12 700

3. Eng yirik orollar

Orolning nomi	Yuzasi, ming km ²	Joylashgan okeani
Grenlandiya	2176	Shimoliy Muz
Yangi Gvineya	829	Tinch
Kalimantan	734	Hind
Madagaskar	590	Hind
Baffin yeri	476	Shimoliy Muz

4. Yer yuzidagi eng baland tog' cho'qqilari

Joylashgan qit'asi	Nomi	Balandligi, m	Tog' massivi
Osiyo	Jomolungma	8848	Himoloy
Janubiy Amerika	Akonkagua	6962	And
Shimoliy Amerika	Mak-Kinli	6194	Alaska tizmasi
Afrika	Kilimanjaro (Uxuru cho'qqisi)	5895	Kilimanjaro
Yevropa	Elbrus	5642	Kavkaz

5. Eng baland harakatdagi vulqonlar

Joylashgan qit'asi	Nomi	Joylashgan o'rni	Balandligi, m
Janubiy Amerika	Lyulyaylyako	Chili-Argentina	6723
	San-Pedro	Chili	6154
	Antofalya	Argentina	6100
Shimoliy Amerika	Orisaba	Meksika	5700
Osiyo	Demavend	Eron	5604

6. Eng katta sahro va cho'llar

T.r.	Nomi	Joylashgan o'rni	Taxminiy maydoni, km ²
1	Sahroyi Kabir	Shimoliy Afrika	7 mln. dan ortiq
2	Gobi	Markaziy Osiyo, Mongoliya va Xitoy	2 mln.
3	Liviya	Shimoliy Afrika, Nil daryosining quyi oqimidan g'arbda	2 mln.
4	Alashan	Markaziy Osiyo, Xitoyning shimoliy qismi	1 mln.
5	Qoraqum	Markaziy Osiyo, Turkmaniston	350 ming
6	Qizilqum	Markaziy Osiyo, O'zbekiston va Qozog'iston	300 ming

XALQ AMALIY SAN'ATIDA AMALIY GRAFIKANING QO'LLANILISHI

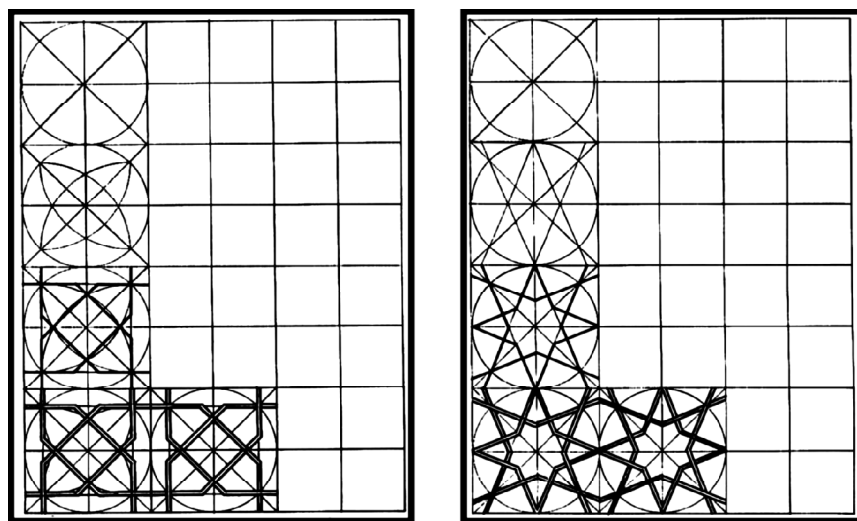
Hamma xalqlarning qadimiy naqshlarida to'g'ri ko'pburchaklardan foydalanilgan. Kishilar o'sha zamonlardayoq ularning go'zalligini qadrlashgan. Bundan tashqari, ular tabiatda to'g'ri ko'pburchaklarni ko'plab chiroyli namunalarini ko'rib, ularni o'z faoliyatlarida, badiiy bezash ishlarida qo'llashga intilishgan. Masalan, beshburchakli minerallar, gullar, mevalarning shakllarida va ayrim dengiz hayvonlari (dengiz yulduzi) tuzilishida, oltiburchakni esa asalari uyasida kuzatish mumkin. Bekorga qadimgi davr va hozirgi zamon olimlari va amaliyotchilari to'g'ri ko'pburchaklar bilan qiziqishmagan.

O'zbekiston hududida yashagan xalqlar ham juda qadim zamonlardan oq aylanani teng qismlarga bo'lishning juda aniq usullarini bilishgan. Misol sifatida S.P.Tolstov rahbarligida Qo'yqirilgan qal'ada o'tkazilgan arxeologik qazishmalarda topilgan astronomik o'lchov asbobi gardishini ko'rsatish mumkin. Bundan 2000 yilcha oldin tayyorlangan ushbu diskda aylanani 360 ga bo'luvchi chiziqlarning izlari yaxshi saqlangan.

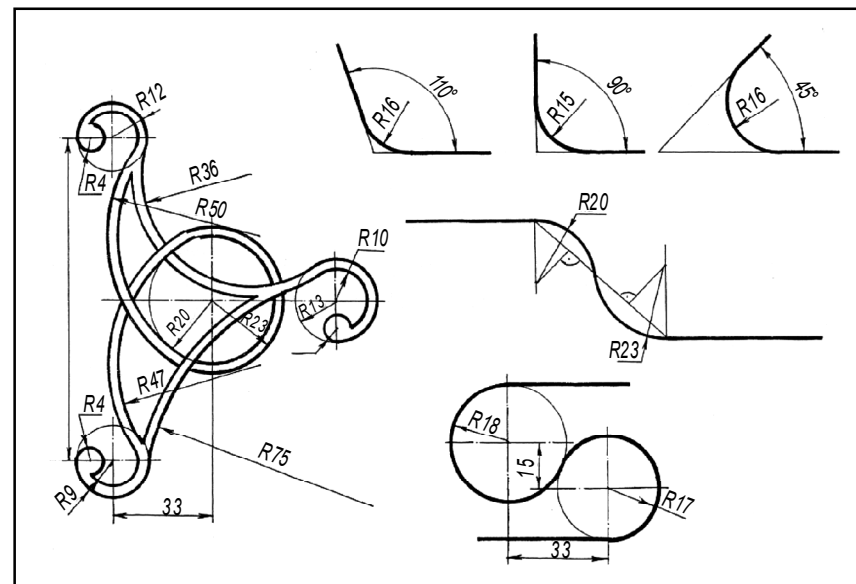
Respublikamiz hududida VIII asrda islom dini keng yoyilib, tasviriy san'at o'ziga xos rivojlanish yo'lini bosib o'tgan. San'at

asarlarida (rasm) jonli mavjudotlarni tasvirlash taqiqlanishi bilan rassomlar, xalq hunarmandlari tomonidan hozirgacha geometrik yasashlar usulida bajarilgan turli naqshlarning juda ko'p turlari yetib kelgan. Bu naqshlar: geometrik naqshlar (girihi – 13-shakl) va o'simliksimon naqshlar (islami – 14-shakl) turlariga bo'linadi. Ikkala turdagi naqshlar ham Sharq xalqlarida keng tarqalgan. Lekin bu naqshlar san'at darajasidagi yuksak ko'rinishga ko'tarilishida qadimgi O'zbekiston hududidagi usta va hunarmandlarning hissasi juda katta bo'lgan. Xiva, Samarqand, Buxoro kabi qadimiy shaharlardagi tarixiy obidalar bezaklarida, hunarmandlar tayyorlagan buyumlarda bu naqshlar saqlanib kelmoqda, ayniqsa, girihlar chiroyliligi va nafisligi bilan hozirgacha tadqiqotchilarni o'ziga jalb qilib kelmoqda. Ayrim murakkab girihlarni bajarish uslublarini aniqlash ham qiyin bo'lgan. Umuman, qadimgi ustalar va hunarmandlar geometrik yasashlarni, aylana va kvadratni teng qismlarga bo'lish, tutashmalarni bajarish usullarini juda yaxshi bilishgan. 13-shaklda O'zbekiston hududidagi tarixiy yodgorliklarda bizgacha yetib kelgan girihlarni bajarish bosqichlari tahlil qilingan.

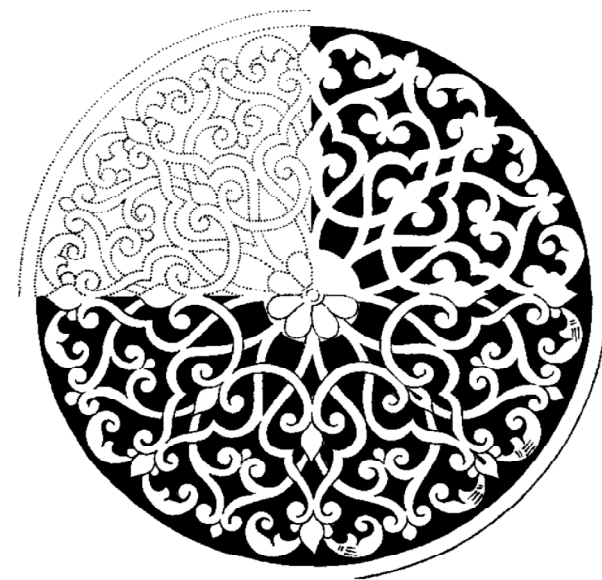
Aylanani teng qismlarga bo'lish va undan amalda foydalanishga doir misollarni ko'plab keltirish mumkin.



13-shakl. Geometrik yasashlar usulida bajarilgan milliy naqshlar.



14-shakl. Tutashmalardan foydalanib islami naqsh elementini bajarishga misol.

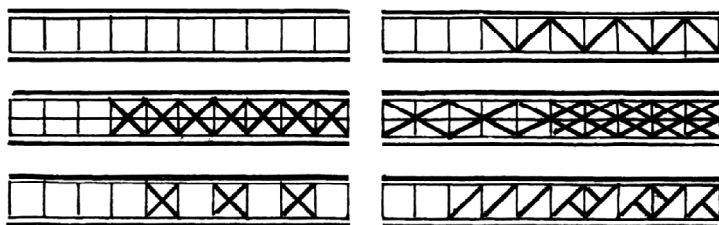


15-shakl. Geometrik yasashlardan foydalanib milliy naqsh «islami»ni bajarishga misol.

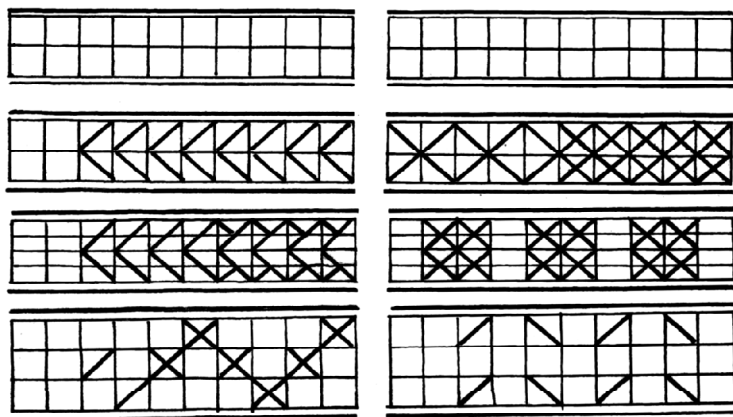
MILLIY USLUBDA NAQSH KOMPOZITSIYASINI TUZISH BO'YICHA TOPSHIRIQLAR

Qadimda xalq ustalari biror naqshni mahsulotga tushirishdan oldin maxsus qog'ozga uning eskizi (ulgisi)ni chizib olishgan. Girih kompozitsiyalarini tuzishda turli xilda tayyorlangan to'rlardan keng foydalanilgan. Quyidagi topshiriqlarda naqsh bajarish uchun to'rlar namunalari keltirilgan. Topshiriq variantini o'qituvchi ko'rsatmasi yoki o'zingizning qiziqishingiz bo'yicha tanlashingiz mumkin. Ularning ayrimlarida naqsh kompozitsiyasi tuzishning dastlabki bosqichlari ham tasvirlangan. Topshiriqni bajarish uslubini tushunib olgandan keyin boshqa variantlarni yaratish unchalik qiyin emasligiga ishonch hosil qilasiz.

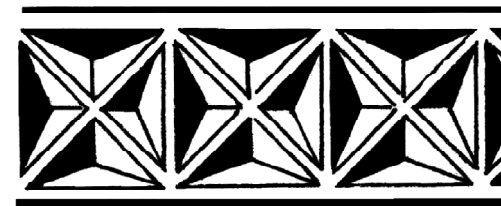
1. Quyidagi shakllarda naqsh kompozitsiyasini tuzish uchun to'rlarning eskizlari keltirilgan. Ulardan foydalanib oddiy naqsh kompozitsiyalarini tuzing. Naqshlarga rang bilan badiiy ishlov berib, vazifani yakunlang.



16-shakl. Oddiy tasmasimon naqsh kompozitsiyasini tuzish uchun to'rlar namunalari.

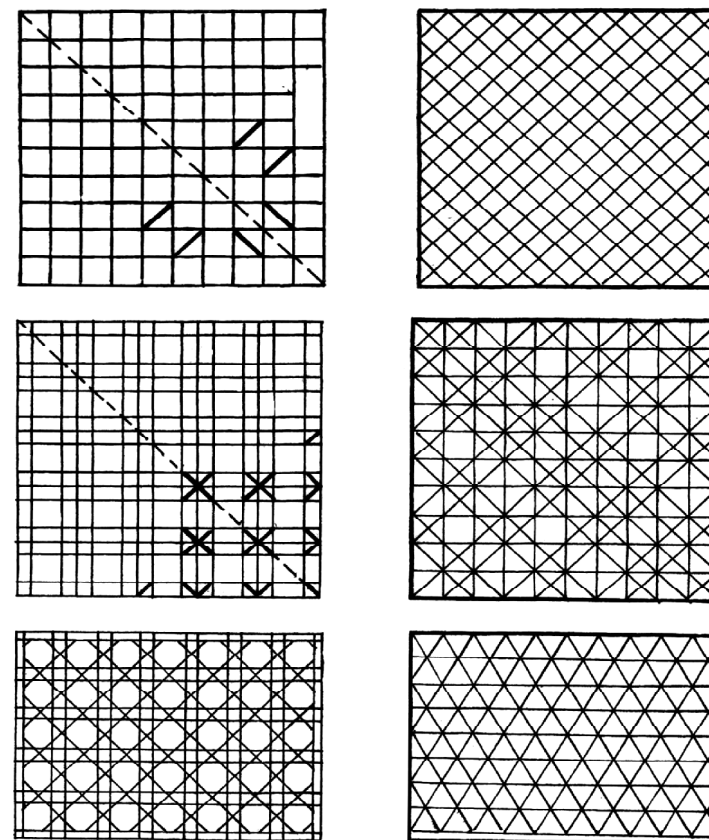


17-shakl. Tasmasimon girih kompozitsiyasini tuzish uchun to'rlar.



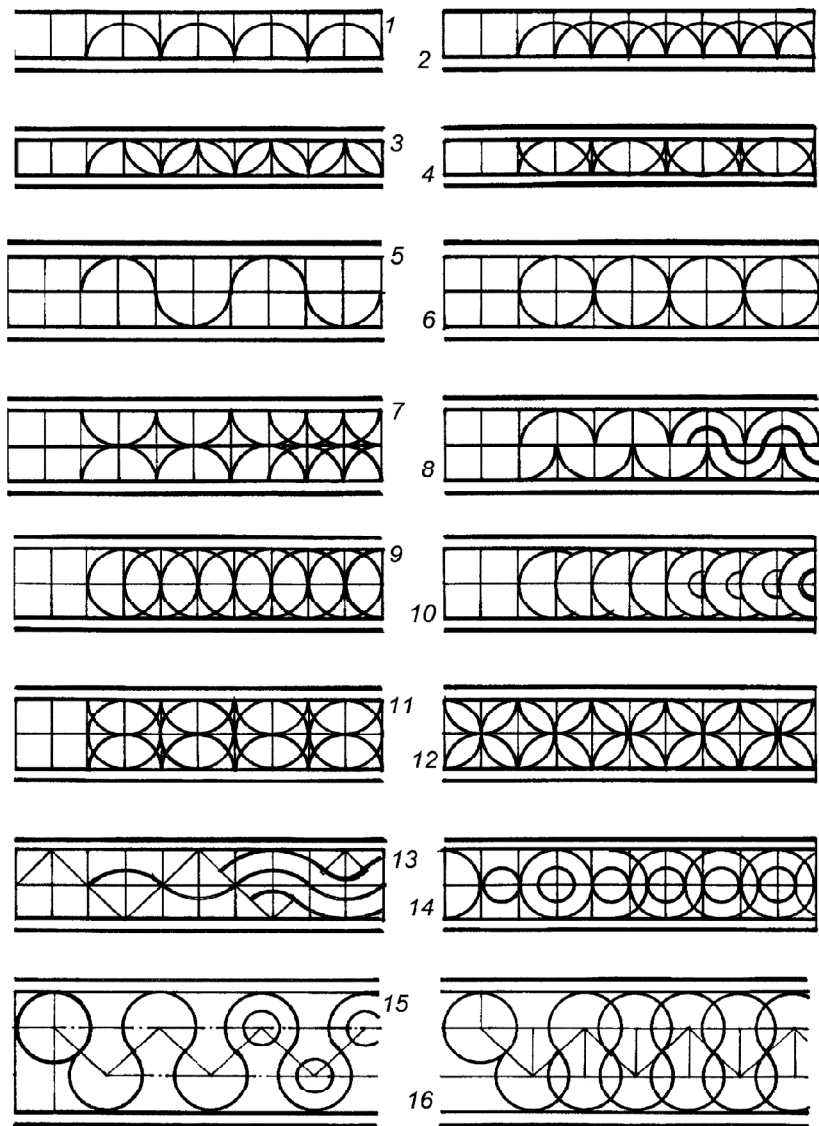
18-shakl. Tasmasimon girih kompozitsiyasining yakunlangan fragmenti.

2. 19-shaklda keltirilgan to'rlar namunalaridan foydalanib, milliy uslubdagi girih kompozitsiyalarini tuzing. Naqshlarni bajarishda 13-shakldagi kabi girih chiziqlarining qat'iy tartibda bir-biriga nisbatan joylashuviga e'tibor bering. Ortiqcha (yasash) chiziqlarini o'chirib, naqshlarga rang bilan ishlov berib, vazifani yakunlang.



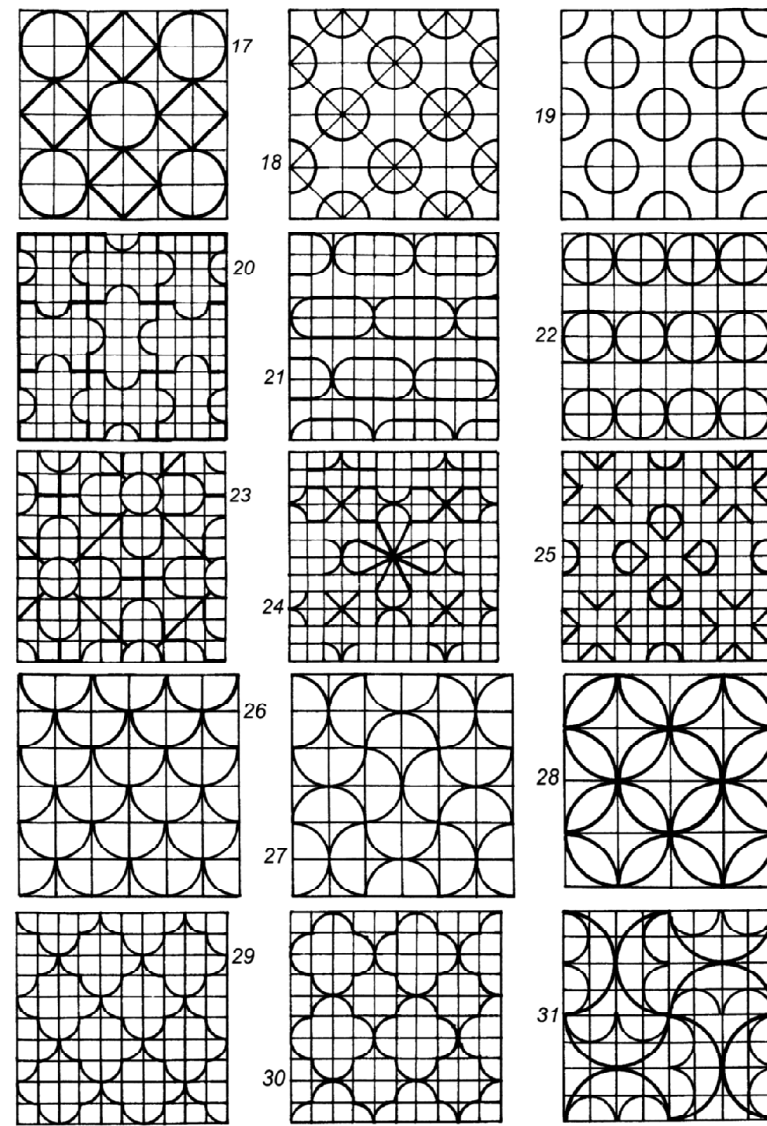
19-shakl. Girih kompozitsiyasini tuzish uchun to'rlar eskizlari namunalari.

3. Quyidagi shakllarda (1–16-variantlar) keltirilgan tasvirlardan foydalanib (20-shakl) sirkul va chizg'ich yordamida tasmasimon milliy naqsh kompozitsiyasini tuzing. Naqsh tasvirini bajarishda chiziqlarning o'zaro vaziyatlariga e'tibor qaring. Bajarilgan tasvirga rang bilan ishlov berib, vazifani yakunlang.

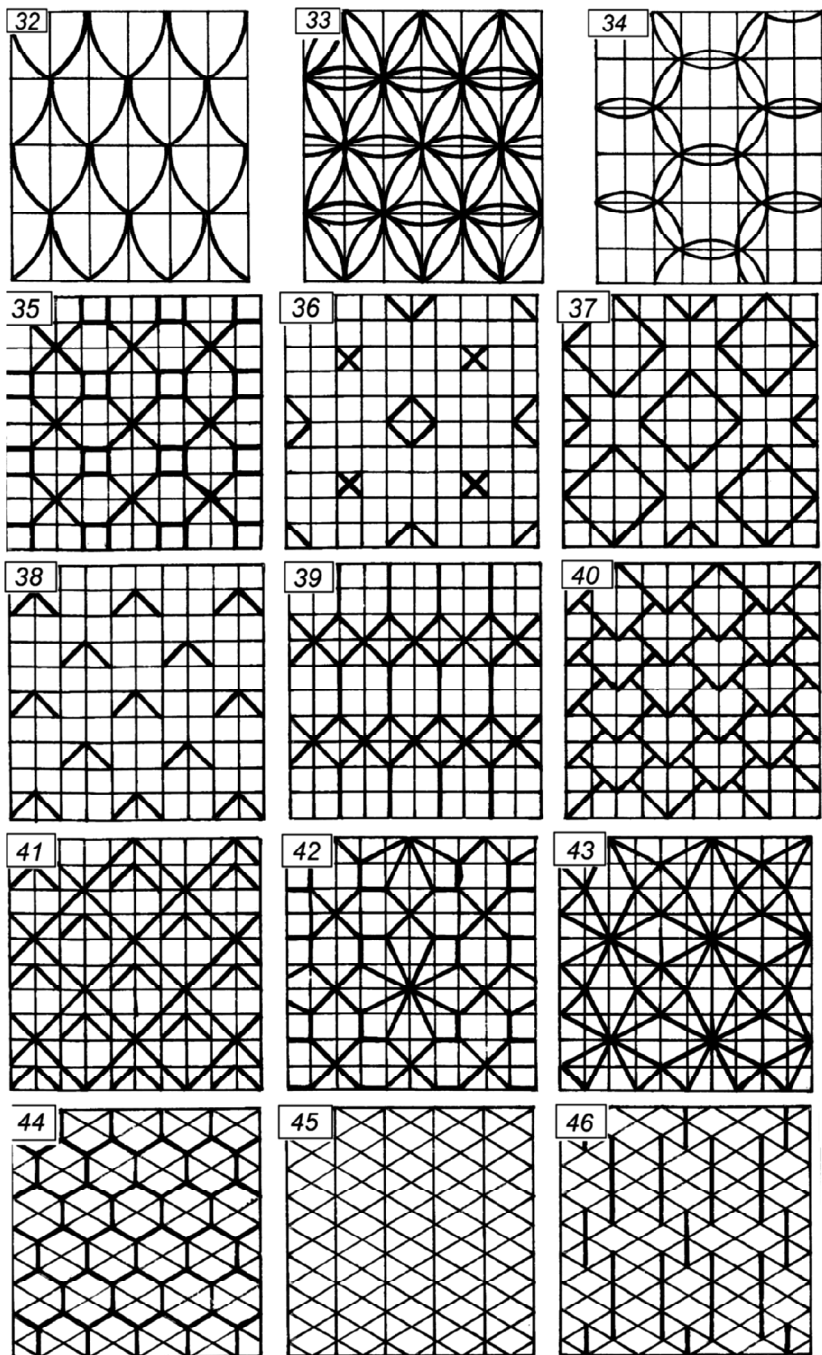


20-shakl. Tasmasimon milliy naqsh kompozitsiyasini tuzish uchun eskizlar namunalari.

4. Quyidagi to'rlarda (21-shakl, 17–46-variantlar) surkul va chizg'ichdan foydalanib naqsh bajarish uchun eskizlarning namunalari keltirilgan. Shu eskizlardan foydalanib milliy uslubdagi naqsh kompozitsiyasini tuzing va oldingi variantlardagi kabi vazifani yakunlang.



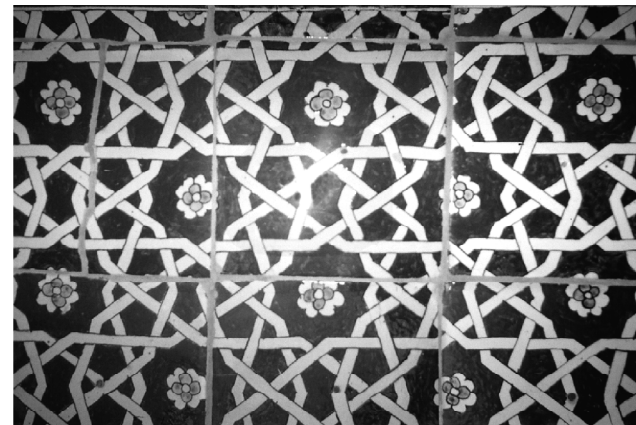
21-shakl. Milliy uslubdagi naqsh kompozitsiyasini tuzish uchun to'rlar eskizlari.



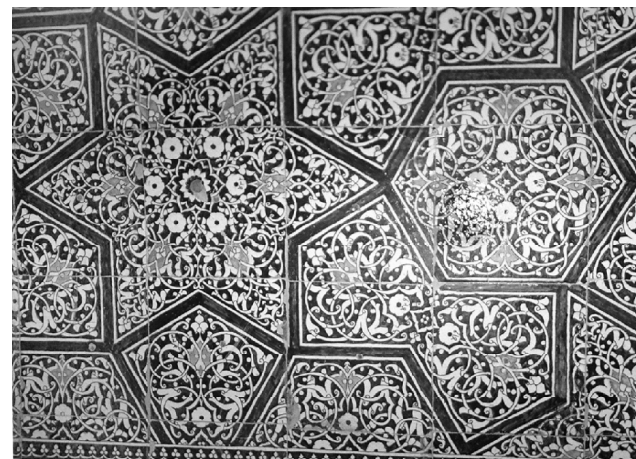
21-saklning davomi.

Ijodiy topshiriq.

Geometrik yasashlar va tutashmalar mavzularini va keltirilgan ma'lumotlarni o'zlashtirgandan keyin 13-shakldagiga o'xshash «Men tuzgan girih» yoki 15-shakldagi singari «Men tuzgan turunj (rozet)» mavzularida milliy uslubdagi naqsh kompozitsiyalarini tuzing. Topshiriqni bajarishda mamlakatimiz tarixiy obidalaridagi naqsh kompozitsiyalaridan foydalanish tavsiya qilinadi (22–23-shakllarda tarixiy obidalardagi milliy naqshlardan parchalar tasvirlangan).



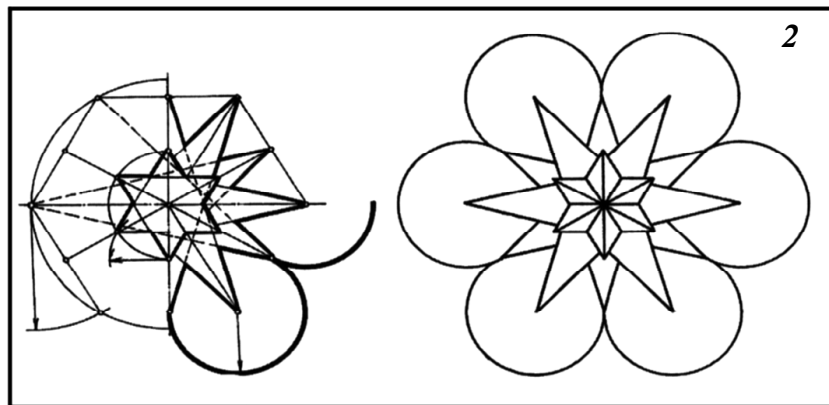
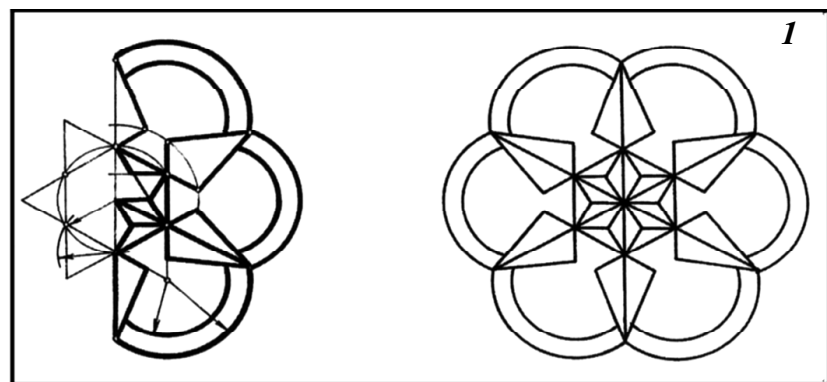
22-shakl. Tarixiy obidalardagi sirlangan sopolga ishlangan milliy girih kompozitsiyasi.



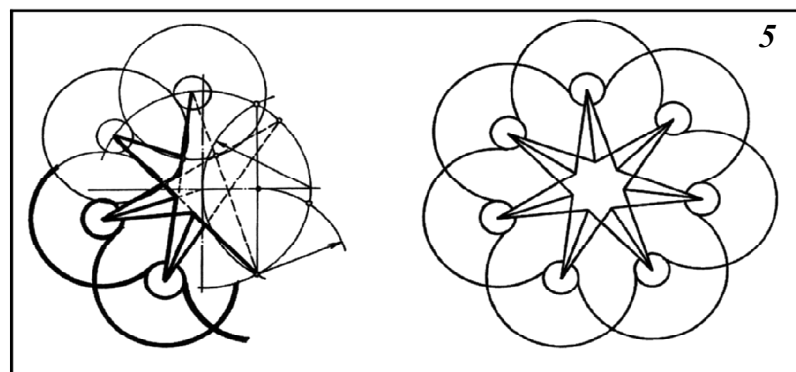
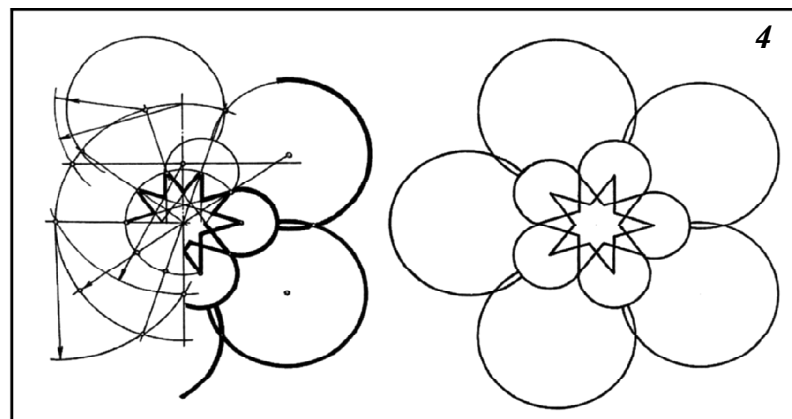
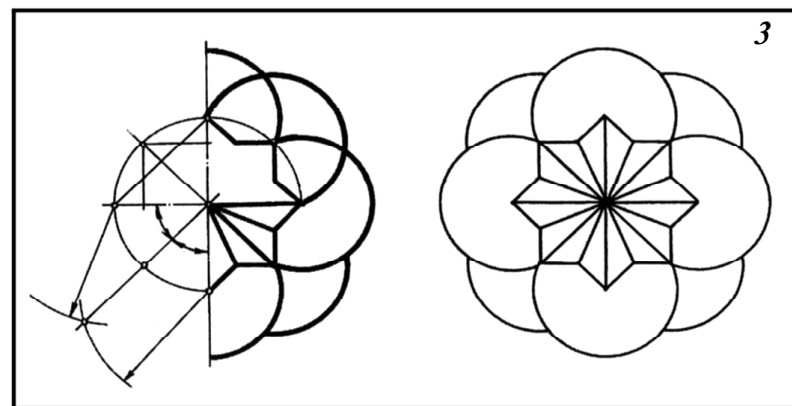
23-shakl. Tarixiy obidalardagi sirlangan sopolga ishlangan milliy girih va islami naqshlardan iborat kompozitsiya.

«TURUNJ» NAQSHLARINI BAJARISH BO'YICHA IJODIY TOPSHIRIQLAR

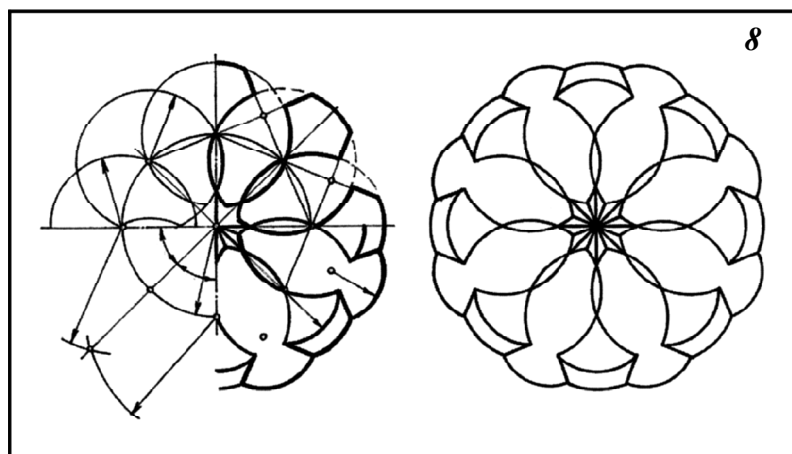
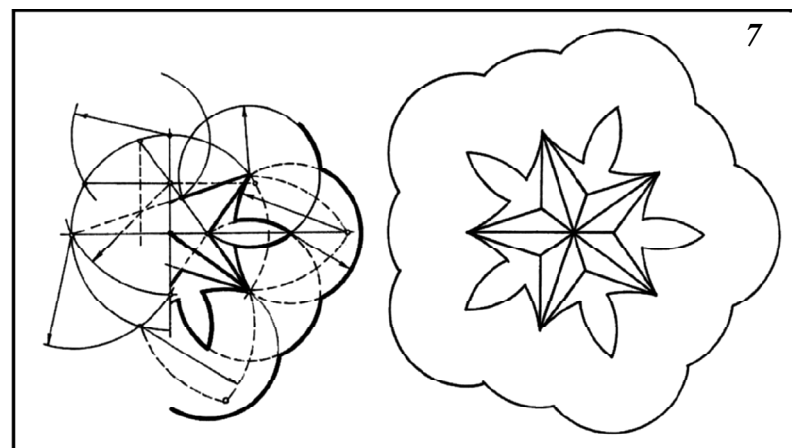
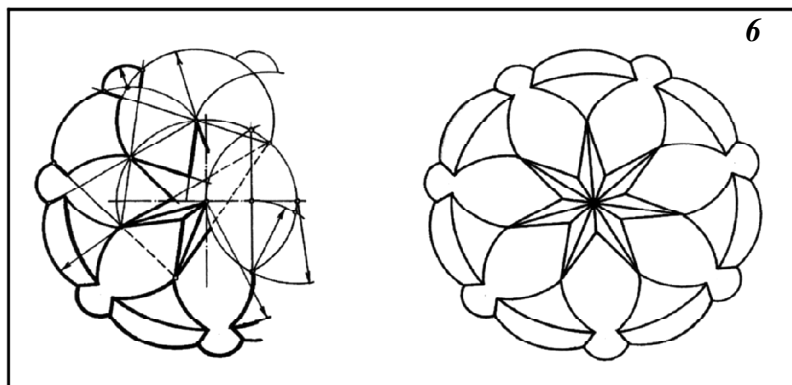
Quyidagi shakllarda sirkul va chizg'ichdan foydalanib, oddiy geometrik yasashlar yordamida «girihli turunj» kompozitsiyasiga namunalar keltirilgan (24-shakl). Turunjni yasash ketma-ketligi shaklning yuqorida joylashgan tasvirlarida ingichka chiziqlar orqali berilgan. Ushbu tasvirlarni zarur kattalikda bajarganingizdan keyin bo'sh joylariga islimi naqshlarini bajarib, rang berishingiz mumkin. Bajarylган tasvirdan har xil sovg'a buyumlarini tayyorlashda foydalanishingiz mumkin.



24-shakl.



24-shaklning davomi.



24-shaklning davomi.

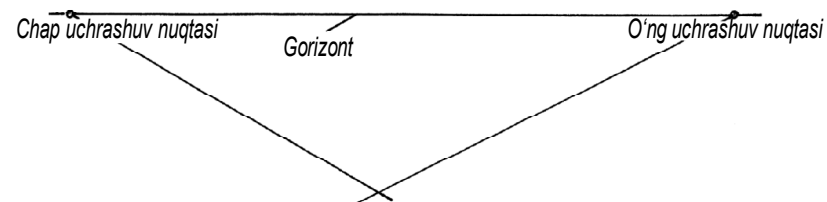
ARXITEKTURAVIY LOYIHALASH BO'YICHA TOPSHIRIQLAR

Arxitektorlar biror binoni loyihalaganlarida odatda shu bino qurib bitkazilganida qanday ko'rinishga ega bo'lishi va uning kishilarga hissiy ta'sirini aniqlash maqsadida perspektiv tasvirini bajaradilar. Perspektiva yaqqol tasvirning bir ko'rinishi bo'lib, markaziy proyeksiyalash qonunlariga asoslanib bajariladi. Tasviriy san'at darslarida o'rganganlaringizdan ham bilasizki, barcha realistik rasmlar ham perspektiva qonuniyatlariga asosan bajariladi. Shuning uchun ham perspektiva bajarish usullarini egallashning amaliy ahamiyati katta.

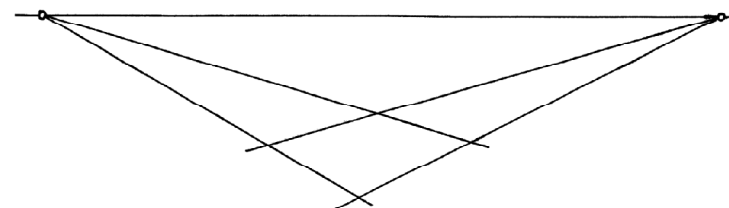
Quyida milliy me'moriy yodgorlikning perspektiv tasvirini soddalashtirib chizish bosqichlarini ko'rib chiqamiz (25-shakl).

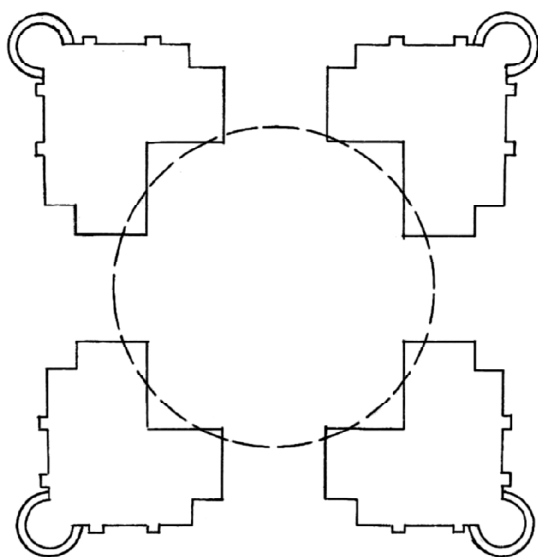
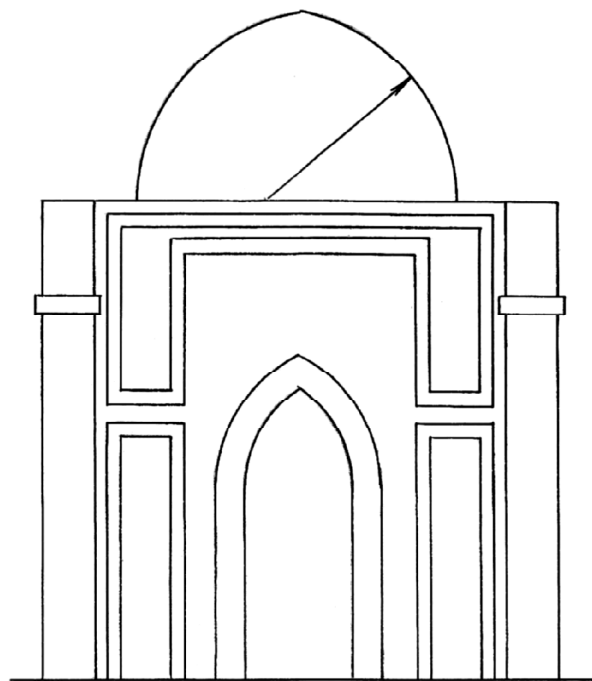
Tasvirlanayotgan obyekt turi va xususiyatlariga qarab perspektiv tasvirlar ham turli usullarda bajariladi. Ushbu topshiriqlarda binoning perspektiv tasvirini qo'lda, olchamlari nisbatini ko'z bilan chamalab bajarilishi sababli (rasm chizish jarayonidagi kabi) perspektiva bajarishning sodda usuli — «ikki nuqtali perspektiva» bajarish bosqichlarini ko'rib chiqamiz.

1. Gorizont chizig'ini o'tkazib, unda oralarini keng qilib chap va o'ng uchrashish nuqtalarining o'rnini ixtiyoriy belgilang. Uchrashish nuqtalaridan pastga qarab ikkita chiziq o'tkazing va ularni o'zaro kesishguncha davom ettiring.



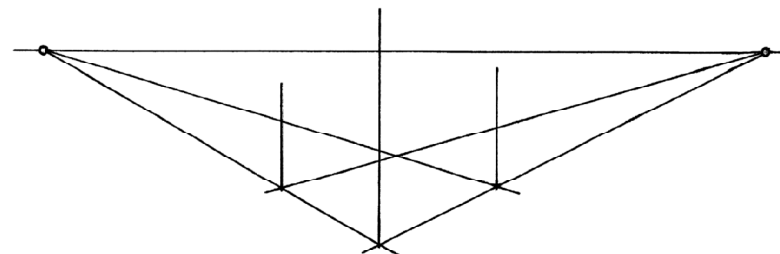
2. Uchrashish nuqtalarining har biridan ikkinchi chiziqni o'tkazib, bino asosining shaklini chizib oling.



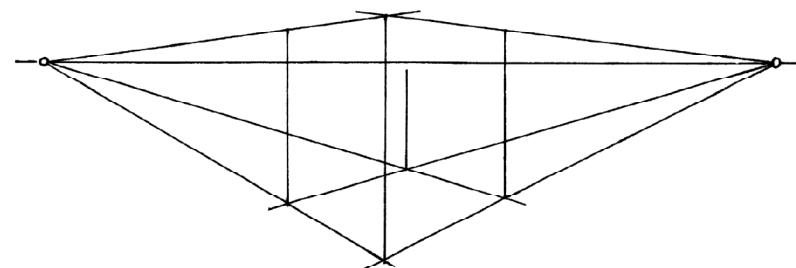


25-shakl. Perspektiv tasvir bajarish misoliga topshiriq varianti.

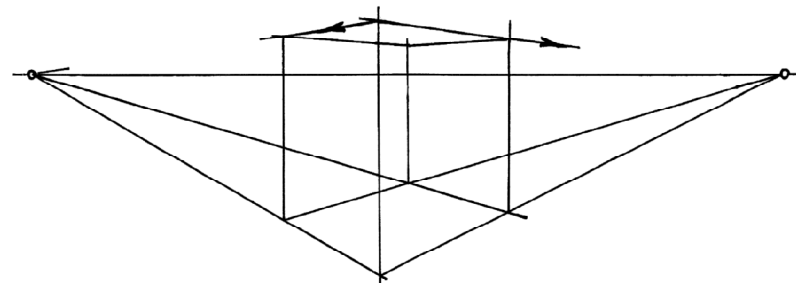
3. O'zingizga yaqin joylashgan uchta kesishish nuqtalaridan vertikal chiziqlar chiqaring. Bu chiziqlar bino qirralarining o'rini bildiradi.



4. O'zingizga yaqin joylashgan vertikal chiziqda bino devorining balandligini belgilab oling (binoning eni va uzunligiga nisbatini hisobga olgan holda). Shu nuqtadan ikkita uchrashuv nuqtalariga to'g'ri chiziqlar o'tkazing va bino tomining pastki qismi shaklini chizing. Chiziqlarni uchrashuv nuqtalarigacha to'liq o'tkazish shart emas, tom chegaralari tasvirlansa yetarli bo'ladi.



5. Tom qirradi chizig'ining o'ngdagi vertikal chiziq bilan kesishish nuqtasidan chap uchrashish nuqtasiga yo'nalgan chiziq o'tkazing. Tom qirradi chizig'ining chapdagi vertikal chiziq bilan kesishish nuqtasidan o'ng uchrashish nuqtasiga yo'nalgan chiziq o'tkazing.



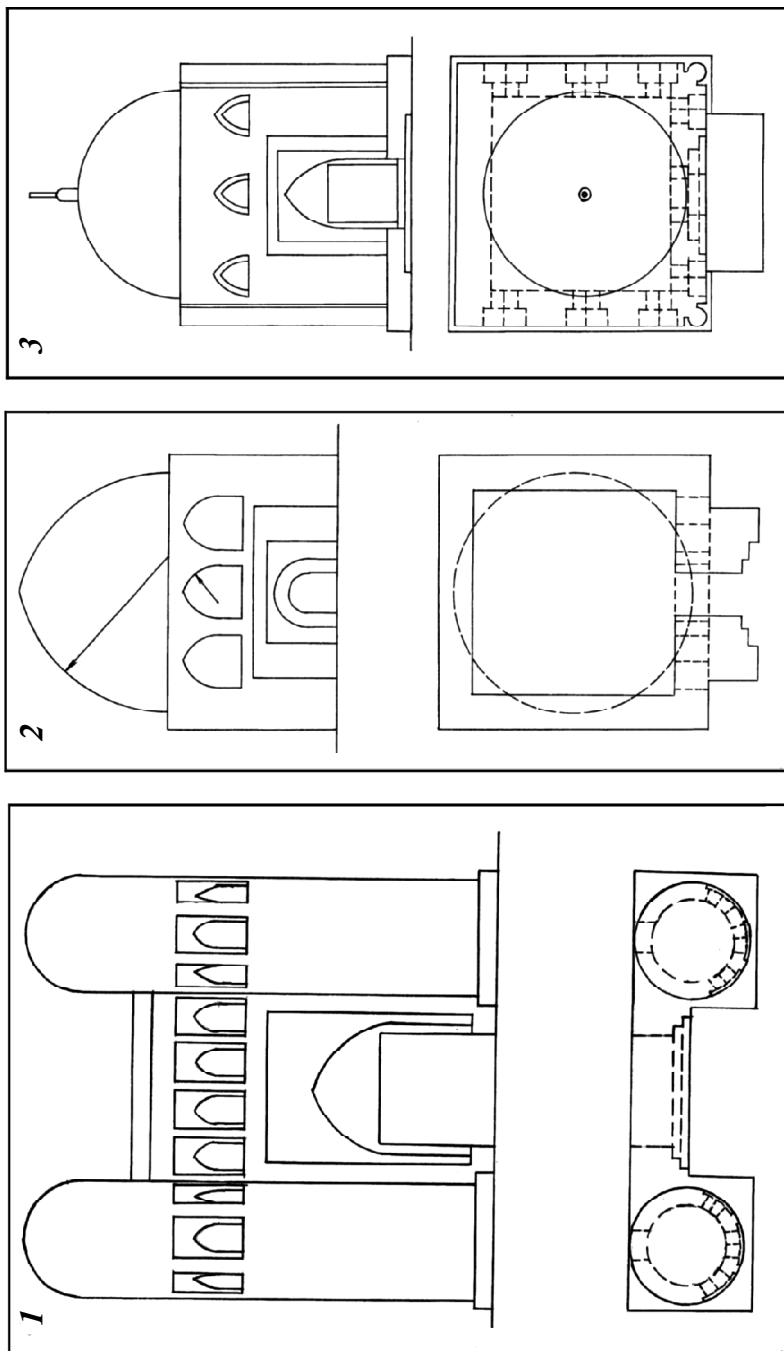
A diagram showing a beam of light entering a rectangular prism from the left. The beam is represented by a horizontal line with an arrowhead pointing right. It enters the left face of the prism and exits the right face. The beam is shown as a single line, indicating it is not dispersed into a spectrum.

26-shakl. «Ikki nuqtali perspektiva»da bino va soyalarini bajarish misoli.

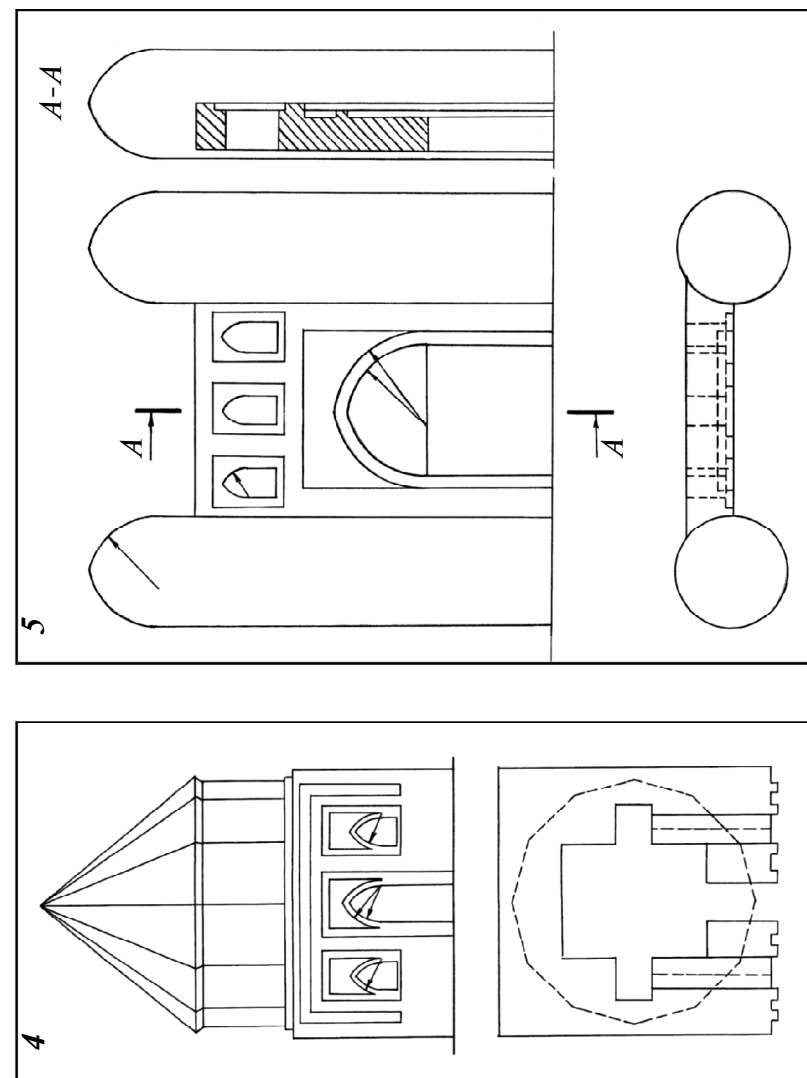
PERSPEKTIV TASVIRLARNI BAJARISH BO'YICHA TOPSHIRIQ VARIANTLARI

Quyidagi shakllarda mamlakatimizning qadimiy shaharlarida bizgacha yetib kelgan qadimiy me'moriy yodgorliklarning birmuncha soddalashtirib bajarilgan chizmalari tasvirlangan. Bino-larning perspektiv tasvirini bajarish bo'yicha quyida keltirilgan ma'lumotlardan foydalanib, me'moriy yodgorliklarning perspektiv tasvirini bajaring (27-shakl).

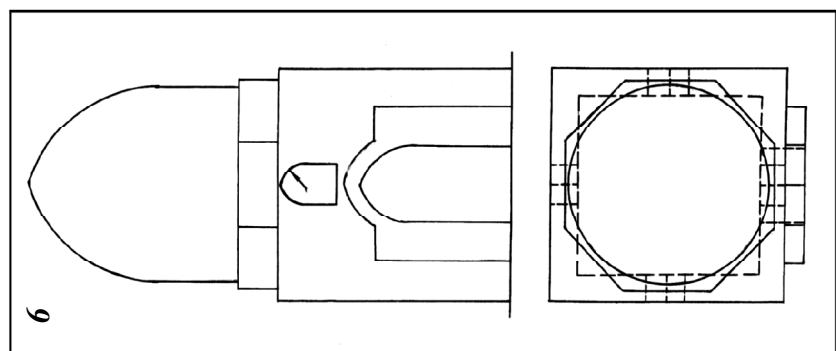
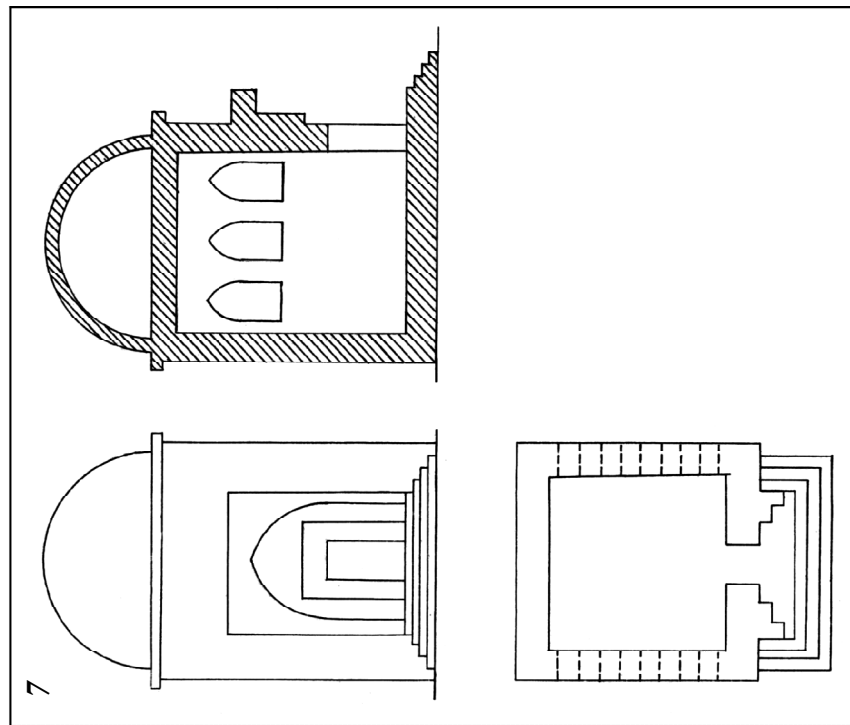
Topshiriq variantlarini tuzishda bino ichki tuzilishi va umumiy shakli haqida to'liqroq tasavvur hosil qilish maqsadida ayrim variantlarda binoning tomdan ko'rinishi tasvirlanib, shtrix chiziqlar yordamida qo'shimcha axborotlar berildi.



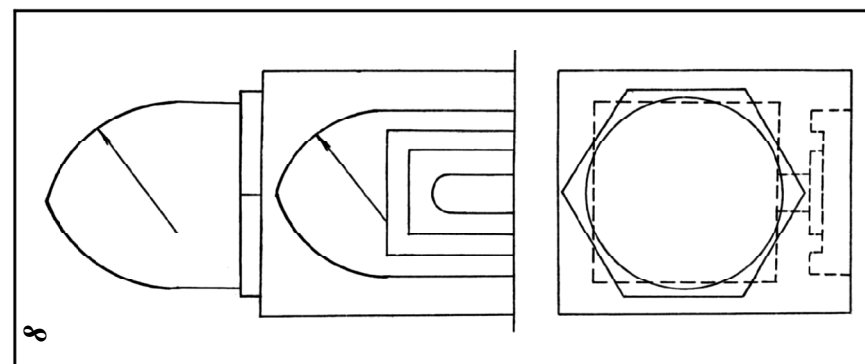
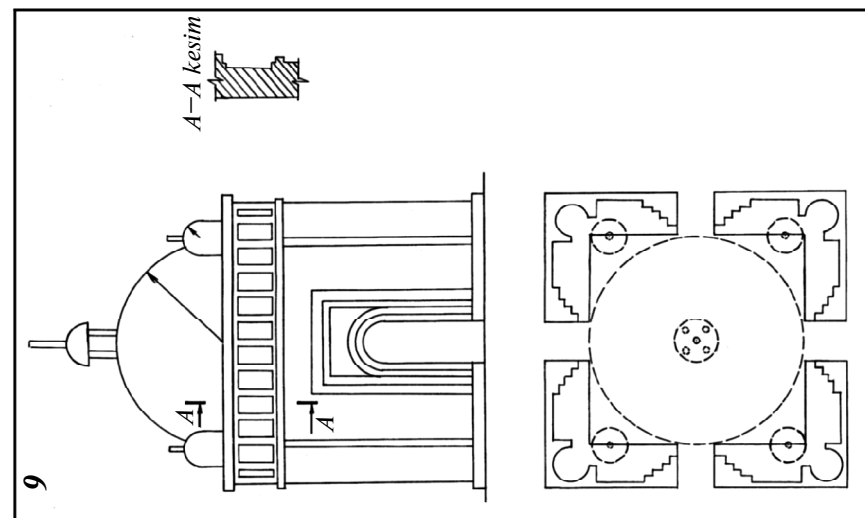
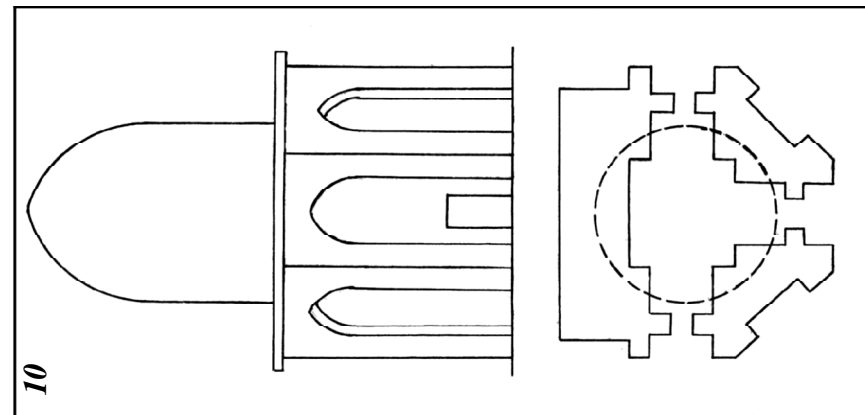
27-shakl.

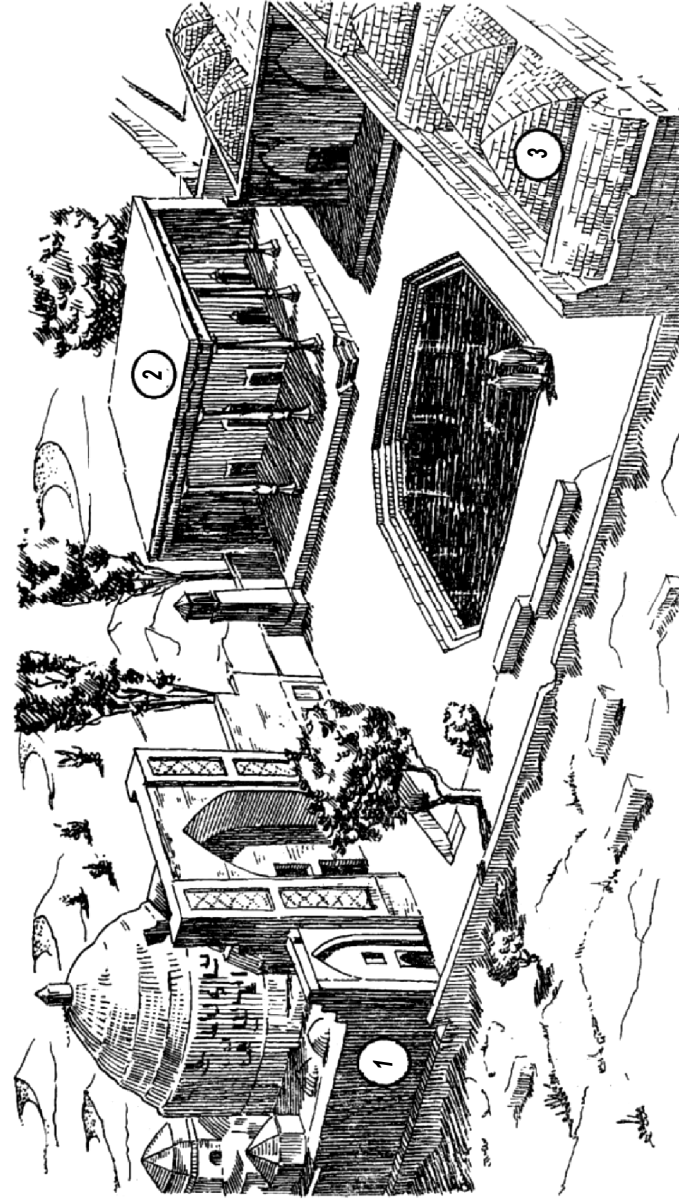
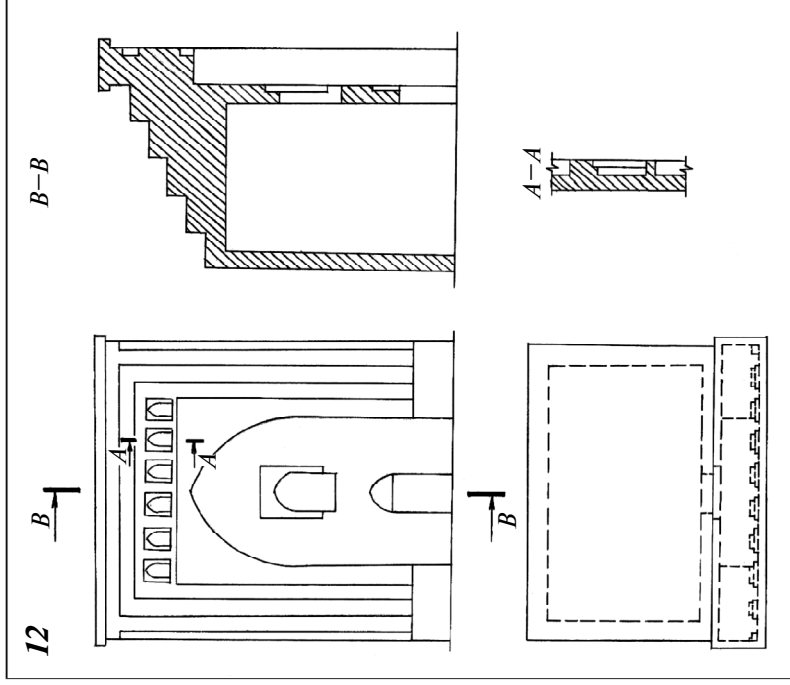
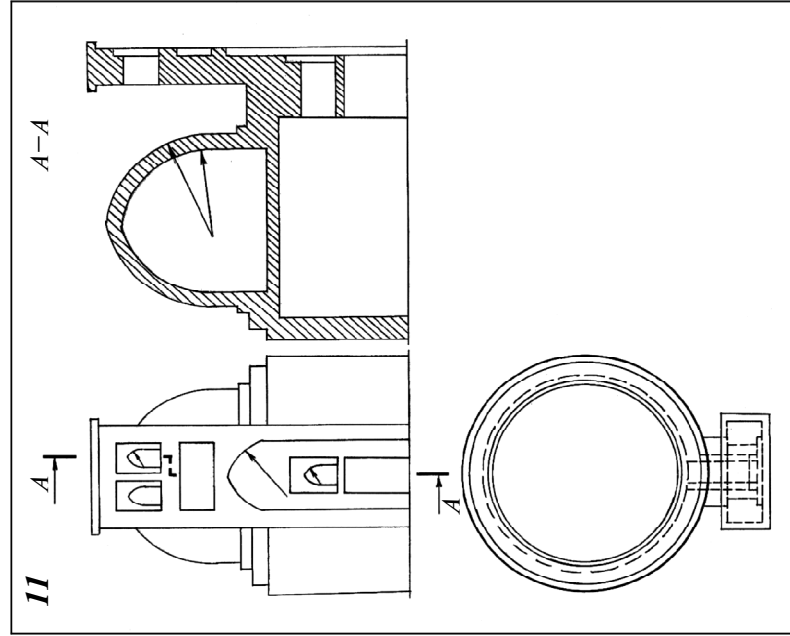


27-shaklning davomi.

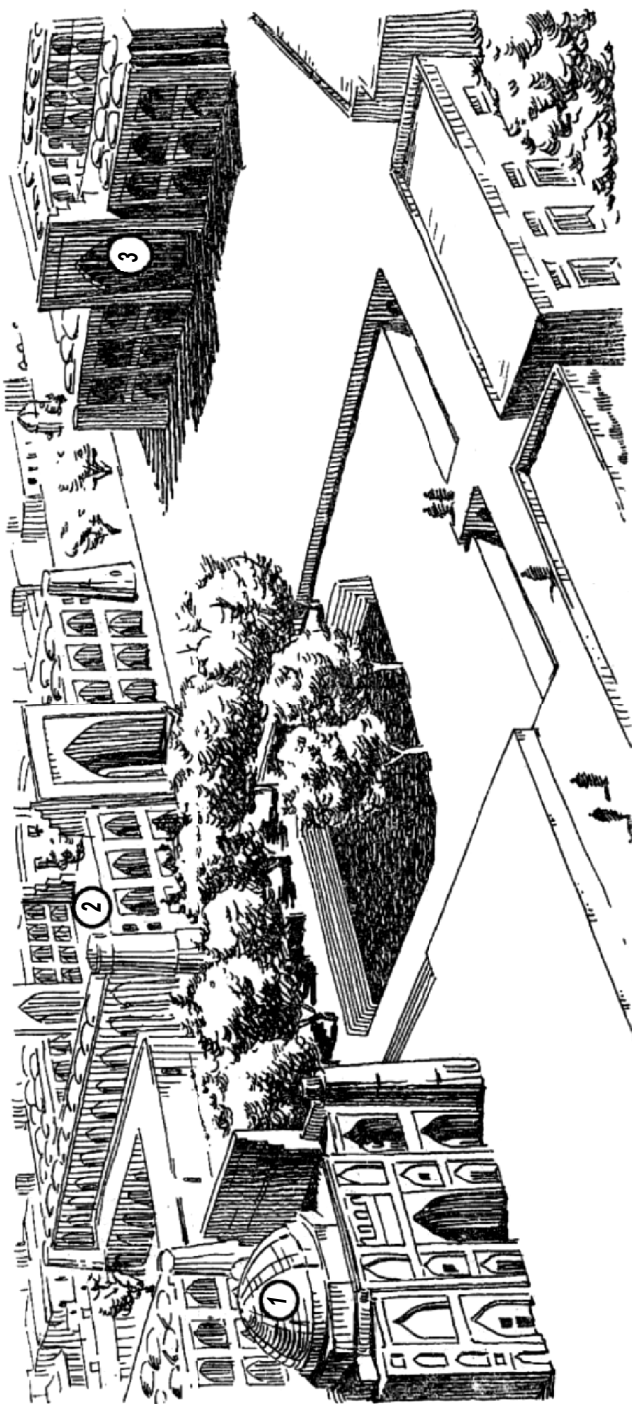


27-shaklning davomi.





28-shakl. Samarqanddagi Abdi Dorun me'moriy majmuasi (XV–XIX asrlar).
Abdi Dorun me'moriy majmuasi tarkibidagi inshootlar: 1 – Abdi Dorun maqbarasi;
2 – yozgi masjid, xonaqoh (yordamchi binolar); 3 – hovuz.



29-shakl. Buxorodagi Labi Hovuz ansambli (XVI–XVII asrlar).

Labi Hovuz atrofidagi asosiy tarixiy yodgorliklar: 1 – Nodira Devonbegi xonaqohi; 2 – Nodira Devonbegi madrasasi; 3 – Ko'kaldosh madrasasi.

BOSH PLAN CHIZMALARINI BAJARISH BO'YICHA TOPSHIRIQLAR

28–29-shakllarda Samarqand va Buxoroda XV–XVI asrlarda shakllangan me'moriy majmua va ansambl umumiy ko'rinishlarining yaqqol tasirlari berilgan. Tasvirlarni o'rganib chiqib quyidagi savollarga javob bering va ulardagi asosiy binolar tasvirlangan bosh plan chizmalari eskizini bajaring (o'lchamlar nisbatlarga rioya qilgan holda taxminiy olinadi).

1. Majmua va ansambl tarkibidagi hovuzlar nima maqsadda barpo etilgan?

2. Majmua va ansambl uyg'unligining tarkibiy qismi bo'lgan daraxtlar qanday vazifani bajarishga mo'ljallangan?

FOYDALANILGAN ADABIYOTLAR RO'YXATI

1. Булатов М.С. Геометрическая гармонизация в архитектуре Средней Азии IX–XV вв. — М.: «Наука», 1988.
2. Бухалов Б.И. и др. Рабочая тетрадь по черчению. — Ростов-на-Дону: 2000.
3. Василенко Е.А. и др. Карточки задания по черчению. — М.: «Просвещение», 1990.
4. Воротников И.А. Занимательное черчение. — М.: «Просвещение», 1990.
5. Гервер В.А. Творчество на уроках черчения. — М.: «Владос», 1998.
6. Кучукова Т.В. Черчение. Разрезы. Рабочая тетрадь №6. — М.: Издательский центр «Вентана-Граф», 2003.
7. Кучукова Т.В. Черчение. Чертежи типовых соединений деталей. Рабочая тетрадь №7. — М.: Издательский центр «Вентана-Граф», 2003.
8. Павлова А.А., Корзинова Е.И. Графика и черчение. Рабочая тетрадь №2. — М.: «Владос», 2000.
9. Павлова А.А., Рузиев Э.И. Задания по строительному черчению. Альбом №1. — М.: «Прометей», 1989.
10. Павлова А.А., Рузиев Э.И. Задания по строительному черчению. Альбом №2. — М.: «Прометей», 1989.
11. Преображенская Н.Г., Преображенская И.Ю. Черчение. Сечение. Рабочая тетрадь №5. — М.: Издательский центр «Вентана-Граф», 2003.
12. Преображенская Н.Г. Черчение. Архитектурно-строительное черчение. Рабочая тетрадь №9. — М.: Издательский центр «Вентана-Граф», 2003.
13. Пугаченкова Г.А., Ремпель Л.И. История искусств Узбекистана. — М.: «Искусство», 1965.

14. Ройтман И.А. Черчение. Задания на детализирование сборочных чертежей. — М.: «Издательство НЦ ЭНАС», 2001.

15. Рузиев Э.И. Графическая подготовка в системе непрерывного образования Республики Узбекистан. — Т.: Издательство «ФАН» АН РУз, 2003.

16. Ro'ziyev E.I., Ashirboyev A.O. Muhandislik grafikasini o'qitish metodikasi. — Т.: «Yangi asr avlodi», 2010.

17. Ro'ziyev E.I., Latipov R.A. Chizmachilikdan ijodiy topshiriqlar (umumiy o'rta ta'lim maktablari o'qituvchilari uchun qo'llanma). — Urganch, UrDU, 2012.

MUNDARIJA

Kirish	3
I QISM. CHIZMALARNI GRAFIK TAXT QILISH	5
1–2-topshiriqlarning qisqacha bayoni	6
1-topshiriq. Chiziqlar turlari	7
2-topshiriq. Chizma shriftlari va chizmalarga oʻlcham qoʻyish qoidalari	12
II QISM. GEOMETRIK CHIZMACHILIK	17
3–5-topshiriqlarning qisqacha bayoni	18
3-topshiriq. Geometrik yasashlar. Aylanani teng boʻlaklarga boʻlish ...	19
4-topshiriq. Tutashmalar	22
5-topshiriq. Qiyalik va konusliklar	32
III QISM. PROYEKSION CHIZMACHILIK	37
6–18-topshiriqlarning qisqacha bayoni	38
6-topshiriq. Detalning yaqqol tasviri boʻyicha koʻrinishlarini bajarish	41
7-topshiriq. Detalning yaqqol tasviri boʻyicha koʻrinishlarini bajarish	48
8-topshiriq. Berilgan ikkita proyeksiyaga asosan yetishmovchi proyeksiyani bajarish	55
9-topshiriq. Tekis shaklning izometrik proyeksiyasini bajarish	62
10-topshiriq. Geometrik shaklli detalning izometrik proyeksiyasini bajarish	67
11-topshiriq. Detal izometrik proyeksiyasini bajarish	74
12-topshiriq. Berilgan ikkita proyeksiyaga koʻra yetishmovchi proyeksiyani topish, qirqim va izometrik proyeksiyasini bajarish	81
13-topshiriq. Detalning yaqqol tasviri boʻyicha eskizini bajarish	88
14-topshiriq. Koʻrinishning yarmi bilan qirqimning yarmini birlashtirishdagi yetishmovchi chiziqlarini bajarish	93

15-topshiriq. Detalning ikkita koʻrinishiga asosan uning texnik chizmasini bajarish	96
16-topshiriq. Yaqqol tasvir boʻyicha tarkibida kesim tasvirlangan detal chizmasini bajarish	102
17-topshiriq. Oddiy qirqim chizmasini bajarish	104
18-topshiriq. Murakkab qirqim chizmasini bajarish	111
IV QISM. MASHINASOZLIK CHIZMACHILIGI	119
19–23-topshiriqlarning qisqacha bayoni	120
19-topshiriq. Rezbalarini chizmada tasvirlash	122
20-topshiriq. Rezbalarini chizmada tasvirlash	127
21-topshiriq. Rezba va rezba birikmalar chizmalari	131
22-topshiriq. Boltli va shpilkali birikmalar chizmalari	138
23-topshiriq. Yigʻish chizmalarini detallarga ajratish	142
V QISM. SXEMALAR	169
24-topshiriqlarning qisqacha bayoni	170
24-topshiriq. Elektr sxemalari chizmasini bajarish	171
VI QISM. ARXITEKTURA-QURILISH CHIZMACHILIGI	177
25–26-topshiriqlarning qisqacha bayoni	178
25-topshiriq. Bino plani chizmalarini oʻqish. Tom plani chizmasini bajarish	179
26-topshiriq. Bino plani, fasadi va qirqimi chizmasini bajarish	191
VII QISM. MODELLASHTIRISH, KONSTRUKSIYALASH VA IJODIY YOʻNALISHDAGI TOPSHIRIQLAR	203
VIII QISM. AMALIY GRAFIKA VA ARXITEKTURAVIY LOYIHALASH ASOSLARI	259
Foydalanilgan adabiyotlar roʻyxati	300

P99 Ro'ziyev E.I.

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Muharrir *Sh.Rahimqoriyev*
Badiiy muharrir *M.Burxonov*
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