O‘ZBEKISTON RESPUBLIKASI

OLIY VA O‘RTA MAXSUS TA’LIM VAZIRLIGI

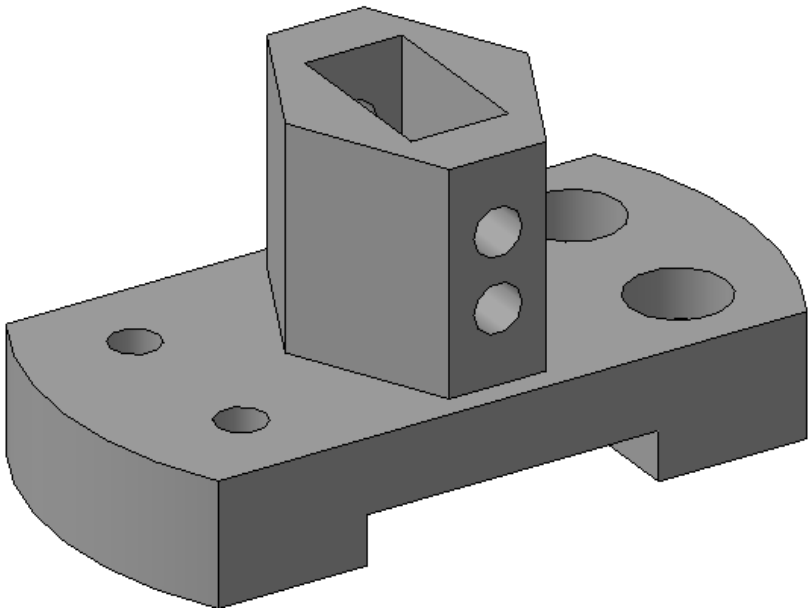
URGANCH DAVLAT UNIVERSITETI

«Fakultetlararo umumtexnika fanlari» kafedrasi

Чизма геометрия ва компютер графикаси, Муҳандислик чизмасҳилиги ва эскизи фанларининг муҳандислик графика бўлими бўйисҳа

USLUBIY QO’LLANMA

Amaliy mashg’ulotlar uchun proyeksion chizmachilikka oid
shaxsiy vazifa variantlari
Barcha ta’lim yo’nalishlari uchun



Urganch–2017

Ushbu uslubiy qo’llanma muhandislik grafikasi kursining boshlang’ich qismi bo’lmish proeksion chizmachilikka oid sodda detal(geometrik jismlardan hosil bo’lgan)larning yaqqol tasvirlari berilgan. Bu tasvirlar murakkabligiga qarab 3 toifaga bo’lingan. 1 va 2 - toifadagi yaqqol tasvirlar juda sodda bo’lib, dimetriya usulida yasalgan. 3- toifadagi yaqqol tasvir esa izometriya usulida yasalgan.

Berilgan yaqqol tasvirlarga qarab, ularning uchta ko’rinishini yasash, zarur o’lchamlarini qo’yib chiqish, qirqim va kesimlarini berish, hamda detalning yaqqol tasvirini qurish talab qililadi. Har bir variantdagi sakllar juda sodda bo’lib, talabalar dars jarayonida, ularning proeksiyalarini mustaqil ravishda bajarib, o’z bilimlarini mustahkamlaydilar. Izometriya uslubida yasalgan yaqqol tasvirning uchta ko’rinishini aniq o’lcham va masshtab asosida yasash hamda uning yaqqol tasvirini izometriya usulida qurish talab qilinadi. Detallarning yaqqol tasvirlariga qirqim va kesim berilmaydi. Topshiriqni A3 format chizma qog’ozda bajariladi.

Bajarib taxt qilingan grafik ish baholash uchun taqdim etiladi.

Uslubiy qo`llanma “Fakultetlararo umutexnika fanlari” kafedrasining 2017 yil _____ (bayonnoma №__) majlisida muhokama qilingan va tasdiqlangan.

Tuzuvchi Sapaev U.A., Nurmetov M.R.“Fakultetlararo umutexnika fanlari” kafedrasi o’qituvchisi

Taqrizchi: Xorazm Viloyati XTXQTMOI o’qituvchisi P. Narziyev

UrDU kata o’qituvchisi B. Allaberganov

Uslubiy qo’llanma Urganch Davlat universiteti ilmiy-uslubiy kengashi tomonidan nashrga tavsiya qilindi.

“_____” yil “_____” № “_____” sonli bayonnomasi.

Kirish

Respublika hukumati va Prezidenti olib borayotgan ijtimoiy-iqtisodiy siyosatda mamlakat hayotining barcha jabhalarini rivojlantirishga, ayniqsa kelajak avlodni milliy tiklanish mafkurasi ruhida tarbiyalashga juda katta e’tibor berilmoqda. Hozirgi kunda ta’lim olayotgan yoshlar Respublikamizning kelajagidir.

Hozirgi paytda ta’lim tizimini takomillashtirish orqali har tomonlama yetuk, barkamol, mustaqil fikrlashga qodir, irodali, fidoiy va tashabbuskor kadrlarni tayyorlashga katta e’tibor berilmoqda. Bu borada ta’lim turlari to’g’risidagi mutlaqo yangi qoidalar hayotga joriy etildi. Kadrlar tayyorlash va uzluksiz ta’lim tizimini isloh qilishning huquqiy – me’yoriy asosi yaratildi.

Chizma geometriya va kompyuter grafikasi, muhandislik chizmachiligi va eskizi fanlarini o’qitishda hozirgi zamon ta’lim tehnologiyalaridan samarali foydalanish ko’zlangan maqsadimizga erishishning eng maqbul yo’llaridan biri hisoblanadi.

Bu borada Chizma geometriya va kompyuter grafikasi, muhandislik chizmachiligi va eskizi fanlarining muhandislik grafika bo’limi bo’yicha tayyorlangan ushbu uslubiy qo’llanma talabalarda proyeksion chizmachilikka oid masalalarni mustaqil echishga katta yordam beradi. Ushbu uslubiy qo’llanmada CAD tizimidagi AutoCAD dasturi asosida tayyorlangan namunalar va talabalar uchun variantlar keltirilgan. Hamda talabalarni fanga yanada qiziqishlarini va ilmiy dunyo qarashlarini kengaytirish maqsatida mavzuga oid “Keys stadi” interfaol metodlar ham berilgan.

1. GRAFIK ISHNING MAQSADI

Proeksion chizmachilikka oid ushbu grafik ishning maqsadi mashinasozlik detallarining chizmalarini bajarish. Detallarni chizmalarda ko'rinishlarini aniqlash. O'lchamlar qo'yish bo'yicha o'rgangan qoidalarni amalda qo'llay olish. Topshiriqda yaqqol tasviri berilgan buyum(detal)ni fazoviy tasavvur qilish orqali asosiy ko'rinishlarini aniqlash ko'nikmalarini hosil qilish, hamda davlat standartlarda bayon etilgan qoyidalarga rioya qilgan holda, yshbu detalning asosiy uchta ko'rinishini proeksion bog'liqlikda chizmasini bajarish, hamda ularga o'lchamlar qoyishdan shuningdek ularga qirqim va kesimlarni bajarishdan iboratdir.

2. GRAFIK ISHNING MAZMUNI

Taqdim etilayotgan grafik ish A3 (420X297 mm) format chizma qog'ozida qalamda bajariladi.

3. GRAFIK ISHNI BAJARISH TARTIBI.

1. Chizma qog'oziga ramka chiziladi. Ramka qog'oz chap tarafidan 20 mm, qolgan taraflaridan 5 mm dan o'lchab, asosiy tutash chiziq bilan chiziladi.

2.Ramkaning pastki o'ng burchagiga asosiy yozuvni burchak shtampi chiziladi. Burchak shtampini o'lchami 185X55 mm.

3. Asosiy ko'rinishlar uchun joy ajratiladi. Ko'rinish uchun joy ajratganda, uni o'lchamlarini va ko'rinishlar orasidagi masofani tanlashda, unga qo'uiladigan chiqarish va o'lcham chiziqlarini etiborda tutish zarur.

4. Ingichka tutash chiziqda va proeksion bog'liqlikda old, ust va chap ko'rinishlar bajariladi. Ko'rinishdagi tasvirda ko'rinmay qolgan chiziqlar shtrih chiziqda chizib to'liq tayyorlanadi. Simmetriya va o'q ciziqlari ingichka shtrih – punktir chiziqda chiziladi.

5. Ko'rinishlarga ingichka tutash chiziqda chiqarish va o'lcham chiziqlari ciziladi. O'lcham chiziqlarini uchlariga strelkalar chiziladi.

6.Chiziq turlari va chiziqning qalinligiga rioya gilgan holda chizma tahtlanadi.

7. Agar o’lcham chizig’i asosiy yozuyga nisbatan tik vazivatda bo’lsa, o’lcham kattaligining son qiymati o’lcham chizig’ining chap tomoniga yoziladi. Agar o’lcham chizig’i asosiy yozuyga parallel bo’lsa, o’lcham kattaligining son qiymati o’lcham chizig’ining ustiga yoziladi.

8. Asjsiy yozuv toldiriladi. Asosiy yozuvni aniq va hatolarsiz to’ldirish talab etiladi.

Grafik ishni shartli belgilashni namunasi: MG.GI.02.05.00

MG - muhandislik grafikasi;

GI - grafik ish;

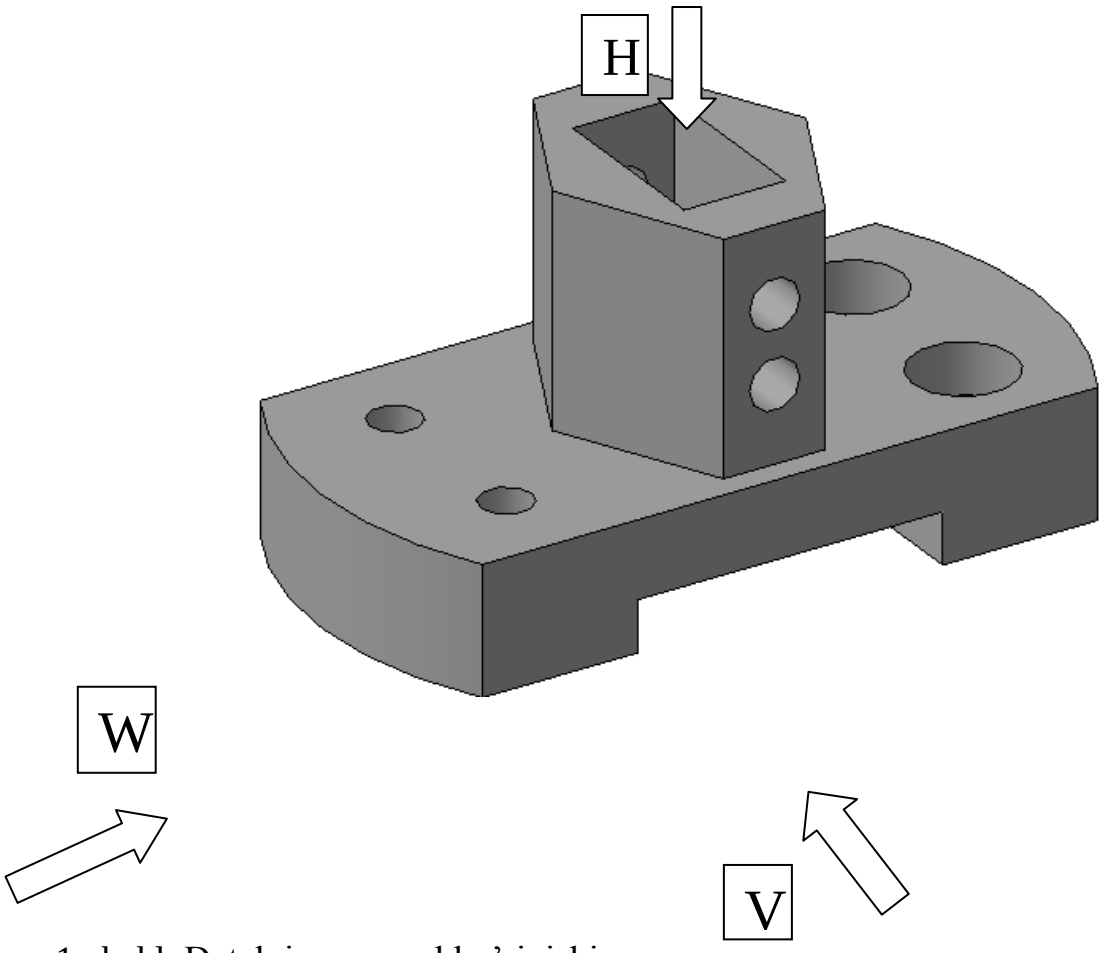
02 - grafik ishning tartib raqami;

05 - grafik ishning varianti;

00 - detalning yig’ma birlikdagi pozitsiya raqami.

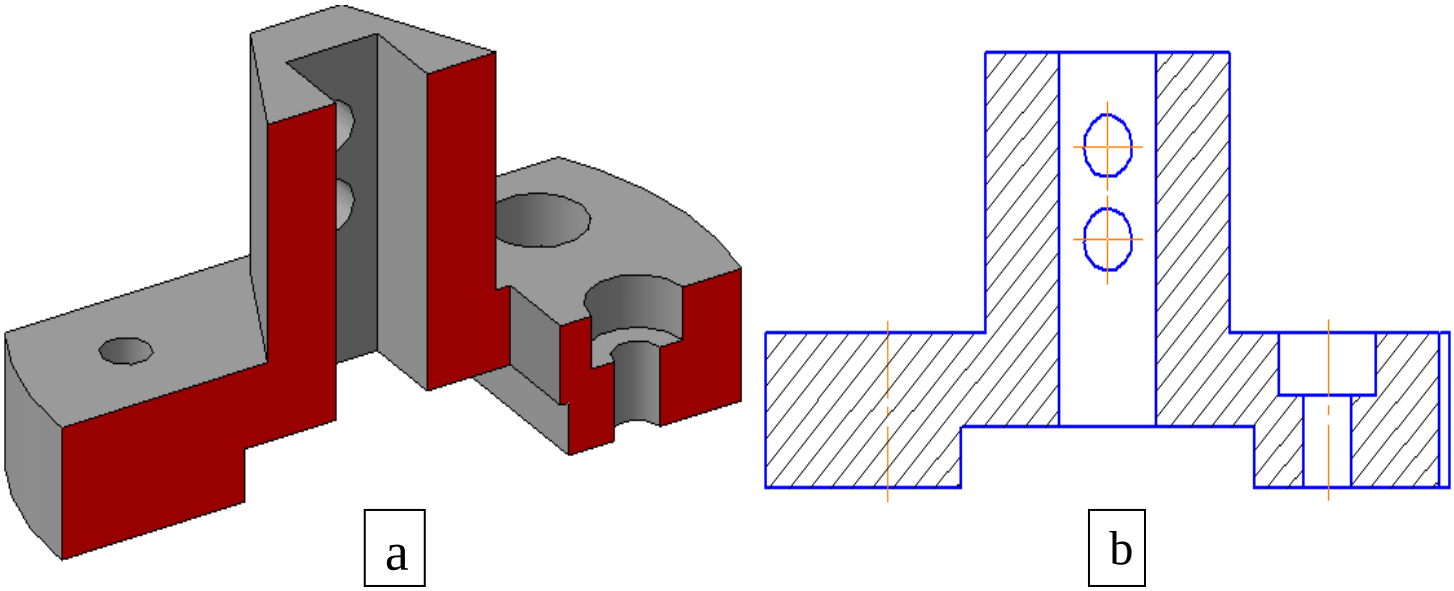
Topshiriqni bajarish uchun namunalar.

Berilgan detalni tasvirlashda oldin uni nichta ko’rinishda to’liq tasvirlash mumkunligi aniqlanadi. Ko’rib chiqilayotgan detalimizni(1-shakl) uchta ko’rinishda tasvirlashimiz mumkun.

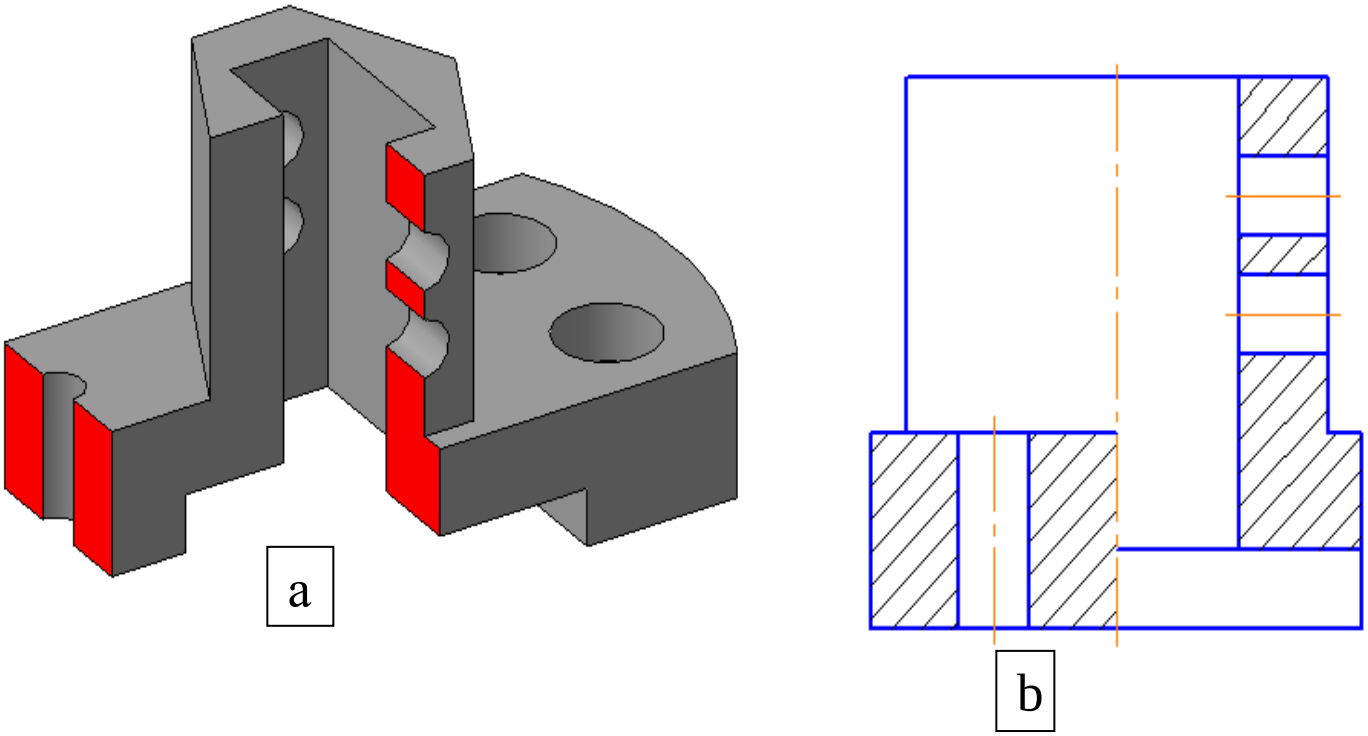


1-shakl. Detalning yoqqol ko’rinishi.

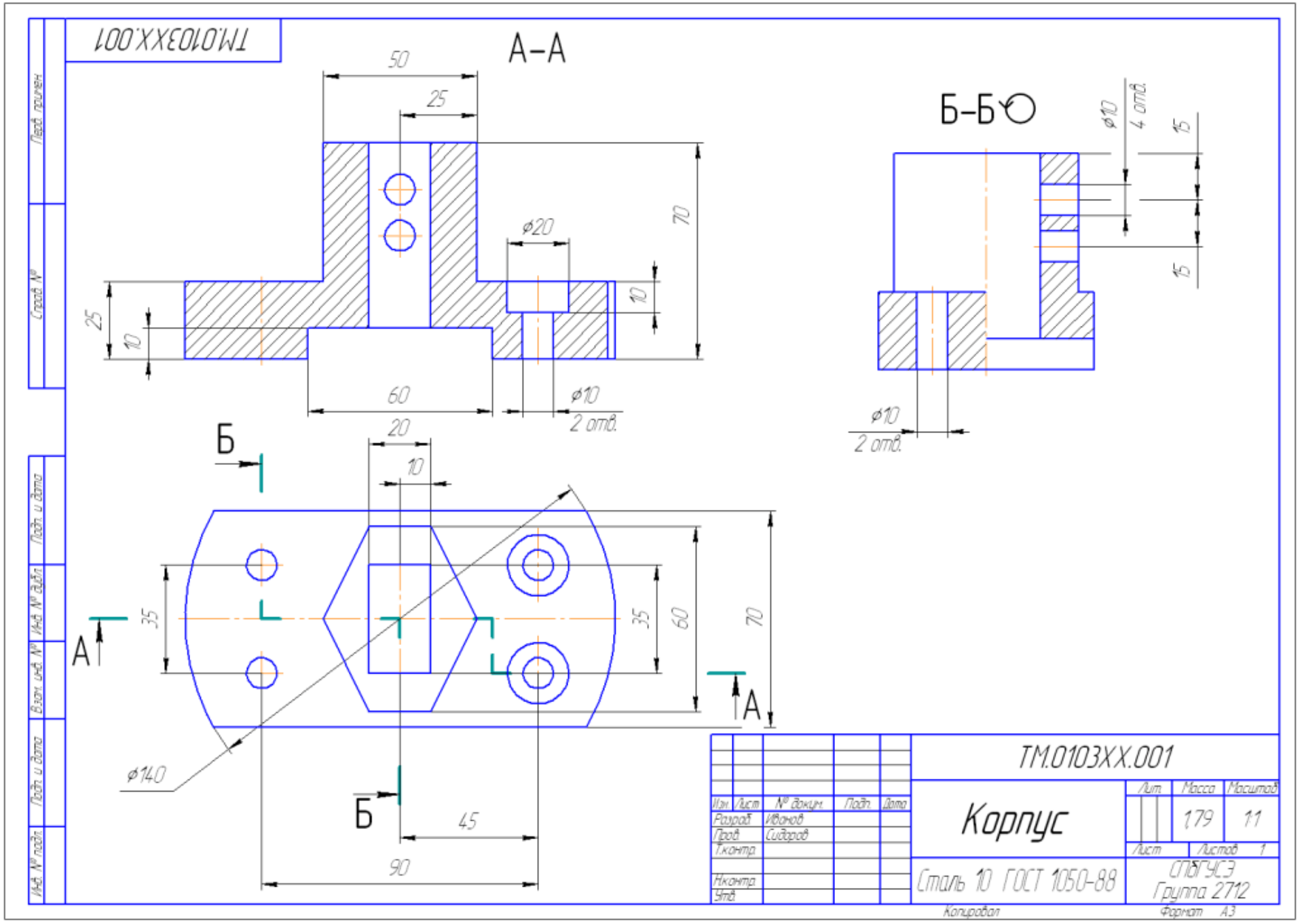
Detalning frontal va profel ko’rinishlarini tasvirlash hamda ularga quyidagi tartibda qirqimlar beriladi. Berilgan detalning gorizantal ko’rinishiga qirqim berilmaydi chunki uni barcha ichki tuzulishi V va W ko’rinishlarda to’liq ko’rinib qoladi.



2-shakl a, b. Detalning frontal (V) ko’rinishi va unga qirqimning bajarilishi.



3-shakl a), b). Detalning profel(W) ko’rinishi va unga qirqimning bajarilishi.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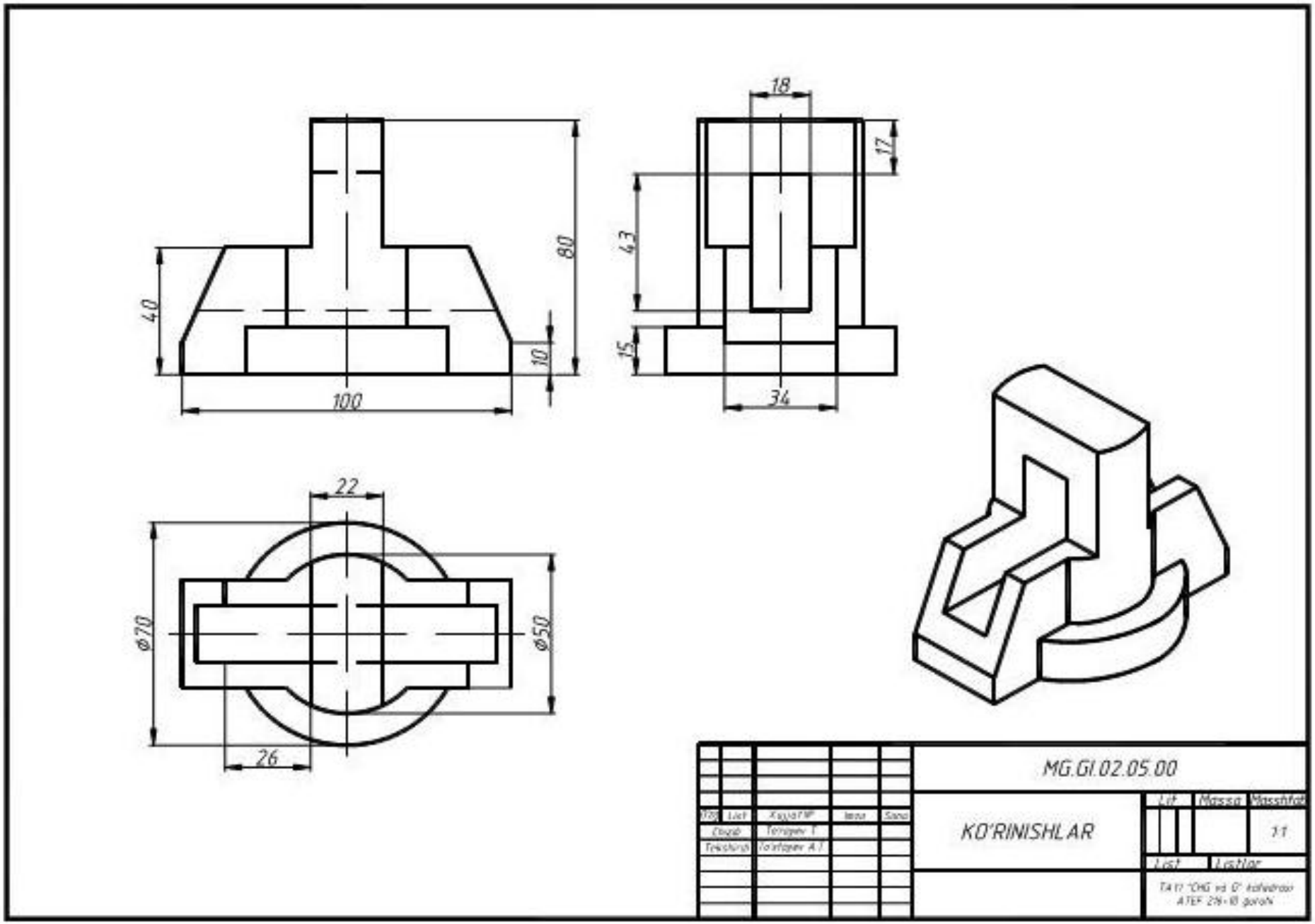
Формат А3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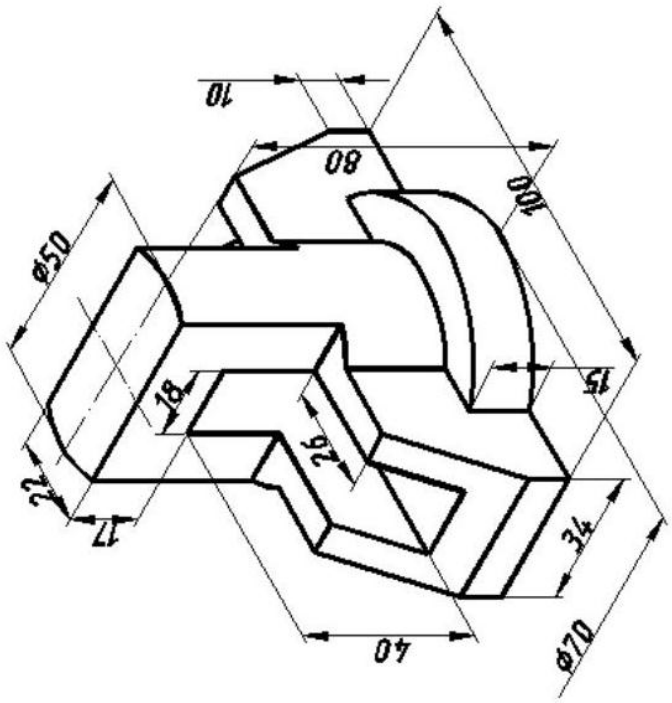
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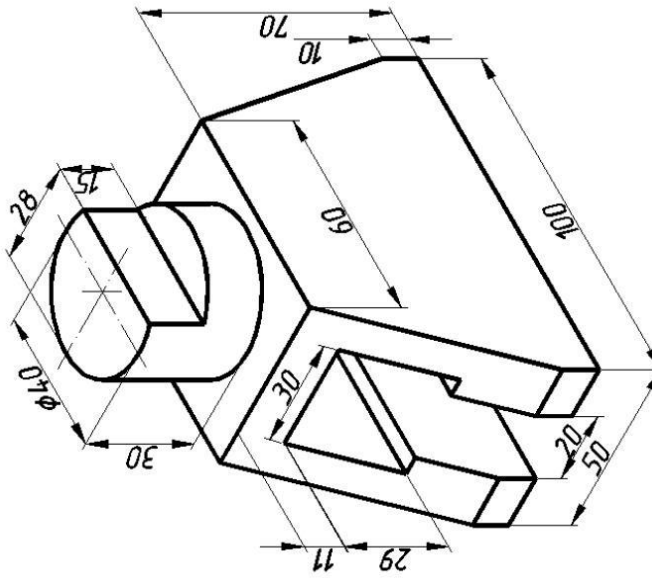
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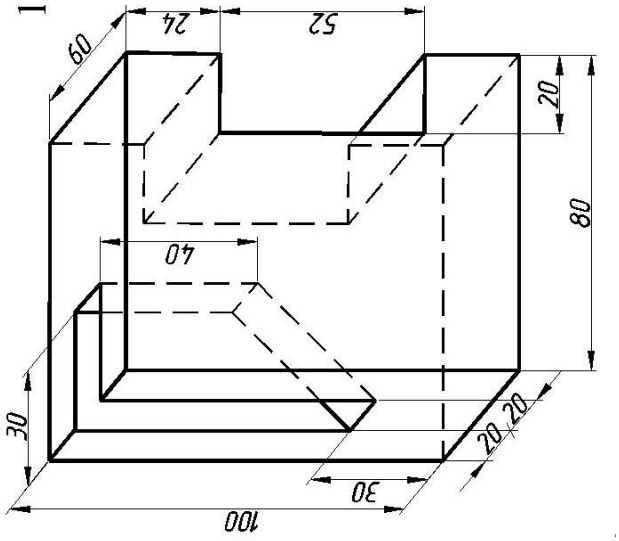
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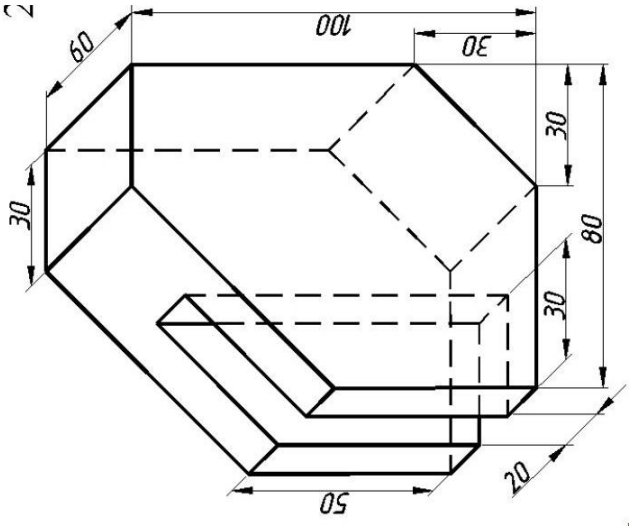
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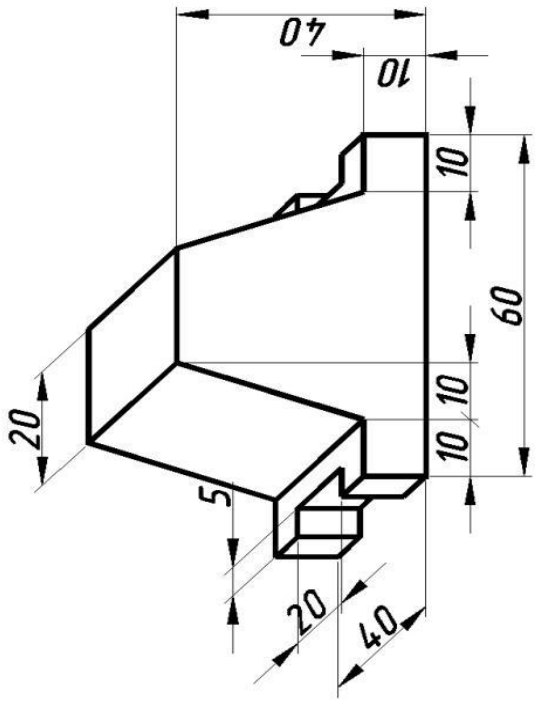
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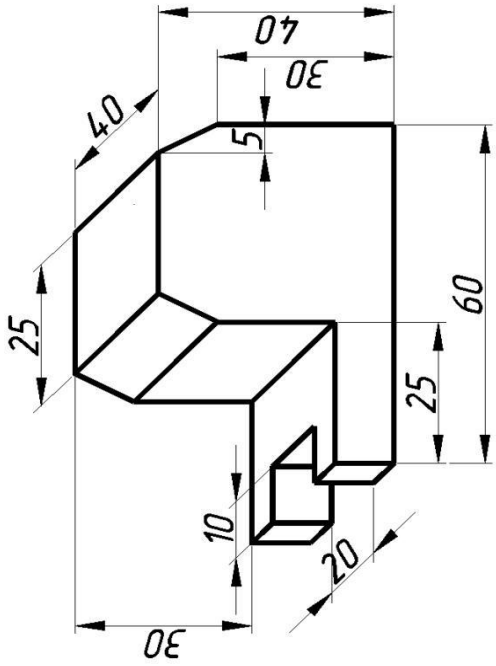
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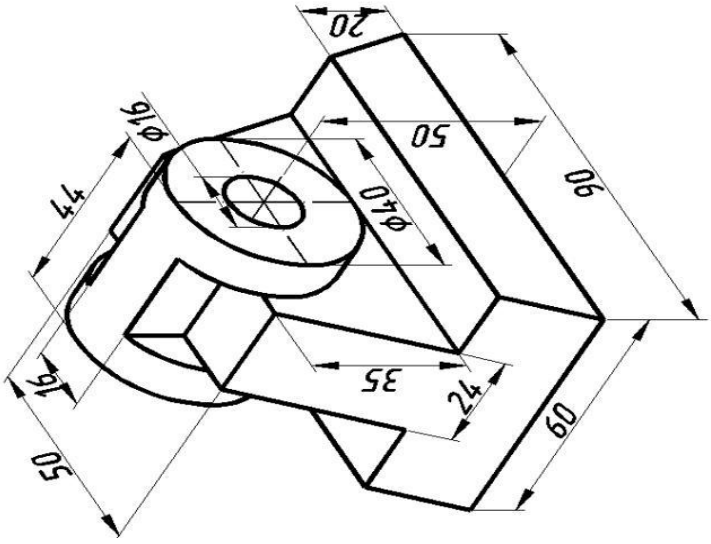
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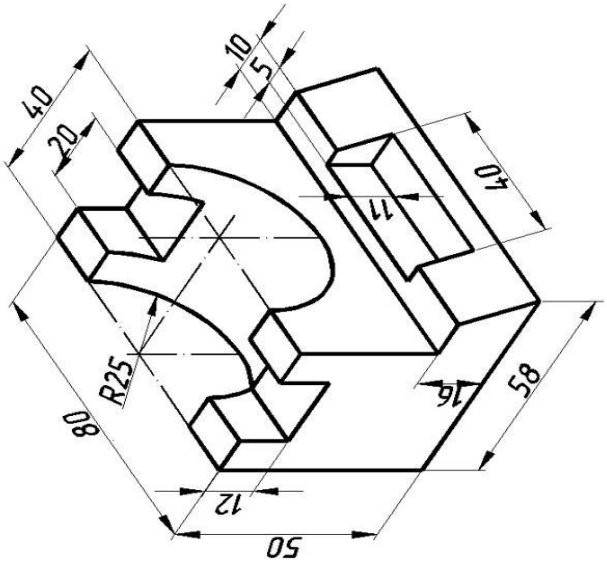
7-v.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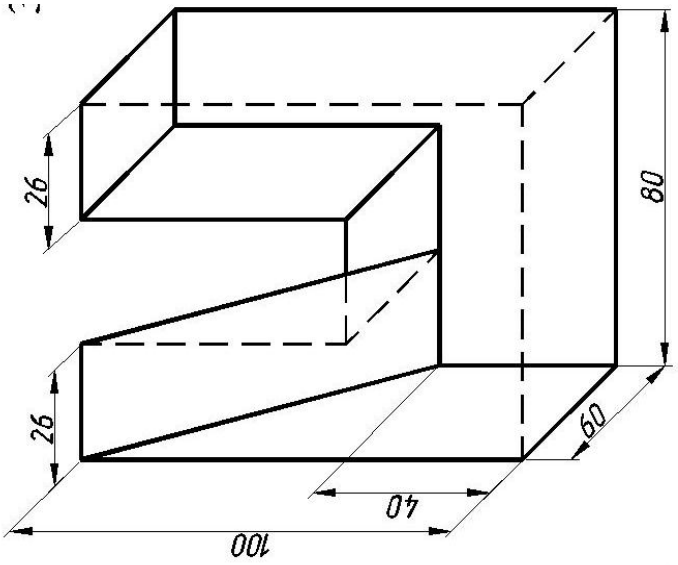
8-v.



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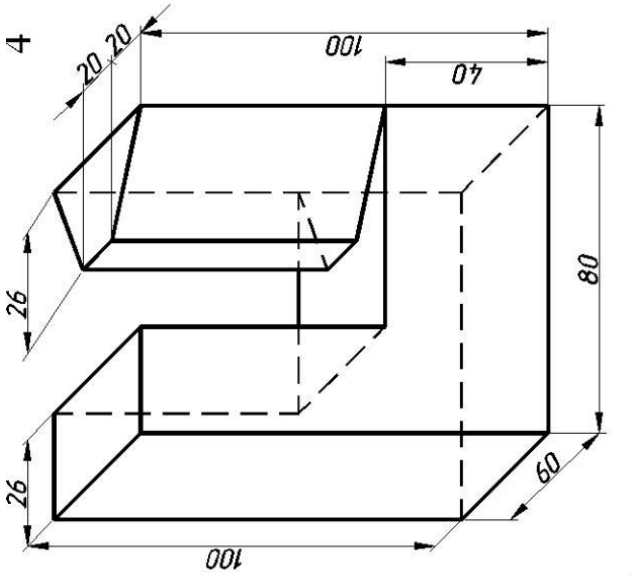

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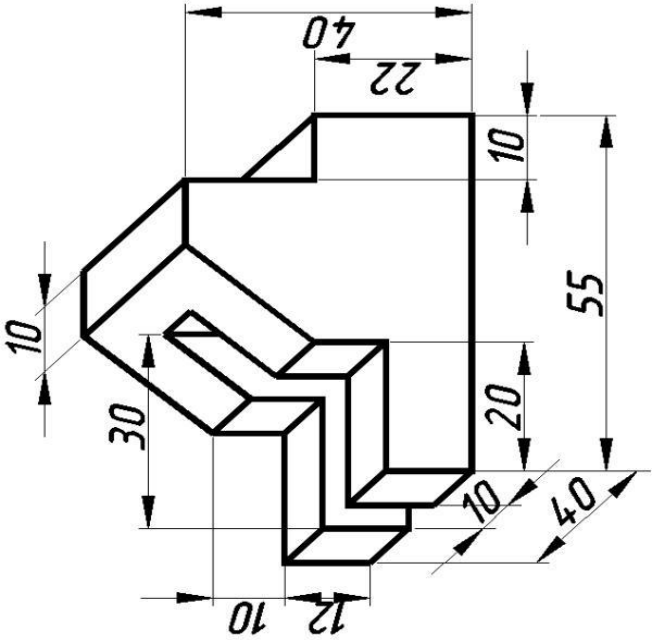

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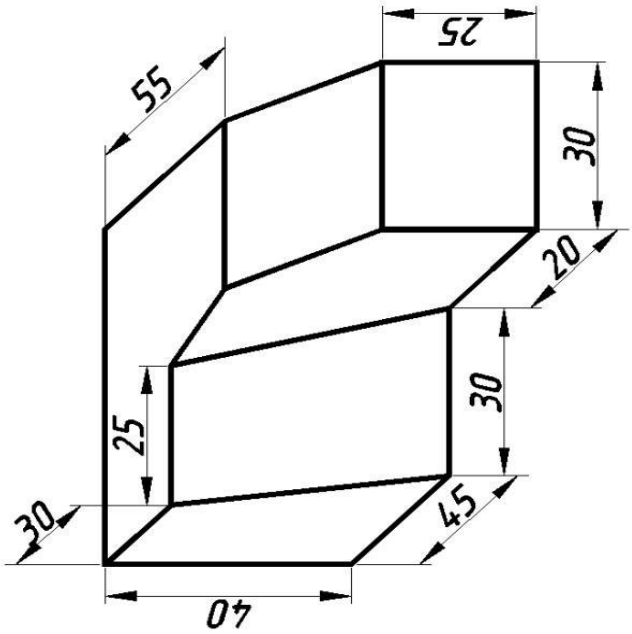

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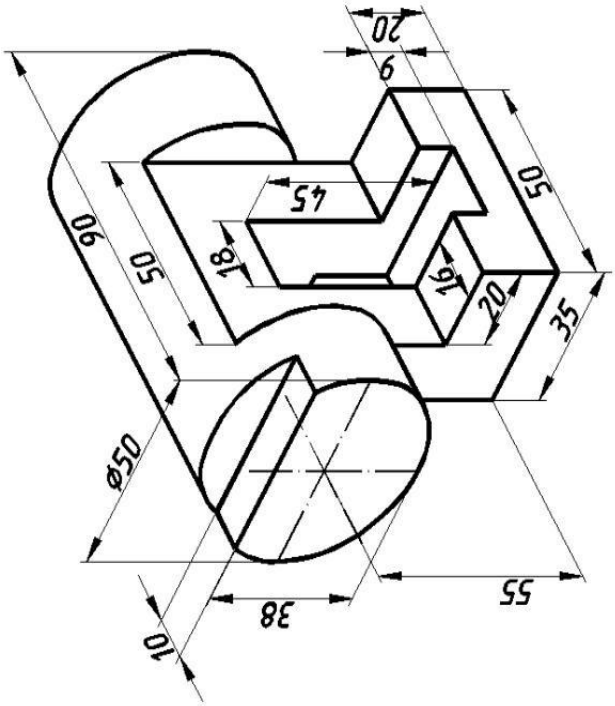

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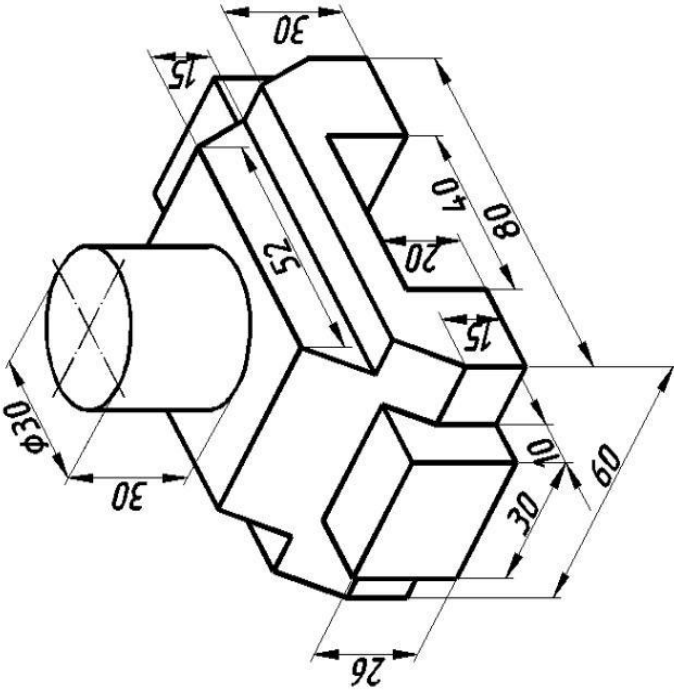

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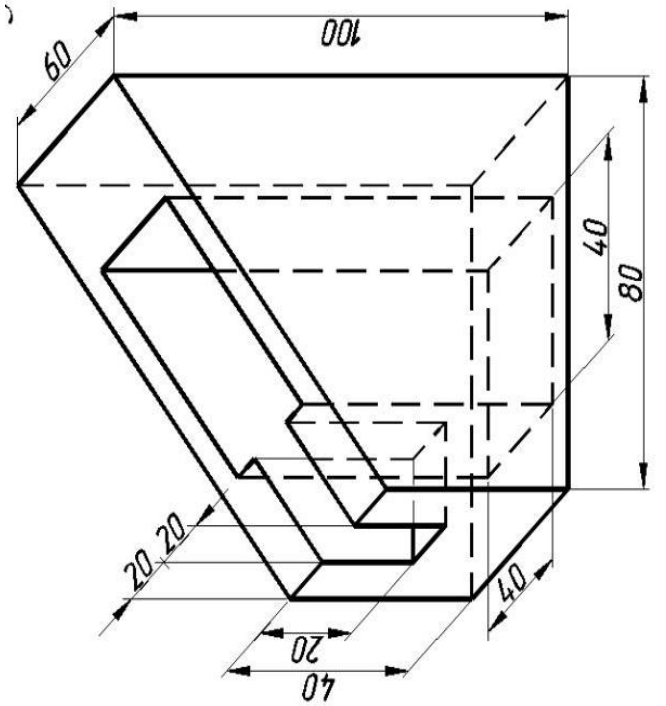

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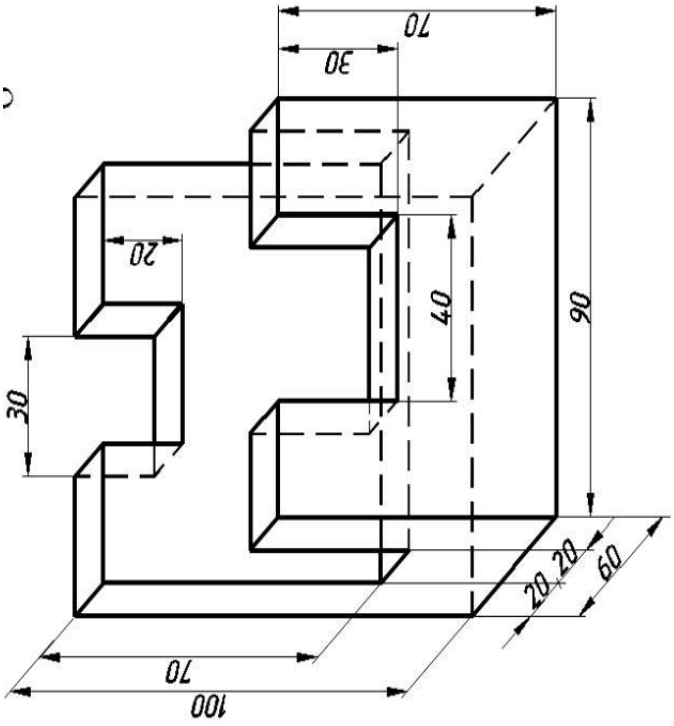

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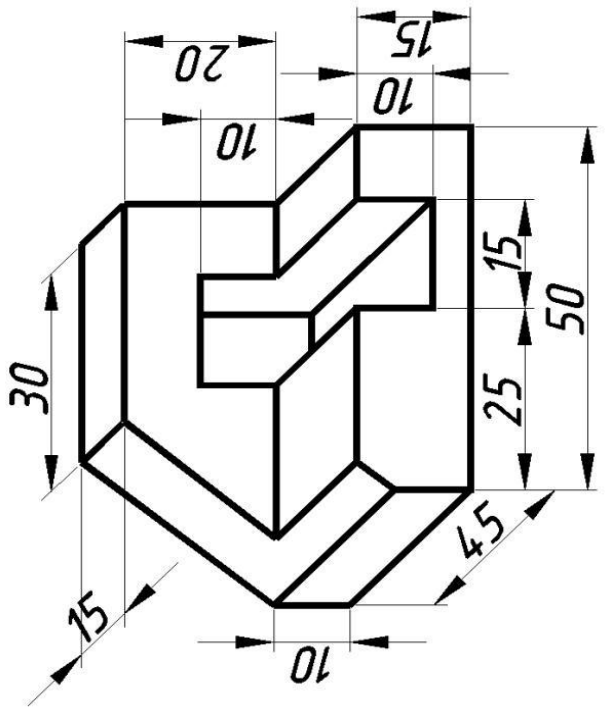

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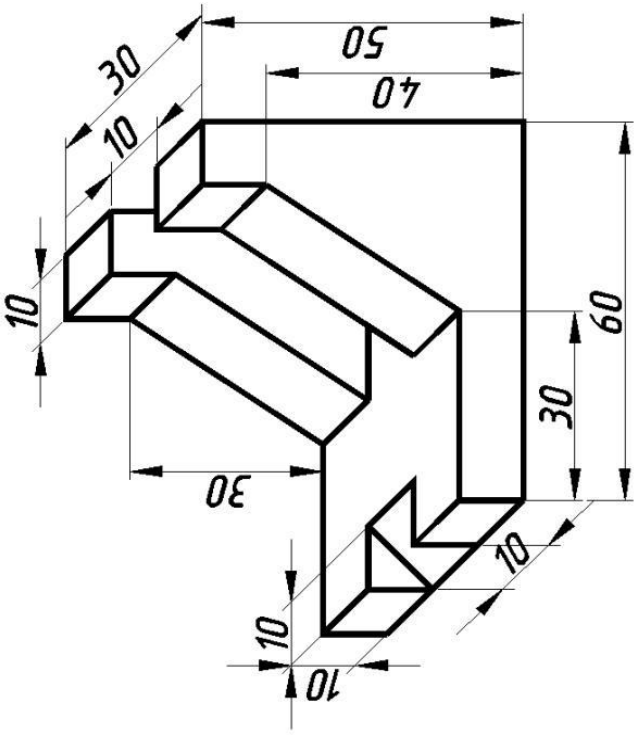

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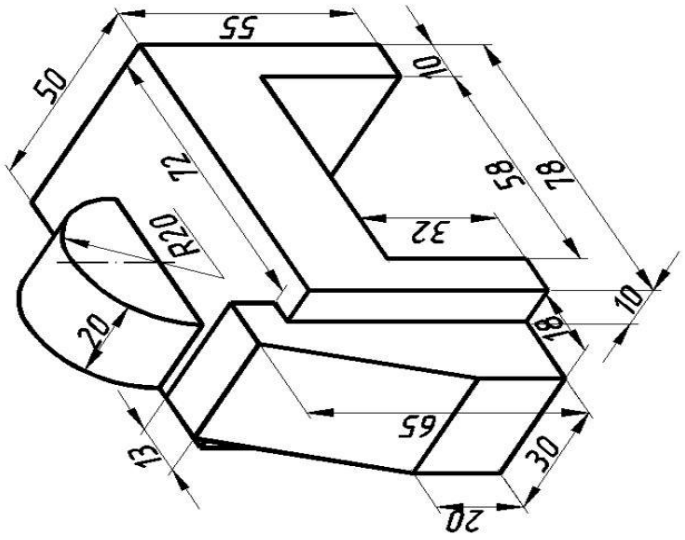

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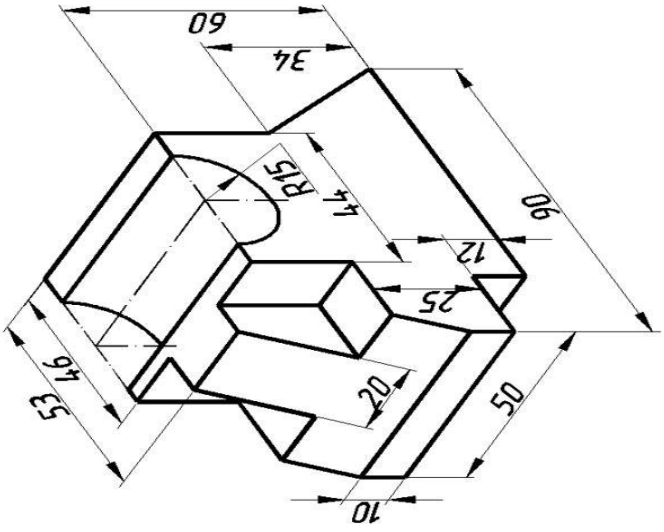

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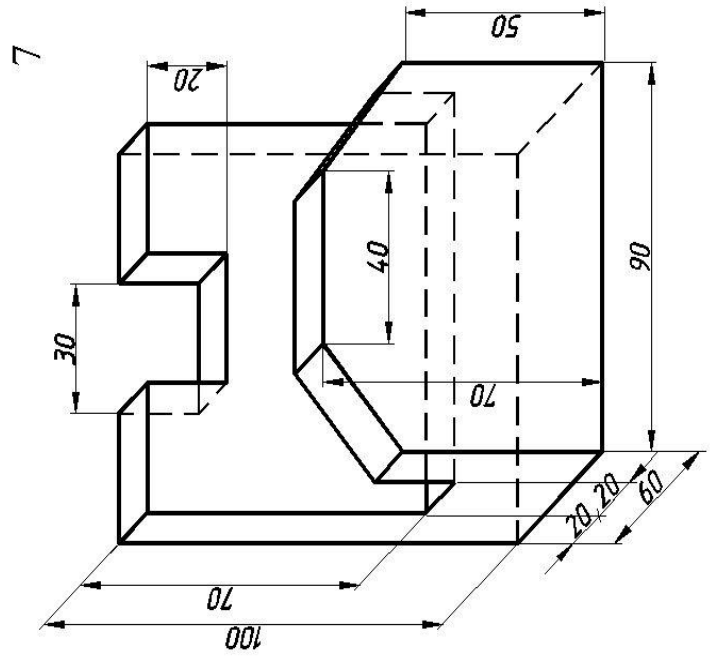

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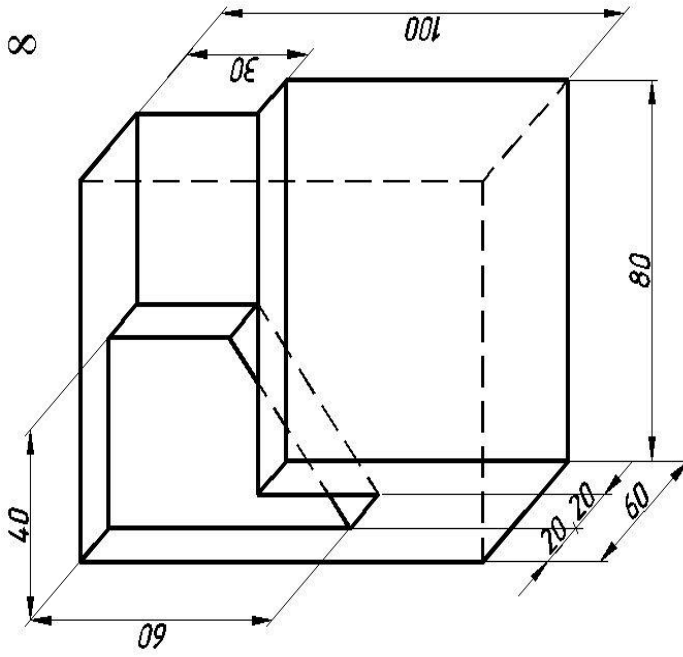

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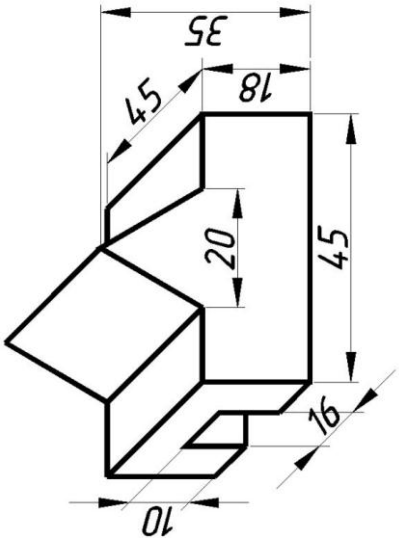

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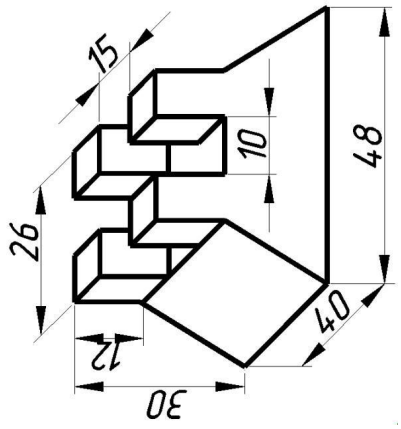

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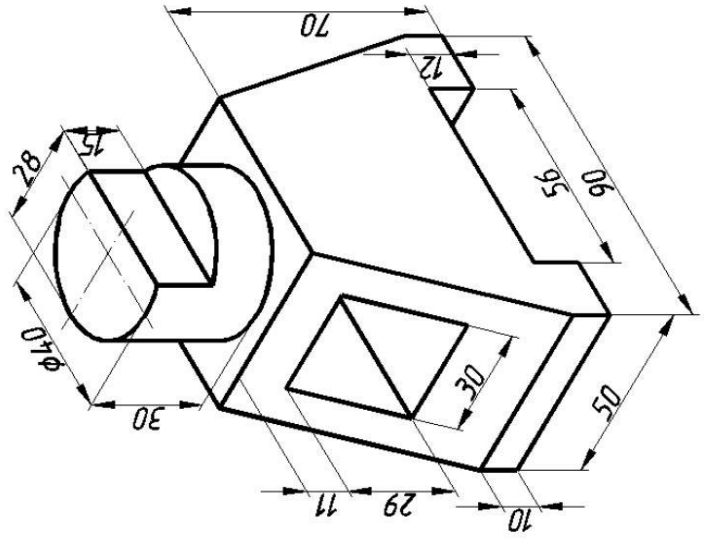

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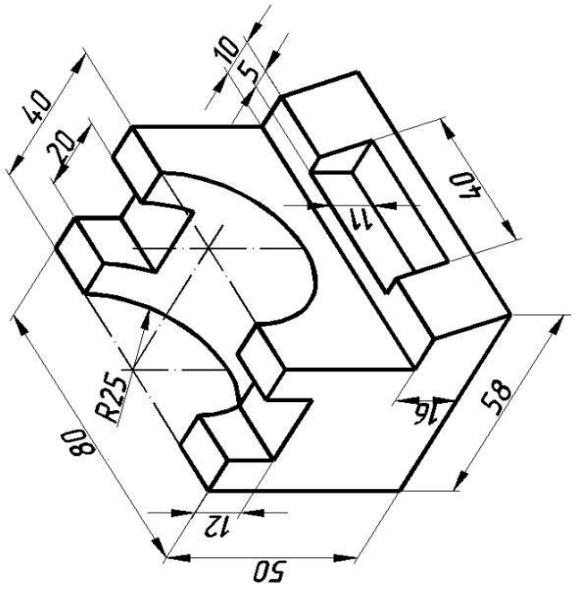

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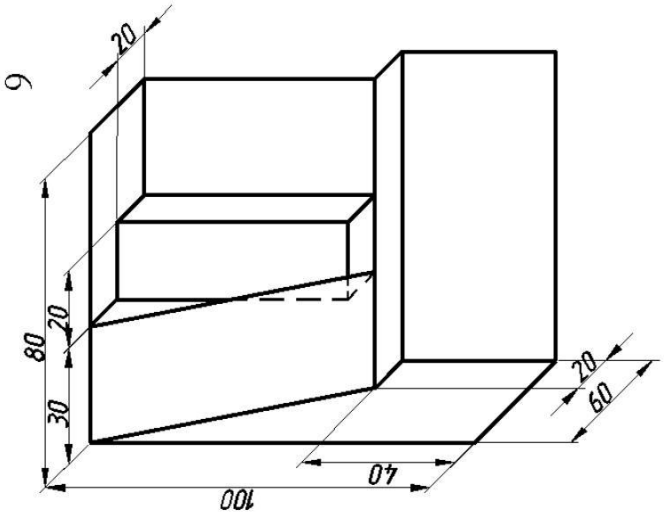

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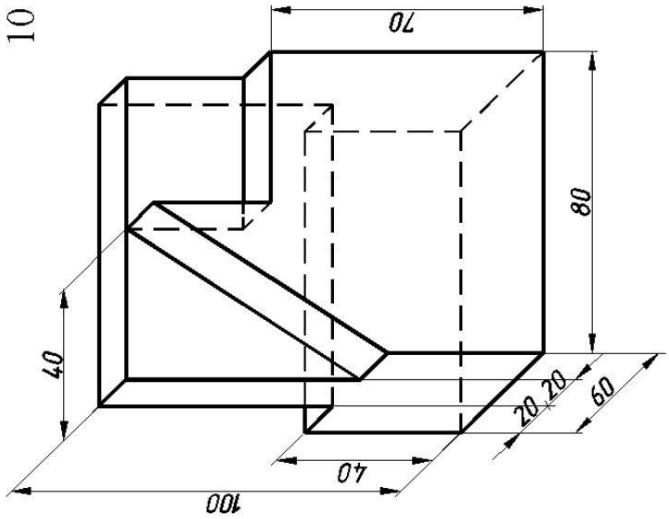

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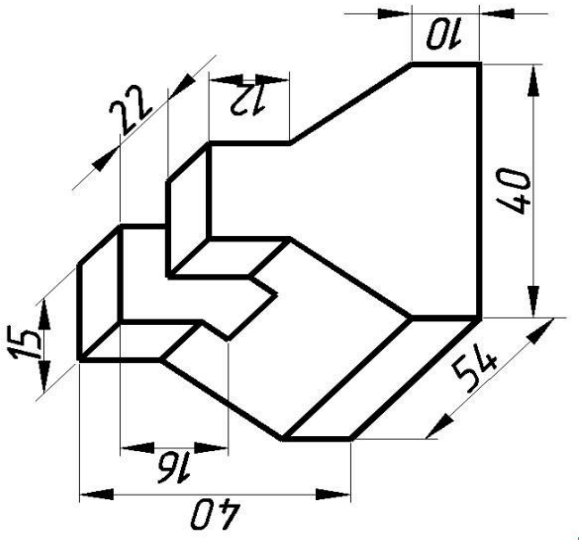
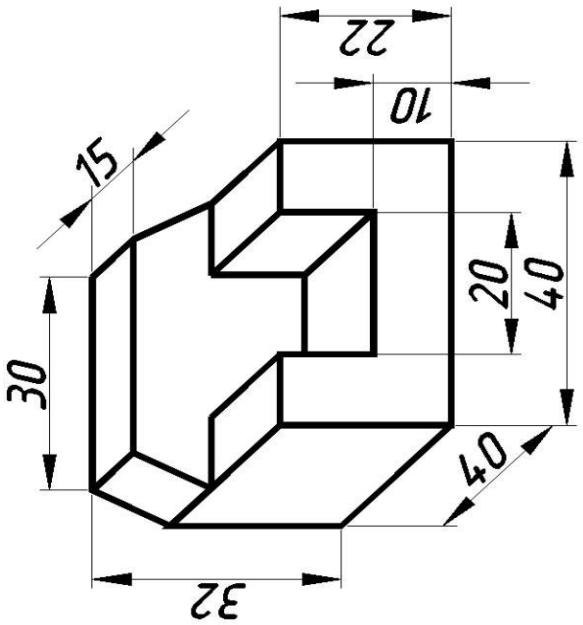
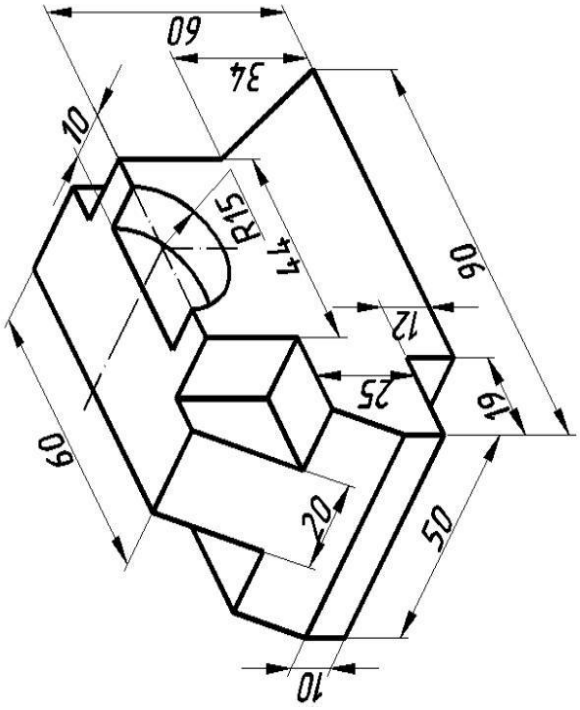


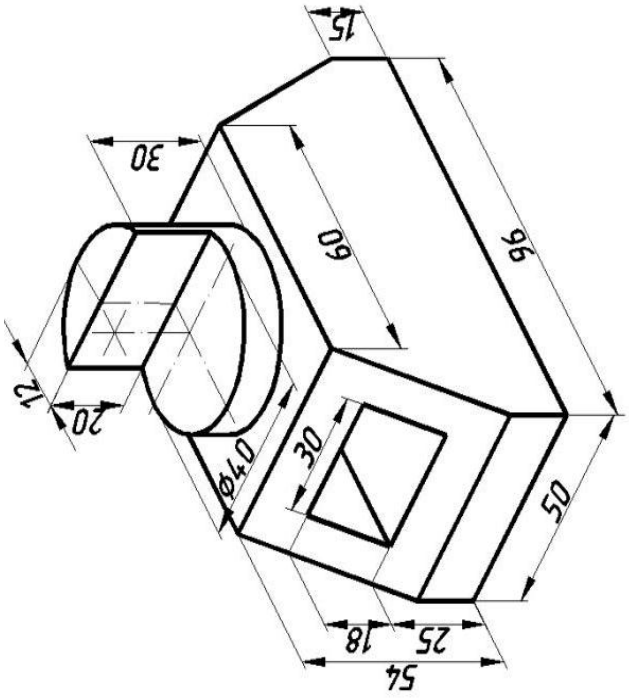
29-v.



30-v.

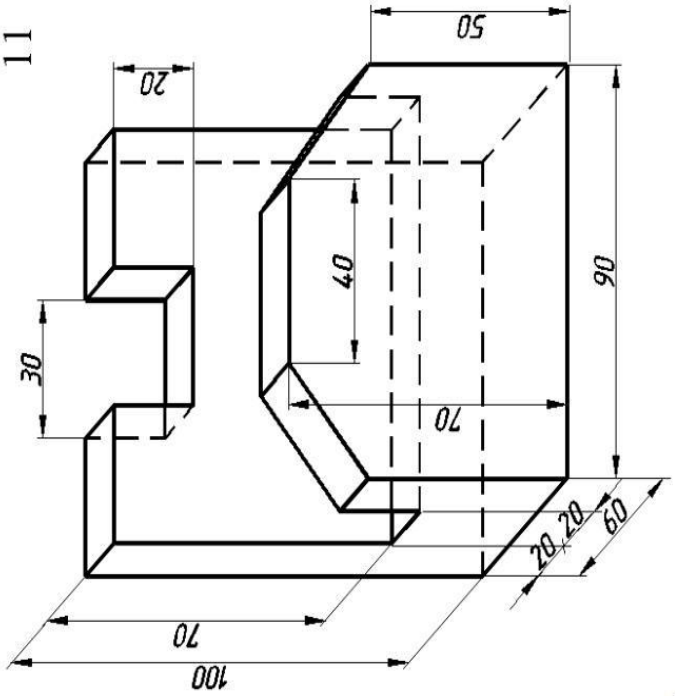


31-v.



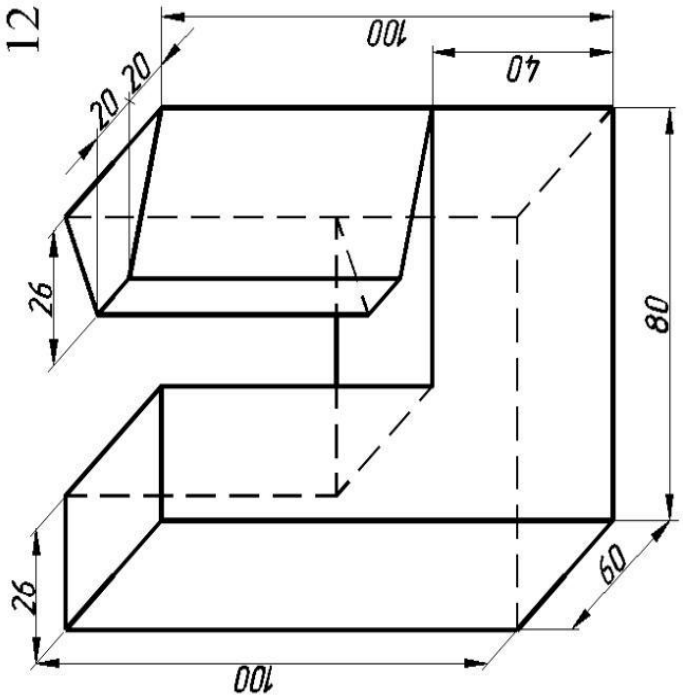
32-v.

11

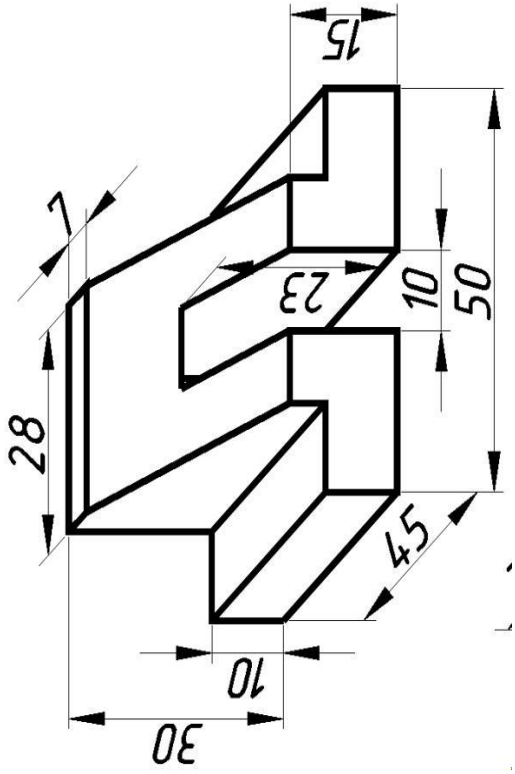


33-v.

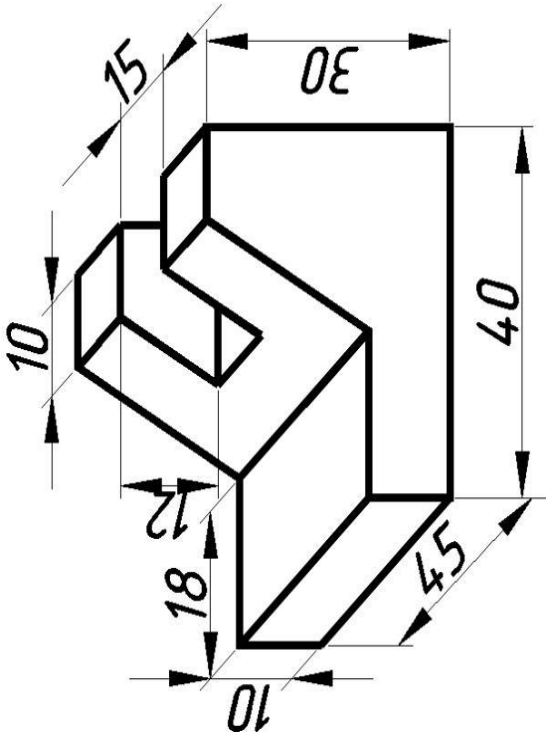
12



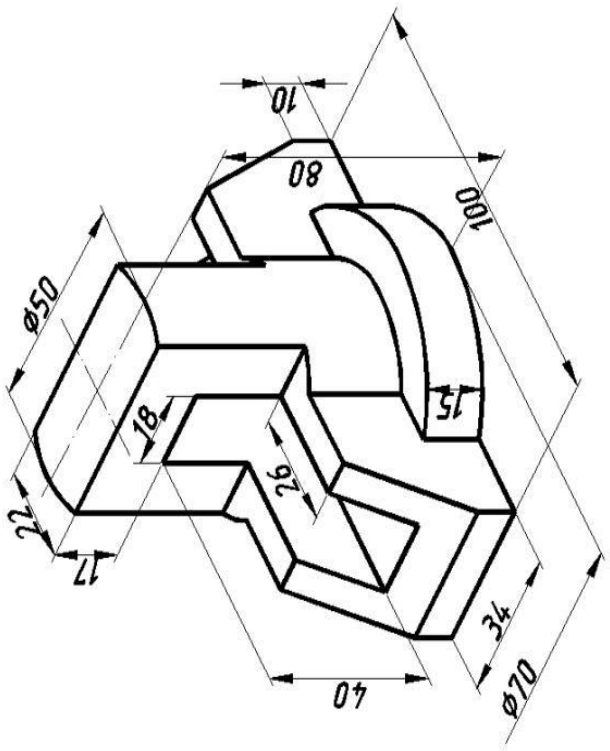
34-v.



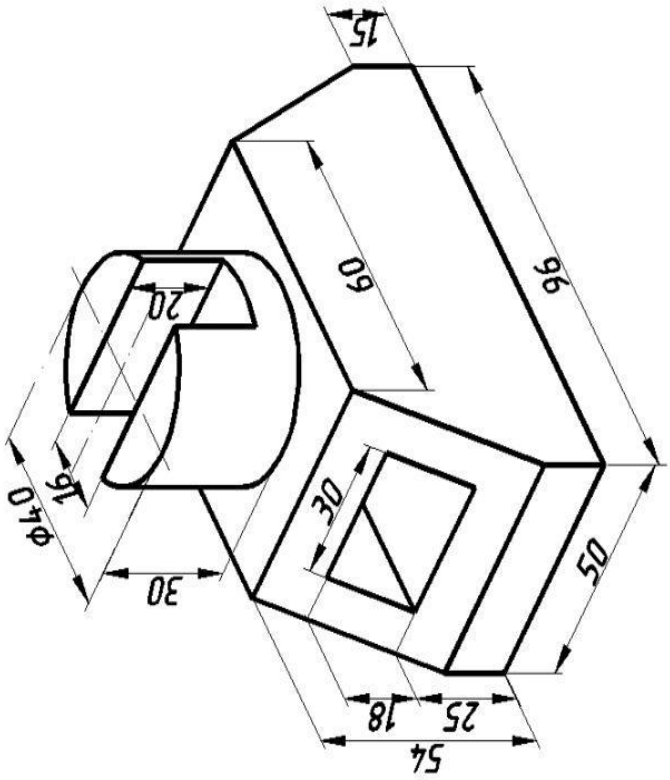
35-v.



36-v.

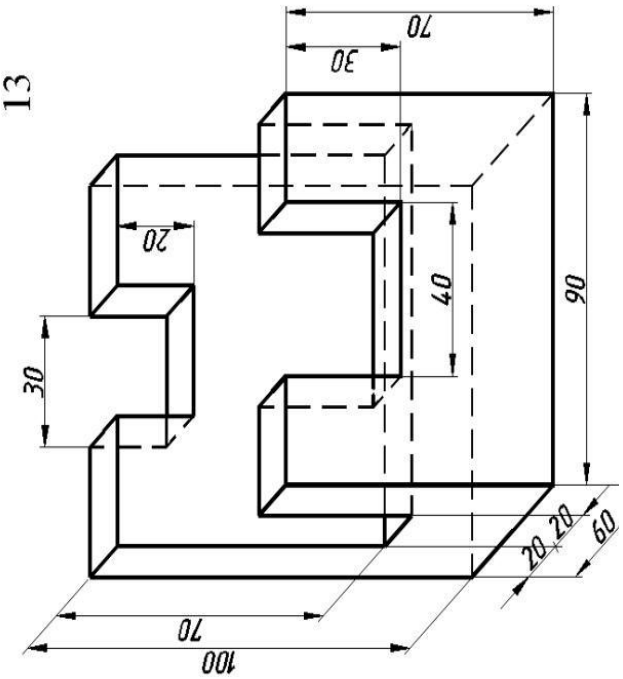


37-v.



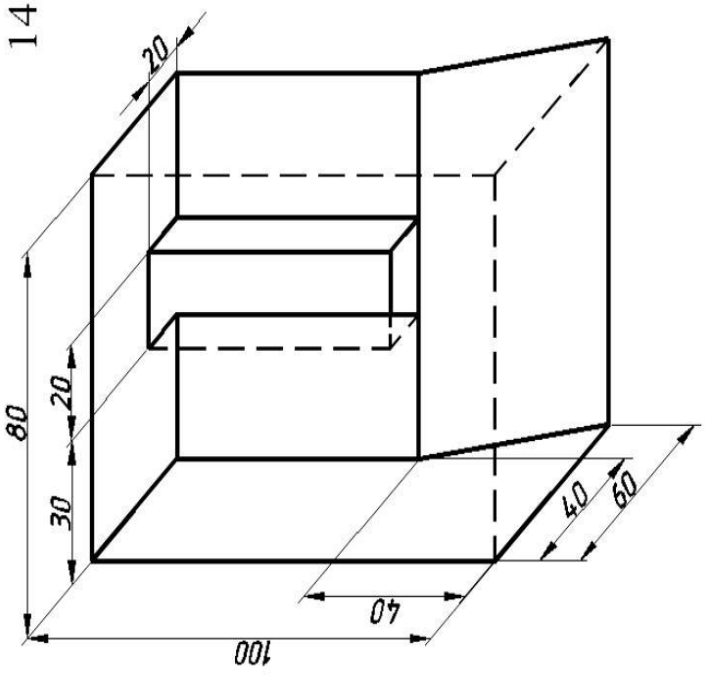
38-v.

13

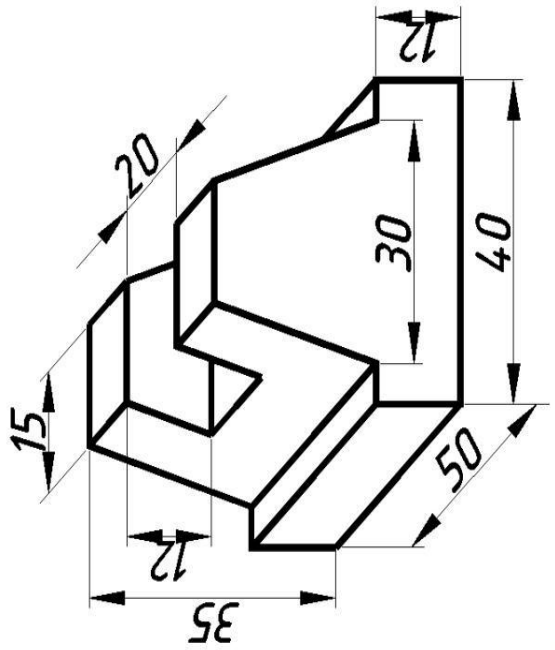


39-v.

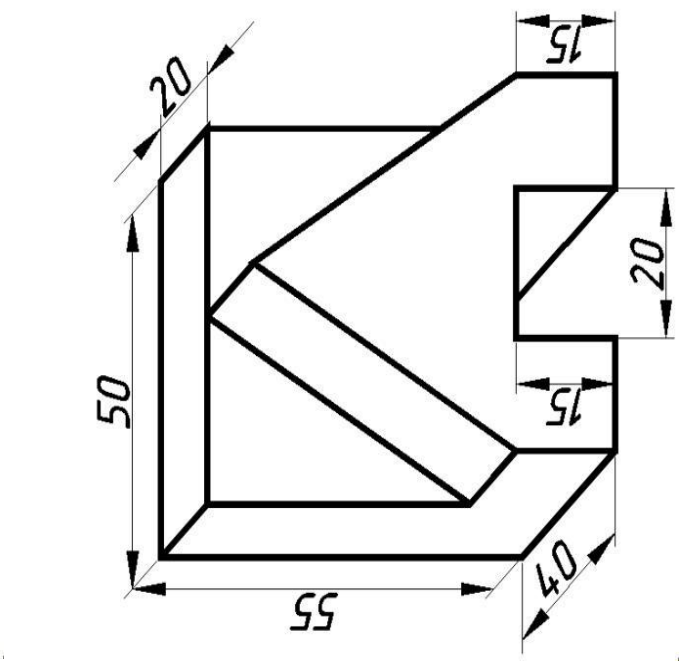
14



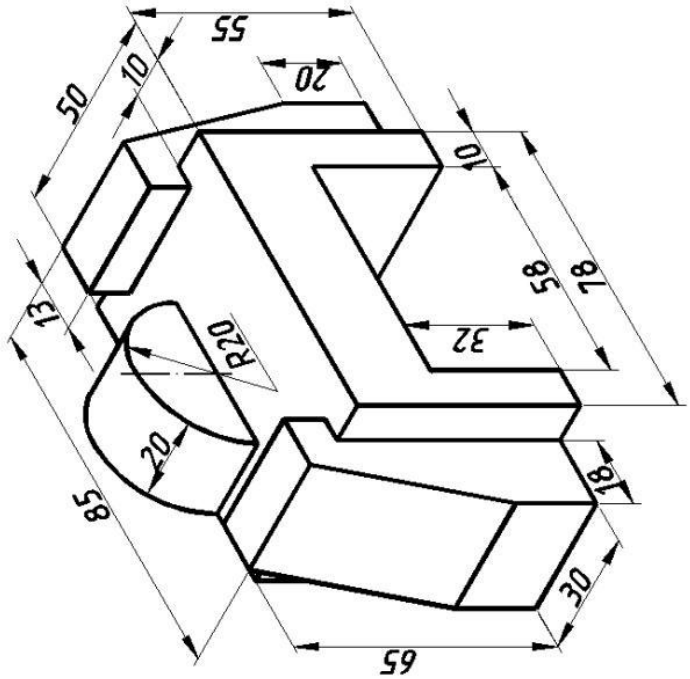
40-v.



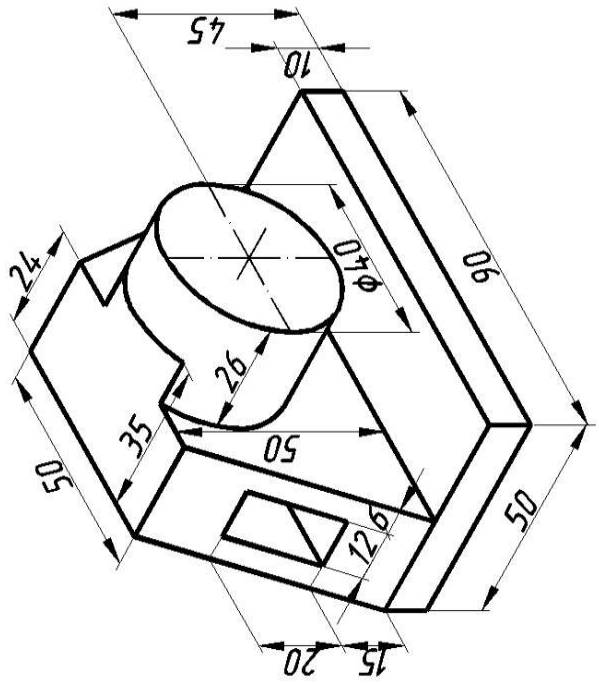
41-v.



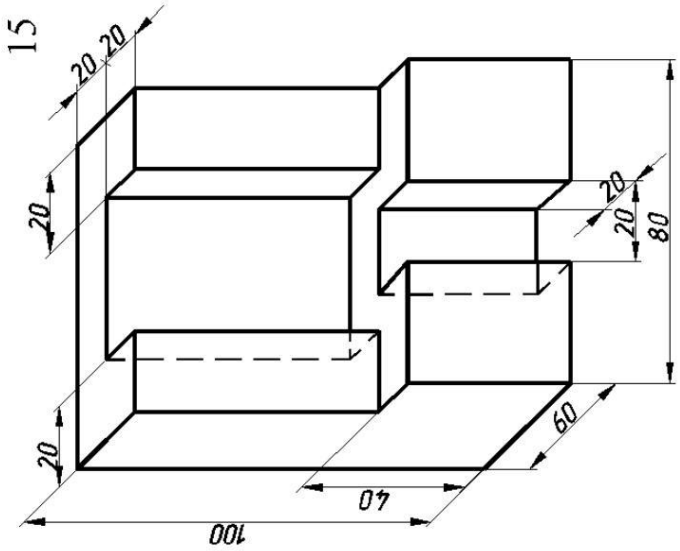
42-v.



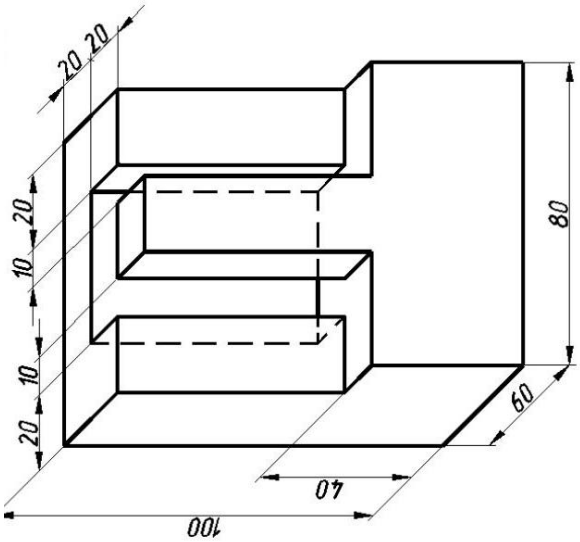
43-v.



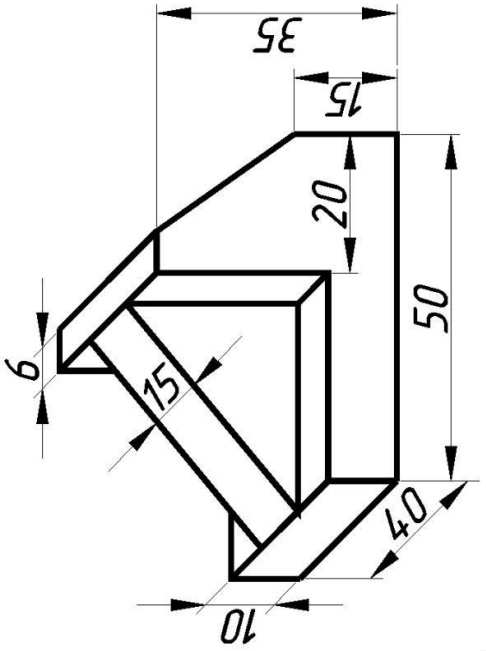
44-v.



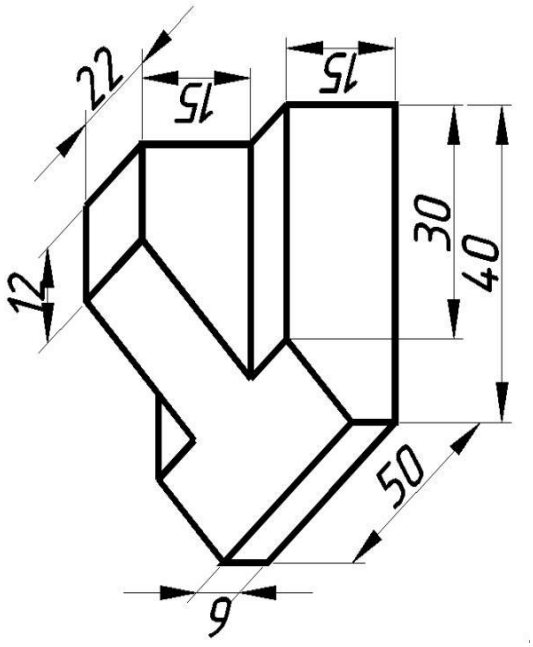
45-v.



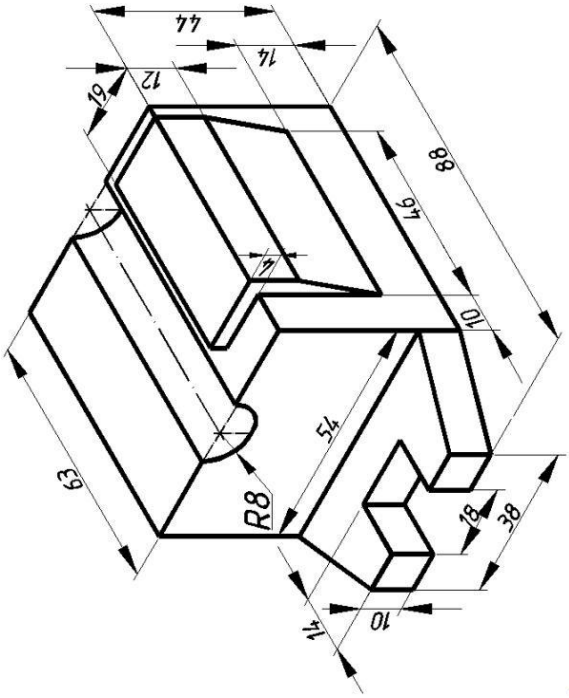
46-v.



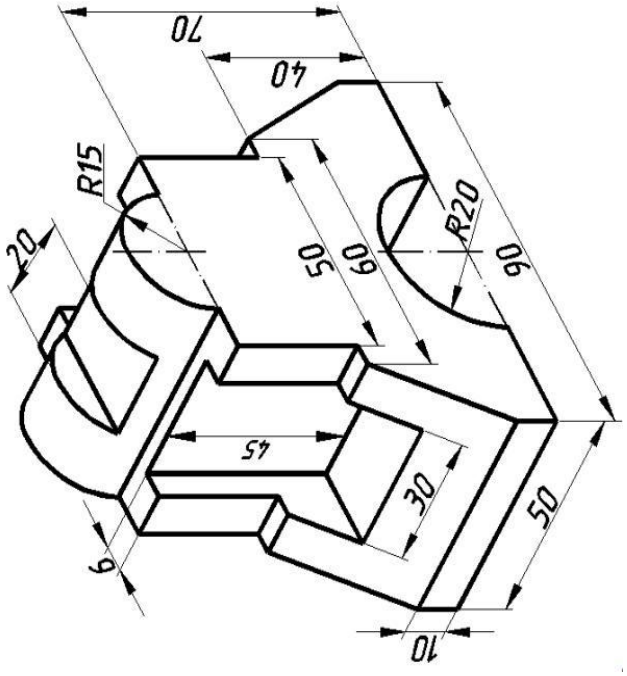
47-v.



48-v.

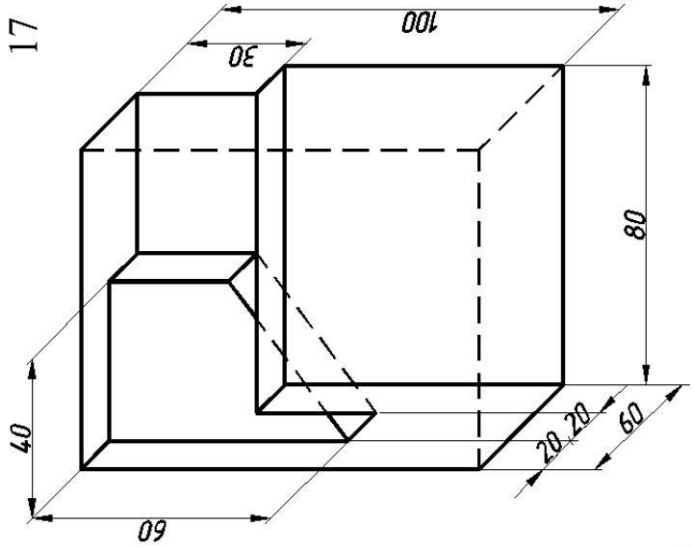


49-v.



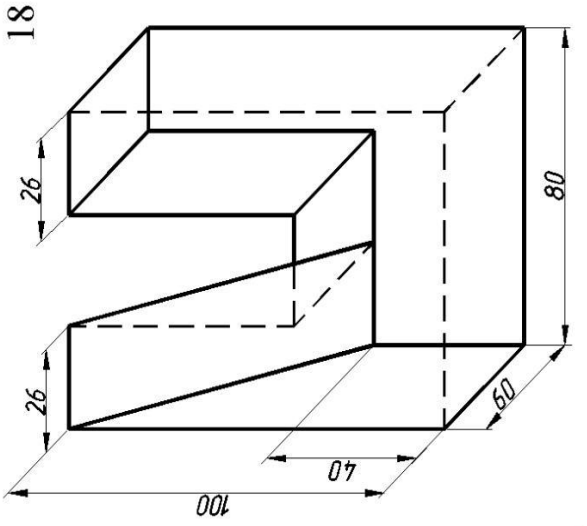
50-v.

17

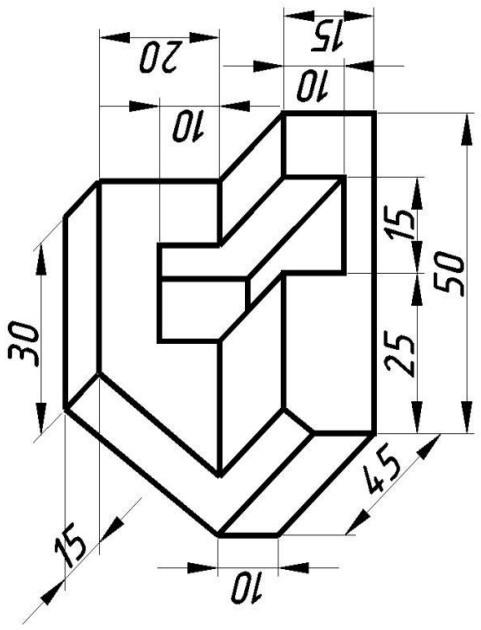


51-v.

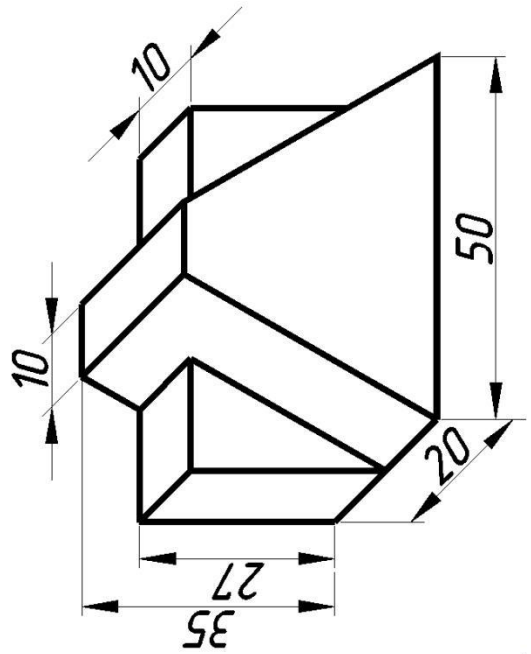
18



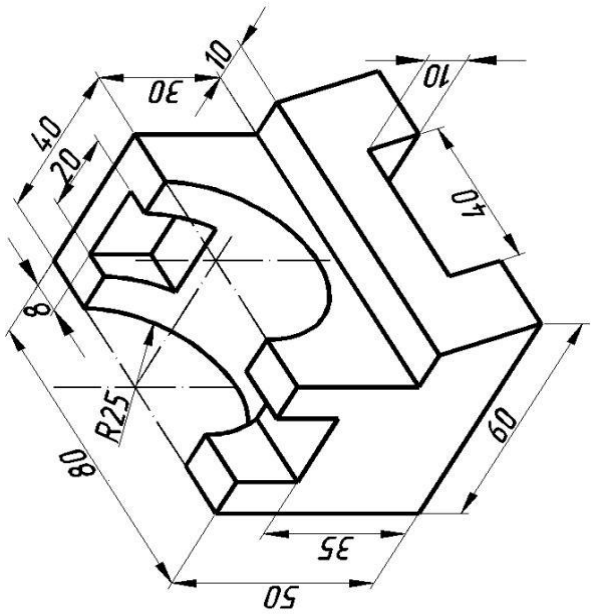
52-v.



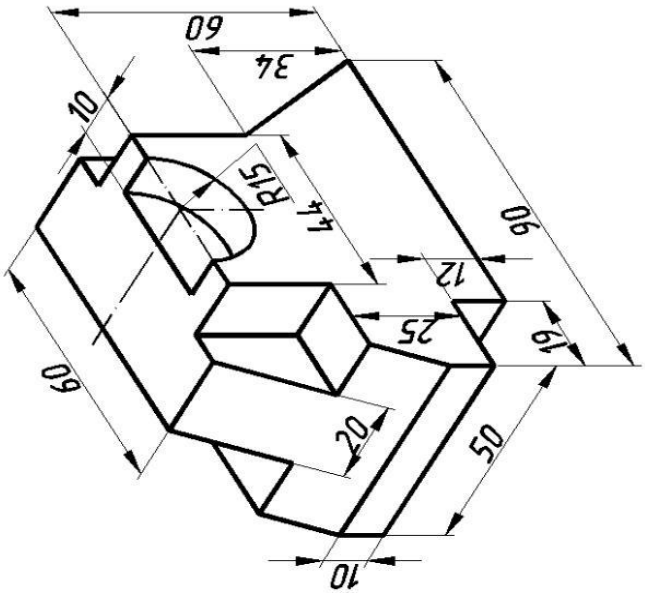
53-v.



54-v.

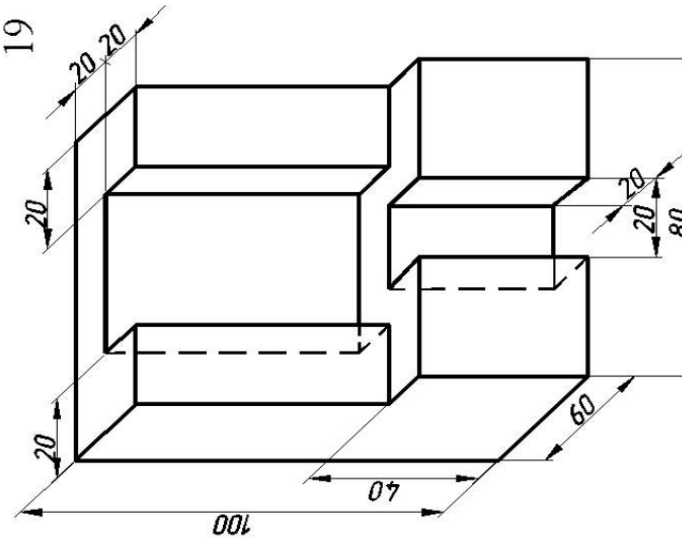


55-v.



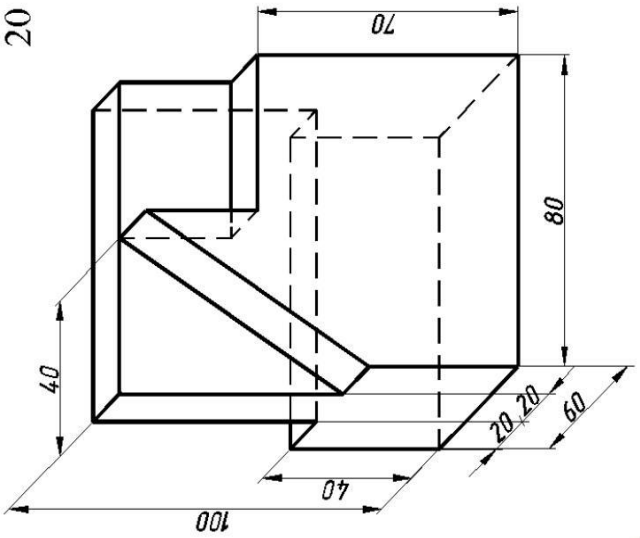
56-v.

19

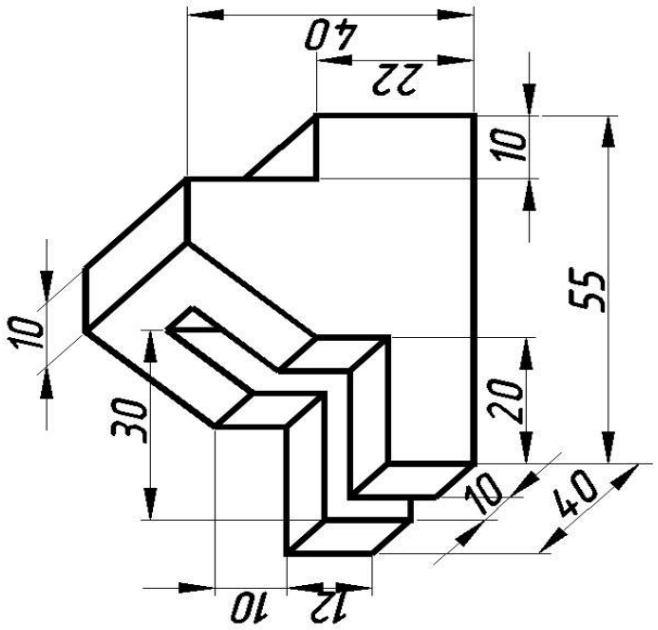


57-v.

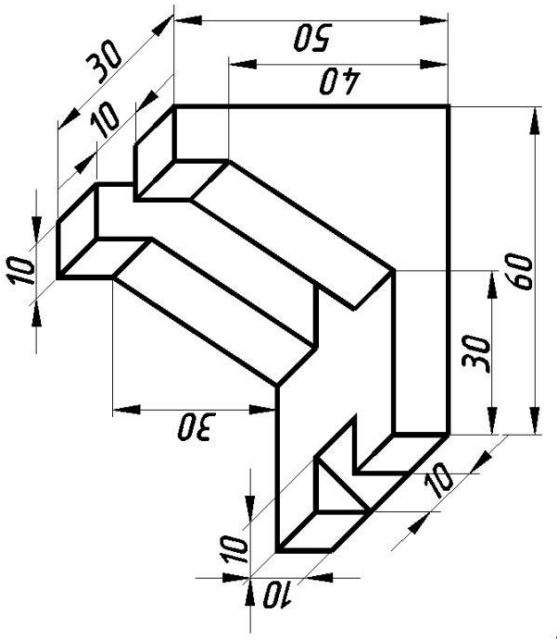
20



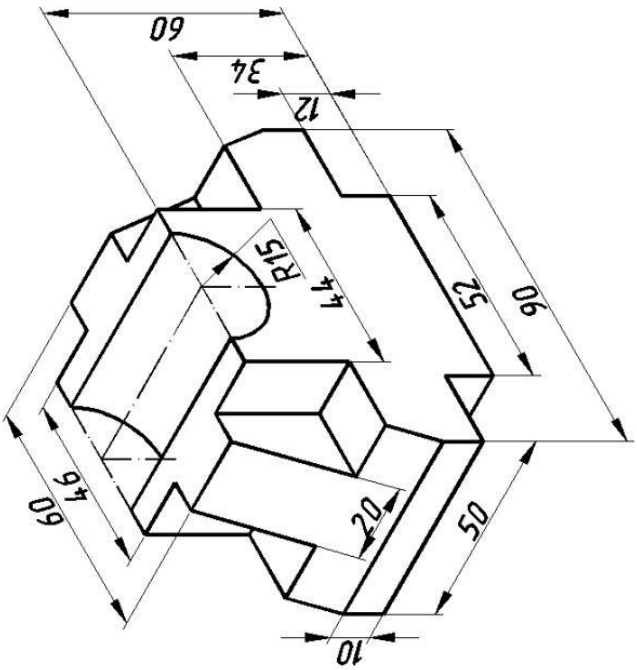
58-v.



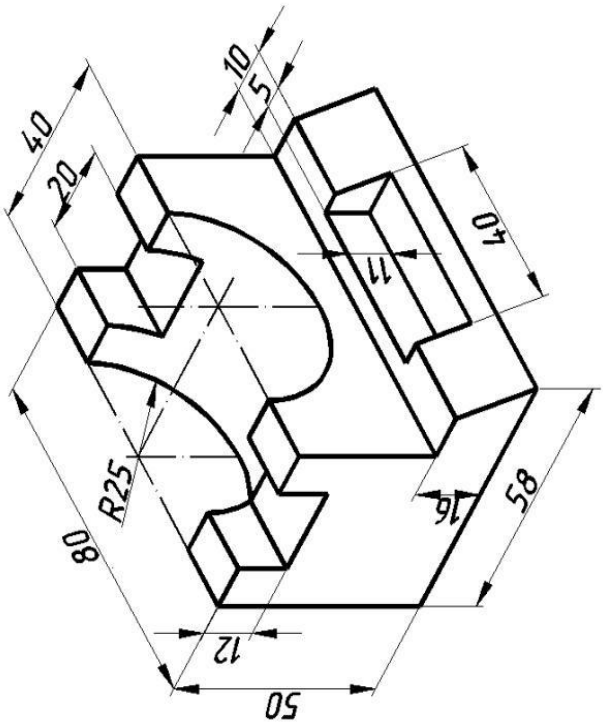
59-v.



60-v.

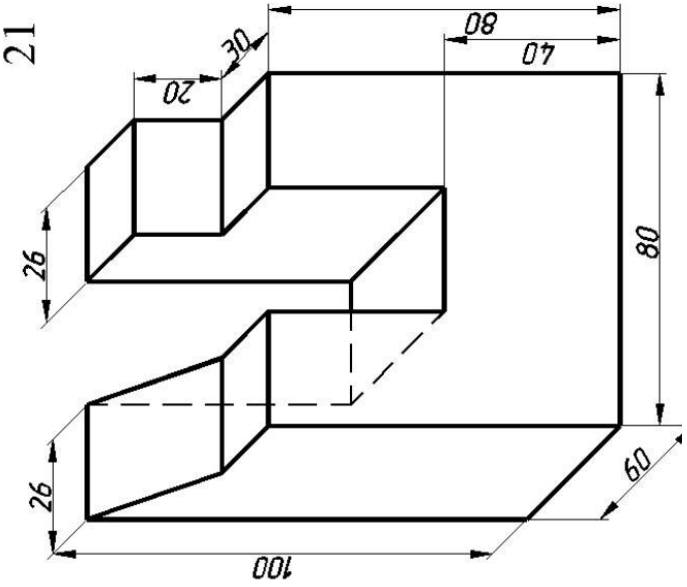


61-v.



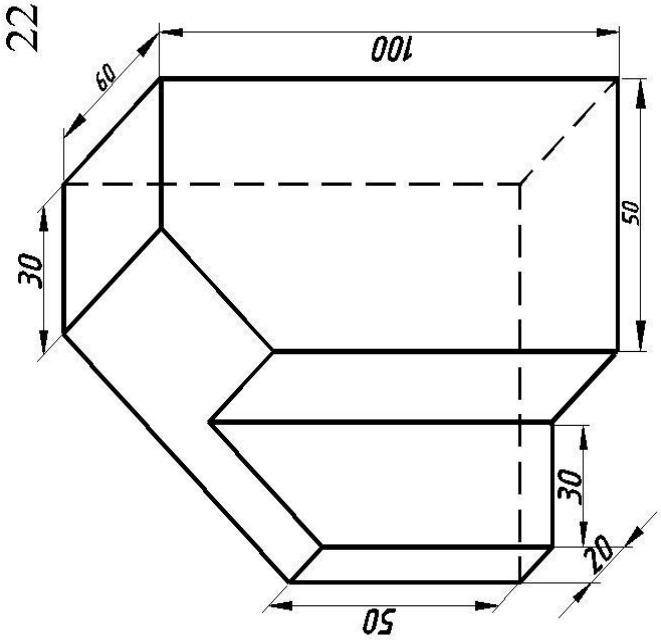
62-v.

21

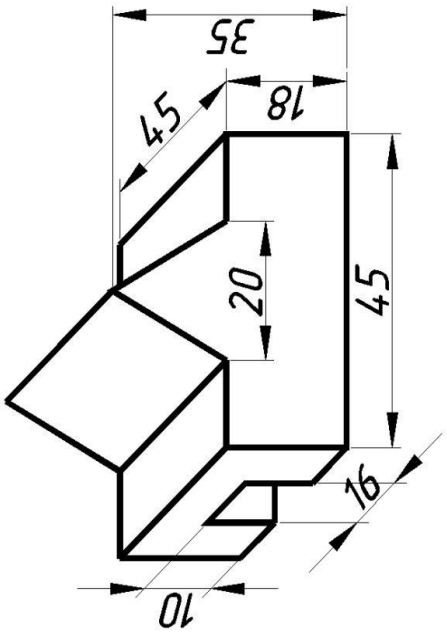


63-v.

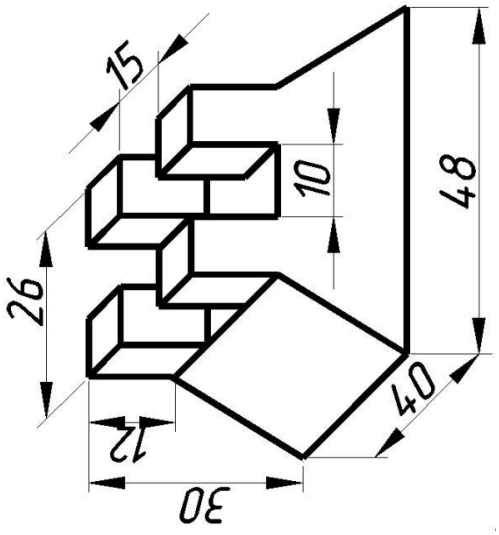
22



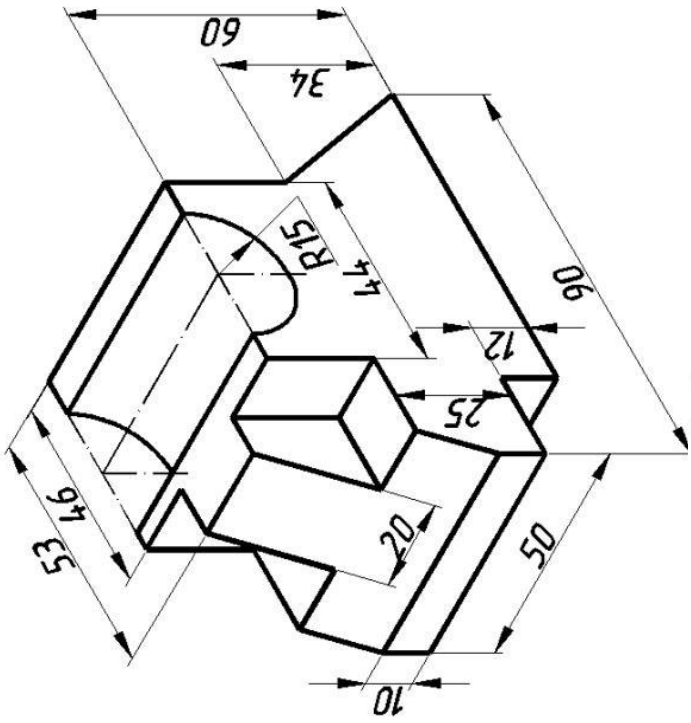
64-v.



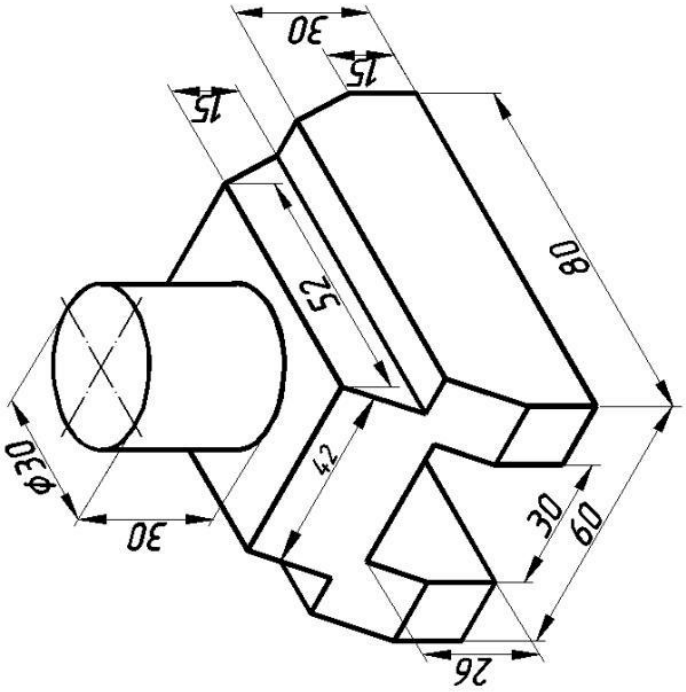
65-v.



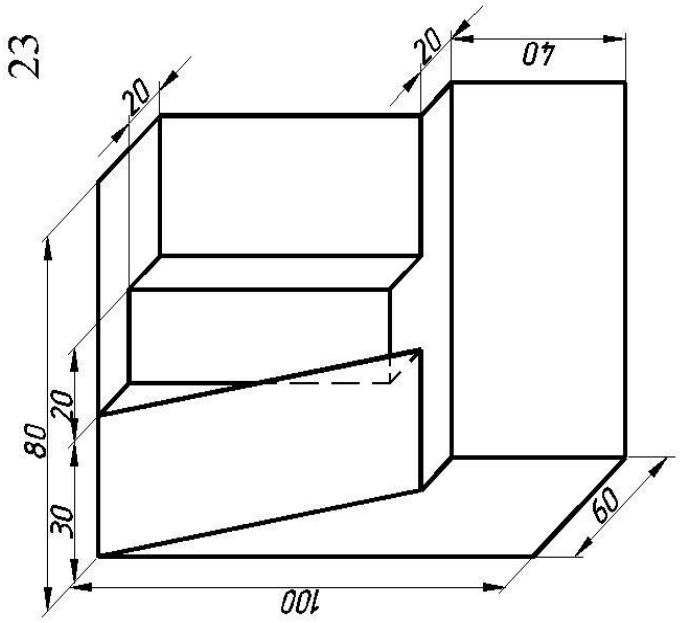
66-v.



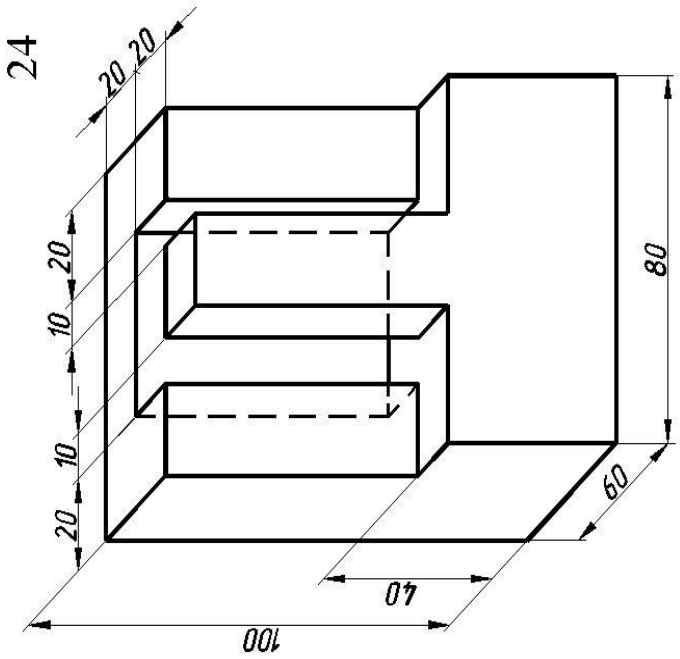
67-v.



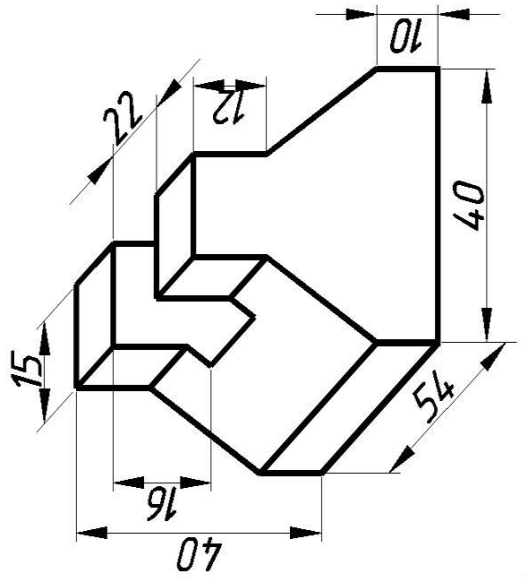
68-v.



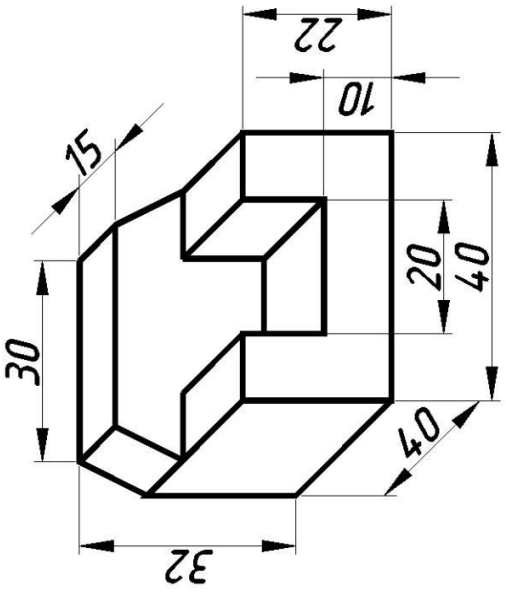
69-v.



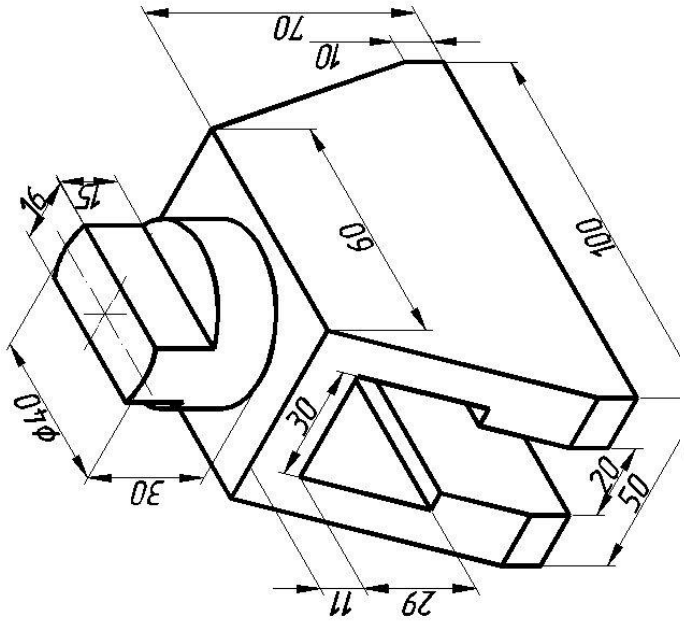
70-v.



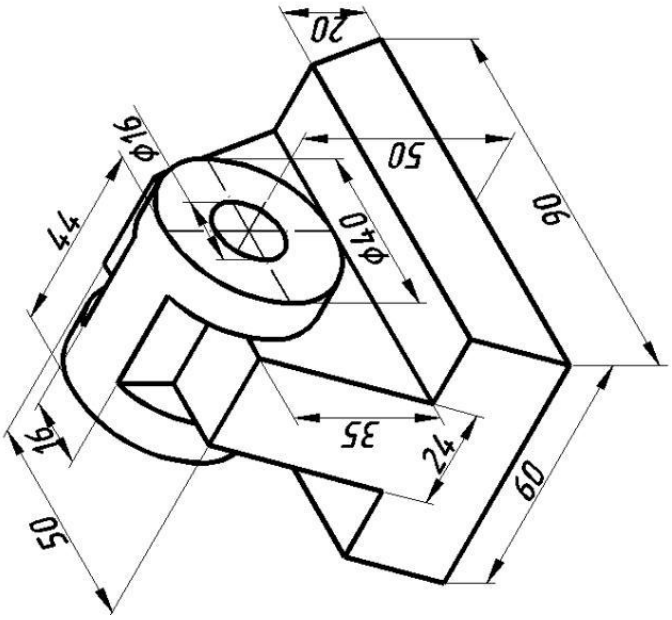
71-v.



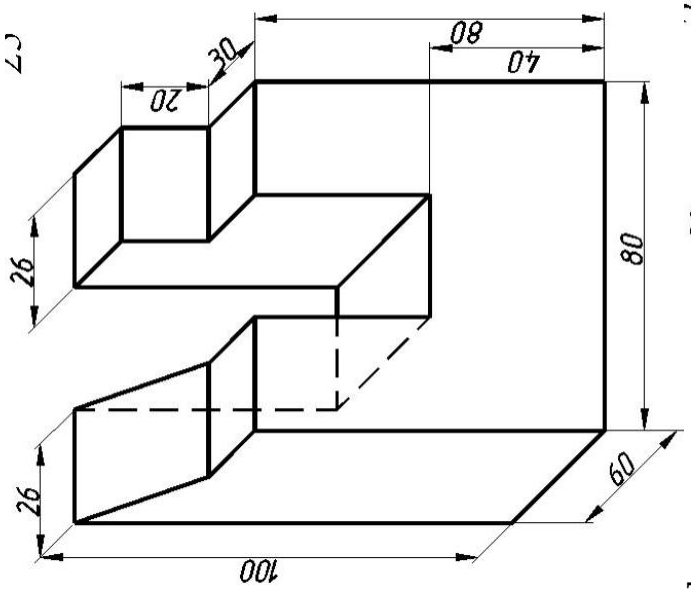
72-v.



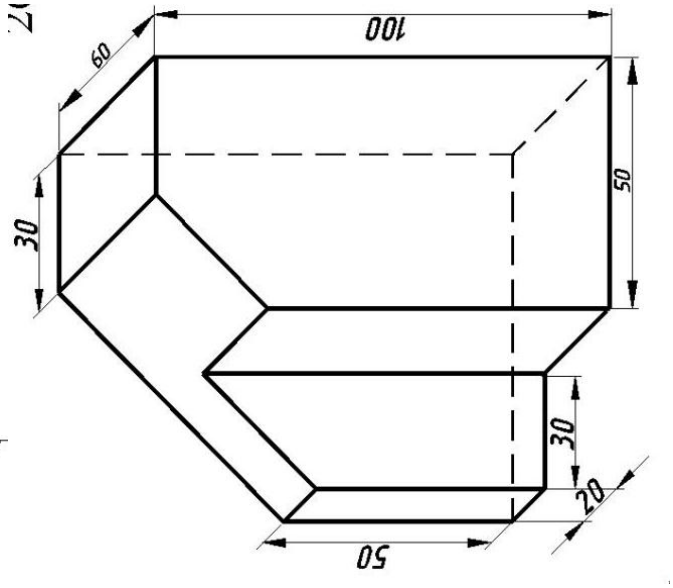
73-v.



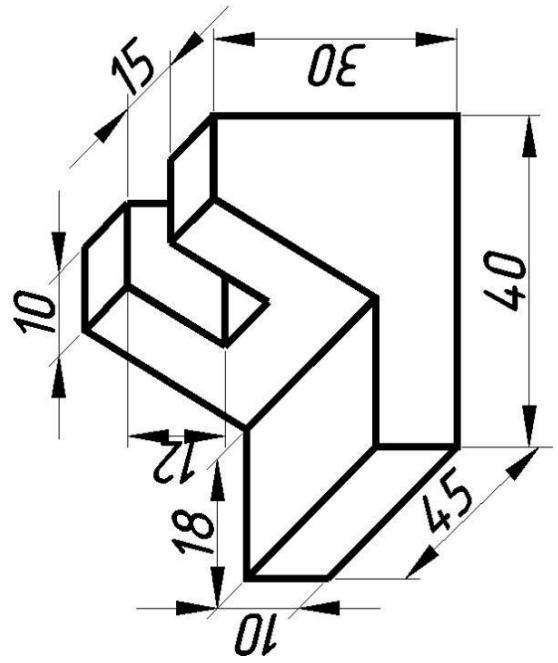
74-v.



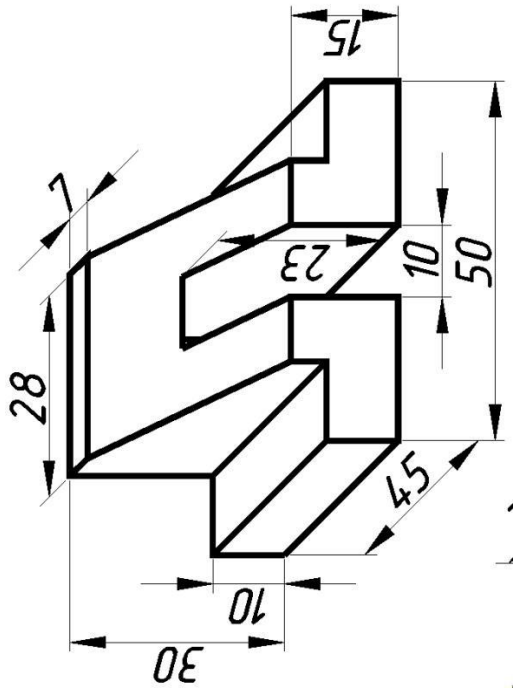
75-v.



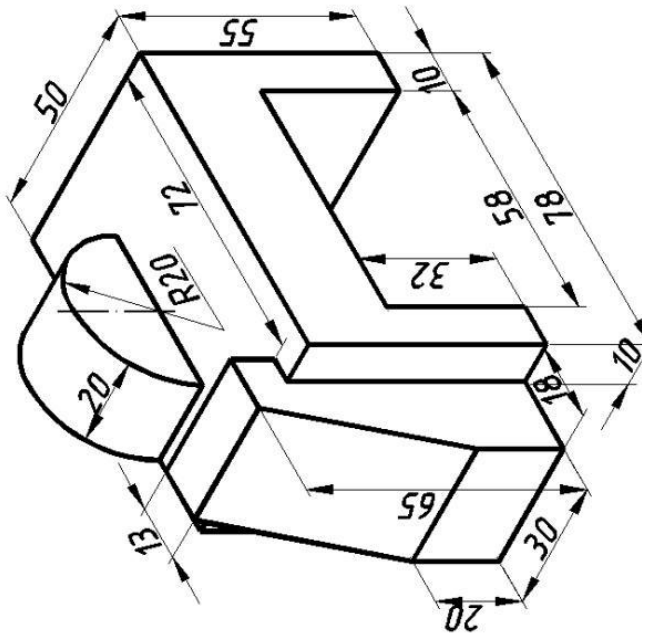
76-v.



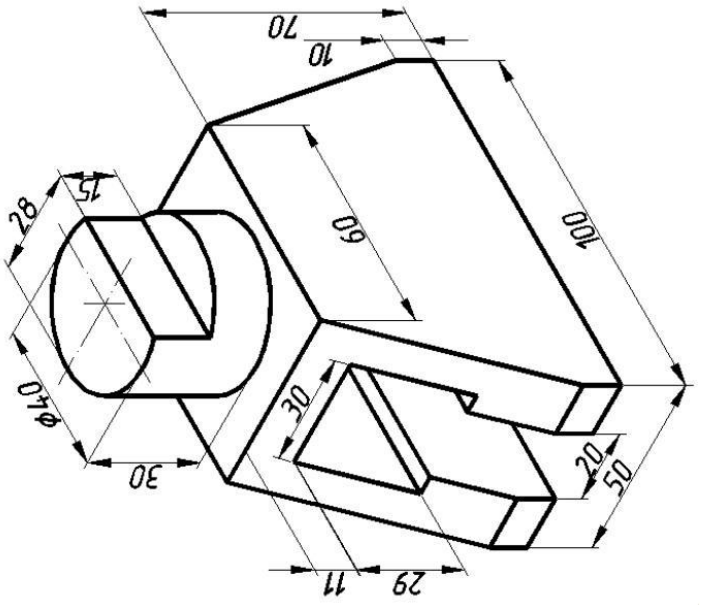
75-v.



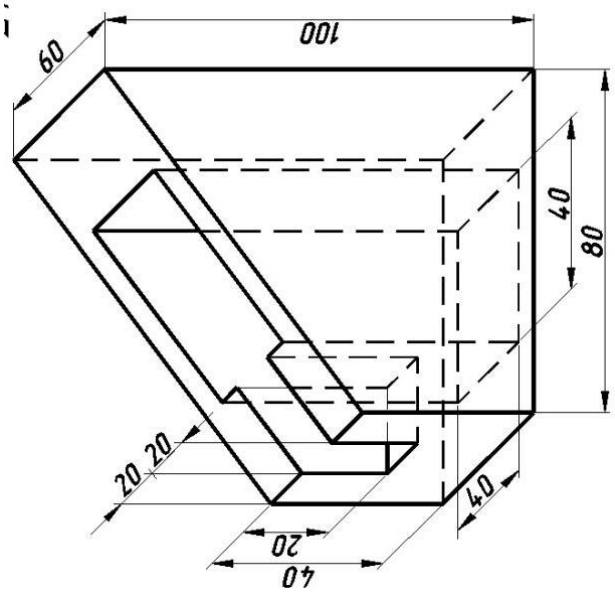
76-v.



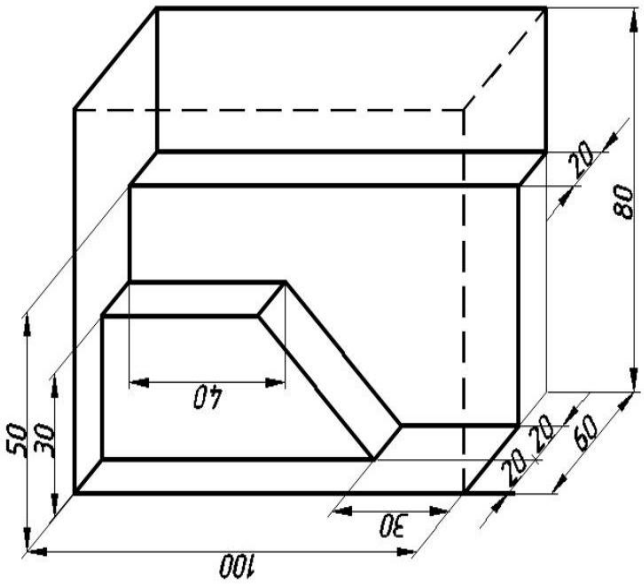
77-v.



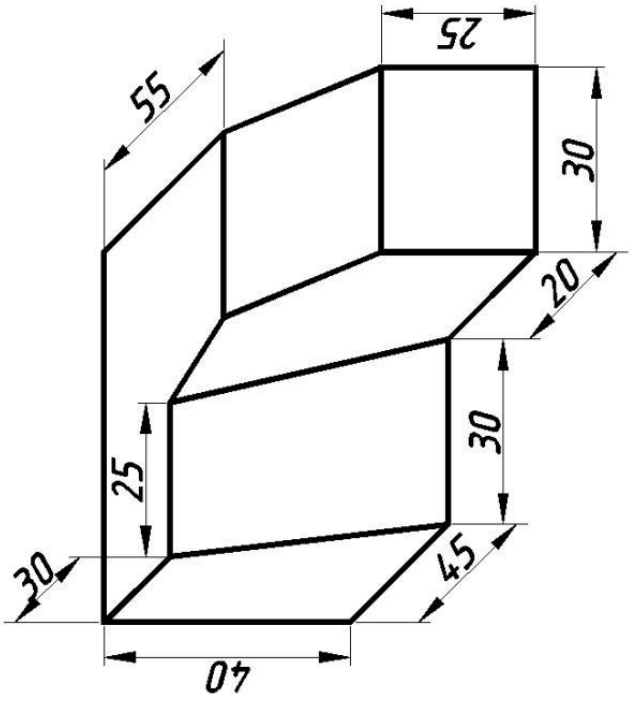
78-v.



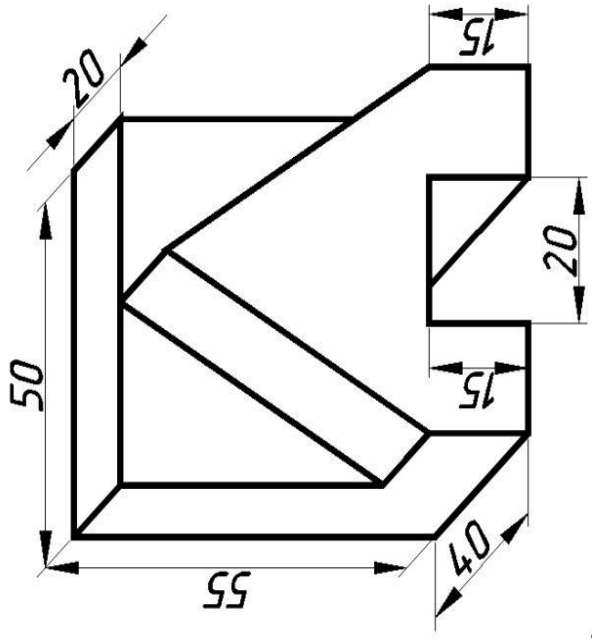
79-v.



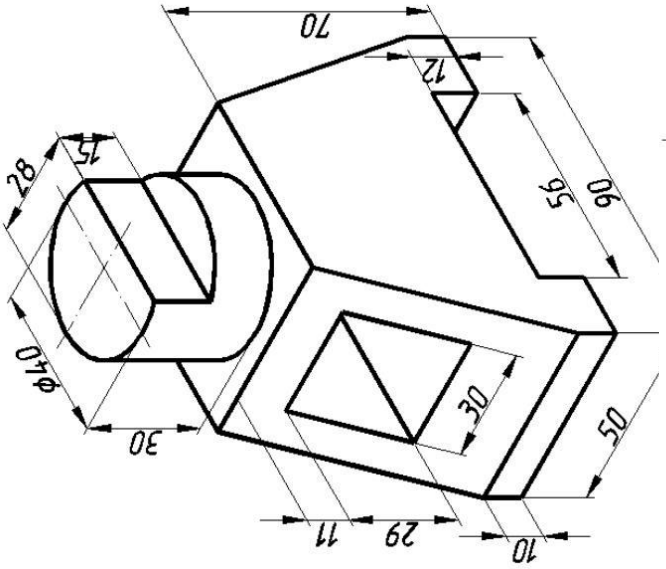
80-v.



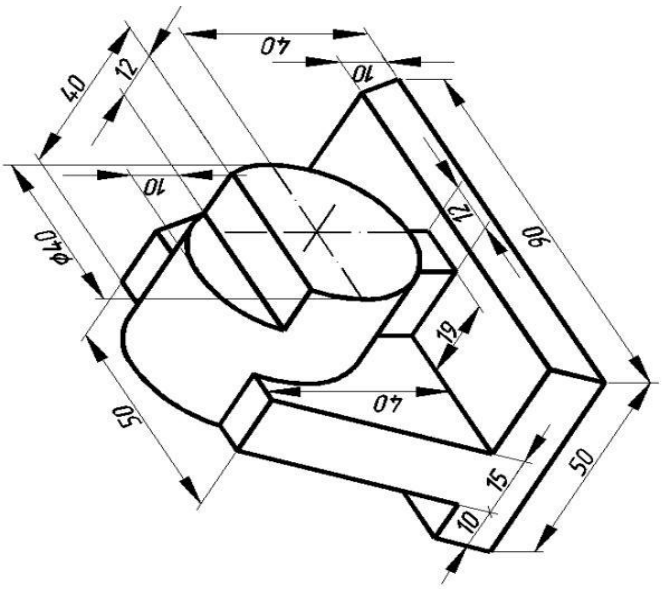
81-v.



82-v.

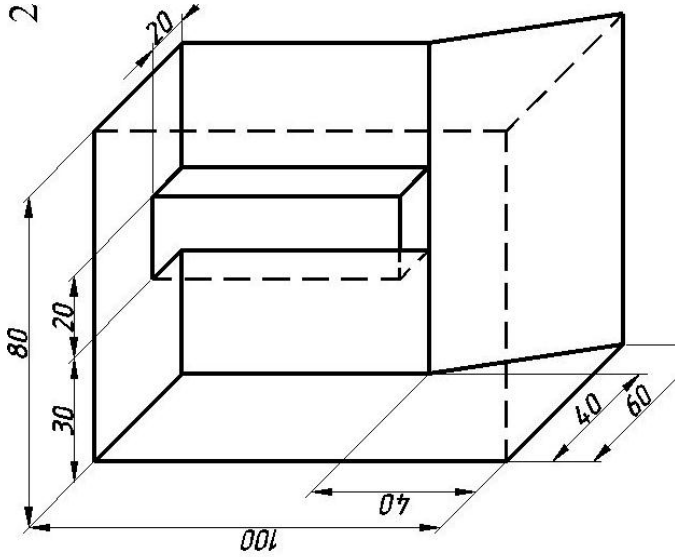


83-v.



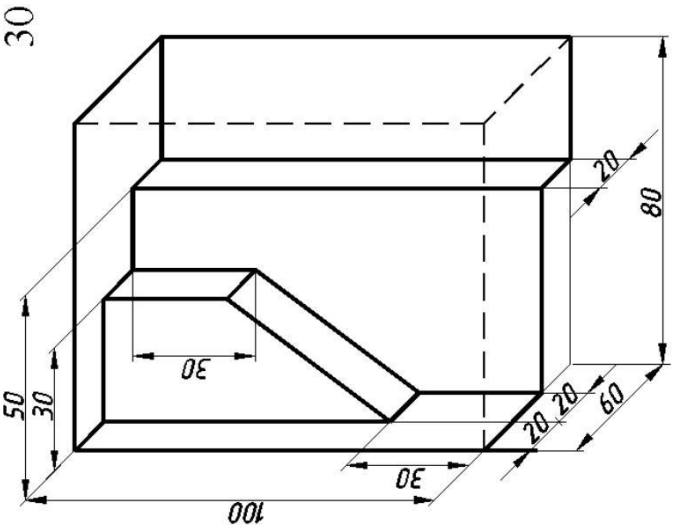
84-v.

2

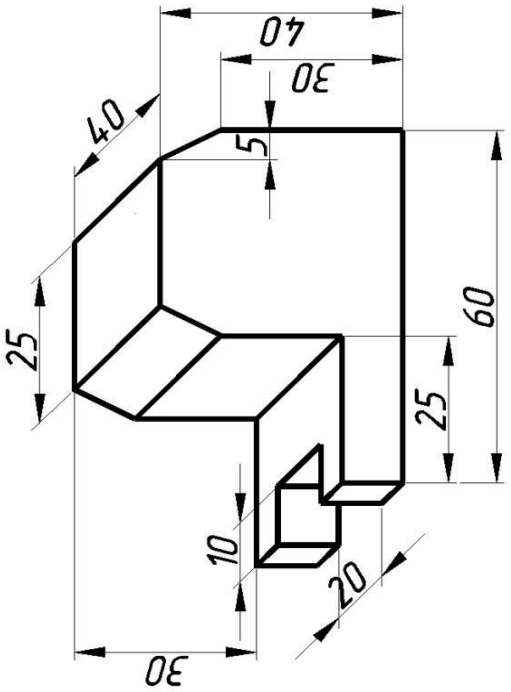


85-v.

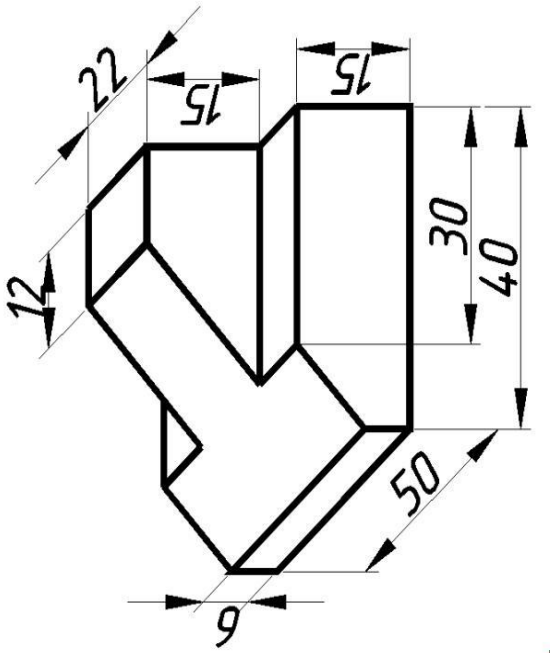
30



86-v.



87-v.



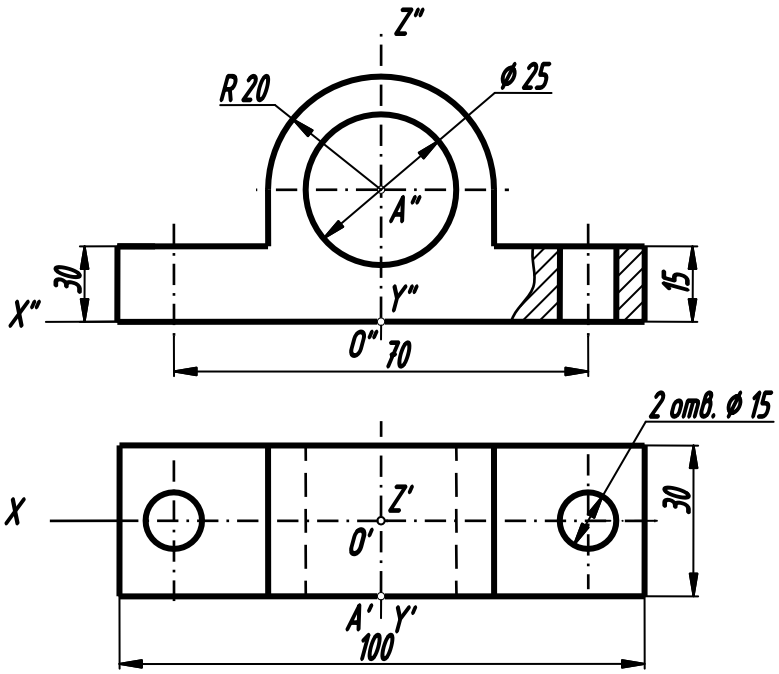
88-v.

Keyslar banki

Keys-1

Keys mavzusi: Detal izometriyasi

Keys bayoni: Detallarni to'g'ri va aniq loyihalash uchun detalning ko'rinishlari haqida yetarli ma'lumot beruvchi chizmalarni ketma-ket ravishda belgilab olishimiz kerak bo'ladi. Odatda talabalarga detalning ko'rinishlari to'g'risidagi masalalar ikki xil usulda beriladi. Birinchi usulda detalning gorizantal va frontal tekisliklardagi proektsiyalari berilib, profel tekislikdakgi proektsiyasini chizish topshiriq qilib beriladi. Ikkinchi usulda detalning barcha elementlari (detalning qirralari, turli shakl (aylana, to'rtburchak, uchburchak, konus, va b.) o'yiqlar va chiqiqlari) lardagi X, Y va Z koordinatalari yordamida berilib, talabalardan shu berilgan ma'lumotlardan foydalangan xolatda detalni ko'rinishlarini chizish talab qilinadi. Bu ikki metodni o'rgangan harqanday talabaning detal to'g'risidagi tassavvuri kengayadi va loyihalash jarayonida eng samarali yechimlarni topaoladi.



Keys topshirig'i: Quyida keltirilgan detalning ikki ko'rinishidan foydalanib, uning izometriyasini chizing va unga qirqim bering. Yechish jarayonida koordinatalar metodini xam qo'llang.

1-shakl.

Foydalanish uchun manbalar.

1. Yu. Kirgizbaev, E.Sobitov va boshkalar. Mashinasozlik chizmachilik kursi. Toshkent, «O'qituvchi», 1981.
2. Frolov S.A. Nachertatelьnaya geometriya.M.: INFRA – M, 2008. 286.
3. Spravochnik po texnicheskomu chercheniyu. Novochixin L.I. 2005.www.evrobook.ru
4. www. pedagog. uz
5. www. Ziyonet. uz
6. www.ta'lim.uz

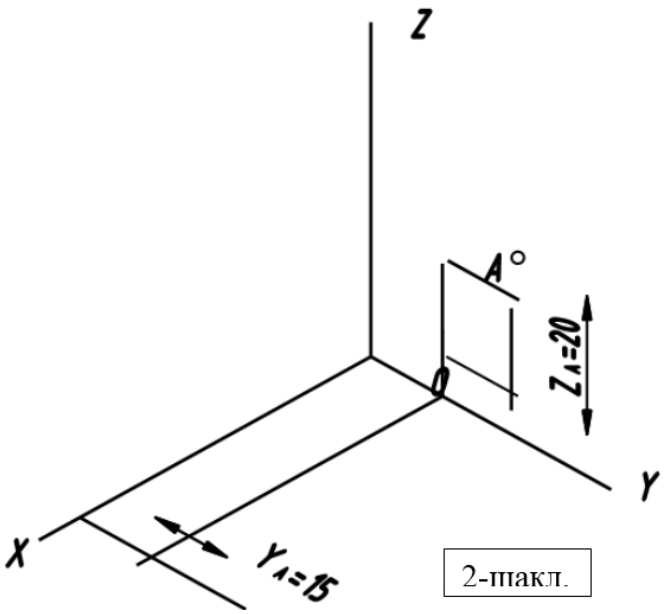
Talabalar uchun umumiy metodik ko'rsatmalar. Bu keysni yechish jarayonida gorizantal, frontal, profel tekisliklarni x, y, z koordinatalariga bog'lagan xolda yechimlarni topish talab qilinadi.

Keysni yechish jarayoni. Detalning berilgan ikki ko'rinishidan foydalanib, uning uchunchi ko'rinishi ya'ni profel tekislikdagi ko'rinishi tasvir qilinadi. Uchta ko'rinishdagi barcha o'lchamlar inobatga olgan xolda tekisliklar bilan koordinatalar o'qlaridan foydalanib, o'lchamlar ketma-ketligi asosida detal izometriyasi shakllantiriladi.

O'qituvchining yechimi.

Talabalarga 1-bosqich uchun metodik ko’rsatma. X, Y va Z o’qlarini orasi 120º burchak ostida bo’ladi va o’lchamlarni o’qlarga nibatan parallel ravishda olinadi.

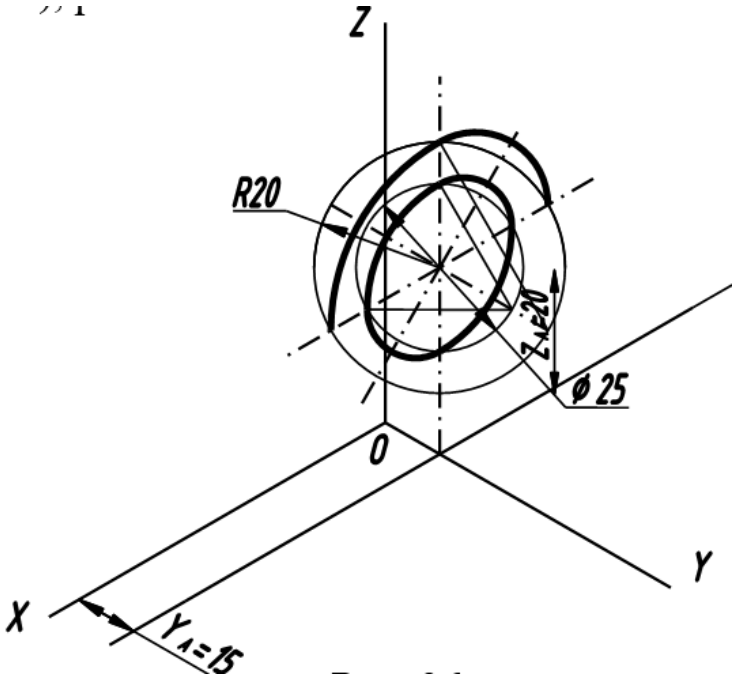
1-bosqich. Koordinatalar shakllantiriladi va detalning asosidan boshlab, o’lchamlar ketma-ketligiga asoslangan xolatda o’qlar bo’yicha taqsimlanadi. 2-shaklda detalning 30 mm qalinlik o’lchami X o’qinig xar ikki tomoniga 15 mm dan taqsimlanib olinadi. Detaldagi tsilindirik teshikning markazini aniqlashda U o’qi yo’nalishi bo’yicha 15 mm Z o’qi yo’nalishi bo’yicha esa yuqoriga 20 mm o’lchash natijasida tsilindirik teshikning markaziga tegishli A nuqta aniqlanadi.



2-шакл.

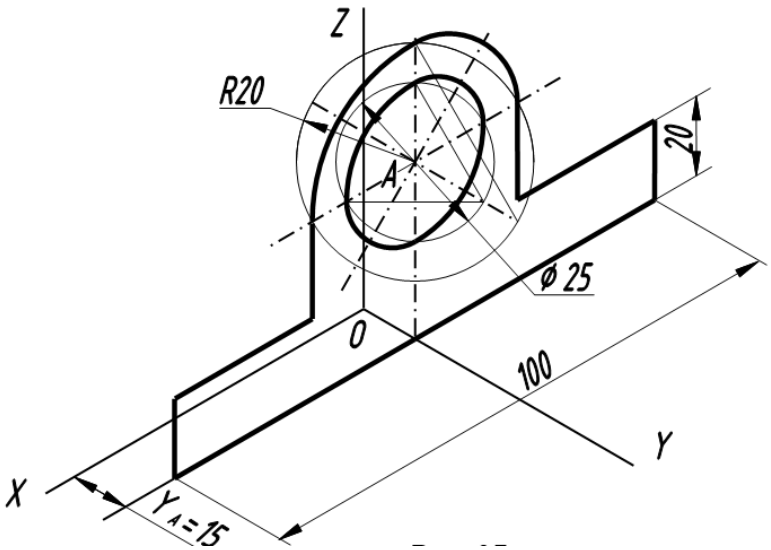
Talabalarga 2-bosqich uchun metodik ko’rsatma. Detaldagi teshik yoki radiuslar izometriyasini chizishda ellips qoidalaridan foydalanilgan xolatda chiziladi.

2-bosqich. Aniqlangan markazga nisbatan detalda joylashgan diametri Ø25 mm li tsilindirik teshik va radiusi R20 mm li tashqi tsilindirik shakilning frontal tekislikdagi ko’rinishi shakllantiriladi (3-shakl).



3-shakl.

Talabalarga 3-bosqich uchun metodik ko’rsatma. Detalning frontal ko’rinishidagi 20 mm li o’lchamni z o’qiga parallel va 100 mm o’lchamni esa x o’qiga parallel ravishda o’lchash chizmani aniqliligini taminlaydi.

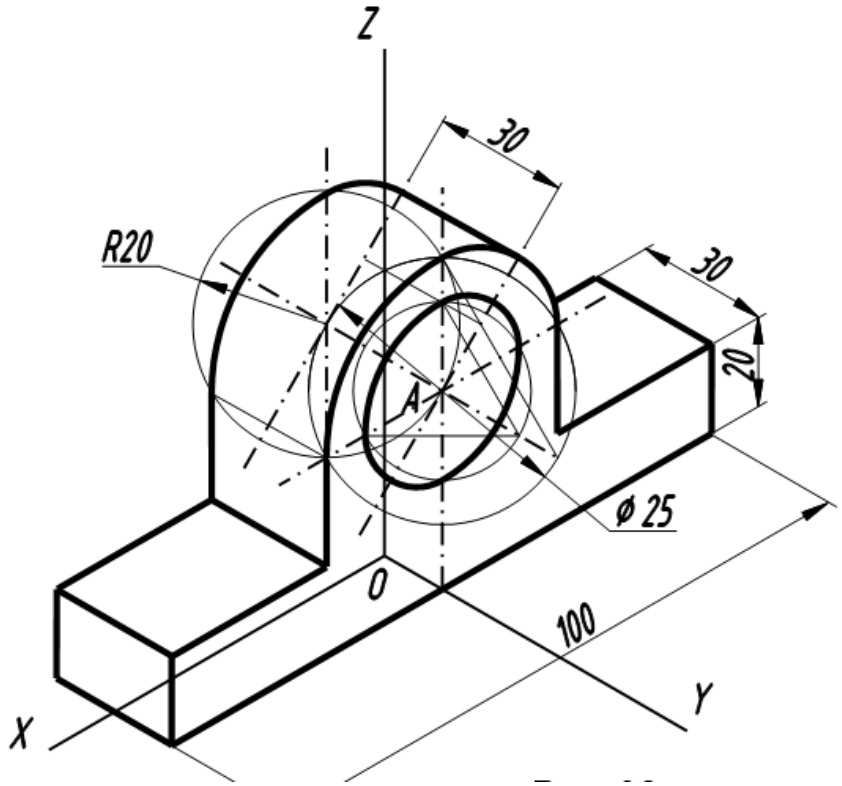


3-bosqich. Detalning frontal proeksiyalar tekisligidagi barcha o'lchamlarni (100 mm, 20 mm, R20 va Ø25) x va z o'qlariga nisbatan joylashtirib, detalning frontal tekislikdagi ko'rinishini chizib olamiz (4-shakl).

4-shakl.

Talabalarga 4-bosqich uchun metodik ko'rsatma. Detalning 30 mm li o'lchamini u o'qiga nisbatan perallel qilib olish tavsiya qilinadi.

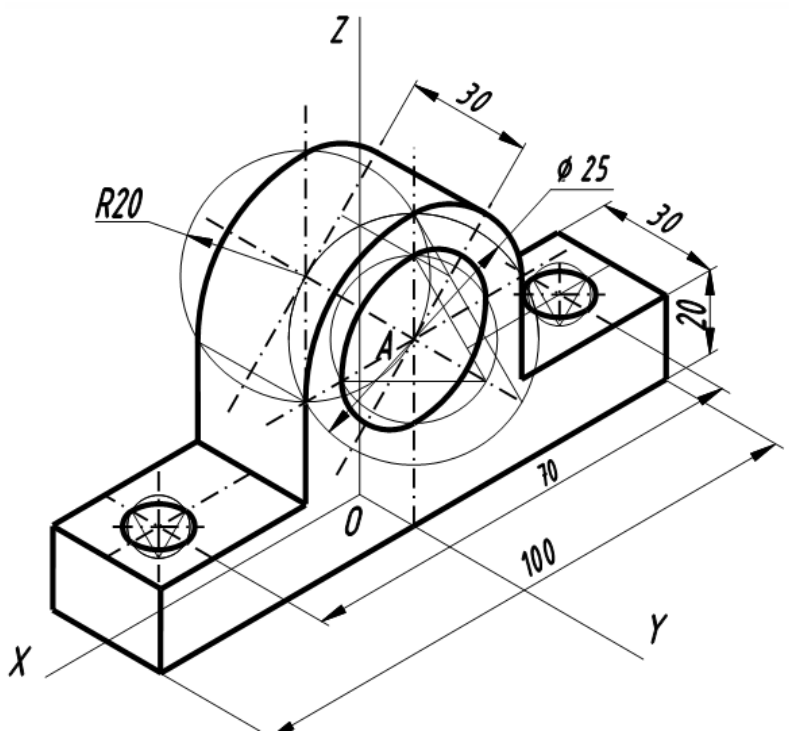
4-bosqich. Detalning gorizantal o'lchamini (30 mm) u o'qiga belgilab ketma-ket ravishda chizib olamiz. Natijada detalning gorizantal, frontal va profel ko'rinishlari qisman tasvirlanadi.



5-shakl.

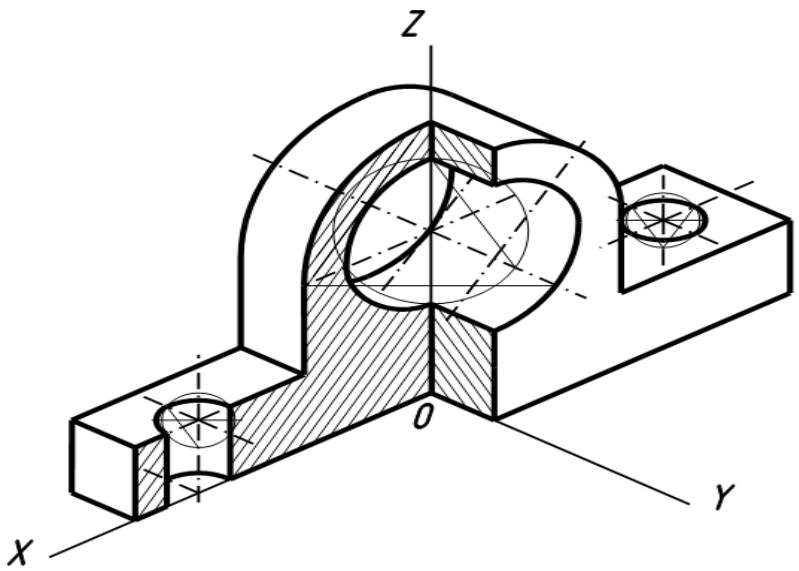
Talabalarga 5-bosqich uchun metodik ko'rsatma. Detalning supachasidagi tsilindrik teshiklarni chizishda ular orasidagi masofa inobatga olinsin.

5-bosqich. Detalning gorizantal tekislikdagi diametri Ø15 mm li teshikni shakllantirish uchun teshiklar orasidagi 70 mm masofani ikkiga bo'lib, u o'qining o'ng va chap tomnlariga 35 mm dan nuqtalarni belgilab olamiz. Belgilangan nuqtalrdan z o'qiga nisbatan parallel o'q chiziqlar o'tkazamiz. Detalning supachasida hosil bo'lgan o'q chiziqlarga asoslanib ikkita diametri Ø15 mm li teshiklarni shakllantiramiz (6-shakl).



6-shakl.

Talabalarga 6-bosqich uchun metodik ko'rsatma. Izometriyaga qirqim berishda uchburchak usulidan foydalaniladi, ya'ni profel tekislik bilan berilgan qirqimda u va z o'qlariga nisbatan ajratilgan bir xil intervaldagi nuqtalar tutashtiriladi. Frontal qirqimda esa x va z o'qlariga nisbatan ajratilgan bir xil intervaldagi nuqtalar tutashtiriladi.



7-shakl.

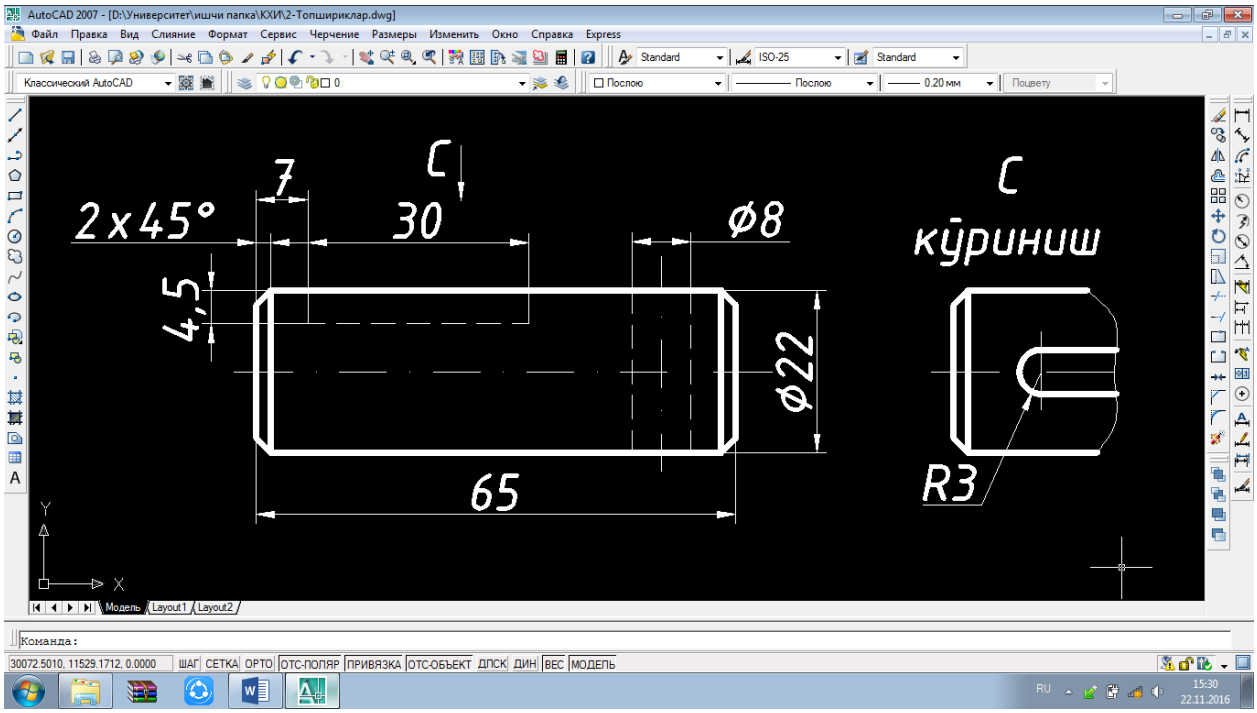
6-bosqich. SHakllantirilgan detalning bu ko'rinishiga detalning izometriyasi deyiladi. Izometriyaning to'rtdan bir qismiga koordinatalardan foydalanilgan xolda qirqim beriladi.

Keys-2

Keys mavzusi: Detallarning kesim va qirqimlari

Keys bayoni: Detallarni loyihalashda ularning ichki tuzulishlarini bilish juda katta axamiyatga ega xisoblanadi. Detal to'g'risida ko'proq ma'lumotga ega bo'lishimizda esa kesim va qirqimlardan kengroq foydalanish qulay hisoblanadi. Kesim va qirqimlardan foydalanilganda detallarning sodda yoki murakkab tuzulganligiga juda katta yetibor qaratiladi. SHunga qarab kesim va qirqimlarning tur (oddiy, murakkab, pog'onali, siniq va og'ma qirqimlar, shunga mos ravishda kesimning xam turlari mavjud) laridan foydalaniladi.

Keys topshirig'i: Quyida AutoCAD dasturi yordamida tayyorlangan val chizmasi kettirilgan. CHizmada ikkita element (shponka ariqchasi va tsilindirik teshik) mavjud bo'lib, bularni kesim yoki qirqim yordamida ko'rsating.



1-shakil.

Foydalanish uchun manbalar.

1. Yu. Kirgizbaev, E.Sobitov va boshkalar. Mashinasozlik chizmachilik kursi. Toshkent, «O'qituvchi», 1981.
2. Spravochnik po texnicheskomu chercheniyu. Novochixin L.I. 2005.www.evrobook.ru

3. Qirg’izboev Y., Inogomov Z., Rixsiboev T. “Texnik chizmachiligi kursi”.-T.,1987
4. Raxmonov I., Abduraxmonov A. “Chizmachilikdan ma’lumotnomalar”, O’quv qo’llanma, Toshkent - 2005
5. www. Ziyonet. Uz
6. AutoCAD dasturi.

Talabalar uchun metodik ko’rsatmalar. Detallarning kesim va qirqimlarini bajarishda dastlab detalning tuzulishi yaxshilab o’rganish lozim bo’ladi. Detalning murakkab yoki soddaligi, uni nechta ko’rinish bilan ifodalash mumkunligini aniqlab beradi. SHunga qarab detalning qaysi ko’rinishlariga kesim yoki qirqimlardan foydalanish metodlari belgilab olinadi.

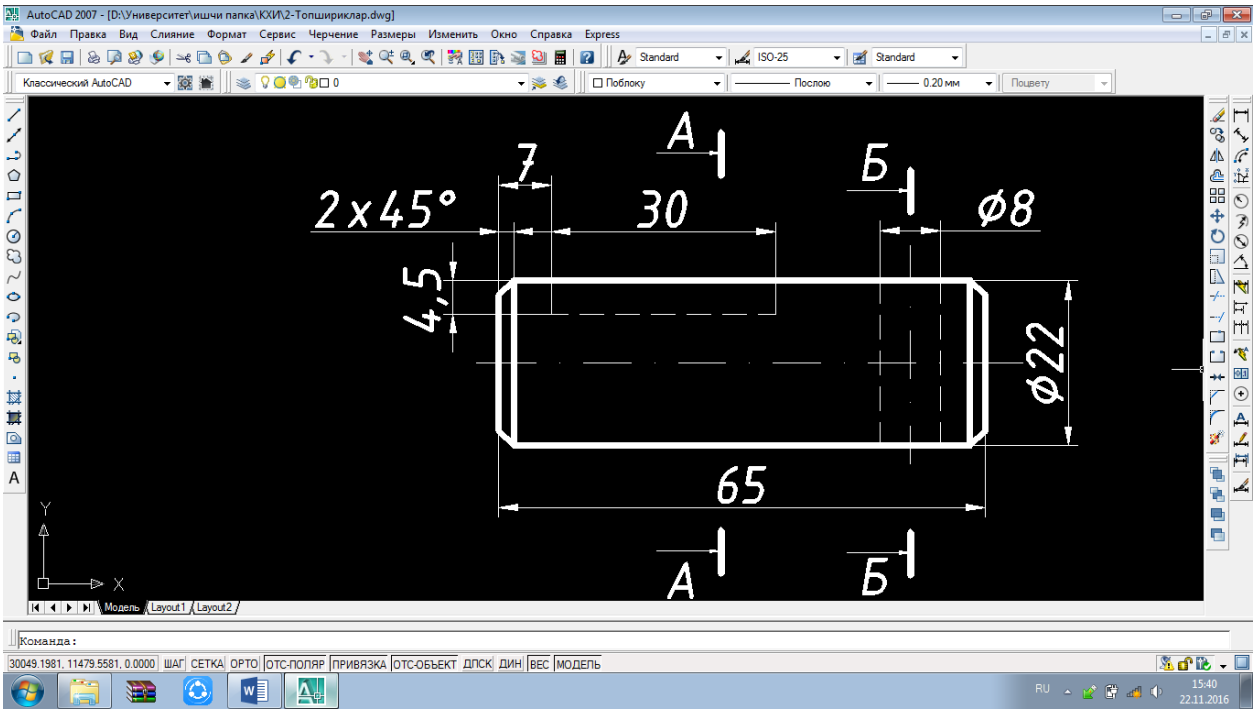
O’qituvchining yechimi.

Berilgan val detalida ikkita element joylashgan bo’lib, ya’ni 4,5x6x30 mm o’lchamdagi shponka ariqchasi va diametri Ø8 mm li tsilindirik teshik. Bu ikkita elementni ko’rsatishni ikkita metodi bo’lib, dastlab birinchi metodda yechimini ko’rib chiqamiz.

1-metod. Bu metod kesimlar yordamida amalga oshiriladi. Dastlab elementlar joylashgan valning qisimi aniqlab olinadi va xarflar yordamida belgilanadi. SHponka ariqchasini A xarfi bilan va tsilindirik teshikni esa B xarfi bilan belgilab olamiz. Bunda uzuq chiziqdan foydalangan holda strelkalar qo’yiladi. Strelkalar uzuq chiziqning qaysi tarafiga qo’yilishiga qarab detalning kesimini faqat o’sha strelka qaratilgan tarafdangina ko’rishimiz mumkun bo’ladi.

Talabalarga 1-bosqich uchun metodik ko’rsatma. Val elementlarini shaklini inobatga olgan xolatda belgilashlar to’g’ri va aniq yo’nalishda bo’lishi kerak.

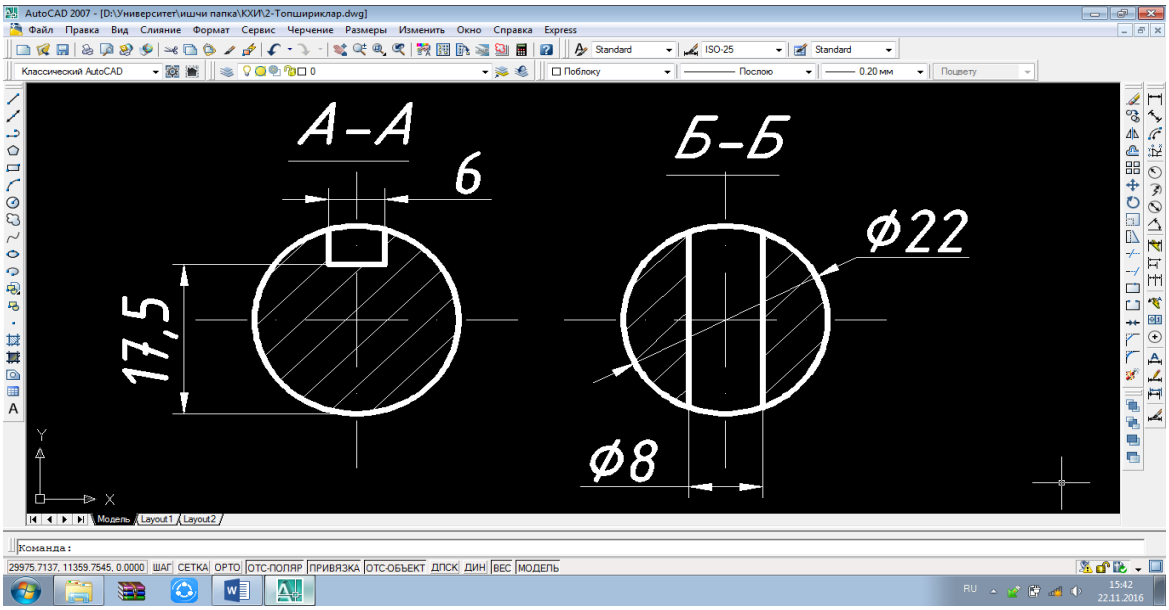
1-Bosqichi. Val yelementlarini aloxida xarflar bilan belgilab olamiz va uzuq chiziqga sterelka qo’yamiz.



2-shakl.

Talabalarga 2-bosqich uchun metodik ko'rsatma. Tekislik bilan berilgan kesim yuzasiga shtrix beriladi. Detalimiz uncha katta bo'lmagani uchun shtrixlar orasini 2 mm dan 3 mm gacha olishimiz mumkun (qoyida bo'yicha detalning katta kichikligiga qarab shtrixlar orasi 1 mm dan 10 mm gacha qilib olishga ruxsat etilgan) va shtrix 45º da bo'lishi kerak.

2-Bosqich. Belgilangan qismlarni ajratib olingan xolda tekislik bilan kesim beriladi va shtrixlanadi. Bunda detaldagi yelementlar yoqqol ravishda ko'rinadi va masala yechimi oxiriga yetgan hisoblanadi.

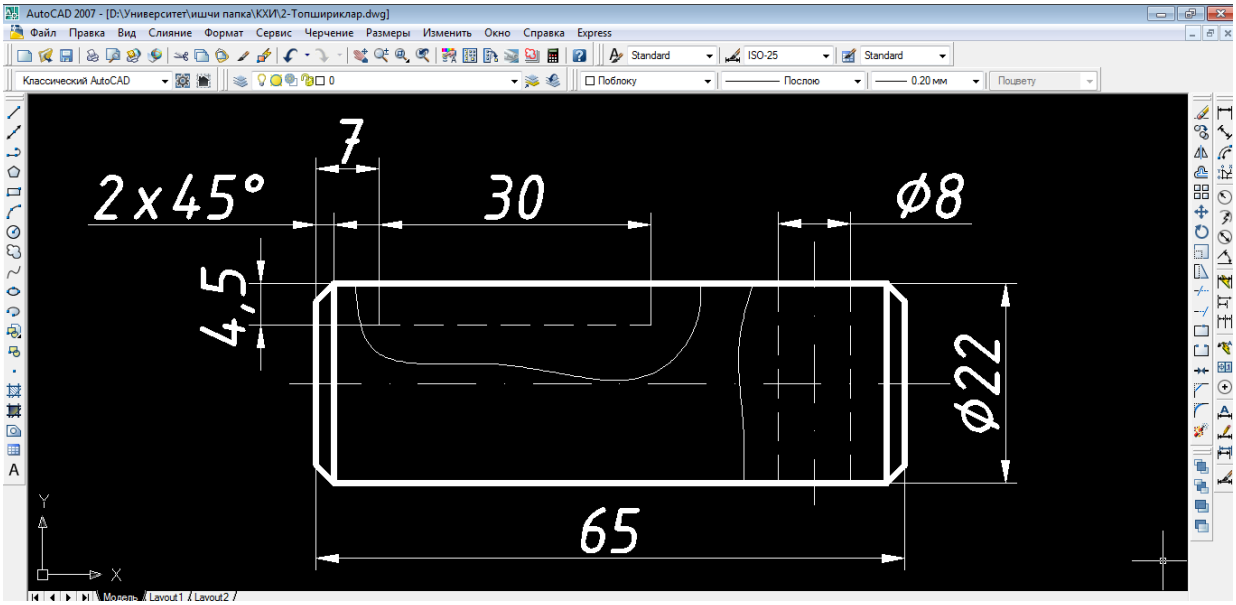


3-shakl.

2-metod. Bu metodda valning ko’rinmay turgan elementlarini mahalliy qirqim berish metodi bilan yechim amalga oshiriladi.

Talabalarga 1-bosqich uchun metodik ko’rsatma. Valning ko’rinmay turgan elementlari tutash to’lqin chiziq bilan chegaralanib olinadi.

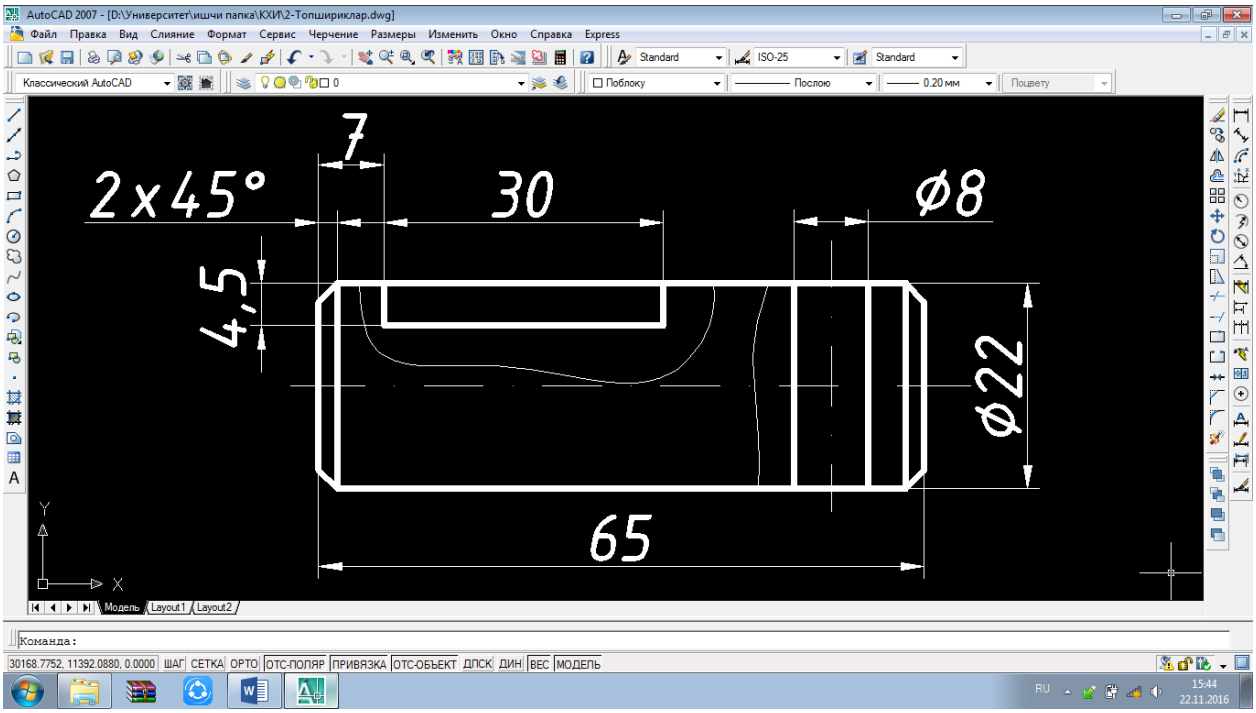
1-bosqich. Bunda valning ko’rinmay turgan shponka ariqchasi va tsilindrik teshikni tutash to’lqin chiziq yordamida mahallliy qirqimni amalga oshirish maqsadida chegaralab olamiz.



4-shakil.

Talabalarga 2-bosqich uchun metodik ko’rsatma. Mahalliy qirqim qo’llanilgandan keyin shtrix chiziqlar asosiy chiziqga aylantiriladi.

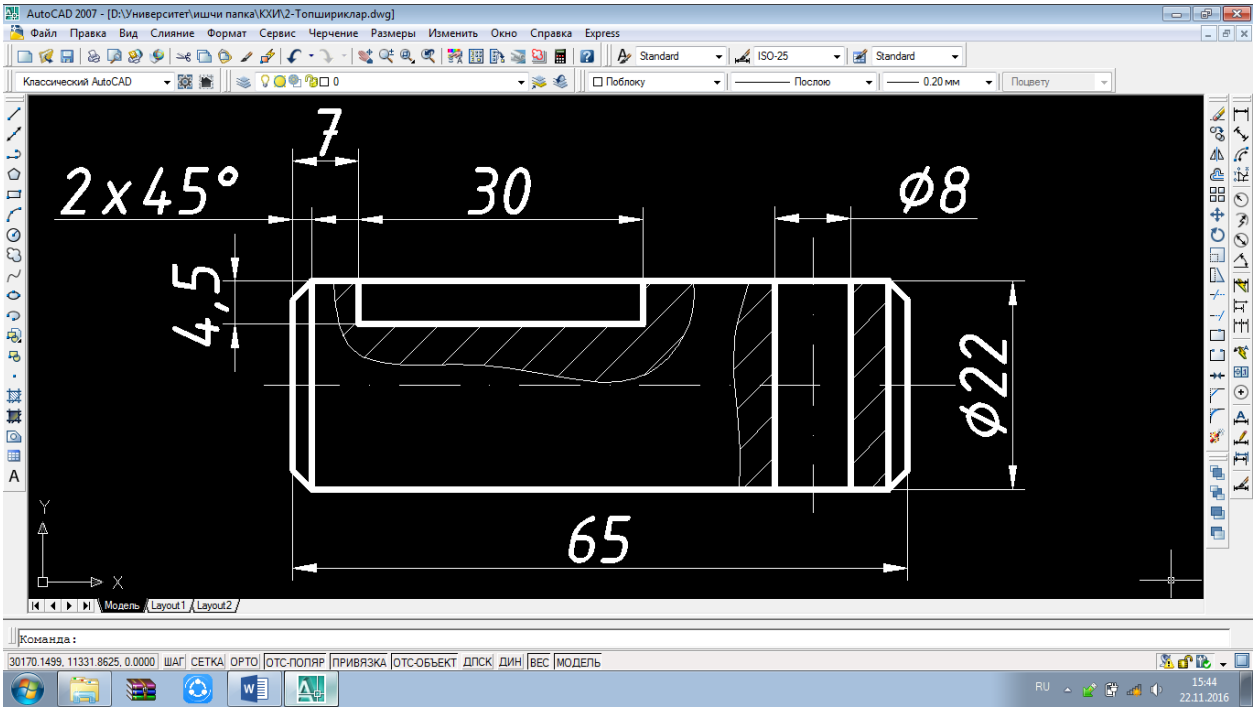
2-bosqich. Tutash to’lqin chiziq bilan detal elementlarini chegaralab olgandan keyin shtrix chiziqlar asosiy chiziq turiga o’zgaradi va detalning ko’rinmay turgan qisimlari qo’rish mumukun bo’ladi.



5-shakil.

Talabalarga 3-bosqich uchun metodik ko'rsatma. Ajratilgan mahalliy qirqim ichiga shtrix chiziqlar yordamida qirqim beriladi.

3-bosqich. Detalning chegaralangan qisimlarini shtrixlaymiz. Bunda detalni yelementlari yoqqol ko'rinadi va uni tushunish soddalashadi. Bu metodda xam yechim mutloq to'g'ri hisoblanadi (6-shakl).



6-shakl.

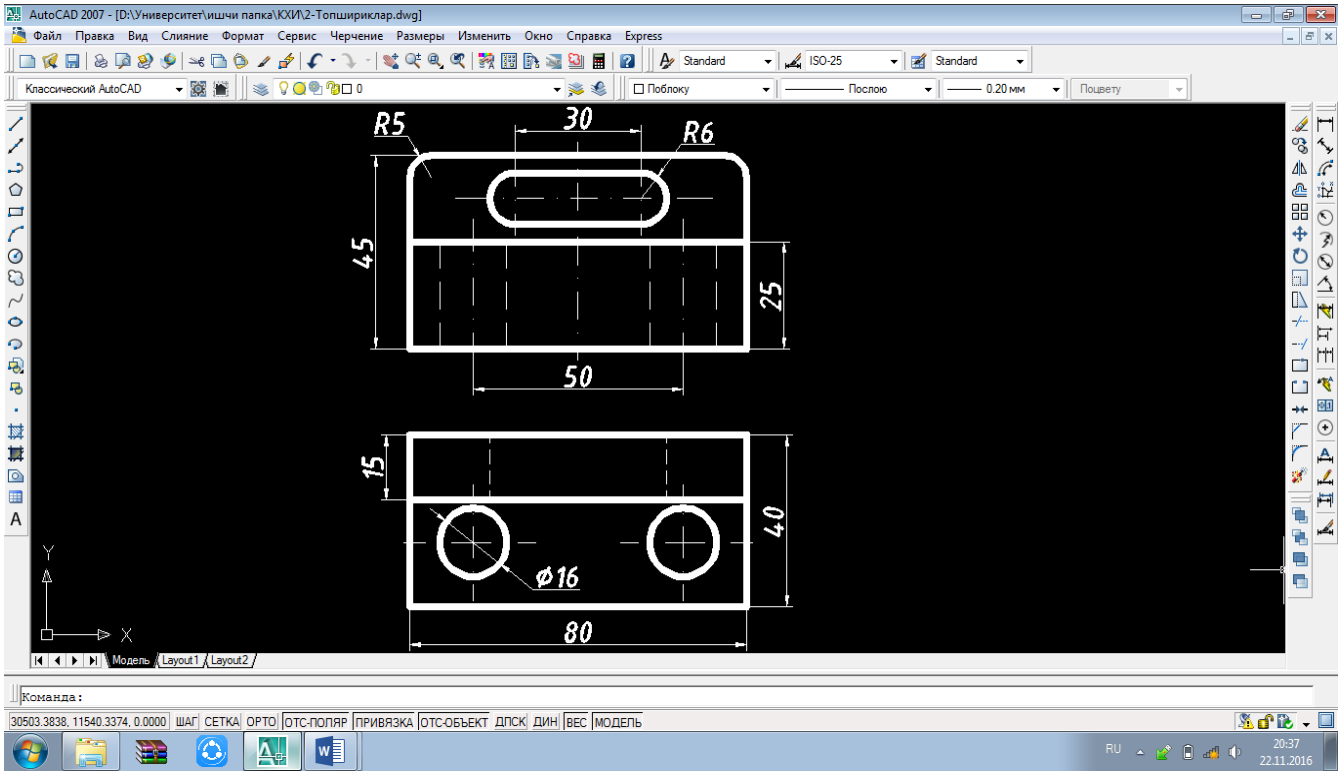
Xulosa: Masalani xar ikkala metodda xam yechimlarini aniqlash to'g'ri xisoblanadi va detallarning ichki qismlarini tasvvur qilishimizga, xamda loyihalarni samarali bajarishimizga katta yordam beradi.

Keys-3

Keys mavzusi: Detalning gorizantal va frontal ko'rinishlaridan foydalangan xolda profel proektsiyasini aniqlash.

Keys bayoni: Detallarni loyihalash jarayonida ularning ko'rinishlarini to'g'ri joylashtirish juda katta axamiyatga ega xisoblanadi. CHunki ishlab chiqarishning rentabelligiga bevosita ta'sir ko'rsatuvchi omillardan biri bu detallarning loyihasi qanday darajada bajarilganligi xisoblanadi. SHuning uchun detallarni tekisliklardagi proektsiyalarini bajarishda chiziq turlarini to'g'ri qo'llanilishi, proektsiyalashni ketma-ket bo'lishi, o'lchamlarni ko'rinishlarga nisbatan aniq va o'z o'rnida qo'llanilishi, rasmiylashtirish standartlar asosida amalga oshirilishi, shuningdek boshqa texnik talablarning to'liq bajarilishi ijobiy natijalarga olib keladi.

Keys topshirig'i: Quyida gorizantal va frontal tekisliklarda keltirilgan detalning ko'rinishlaridan foydalangan xolda, uning profel tekislikdagi ko'rinishi topilsin va zarur qirqimlar bajarilsin.



1-shakl

Foydalanish uchun manbalar.

1. *Mironova R.S., Mironov B.G.* Injenernaya grafika. M.: Vыsshaya shkola. – 2000. – 288 s.
2. *Mironov B.G. i dr.* Sbornik zadaniy po injenernoy grafike s primerami vыpolneniya chertejey na kompьyutere. M.: Vыsshaya shkola. – 2004. – 356 s.
3. *pod. red. D.M.Borisova.* CHerchenie. M.: Prosveщenie. – 1987. – 352 s.
4. *Ro'ziev E.I.* CHizmachilik o'qitish metodikasi. Urganch. UrDU. – 2001. – 120 b.

Talabalar uchun metodik ko'rsatmalar. Detalning profel ko'rinishini aniqlashda detaldaning gorizantal va frontal ko'rinishlardagi xar bir nuqtalarni profel tekislikga parallel ko'chirish metodidan foydalaniladi. SHuningdek o'lchamlarni to'g'ri joylashtirish va ko'rinishlarga zarur qirqimlar bajariladi.

Keysni yechish jarayoni. Detalning ko'rinishlarini aniqlab va qirqimlar berish jarayoni quyidagi tartibda amalga oshiriladi:

Detalning o'lchamidan kelib chiqqan xolda farmat tanlaymiz (bizning misolimiz uchun A3 farmat tanlaymiz);

A3 farmatni chap tomonidan farmat chetki qismiga nisbatan 20 mm va qolgan tomonlaridan 5 mm masofada asosiy chiziq turi bilan ramkaga olamiz;

Olingan ramkaning o'ng tomoniga burchak shtampi bajariladi;

Detalning ko'rinishlarini katta kichikligiga qarab, farmatdan ajratilgan maydonga teng va markazlashgan xolda joylashtiriladi;

Detalning o'lchamlari uch ko'rinishga xam teng va o'z o'rnida qo'llaniladi;

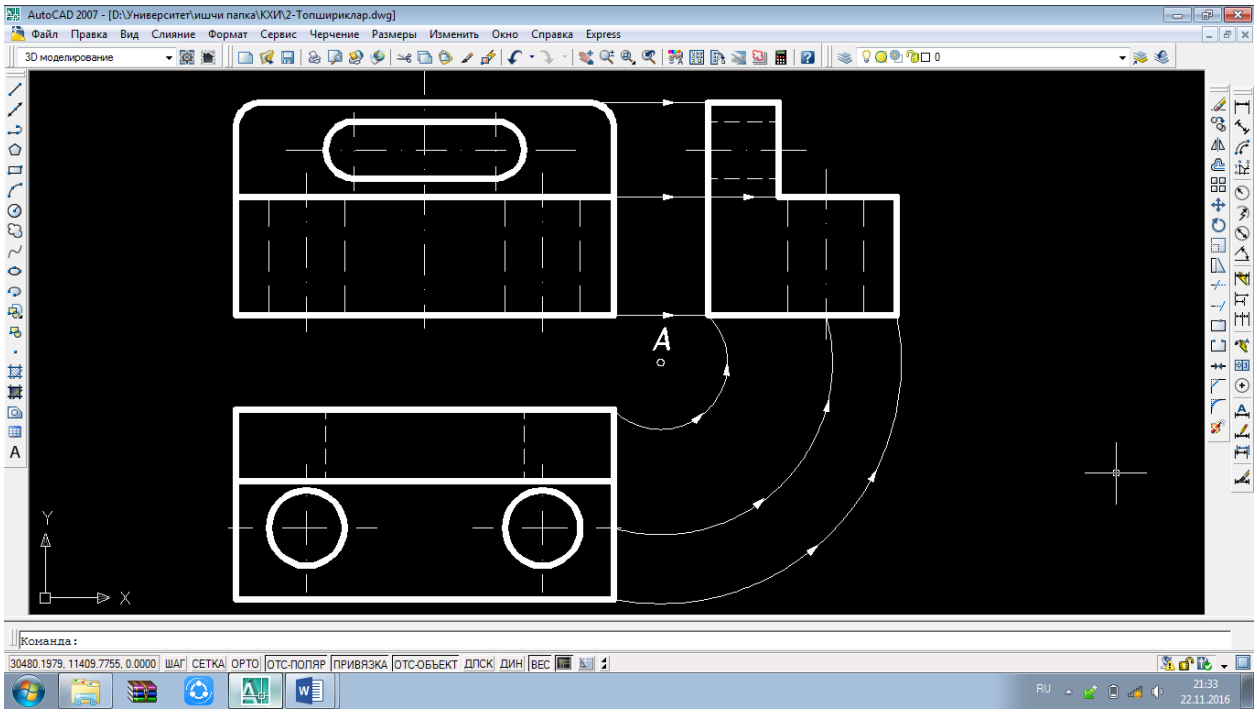
Detalning ko'rinishlariga zarur bo'lgan qirqimlar bajariladi.

Bu amallarni AutoCAD dasturi orqali xam bajarish mumkun.

O'qituvchining yechimi.

Talabalarga 1-bosqich uchun metodik ko'rsatma. Ko'rinishlar orasidagi masofa bir xilda olinadi va o'lchamlarni joylashtirish imkoniyatini xam inobatga olish zarur hisoblanadi.

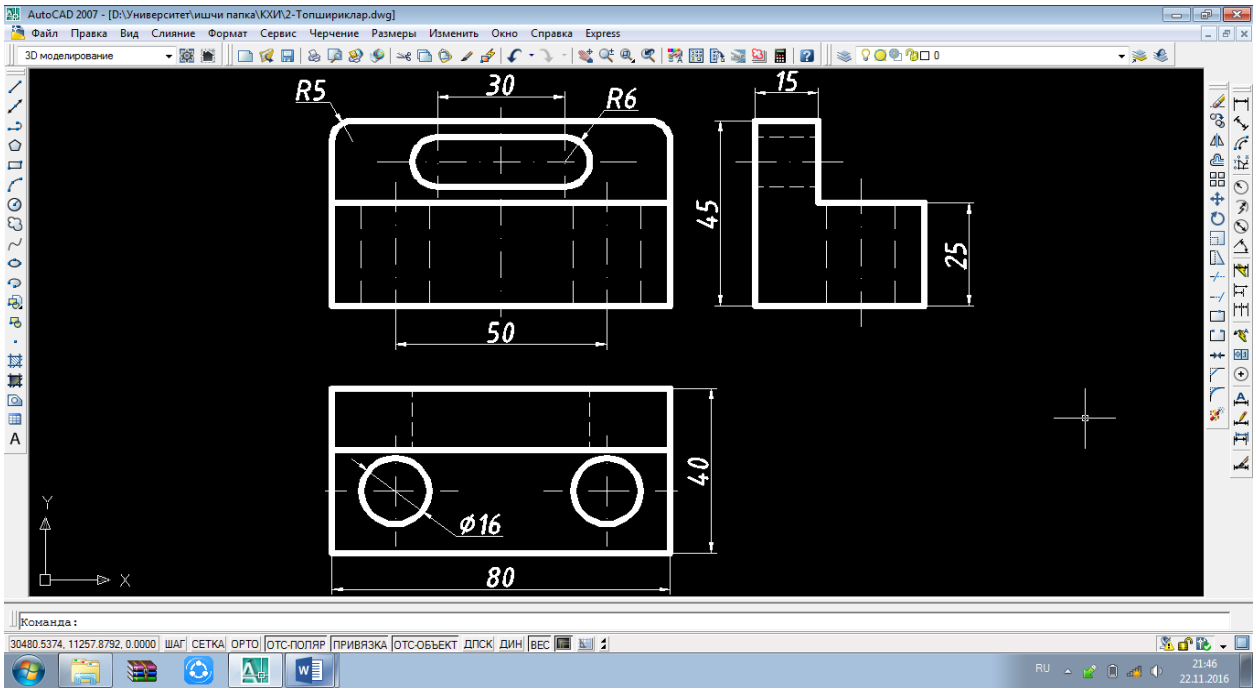
1-bosqich. Bunda detalning profel ko'rinishi aniqlash uchun A nuqta atrofida tsirkulni aylantirib, gorizantal tekislikdagi nuqtalar ketma-ket ravishda profel tekislikga ko'chiriladi. Frontal tekislikdagi nuqtalar esa parallel ravishda profel tekislikga ko'chiriladi. Ko'chirilgan nuqtalar asosida detalning profel tekislikdagi ko'rinishini shakllantirib olamiz.



2-shakl

Talabalarga 2-bosqich uchun metodik ko'rsatma. Detal ko'rinishlariga o'lchamlarni joylashtirilganda bitta o'lcham faqat bir marta ishlatiladi. Xar qanday o'lcham detalning to'liq ko'rinib turgan qismiga qo'yiladi.

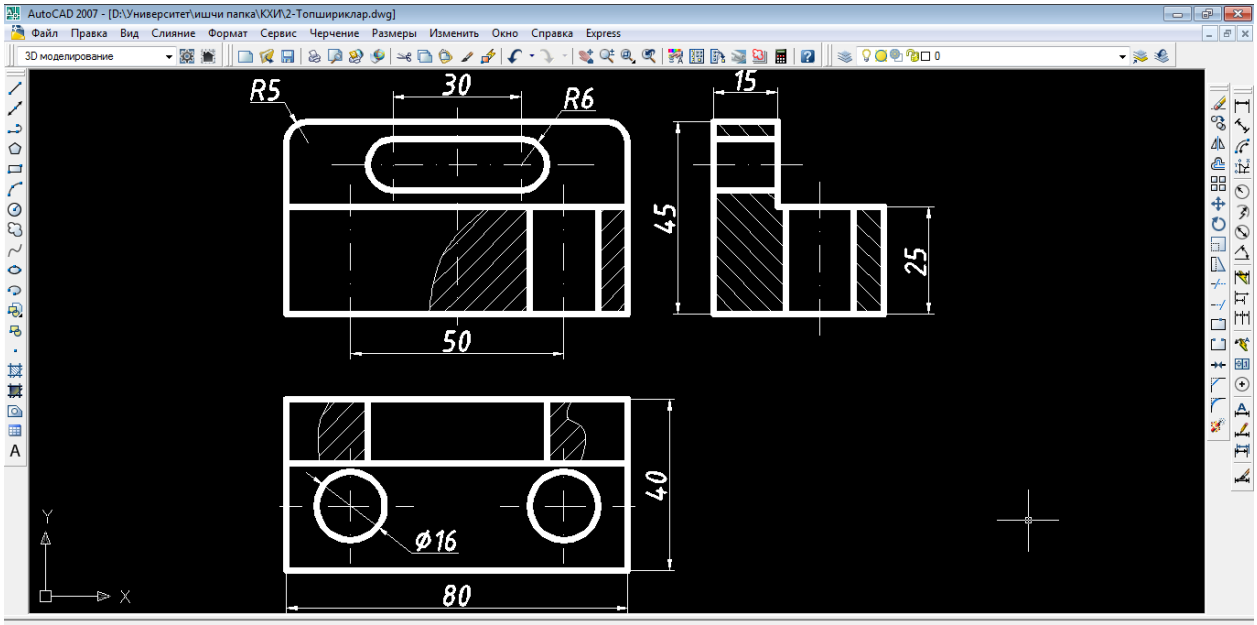
2-bosqich. SHakllantirilgan ko'rinishlarga detalning o'lchamlarini teng va o'z o'rnida joylashtirib chiqamiz.



3-shakl.

Talabalarga 3-bosqich uchun metodik ko'rsatma. Detalning ko'rinishlariga qirqimlarni qo'llashda, uning ko'rinmay turgan elementlarini qanday joylashishiga qarab qirqim tur (mahalliy, oddiy, pog'onaviy siniq, og'ma va b.) laridan foydalaniladi.

3-bosqich. Detalning gorizantal, frontal va profel tekisliklardagi ko'rinishlariga zarur bo'lgan qirqimlarni bajaramiz. Gorizantal va frontal ko'rinishga mahalliy qirqimdan foydalanamiz. Profel ko'rinishga esa butun ko'rinish bo'yicha qirqim qo'llaymiz va bunda detalning ko'rinmay turgan qisimlari ko'rinadigan bo'ladi.



4-shakl.

Xulosa: Detalning ikki ko'rinishidan (gorizantal va frontal ko'rinishlari) foydalanib uning uchunchi ko'rinishini (profel ko'rinishi) tasavvur qilish yoki boshqa zarur bo'lgan ko'rinishlarni aniqlash va chizish talabalarda detalning loyihasini to'g'ri va aniq bajarishning yuksak malakasini shakllanishiga ijobiy yordam ko'rsatadi.

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