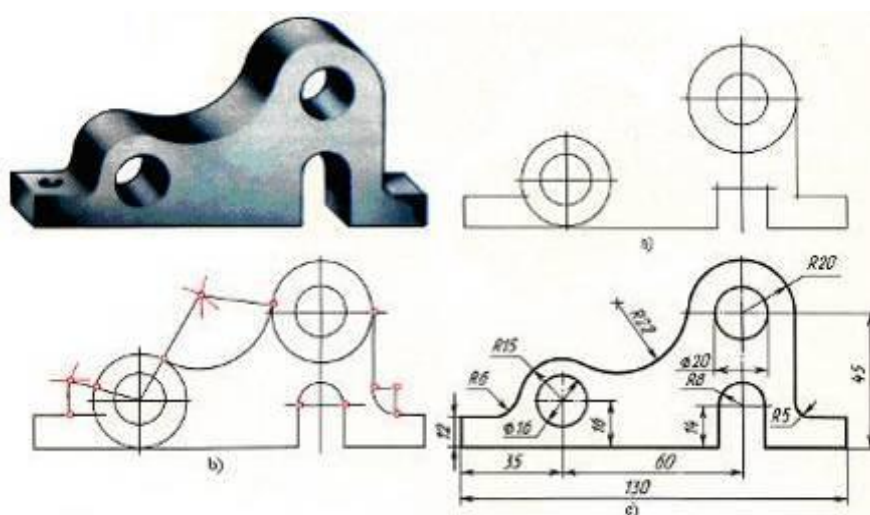


M.Xalimov, F.E.Ochilov

CHIZMACHILIK

(Geometrik va proyeksion chizmachilikdan
mustaqil ishlash uchun topshiriqlar)



QARSHI-2012

Mazkur o`quv metodik qo`llanma Pedagogika oliy o`quv yurtlarining 5110800-“Tasviriy san`at va muhandislik grafikasi”, 5111000-Kasb ta’limi (“Tasviriy san`at va muhandislik grafikasi”), 5111000-Kasb ta’limi (5320900-Engil sanoat buyumlari konstruksiyasini ishlash va texnologiyasi(Engil sanoat)), 5111000- Kasb ta’limi(5310600-Yer usti transport tizimlari va ularning ekspluatatsiyasi (Avtotransport)), 5111000- Kasb ta’limi (5320100-Materialshunoslik va yangi materillar texnologiyasi) va 5111000- Kasb ta’limi (5112100-Mehnat ta’limi) bakalavriat yo`nalishlarining kunduzgi bo`lim talabalar uchun mo`ljallangan bo`lib, unda chizmachilikning geometrik va proyeksion bo`limlariga doir talabalar bajaradigan mustaqil ishlashlar mazmuni, mavzularni chuqurroq o`rganishlari uchun bir muncha qiziqarli va biroz murakkab bo`lgan topshiriqlar kiritilgan. Shu bilan birga talaba mustaqil o`zini bilimini tekshirishi uchun test savollari hamda geometrik va proyeksion chizmachilik fanidan savolnomalar majmuasi, boshqotirmalar ham keltirilgan. Ushbu o`quv metodik qo`llanmadan talabalar, magistrantlar, kasb-hunar kolleji o`qituvchilari va mustaqil shug`ullanuvchi boshqa kasb egalari ham foydalanishlari mumkin.

Mualliflar: M.Xalimov – Nizomiy nomidagi TDPU «Chizmachilik va uni o`qitish metodikasi» kafedrasida katta o`qituvchisi.

F.E.Ochilov - Qarshi DU «Tasviriy san`at va muhandislik grafikasi» kafedrasida katta o`qituvchisi, t.f.n.

Taqrizchilar: P.O.Adilov - Nizomiy nomidagi TDPU “Chizmachilik va uni o`qitish metodikasi” kafedrasida dotsenti, t.f.n.

S.X.Yakubov - Qarshi DU «Mehnat ta’limi va chizmachilik» kafedrasida mudiri, dotsent, t.f.n.

O'quv metodik qo'llanma Qarshi DU Ilmiy kengashining
20__yil «__»_____dagi __ sonli qarori bilan nashrga tavsiya etilgan.

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O'ZBEKISTON RESPUBLIKASI
OLIY VA O'RTA MAXSUS TA'LIM VAZIRLIGI

QARSHI DAVLAT UNIVERSITETI

CHIZMACHILIK

(Geometrik va proyeksion chizmachilikdan
mustaqil ishlash uchun topshiriqlar)

QARSHI-2012

Mazkur o'quv - metodik qo'llanma
O'zbekiston Respublikasi Mustaqilligining
20 yilligiga bag'ishlanadi.

So`z boshi

Mazkur o'quv-metodik qo'llanma pedagogika oliy o'quv yurtlarining 5110800-“Tasviriy san`at va muhandislik grafikasi”, 5111000-Kasb ta'limi (“Tasviriy san`at va muhandislik grafikasi”), 5111000-Kasb ta'limi (5320900-Engil sanoat buyumlari konstruksiyasinin ishlash va texnologiyasi(Engil sanoat)), 5111000- Kasb ta'limi(5310600-Yer usti transport tizimlari va ularning ekspluatatsiyasi(Avtotransport)), 5111000- Kasb ta'limi (5320100-Materialshunoslik va yangi materillar texnologiyasi) va 5111000- Kasb ta'limi (5112100-Mehnat ta'limi) ta'lim yo'nalishi o'quv rejasida kiritilgan Chizmachilik (Geometrik va proyeksion chizmachilik) fani dasturi asosida tayyorlangan. Chizmachilik (Geometrik va proyeksion chizmachilik) fanidagi ba'zi grafik ishlarni talabalar ishning mohiyati va mazmunini tushunmay, fazoviy tasavvur qilmay bajaradilar. Bunday hollarni muhandislik grafikasi o'qitiladigan barcha oliy o'quv yurtlarlarida kuzatish mumkin. Sabab, dastlabki darslarda talabalarga chizmalarni chizish va o'qish ancha qiyinchilik tug'diradi. Chizmani o'qishni o'rgatish talabalarining chizmada tasvirlangan predmetning, uning tuzilishi va tarkibiy qismlari to'g'risida aniq og'zaki tavsif bera olish qobiliyatini rivojlantirish demakdir. Talabalarda biror buyum yoki detalning chizmasini bajarishga doir predmetning berilgan chizmasini o'qishga oid topshiriqni bajarishda, ularga tanish bo'lgan geometrik jismlarning yoki real buyumning geometrik shaklini yanada aniq tasavvur qila bilish qobiliyatlarini rivojlantirish va fazoviy tasavvuri zahirasini kengaytirish hamda mustahkamlash kerak bo'ladi. Berilgan topshiriqlarning maqsadi talabalarining dars mobaynida o'rgangan bilimlarini mustahkamlashga, mavzuga oid boshqa topshiriqlarni o'rganishga, chizmalarni o'qishni va mustaqil bajarish malakalarini rivojlantirishga, asosiysi esa fanni puxta o'zlashtirishiga zamin yaratishdan iborat.

Qo'llanmada birinchi kursga qabul qilingan talabalarining chizmachilikdan bilim saviyasini kengaytirish maqsadida geometrik chizmachilik bo'limida o'rganishi lozim bo'lgan topshiriqlardan tortib, proyeksion chizmachilikka oid ayrim murakkablikka ega bo'lgan detal chizmalarini chizish va ularni o'qiy bilish hamda fazoviy tasavvurni rivojlantirish kabi malakalarni oshirish uchun topshiriqlar keltirilgan.

Talabalar mustaqil ishlarini tashkil qilishning maqsad va vazifalari

Ma'lumki, oliy ta'limda O'zbekiston Respublikasi Vazirlar Mahkamasining 2001 yil 16 avgustdagi «Oliy ta'limning DTSlarini tasdiqlash to'g'risida»gi 343-sonli qaroriga muvofiq kadrlar tayyorlash sifatini nazorat qilishda talabalarining mustaqil ishlarini tashkil etish, nazorat qilish va baholash tartibi belgilangan.

Talabalar mustaqil ishining asosiy maqsadi – talabada o'quv ishlarini mustaqil bajarishda kerak bo'ladigan bilim, ko'nikma va malakalarni tashkil topishi va rivojlanishi demakdir.

Talabalar mustaqil ishining vazifalari:

- *mustaqil ishlarni bajarish uchun yangi ma'lumot axtarish, kerakli chora tadbirlarni aniqlash;*
- *informatsion manbalardan mustaqil ishlarni bajarish jarayonida foydalanish;*
- *meyoriy xujjatlar, ilmiy-metodik materiallar, o'quv adabiyotlar bilan ishlash;*
- *elektron o'quv adabiyotlar va ma'lumotlar bazasi bilan ishlash;*
- *“INTERNET” tarmog'idan maqsadli foydalanish, berilgan savollar echimini to'g'ri aniqlash;*
- *ishni tizimli va ijodiy bajarilishiga tayyorlash;*
- *ishlab chiqilgan echimni, g'oya yoki proektni izohlash va himoya qilish va b.*

Talabalar mustaqil ishi metodik ta'minlanishni tematikasi va shakllari ro'yxatini tuzish uchun har birini maqsad va vazifalarini ifodalab berish, yo'riqnoma yoki metodik yo'llanmalar ishlab chiqish va ilmiy adabiyotlarni tanlash deganidir.

Quyida asosan Chizmachilik fanidan (Geometrik va proyeksion chizmachilik) materiallar o'rin olgan. Xususan, 5110800-“Tasviriy san`at va muhandislik grafikasi”, 5111000-Kasb ta'limi (“Tasviriy san`at va muhandislik grafikasi”), 5111000-Kasb ta'limi (5320900-Engil sanoat buyumlari konstruksiyasinin ishlash va texnologiyasi(Engil sanoat)), 5111000- Kasb ta'limi(5310600-Yer usti transport tizimlari va ularning ekspluatatsiyasi(Avtotransport)), 5111000- Kasb ta'limi (5320100-Materialshunoslik va yangi materillar texnologiyasi) va 5111000- Kasb ta'limi (5112100-Mehnat ta'limi) ta'lim yo'nalishida o'qitiladigan Chizmachilik o'quv fanini o'zlashtirish jarayonida talaba quyidagi bilim, ko'nikma va malakaga ega bo'lishi kerak:

- *ESKD (KXYaT) va davlat standartlarining (GOST) qoidalarini o'zlashtirish;*
- *yuqori darajadagi grafik savodxonlikka erishish;*
- *chizmalarda shartlilik va soddalashtirishlarni tadbiriq qila olish;*
- *model va mashina detallarining eskizi, ishchi chizmasi hamda aksonometrik tasvirlarini bajarish;*
- *buyumlarning turli sxematik chizmalarini bajara olish va ularni o'qiy bilish;*
- *istalgan buyumning ko'rinishlarini bajara olish;*
- *detal ko'rinishlari sonini etarli darajada kamaytira olish;*
- *texnik ijodkorlik va loyihalash malakalarini egallash va h.k.*

«Chizmachilik» fani o'quv rejada rejalashtirilgan matematika va tabiiy fanlar bilan bevosita bog'liq. Demak, bu fanlarni o'zlashtirish uchun talabadan «Chizmachilik» fani bo'yicha etarli bilim, ko'nikma va malakalarga ega bo'lishlik talab etiladi. Yuqoridagi bilim, ko'nikma va malakalarga ega bo'lishlik uchun fan o'qituvchisi mustaqil ish uchun ajratilgan soatlardan unumli foydalanishlari mumkin bo'ladi. Xususan, «Chizmachilik» fani uchun mustaqil ta'lim mavzusi talabalar mustaqil

o'rganadigan ma'ruza va amaliy mashg'uloti mavzularidan kelib chiqqan bo'lishi kerak. Shu bilan birga o'qituvchi talaba dars mobaynida olgan bilimni mustahkamlashiga mo'ljallab mavzular kiritishi kerak.

Talabalar mustaqil ishini bajarish jarayonida quyidagi manbalardan foydalanishi mumkin:

- *adabiyotlar (darslik, o'quv, metodik va boshqalar);*
- *“INTERNET” resurslari;*
- *ilmiy jurnallar;*
- *axborot resurslar;*
- *o'rgatish kurslari;*
- *ilmiy, kasbiy, amaliy to'garaklar;*
- *malaka oshirish kurslari;*
- *seminarlar va anjuman materiallar;*

Mustaqil ish natijalari (talaba uchun)

- *fanni o'zlashtirish sifati oshadi;*
- *nashr etilgan metodik qo'llanmalari, maqolalari, darsliklar, dasturlar va shu kabilar;*
- *o'qitishning faol shakllari, metodlari va uslublarida ishtirok etishi;*
- *turli seminar, anjumanlarda (ma'ruzalar) qatnashishi;*
- *didaktik materiallar, testlar foydalanish malakasi oshadi;*
- *yangi pedagogik va axborot texnologiyalar bo'yicha ma'lumotlar oladi;*

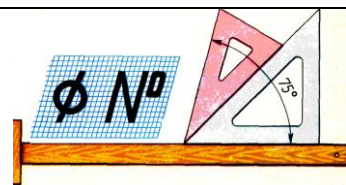
Mustaqil ish natijalari (o'qituvchi uchun)

- *fanni o'qitish sifati oshirishi;*
- *nashr etilgan darslik, o'quv qo'llanma hamda metodik qo'llanmalar, maqolalar, va shu kabilar tahlili;*
- *o'qitishning faol metodlarini ishlab chiqish;*
- *turli seminar, anjumanlar va tadbirlarda qatnashishi va qatnashgan boshqa ishtirokchilar ishlarini tahlil qilishi, yutuqli tomonlarini dars jarayoniga tadbiq etishi;*
- *dars o'tish uchun didaktik materiallar, ta'limiy testlar, ko'rgazmali qurollar va plakatlar, dinamik modellar ishlab chiqish;*
- *yangi pedagogik va axborot texnologiyalarini qo'llash bo'yicha metodik tavsiyalarni tahlil qilish hamda ishlab chiqish;*
- *shaxsiy novatorlik texnologiyalari bo'yicha ochiq mashg'ulotlar ishlab chiqish va o'tkazish;*

“Chizmachilik” (Geometrik va proyeksion chizmachilik) fanidan talabalar mustaqil ishini vazifalarini nazorat ishi, grafik ish, ishchi daftar, grafik konspekt (daftarda) ko'rinishida bajarib topshirishlari mumkin.

Quyida keltirilgan topshiriqlarni talabalar bevosita ishchi daftari, yoki grafik ish shakllarida bajarishlari mumkin. Chizmalarni ESKD (konstruktorlik hujjatlarining yagona tizimi-KHYaT) tomonidan qo`yilgan talablar asosida bajarishlikka rioya qilish zarur. Berilgan topshiriqlarni talaba chizma qog`oziga yoki oddiy daftarga ham bajarishi mumkin.

Berilgan shriftlarni ko`chirib yozing.



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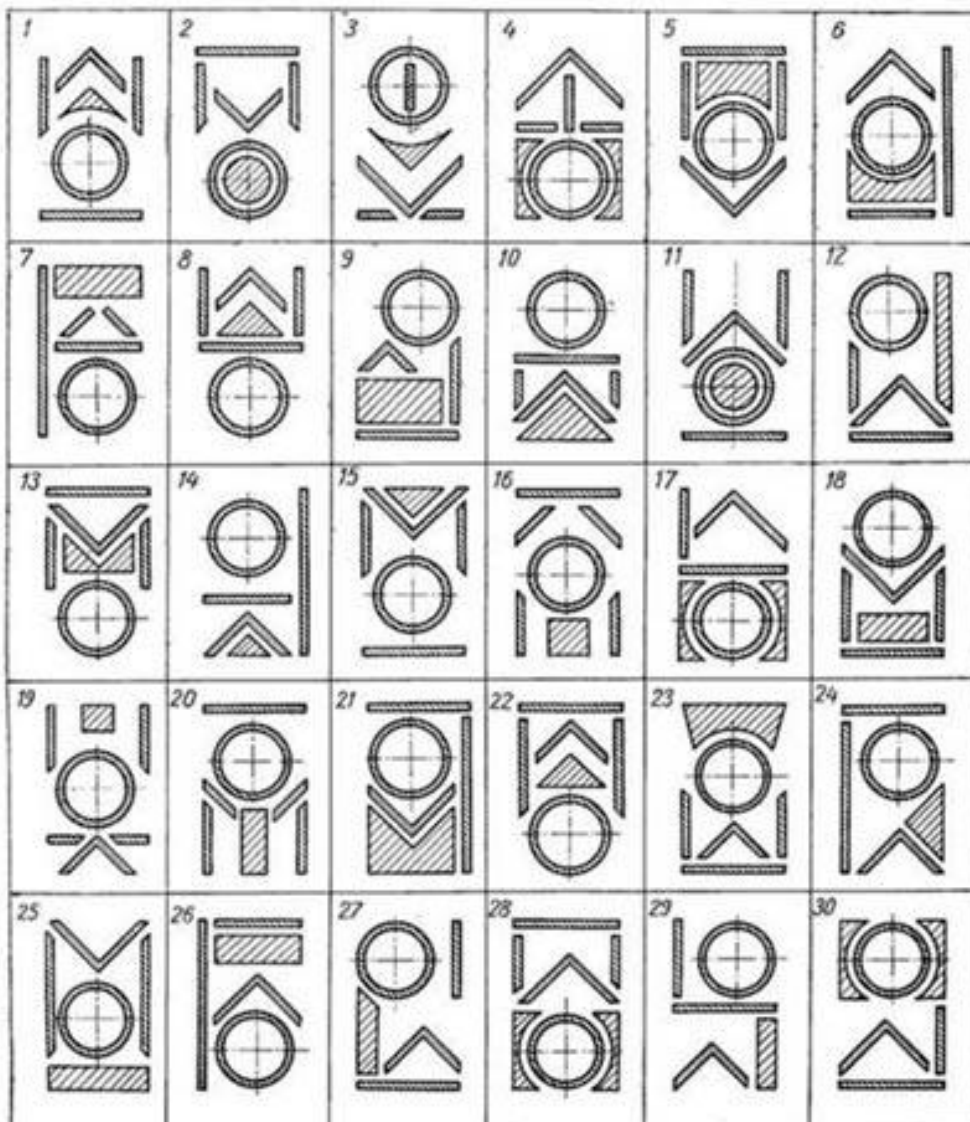
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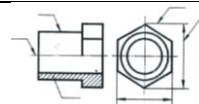
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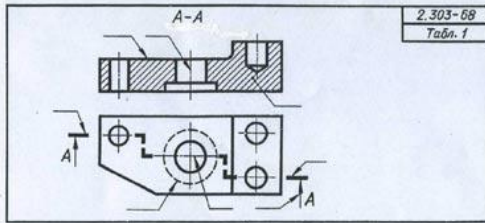
1 2 3 4 5 6 7 8 9 0

Shtrixlangan yuzalarni ko'chiring.

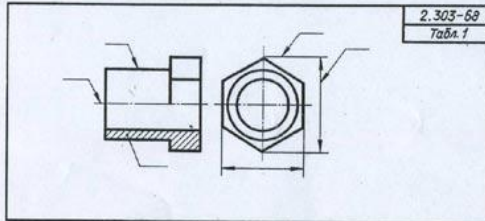


Detal chizmasini chizishda tadbiq qilingan chiziq turlariga ta'rif bering. Detalga chizmasida tadbiq qilingan kesim yoki qirqimni aniqlab, izohlang.

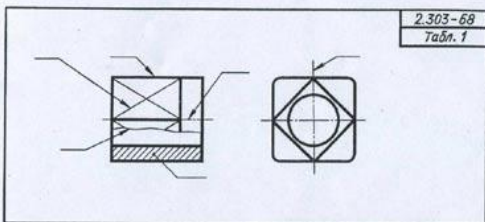




46. Обозначить на полках-выносах толщины линий в соответствии с их назначением

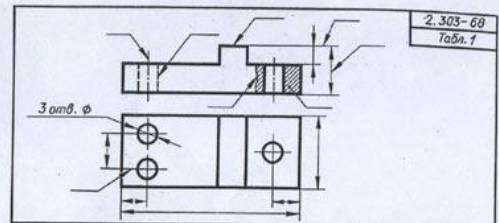


47. Обозначить на полках-выносах толщины линий в соответствии с их назначением

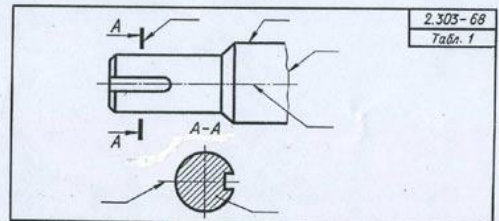


48. Обозначить на полках-выносах толщины линий в соответствии с их назначением

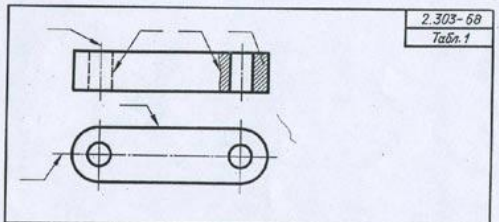
20



49. Обозначить на полках-выносах толщины линий в соответствии с их назначением

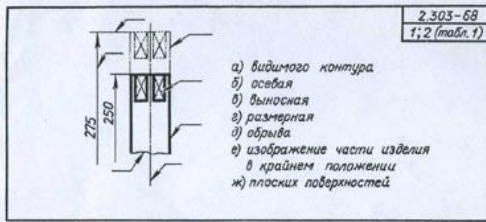


50. Обозначить на полках-выносах толщины линий в соответствии с их назначением



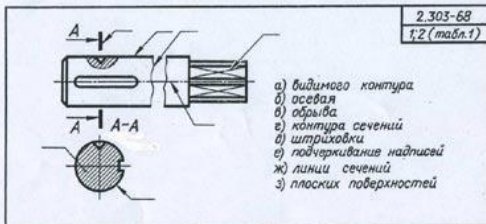
51. Обозначить на полках-выносах толщины линий в соответствии с их назначением

21



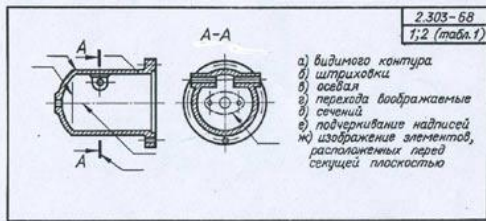
- а) видимого контура
- б) осевая
- в) выносная
- г) размерная
- д) обрыва
- е) изображение части изделия в крайнем положении
- ж) плоских поверхностей

34. Обозначить на полках линий-выносок перечисленные назначения линий



- а) видимого контура
- б) осевая
- в) обрыва
- г) контура сечений
- д) штриховки
- е) подчеркивания надписей
- ж) линии сечений
- з) плоских поверхностей

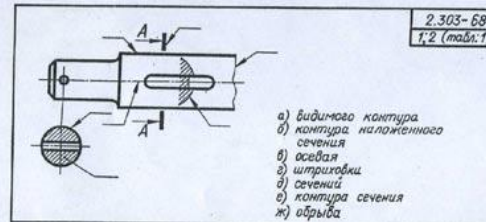
35. Обозначить на полках линий-выносок перечисленные назначения линий



- а) видимого контура
- б) штриховки
- в) осевая
- г) переходы изображаемые
- д) сечений
- е) подчеркивания надписей
- ж) изображение элементов, расположенных перед секущей плоскостью

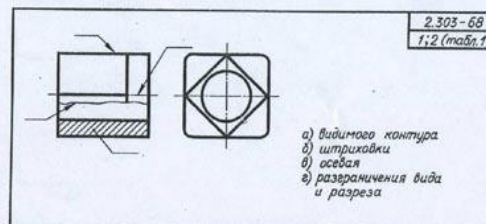
36. Обозначить на полках линий-выносок перечисленные назначения линий

16



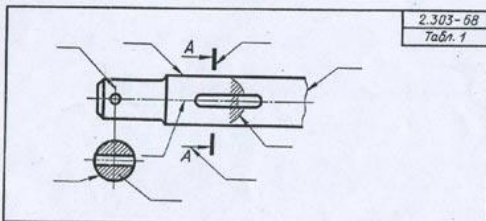
- а) видимого контура
- б) контура наложенного сечения
- в) осевая
- г) штриховки
- д) сечений
- е) контура сечения
- ж) обрыва

37. Обозначить на полках линий-выносок перечисленные назначения линий



- а) видимого контура
- б) штриховки
- в) осевая
- г) разграничения вида и разреза

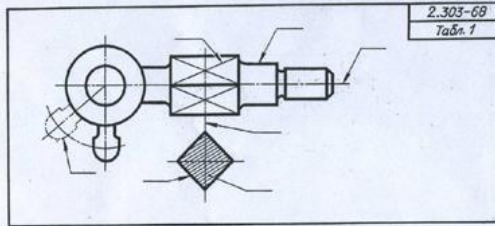
38. Обозначить на полках линий-выносок перечисленные назначения линий



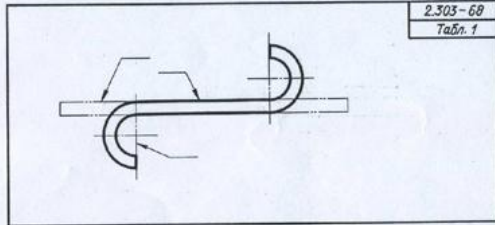
39. Обозначить на полках-выносах толщины линий в соответствии с их назначением

2-306

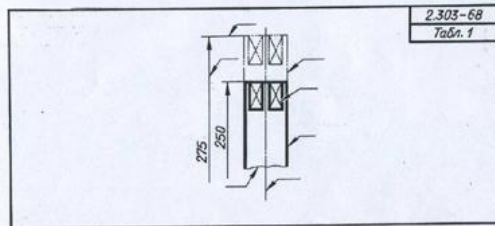
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40. Обозначить на полках-выносах толщины линий в соответствии с их назначением

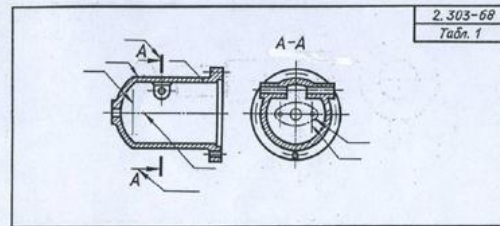


41. Обозначить на полках-выносах толщины линий в соответствии с их назначением

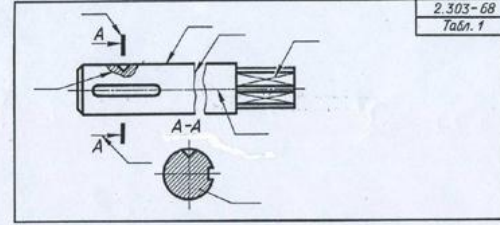


42. Обозначить на полках-выносах толщины линий в соответствии с их назначением

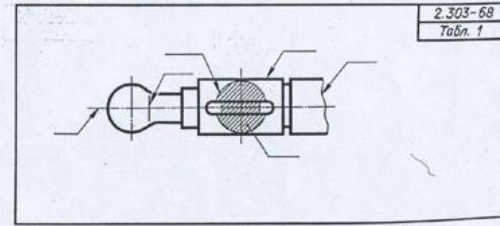
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43. Обозначить на полках-выносах толщины линий в соответствии с их назначением



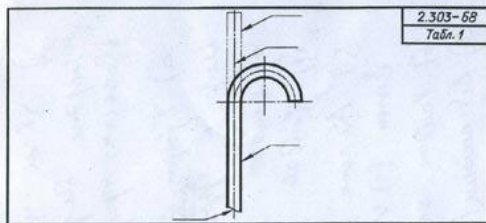
44. Обозначить на полках-выносах толщины линий в соответствии с их назначением



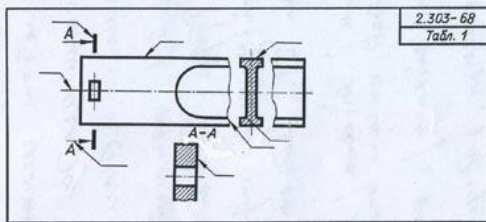
45. Обозначить на полках-выносах толщины линий в соответствии с их назначением

2*

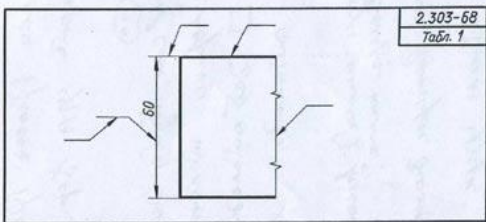
19 ✓



52. Обозначить на полках-выносах толщины линий в соответствии с их назначением

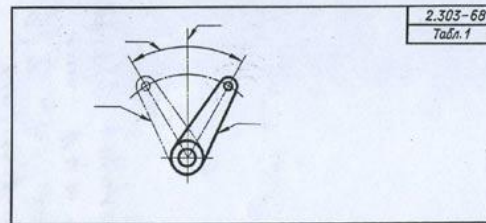


53. Обозначить на полках-выносах толщины линий в соответствии с их назначением

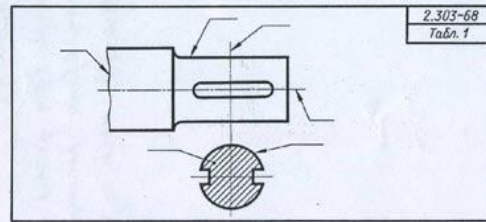


54. Обозначить на полках-выносах толщины линий в соответствии с их назначением

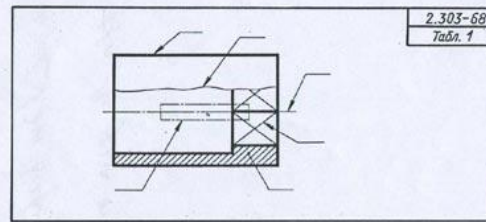
22



55. Обозначить на полках-выносах толщины линий в соответствии с их назначением



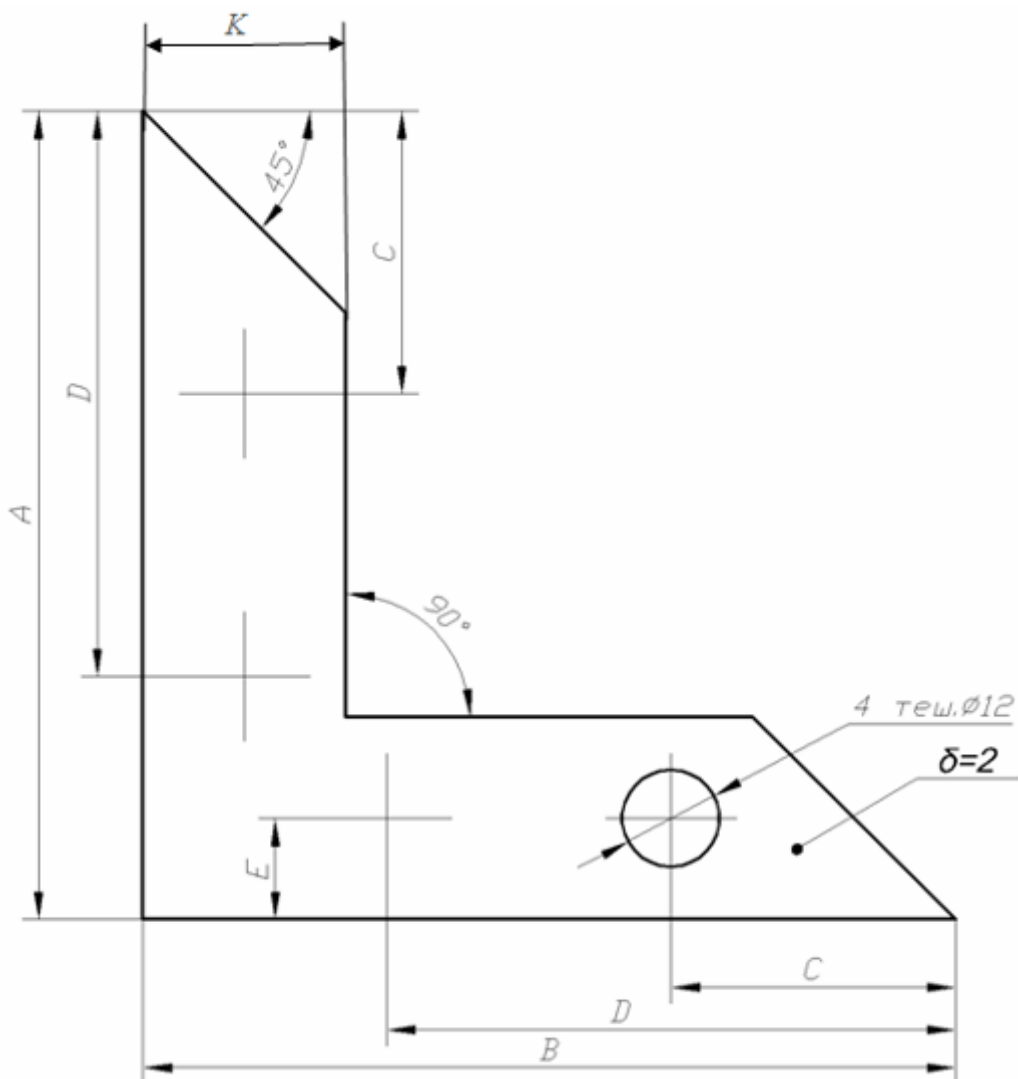
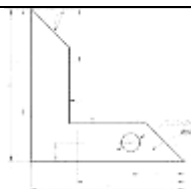
56. Обозначить на полках-выносах толщины линий в соответствии с их назначением



57. Обозначить на полках-выносах толщины линий в соответствии с их назначением

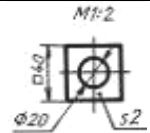
23 ✓

Burchaklikni berilgan o'lcham asosida chizing.



O'lchamlari	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
A	98	95	92	90	88	86	84	80	75	70	89	95	93	80	98	87
D	62	60	58	55	53	51	49	48	47	45	55	60	53	48	62	53
B	98	95	92	90	88	86	84	80	75	70	89	95	92	80	98	87
E	12	11	11	10	10	10	9	9	8	8	10	11	11	9	12	10
K	24	22	22	20	20	20	18	18	16	16	20	22	22	18	24	20
C	28	26	25	23	20	19	17	16	15	15	23	26	25	16	28	20

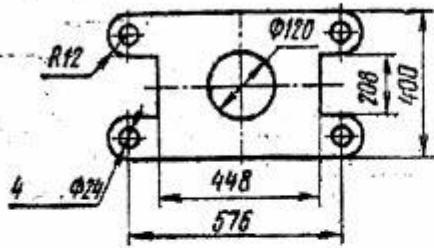
Masshtabga rioya qilgan holda chizma chizilsin.



<p>1</p> <p>M 2,5:1</p>	<p>2</p> <p>M 2:1</p>
<p>3</p> <p>M 1:2</p>	<p>4</p> <p>M 2,5:1</p>
<p>5</p> <p>M 2:1</p>	<p>6</p> <p>M 4:1</p>
<p>7</p> <p>M 5:1</p>	<p>8</p> <p>M 2,5:1</p>

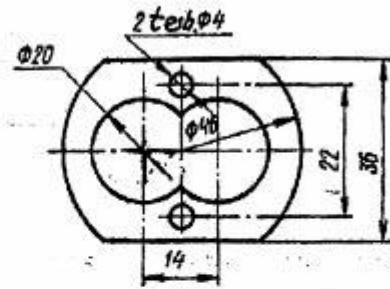
9

M1:4



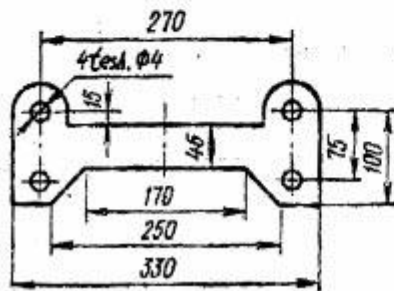
10

M4:1



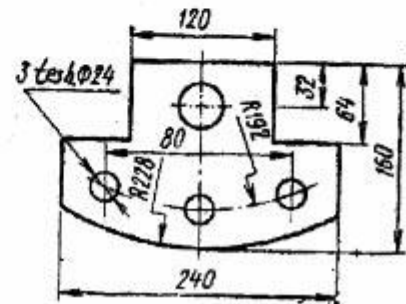
11

M1:2,5



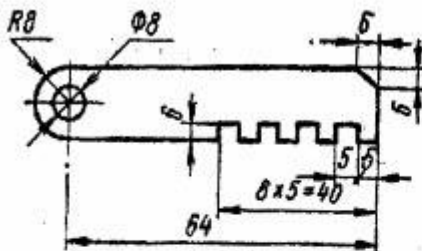
12

M1:2



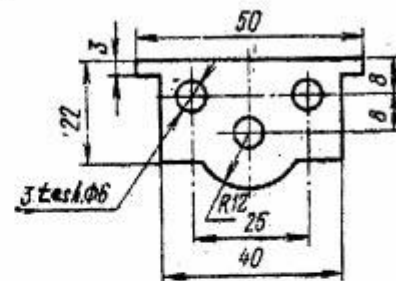
13

M25:1



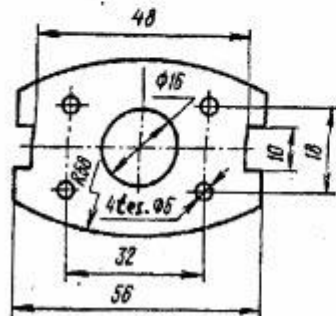
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M2:1

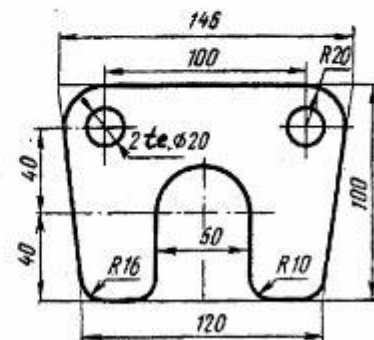


15

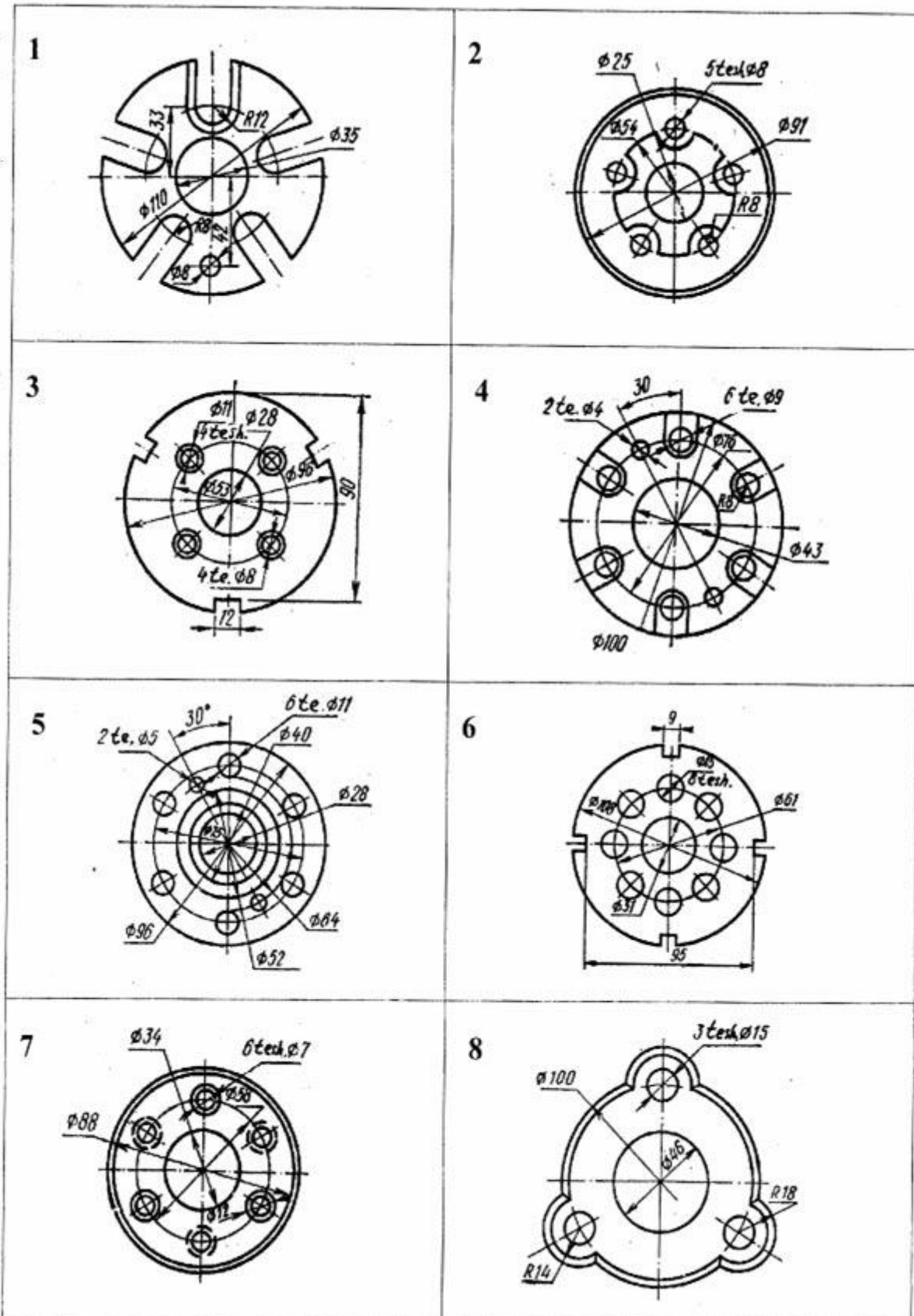
M2,5:1



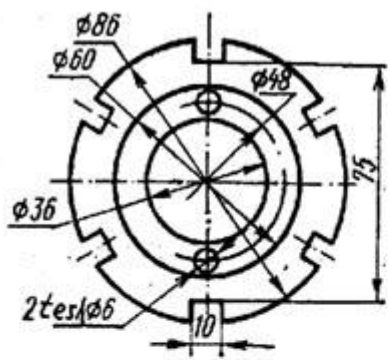
16



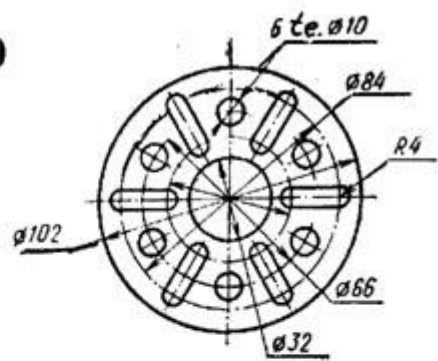
Aylana teng bo'laklarga bo'linsin.



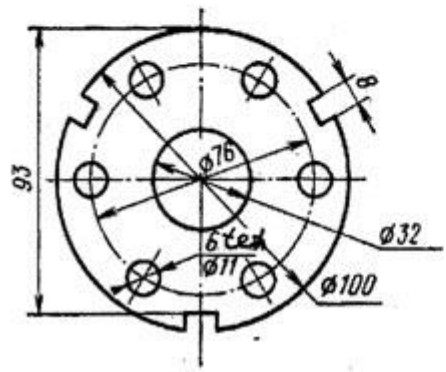
9



10



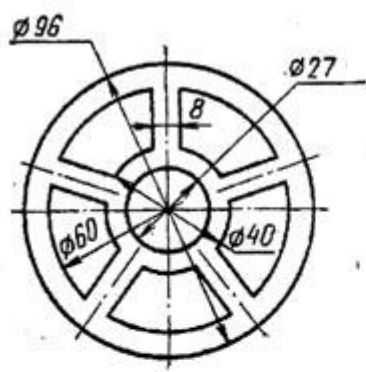
11



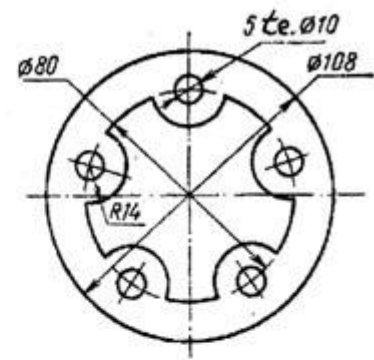
12



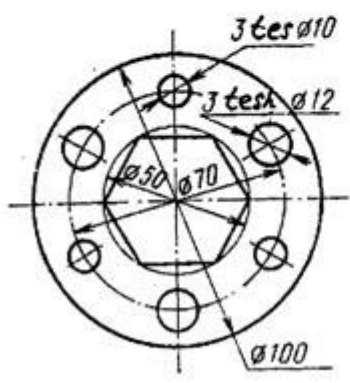
13



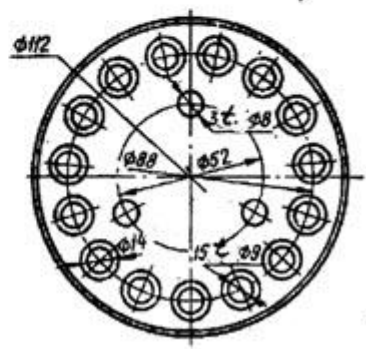
14



15



16



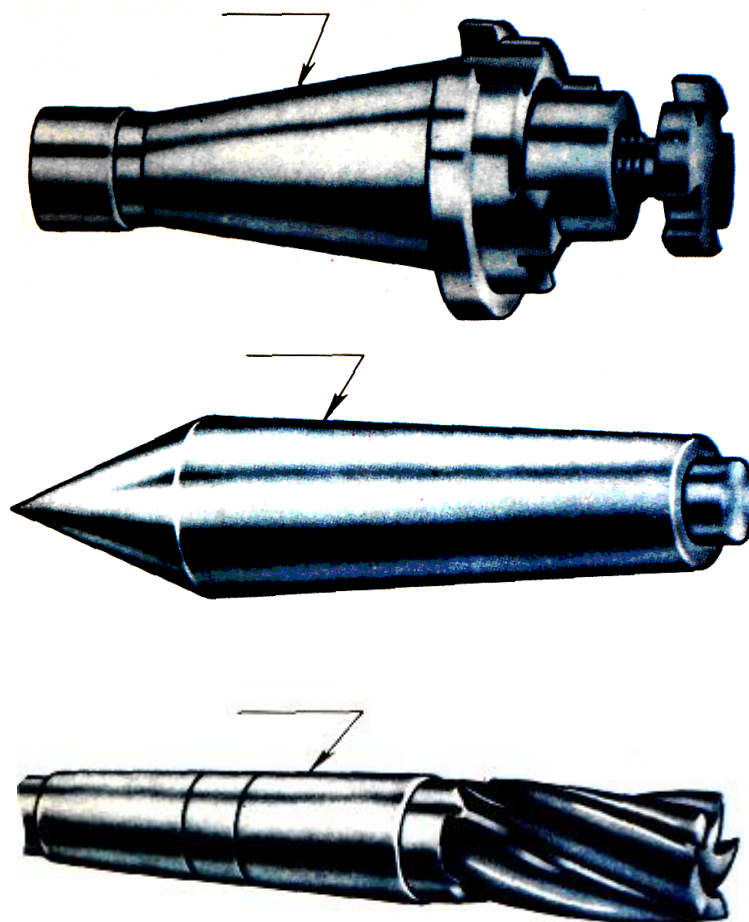
Tarkibida qiyalik va konuslik qatnashgan detal chizmasi bajarilsin

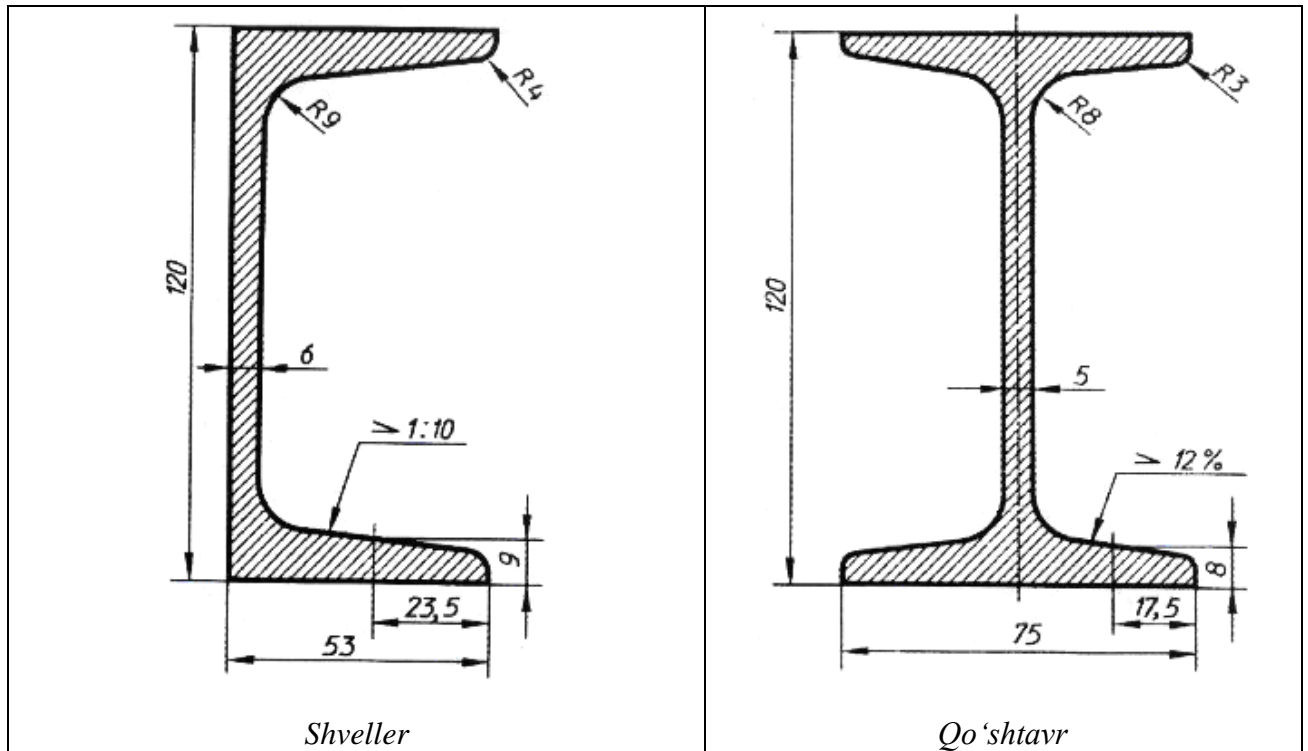


Qiyalik qatnashgan detallar



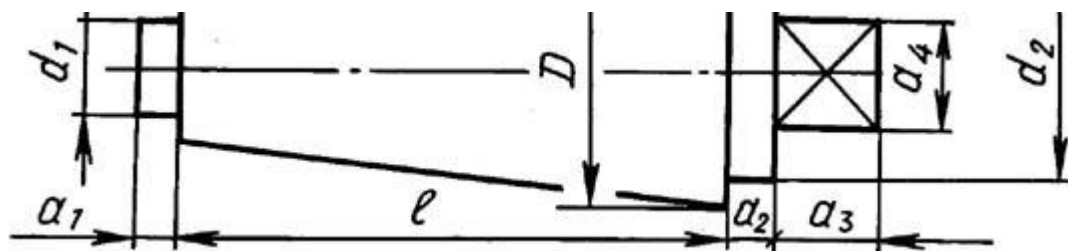
Konuslik qatnashgan detallar





№	<i>Shveller</i>						<i>Qo'shtavr</i>					
	h	b	S	t	R	R	h	b	S	t	R	R
1	50	32	4,4	7,5	6	2,5	100	55	4,5	7,2	7,5	2,5
2	60	40	4,5	7,5	6,5	3	120	64	4,8	7,5	7,5	3
3	65	36	4,4	7,2	6	2,5	140	70	5	7	8	3
4	100	46	5	7,5	7	3	180	90	5	8	9	3,5
5	140	58	4,9	8	8	3	200	100	5,2	8,5	9,5	4
6	140	62	5	8,5	7	3	200	110	5,2	8	10	4
7	160	64	5	8	8	3,5	220	110	5,4	8,5	9	3,5
8	160	68	5	9	8,5	3,5	220	120	5,5	9	10	4
9	180	70	5	8,5	9	4	240	115	6	8,5	11	4
10	180	74	6	9	9	3,5	240	125	6	9	10,5	4
11	200	76	6	9	10	4	270	125	6	8	10	4,5
12	200	80	5,5	10	9	4	300	135	6,5	10	12	5
13	220	82	5,5	9,5	10	4	300	145	6,5	10,5	12	5
14	220	87	6	10	10	4	400	155	8	14	13	6
15	240	90	6	10	11	4	450	160	9	15	14	5
16	240	92	7	12	12	4	450	165	10	16	14	6

Konuslik

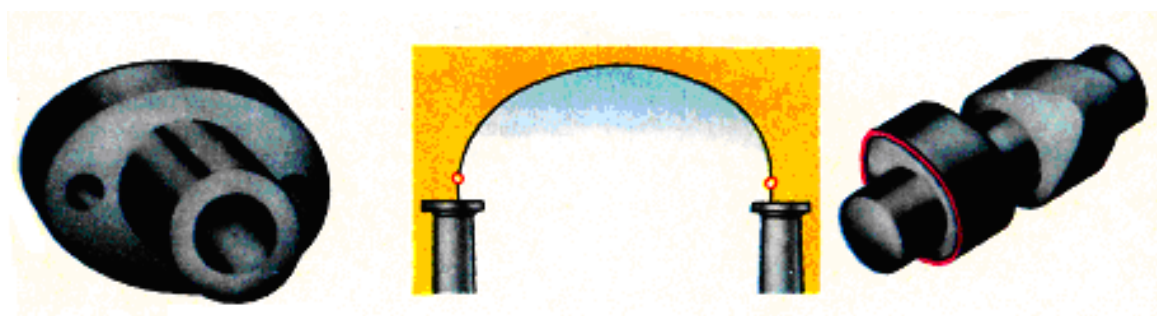
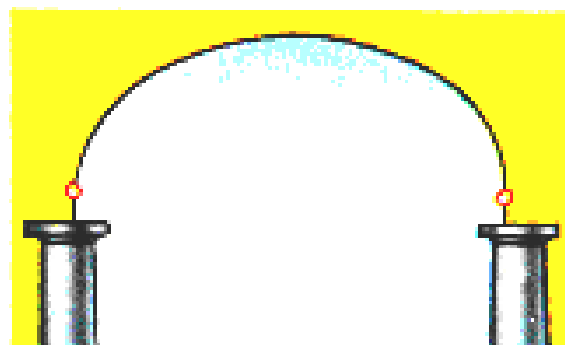
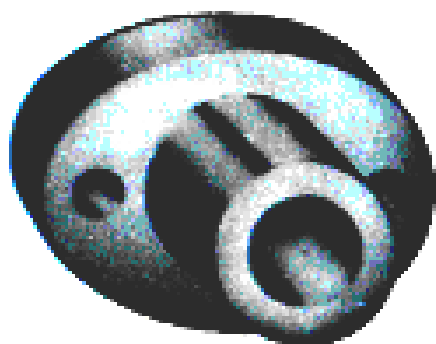


№	D	l	K	d ₁	d ₂	a ₁	a ₂	a ₃	a ₄
1	26	56	1:3	6	16	4	2	16	10
2	24	60	1:3	6	18	4	2	16	12
3	22	52	1:3	4	16	4	4	18	10
4	26	62	1:6	6	18	2	4	14	12
5	24	60	1:6	4	18	2	4	18	10
6	22	56	1:7	6	16	4	2	16	12
7	24	62	1:4	6	16	2	4	16	10
8	24	50	1:5	6	18	2	4	18	12
9	26	56	1:6	4	18	4	2	18	12
10	24	52	1:7	6	18	2	4	16	10
11	28	60	1:6	6	16	4	4	18	12
12	22	56	1:3	4	18	2	4	16	12
13	24	50	1:4	6	16	4	2	18	10
14	26	50	1:5	4	18	4	4	16	12
15	28	56	1:3	6	16	2	2	16	10
16	22	60	1:6	4	18	4	2	18	10

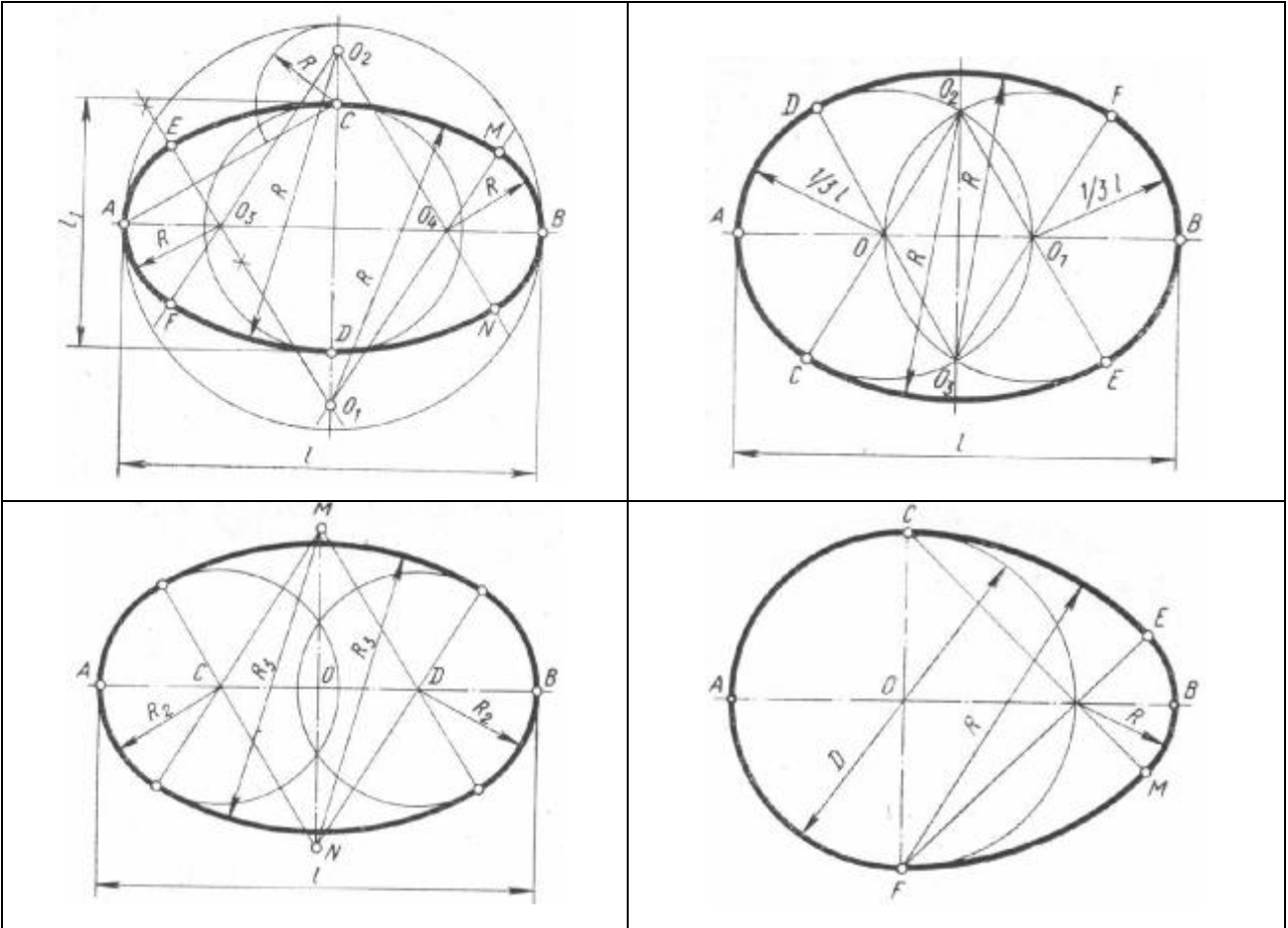
Sirkul egri chizig'i chizmasini bajaring.



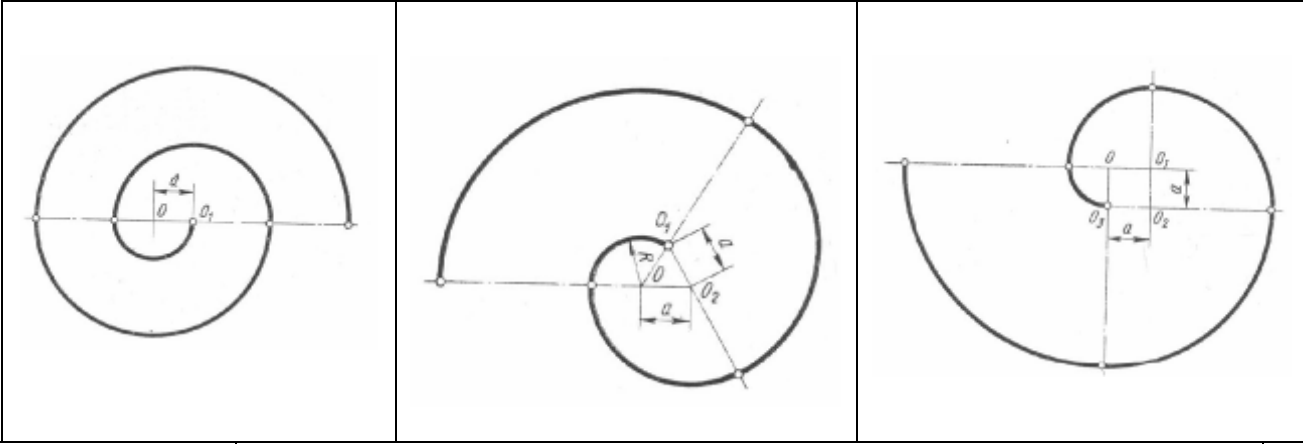
Sirkul egri chiziqlari



Ovallar



O'ramalar

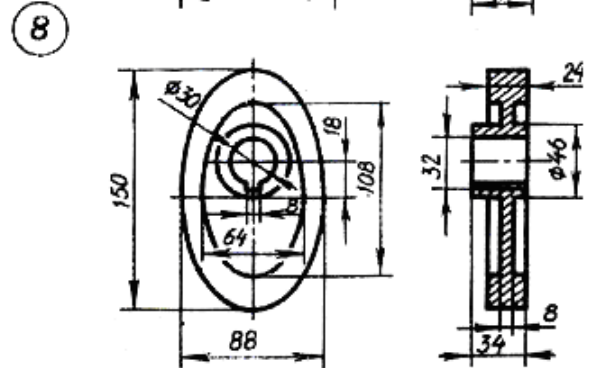
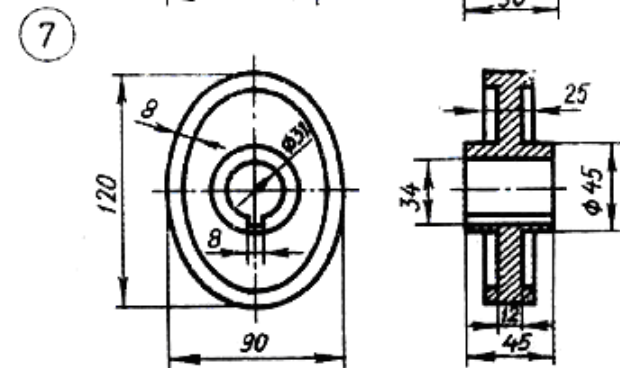
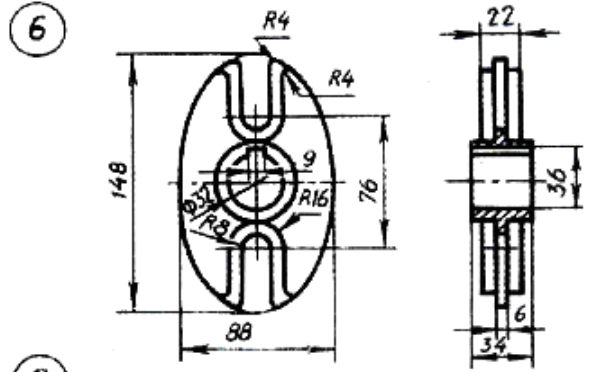
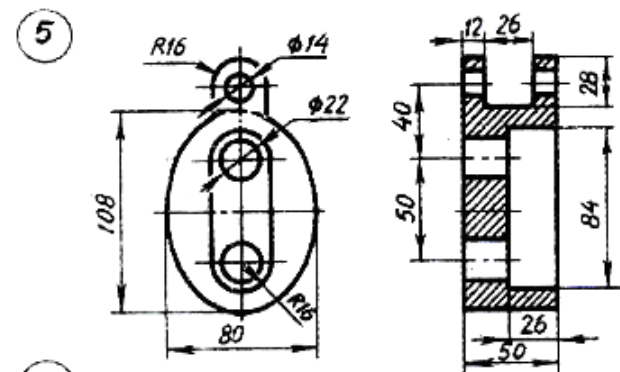
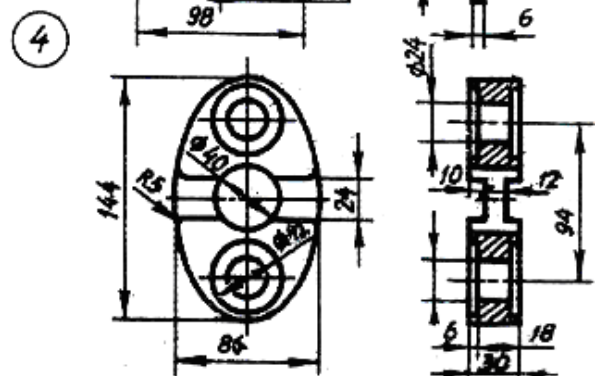
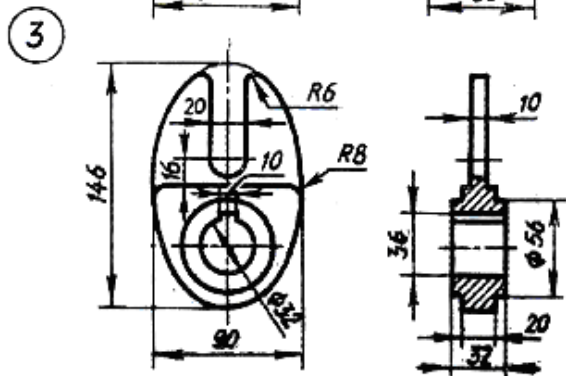
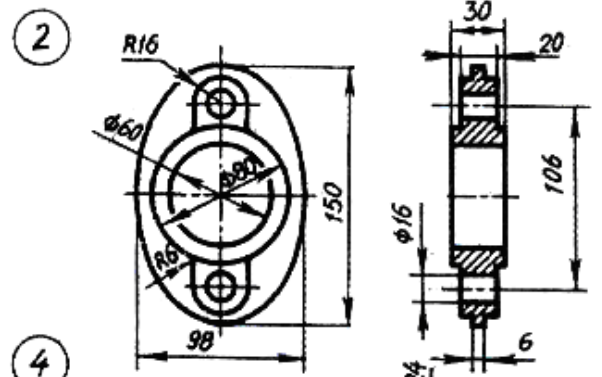
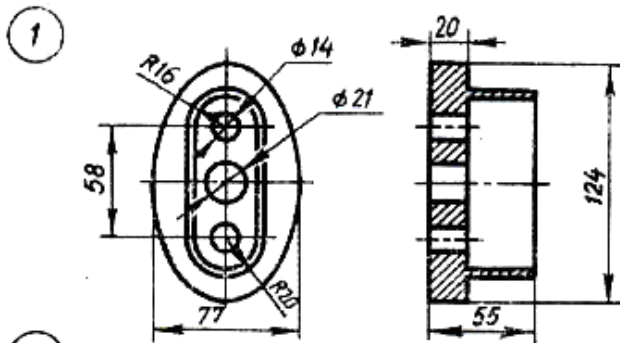
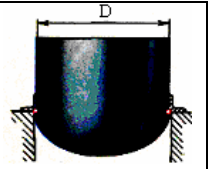


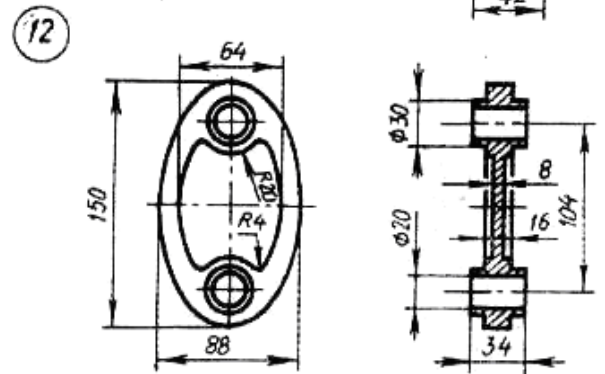
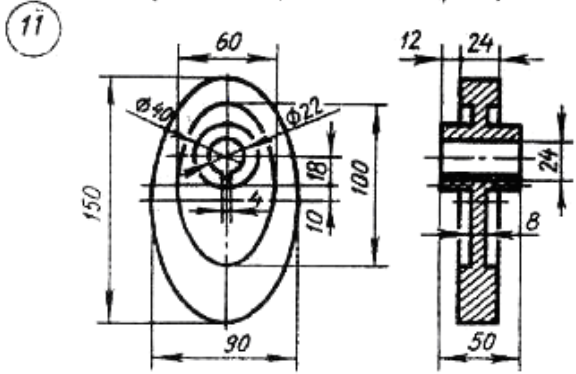
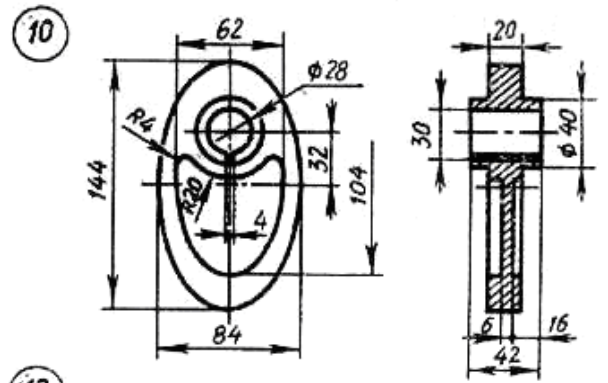
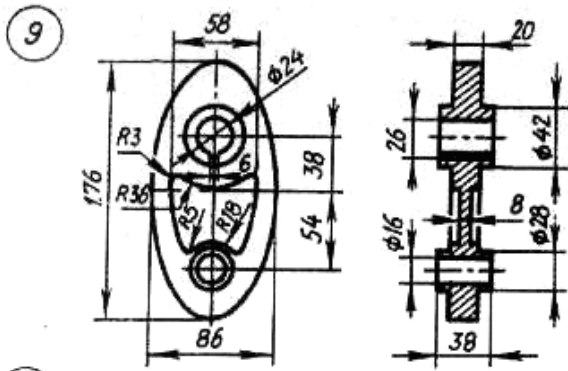
Variantlar

O'lchamlar (mm)	Variantlar															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
D	48	50	58	56	62	64	52	58	64	60	52	50	54	56	58	62
l	82	84	66	68	76	78	84	62	70	63	72	80	72	70	66	63
l1	58	58	43	44	50	58	62	40	50	42	52	60	52	50	44	44
R1	46	58	44	66	43	48	47	53	49	57	55	40	45	49	44	57
R2	28	20	28	30	32	30	24	22	22	26	26	26	26	22	28	26
R3	70	50	70	75	75	75	62	50	55	78	65	65	65	55	70	78
a	6	8	4	11	3	8	7	3	9	7	5	10	5	9	4	7

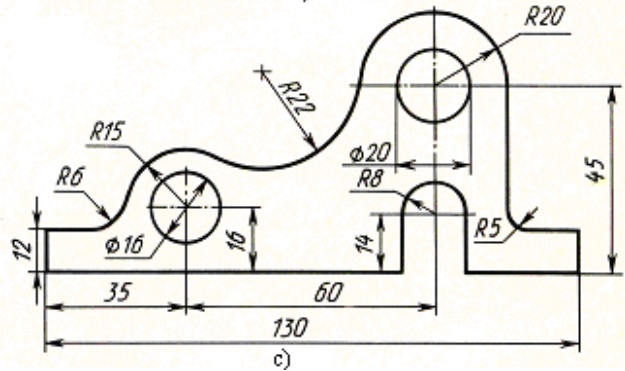
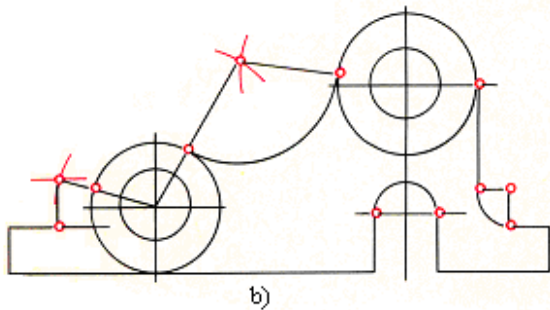
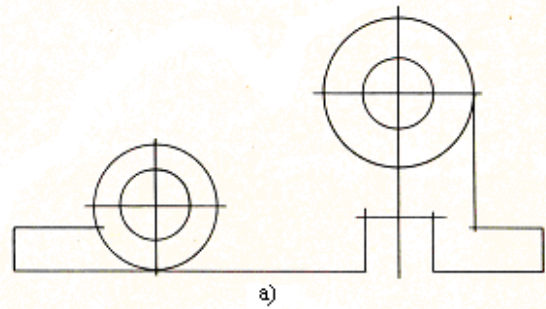
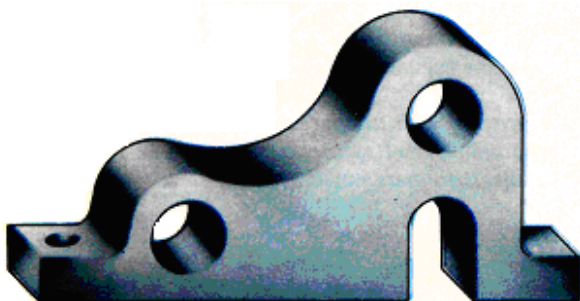
Eslatma: R-yasash yo'li bilan topiladi.

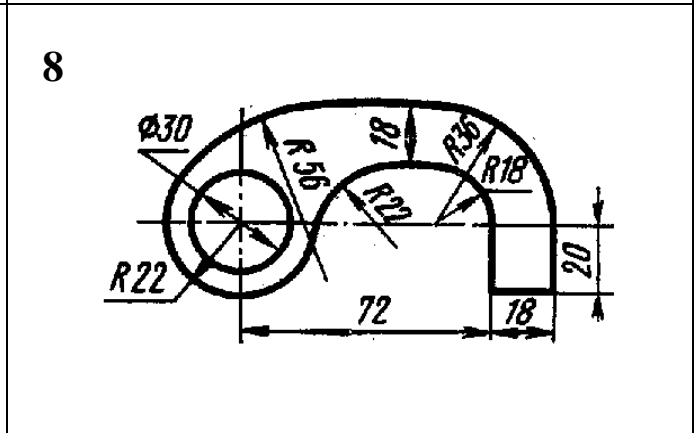
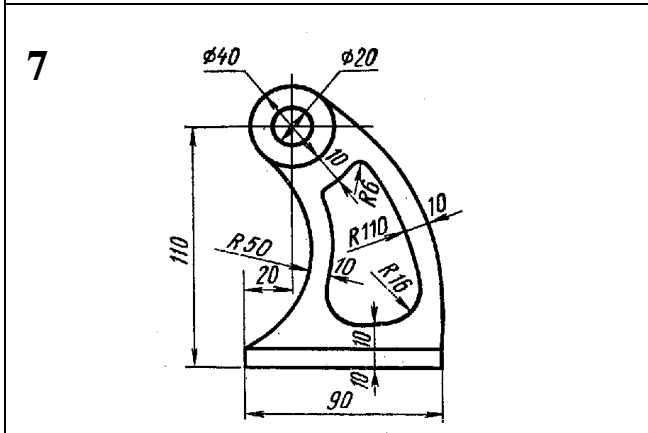
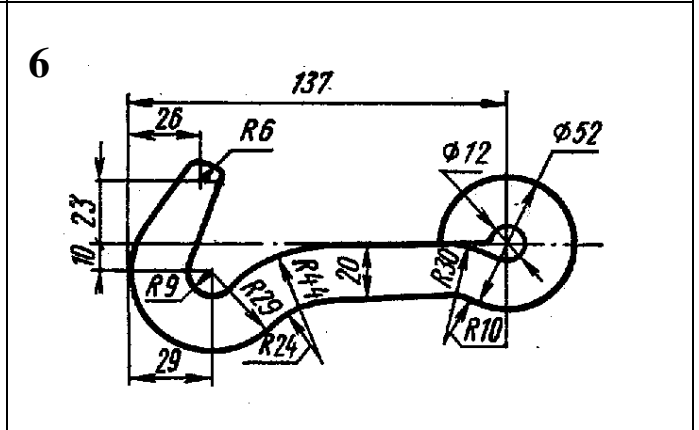
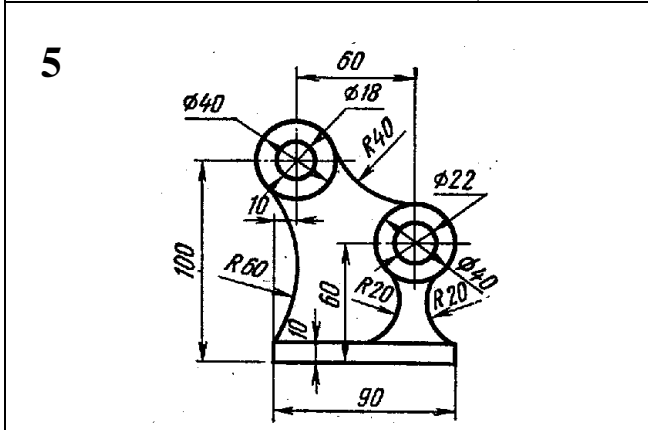
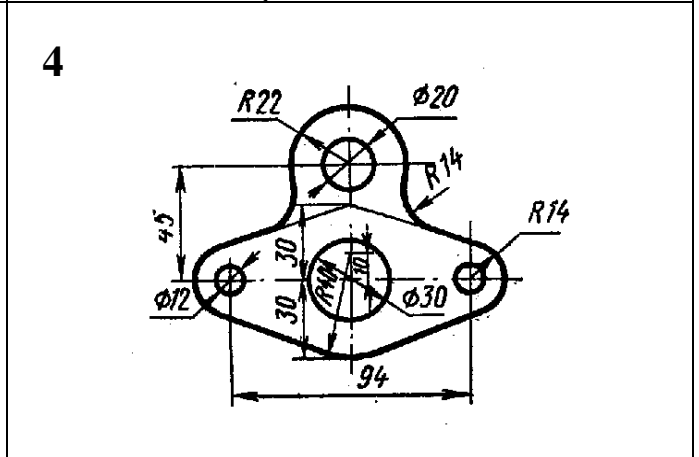
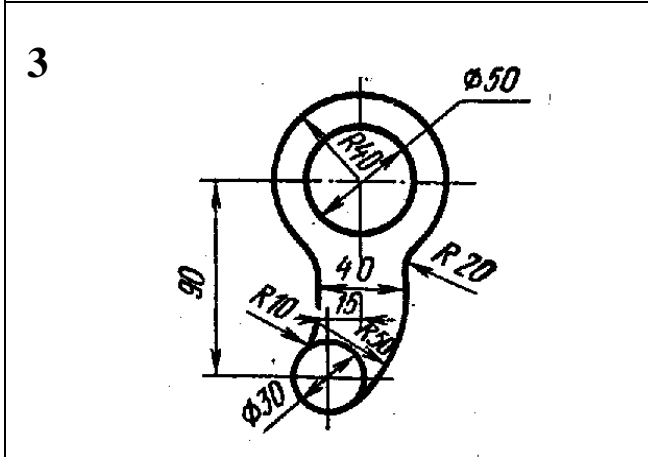
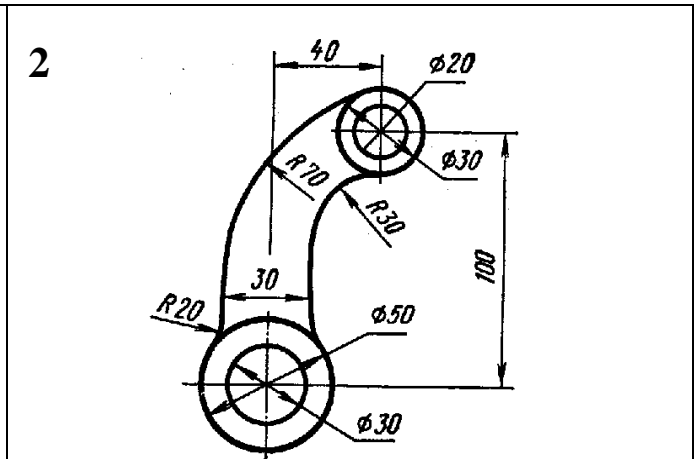
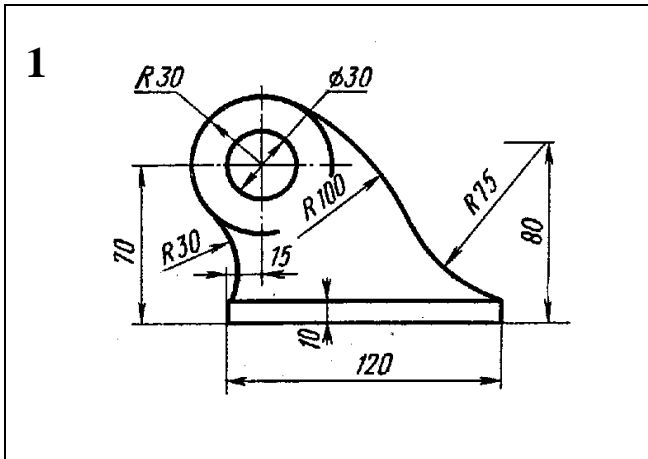
Detalning olddan ko'rinishi ovallar yasash qoidasiga asosan bajarilib, uning profil ko'rinishi bilan proyeksiyon bog'lanish ta'minlansin. O'lchamlar qo'yilsin.



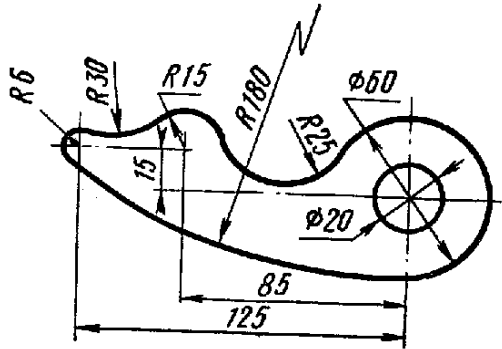


Tarkibida tutashma elementlari qatnashgan detal chizmasi bajarilsin

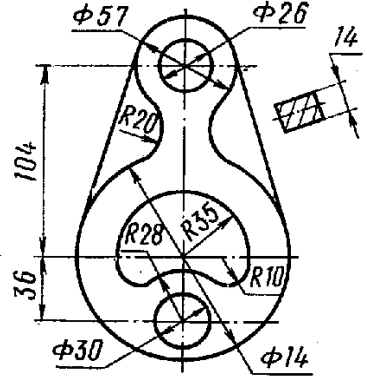




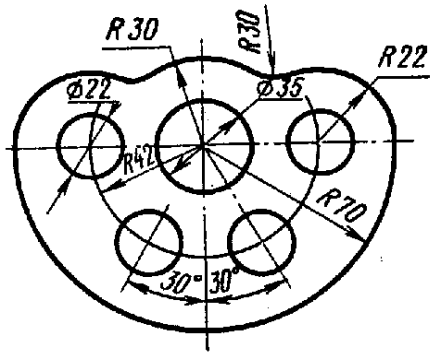
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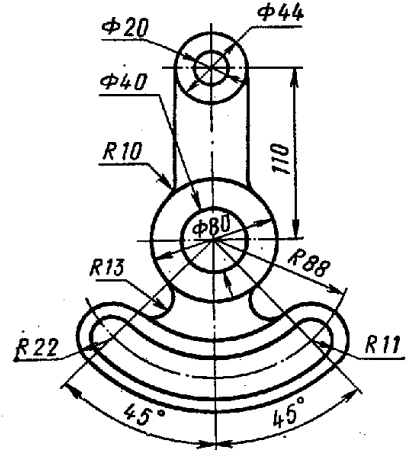
10



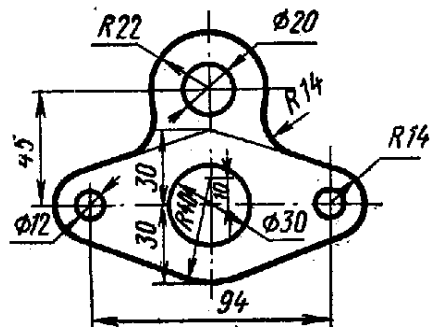
11



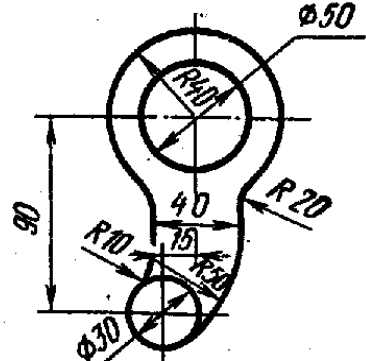
12



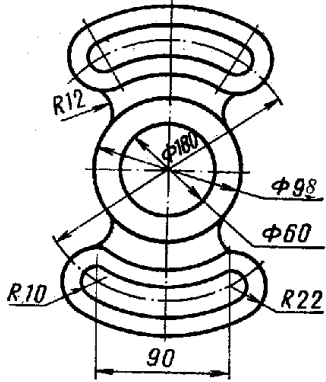
13



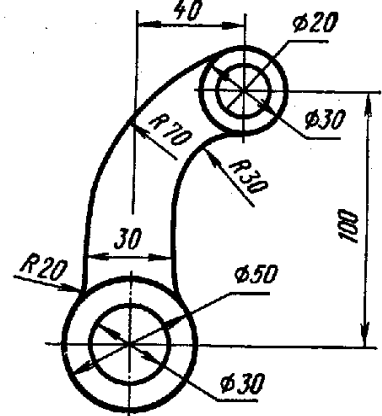
14



15

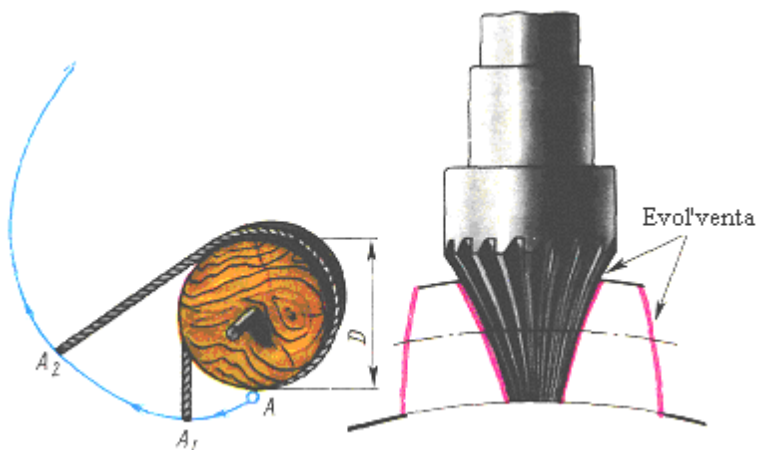
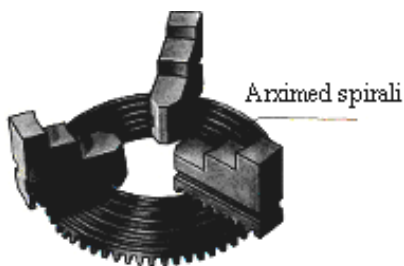
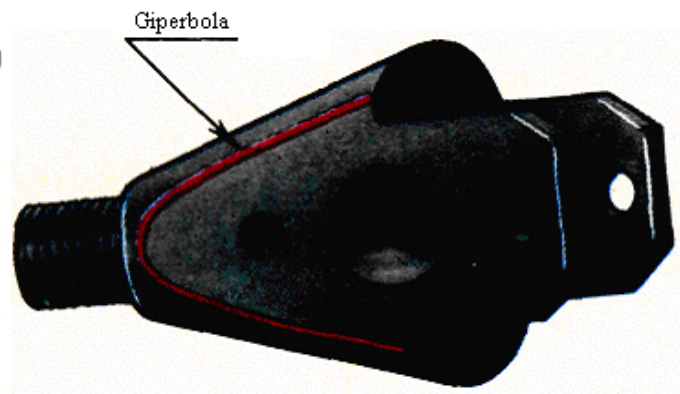
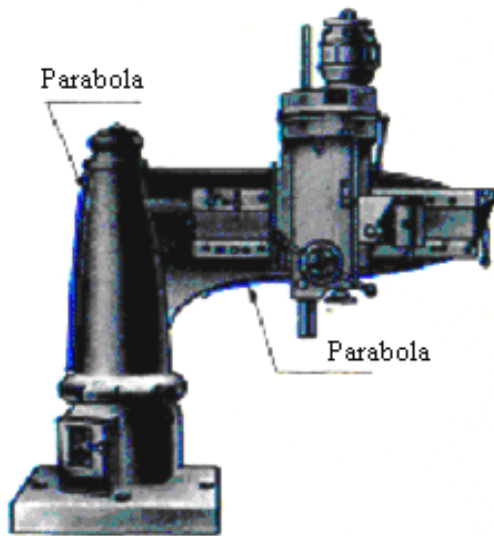
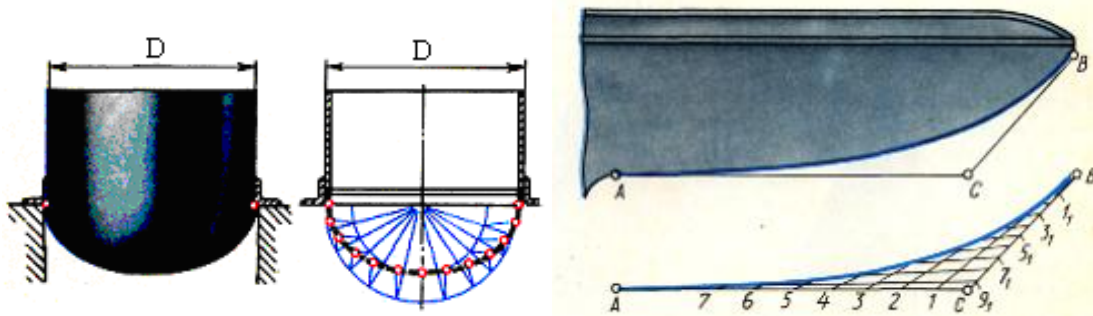


16

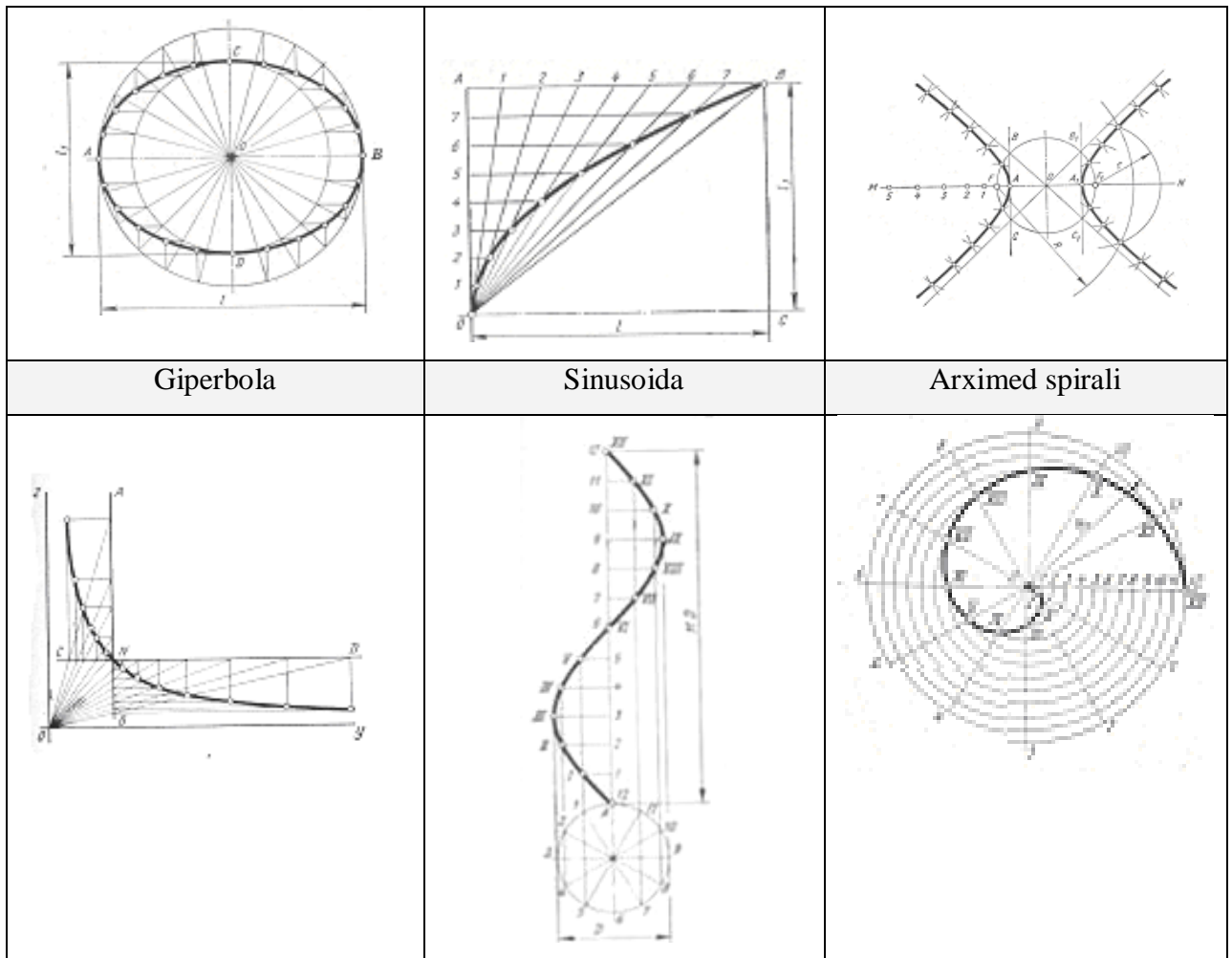




Lekalo egri chiziqlari



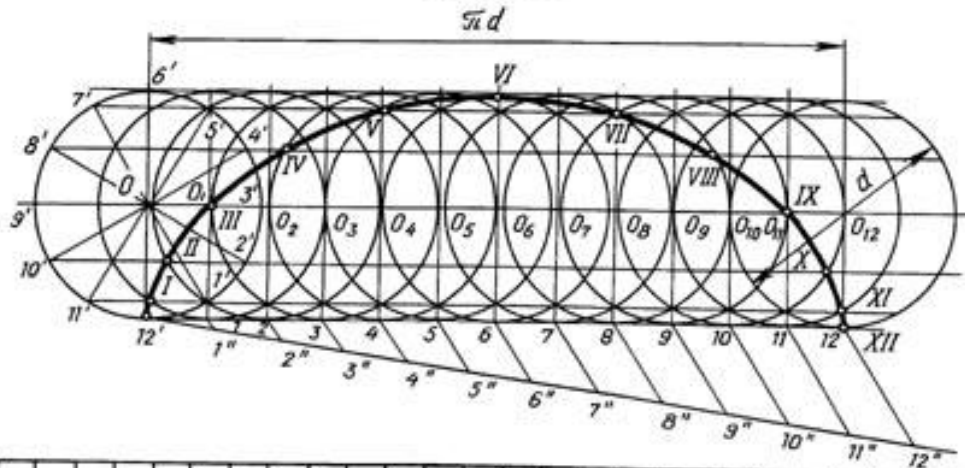
Ellips	Parabola	Giperbola
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Variantlar	O'lchamlar (mm)						
	l1	l2	Koordinata nuqtasi		D	AA1	AF=A1F1
			z	y			
1	74	50	16	10	42	16	6
2	78	56	23	18	28	14	11
3	76	46	19	10	34	12	8
4	70	52	15	16	44	14	10
5	74	56	22	15	34	16	10
6	92	70	24	20	36	12	8
7	86	66	16	20	38	18	3
8	82	70	14	25	44	16	10
9	82	60	20	20	36	14	9
10	68	38	14	20	32	14	7
11	88	66	21	16	40	13	10
12	84	62	18	16	36	12	7
13	78	56	19	24	30	20	8
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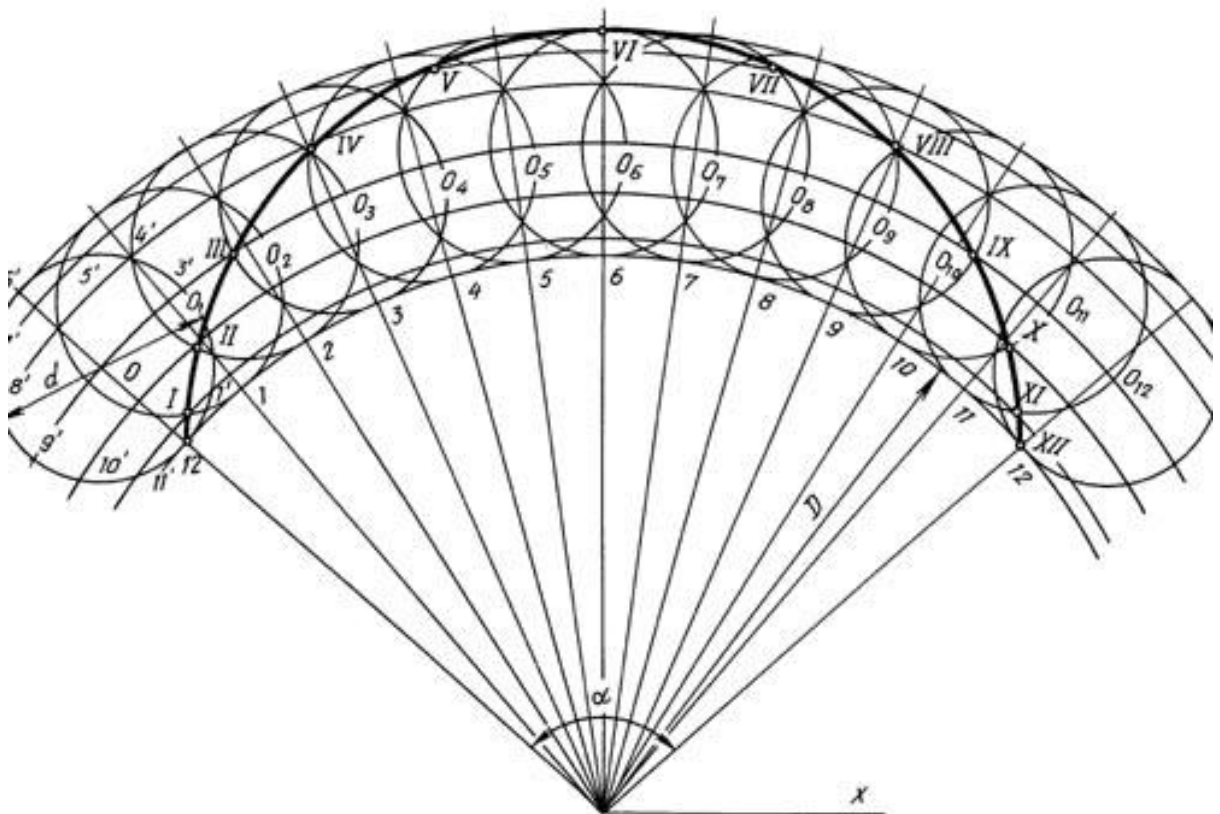
Sikloida

Циклоида



	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
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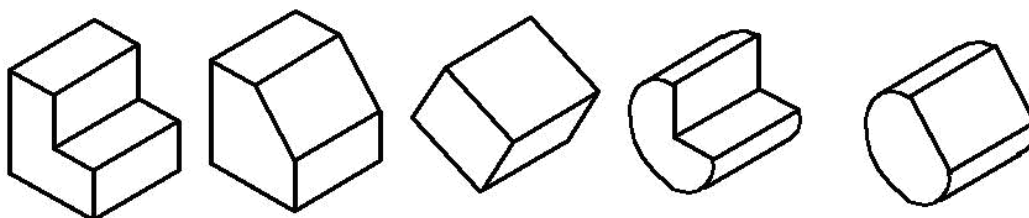
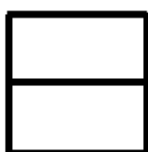
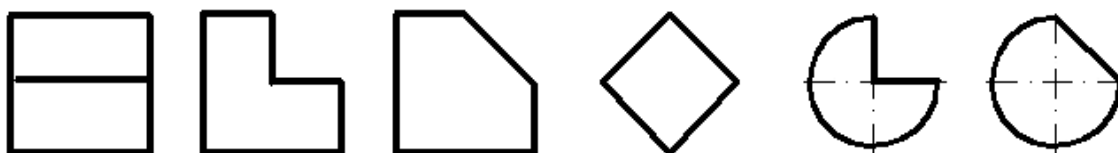
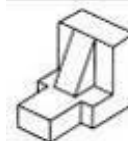
Эпициклоида



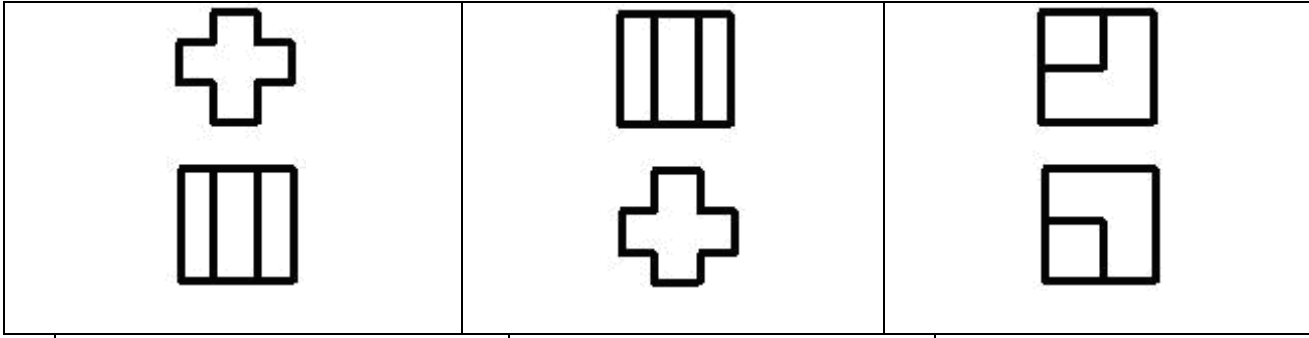
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d	380	300	260	280	240	80	84	76	94	52	136	148	60	62	52	80	20	50	52	64	72	68	77	62	80	86	110	120	78	92
D	740	420	340	320	400	160	164	148	156	88	68	76	84	86	68	48	40	110	100	128	140	135	142	164	174	98	50	242	147	184

Еписиклоида

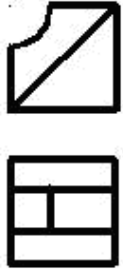
Detalning berilgan ikki ko‘rinishi asosida yetishmovchi uchinchi ko‘rinishini toping va yaqqol tasvirini bajaring



<p>1</p>	<p>2</p>	<p>3</p>
<p>4</p>	<p>5</p>	<p>6</p>
<p>7</p>	<p>8</p>	<p>9</p>



10



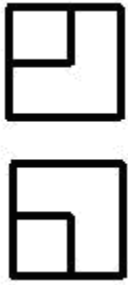
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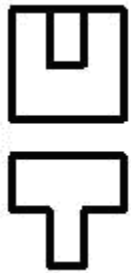
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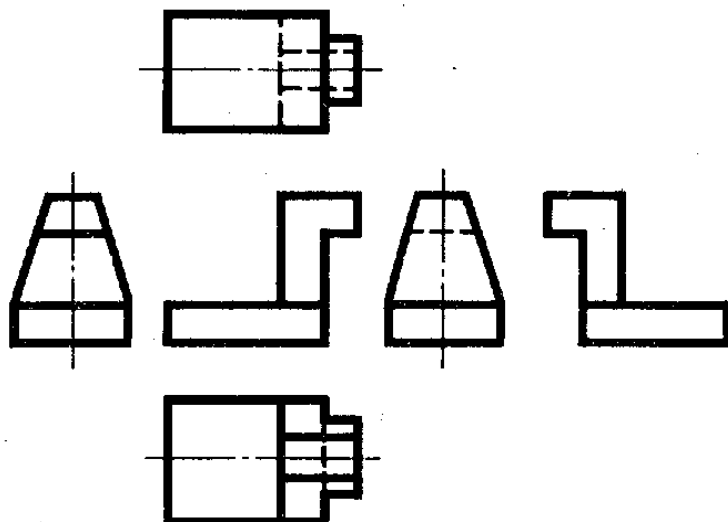
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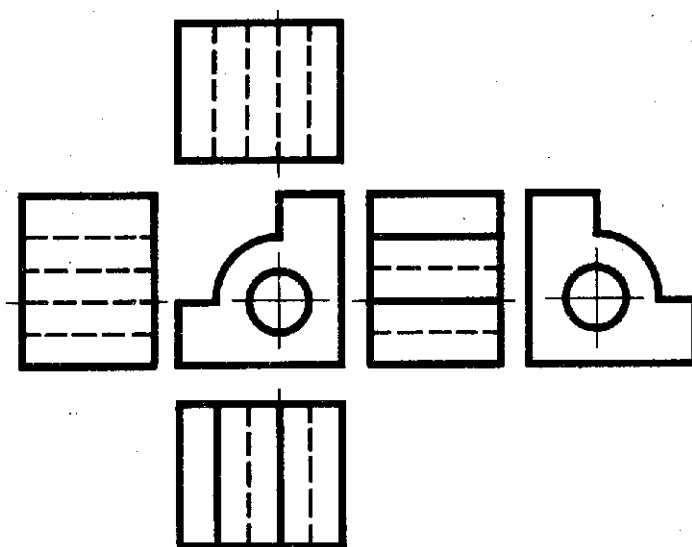
Detalning asosiy ko'rinishlari asosida yaqqol tasviri chizilsin.



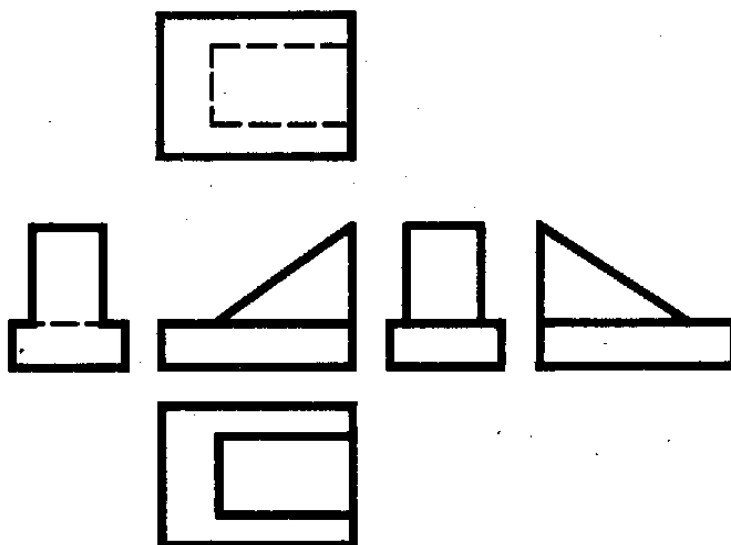
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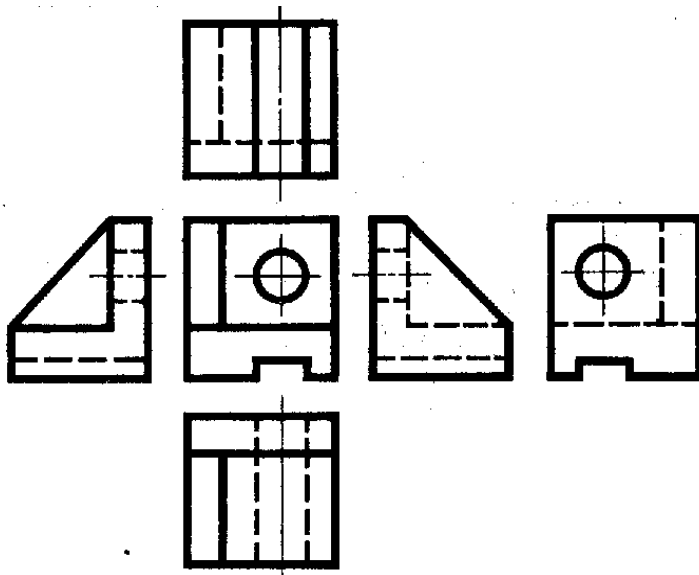


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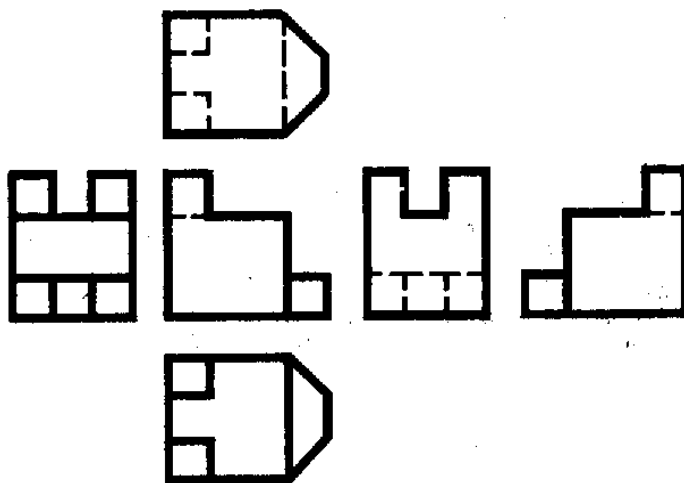




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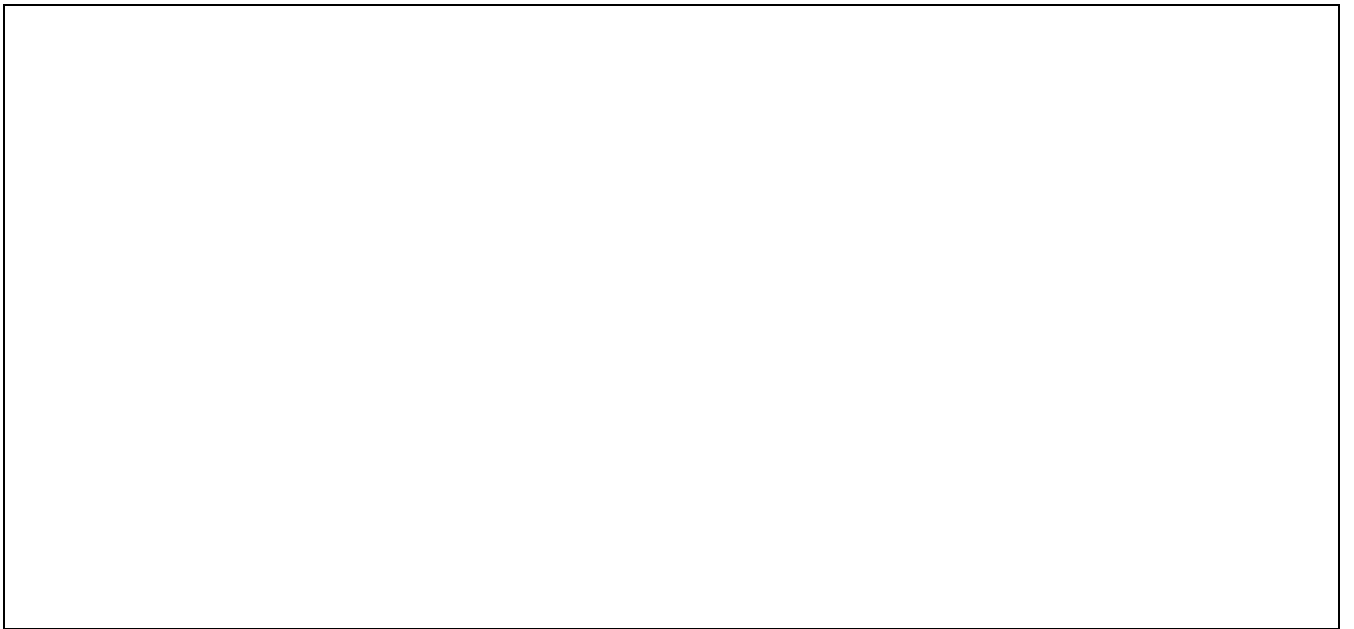


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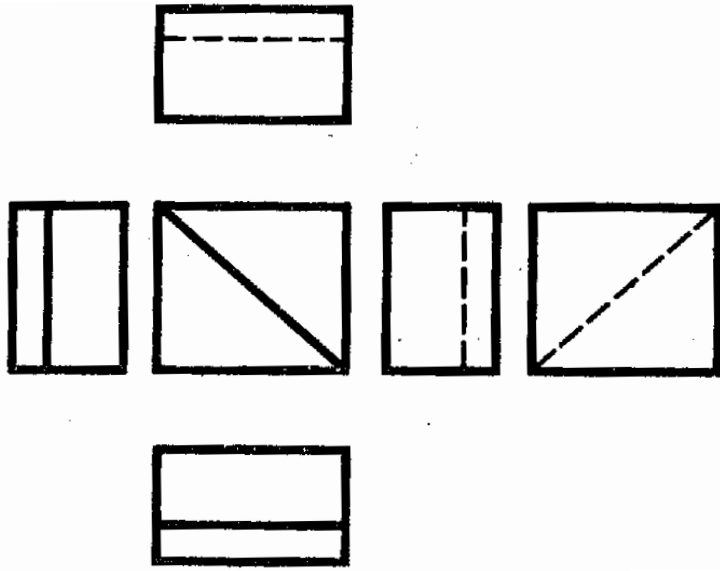


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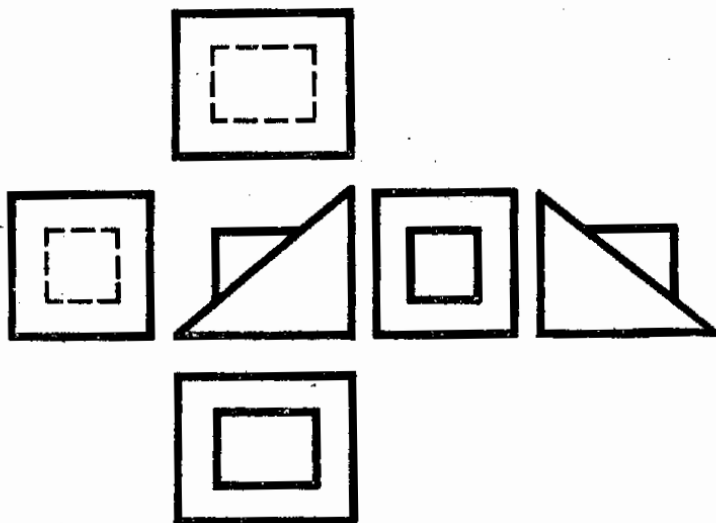




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8

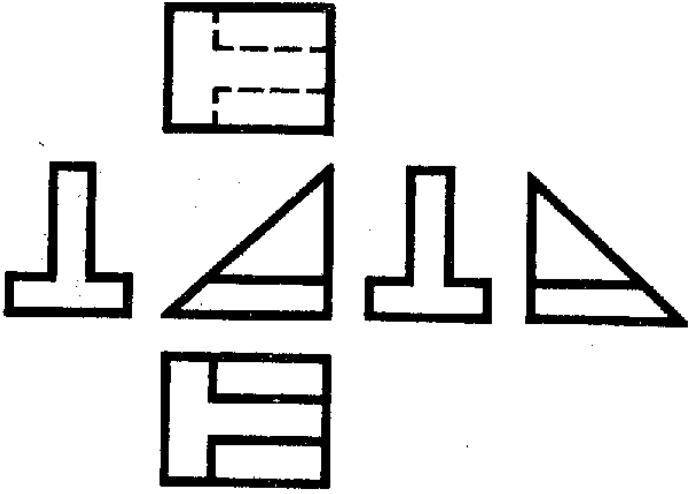


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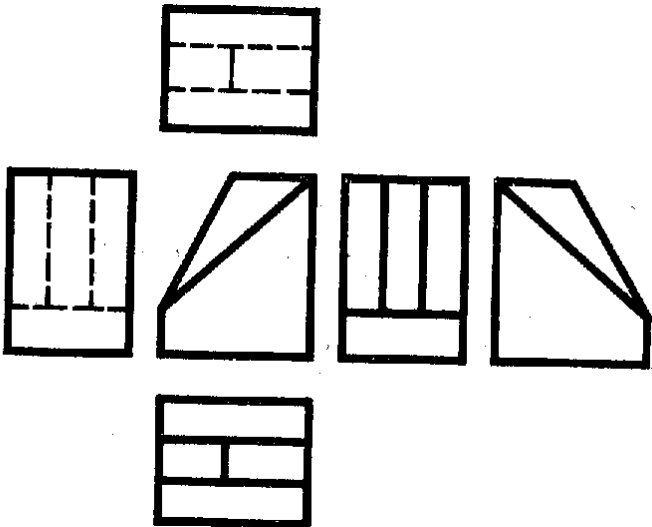




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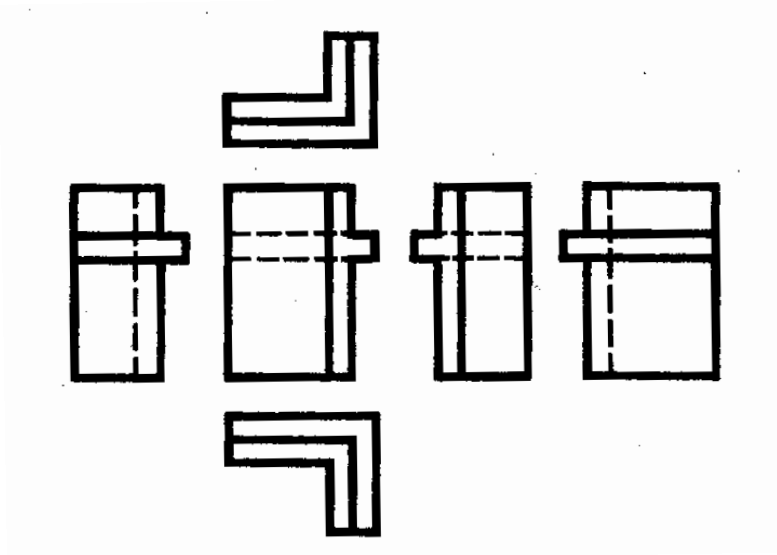
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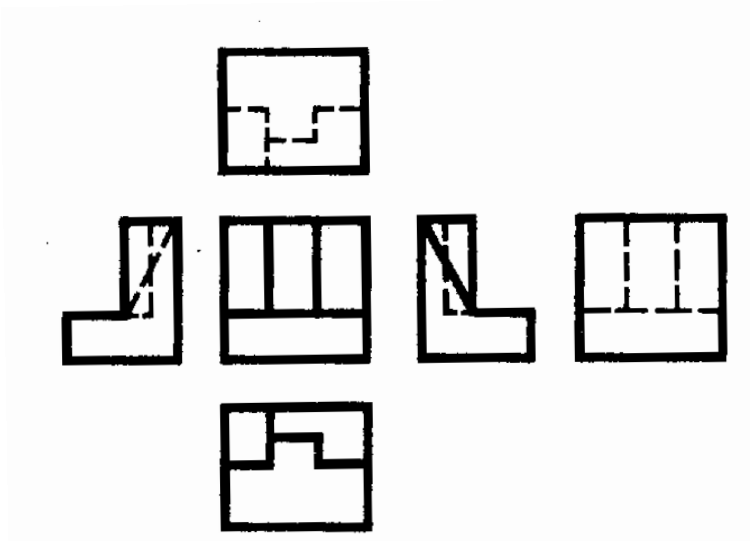
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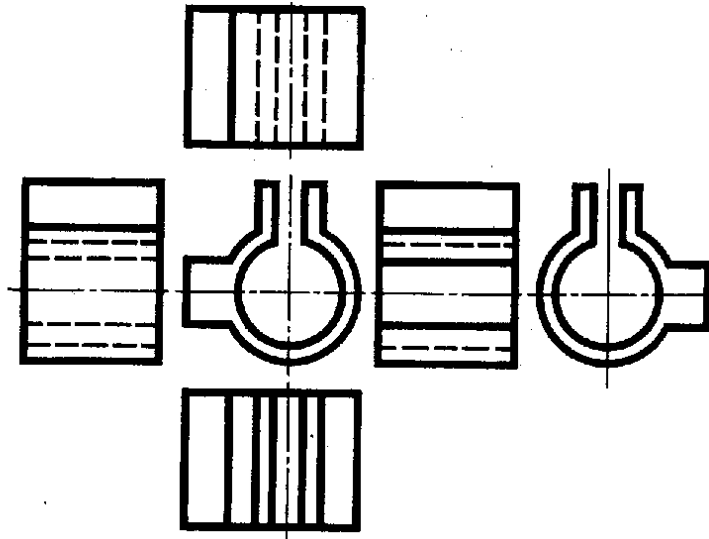
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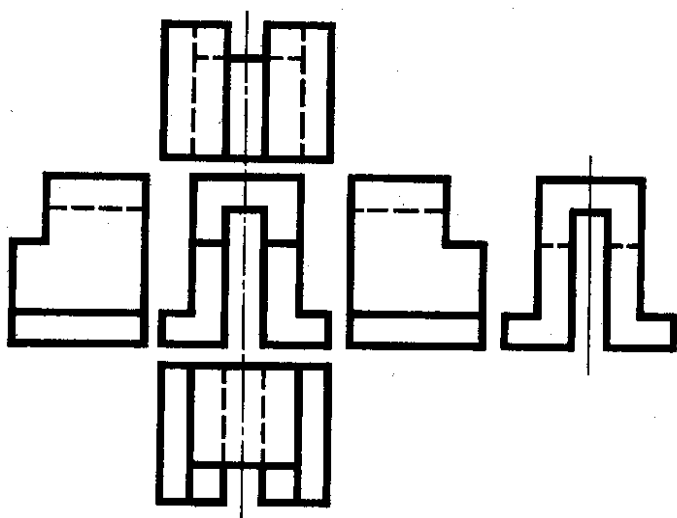
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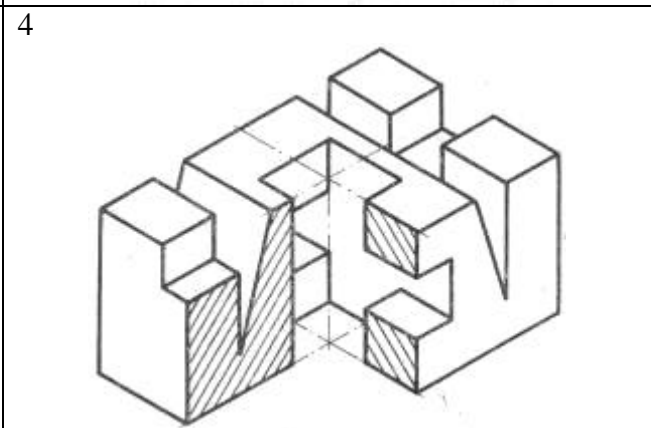
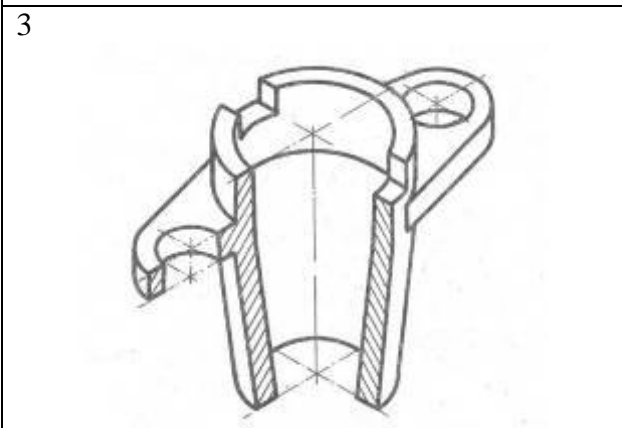
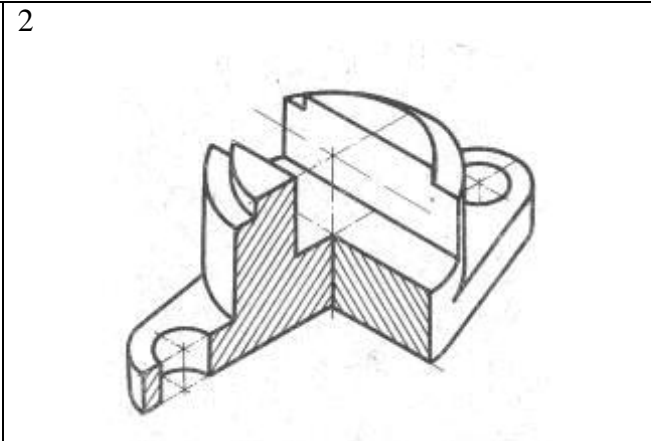
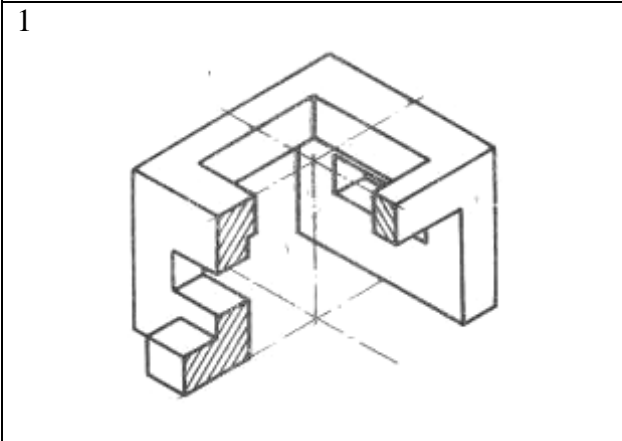
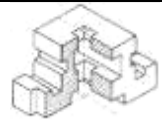


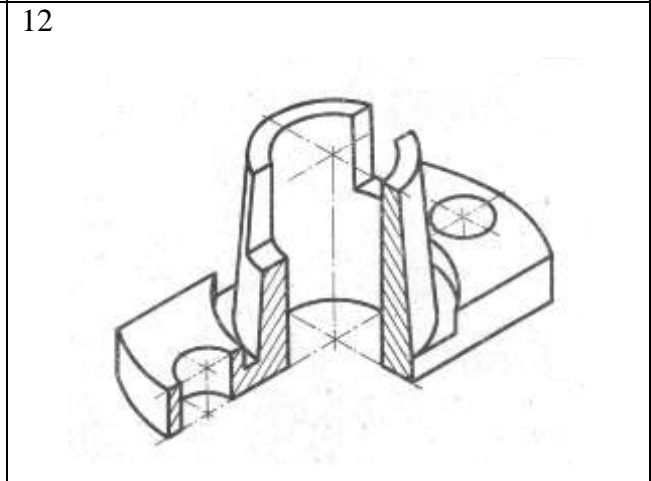
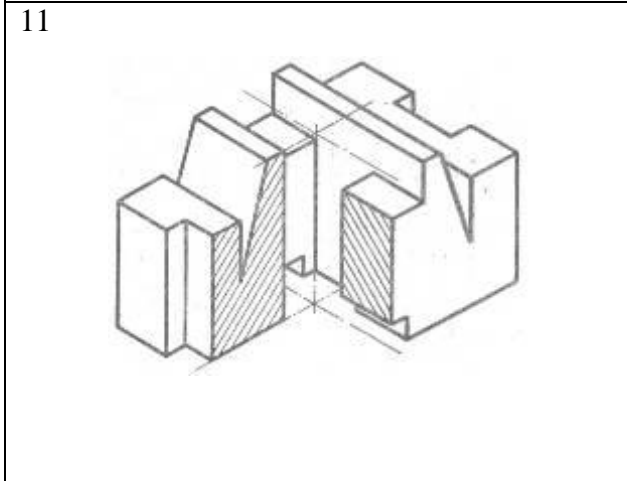
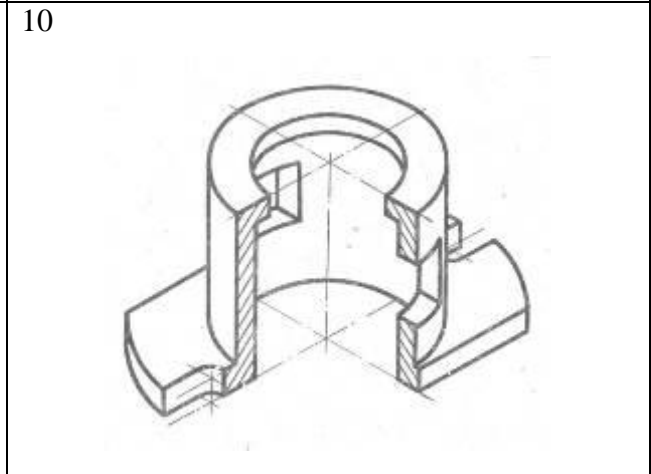
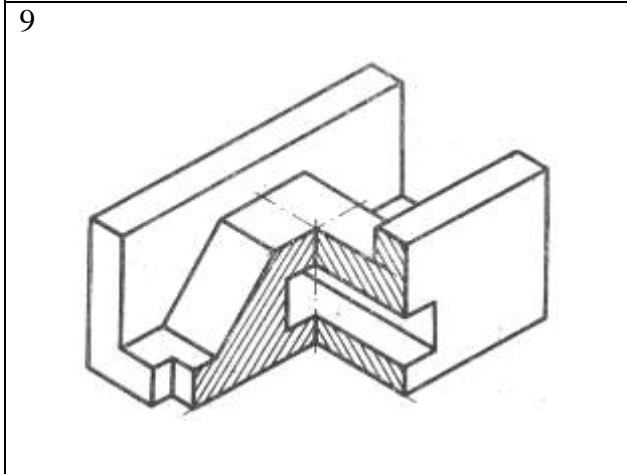
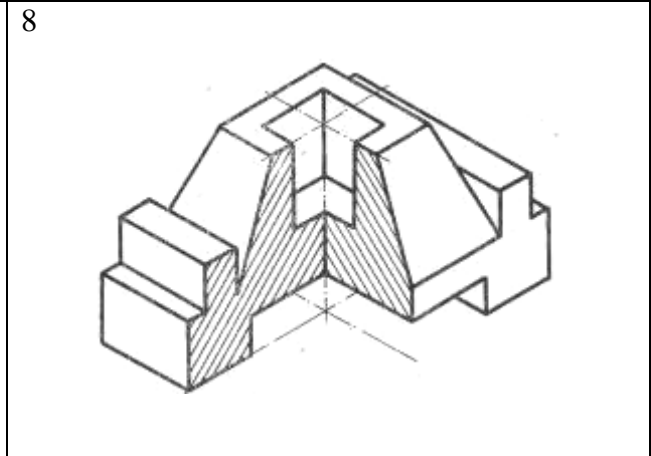
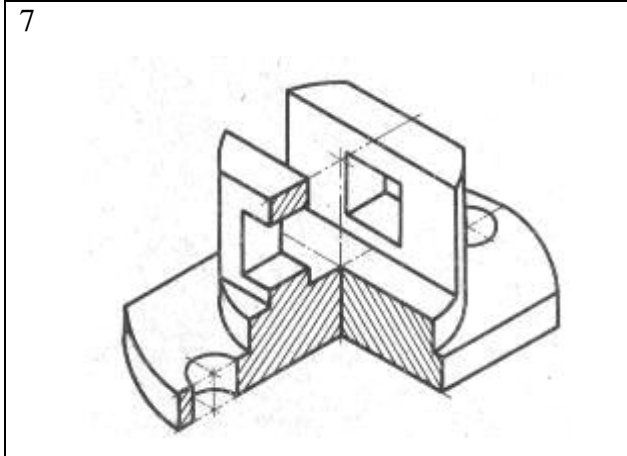
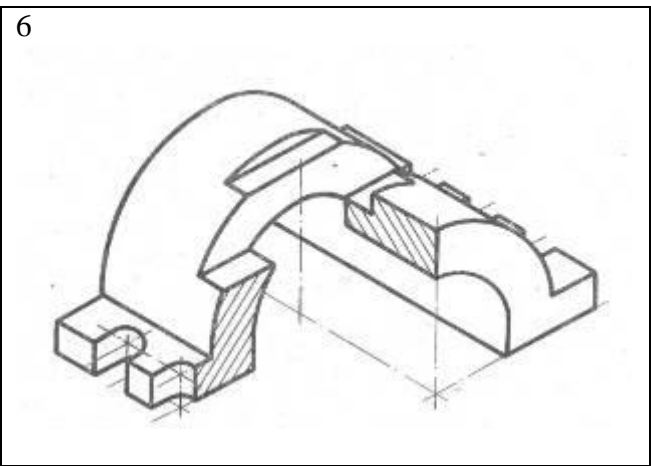
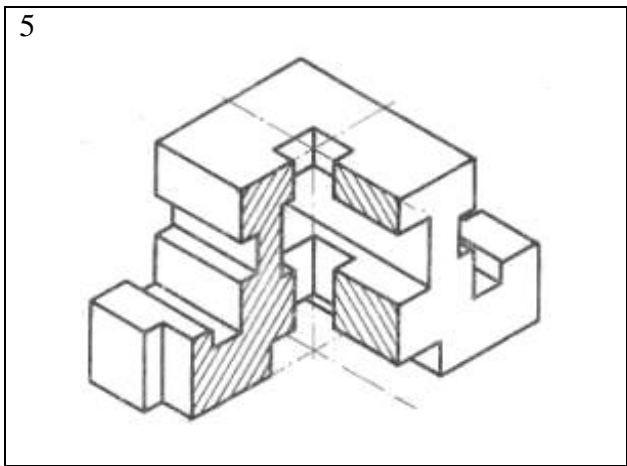
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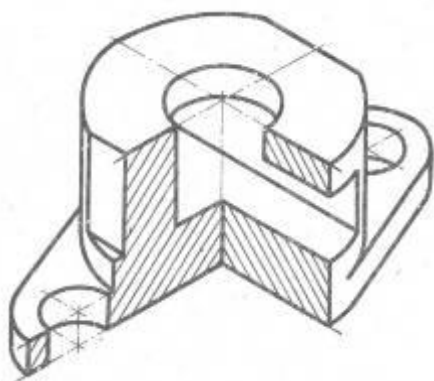


Qirrali va aylanish sirtlaridan iborat bo'lgan detalning aksonometrik proyeksiyasi asosida uning ortogonal proyeksiyasini bajaring

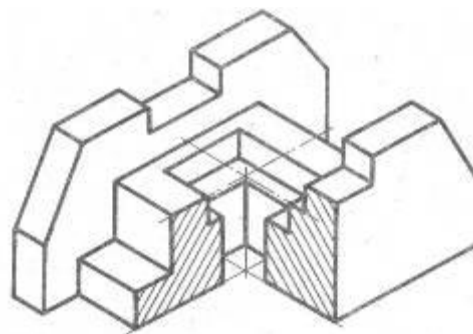




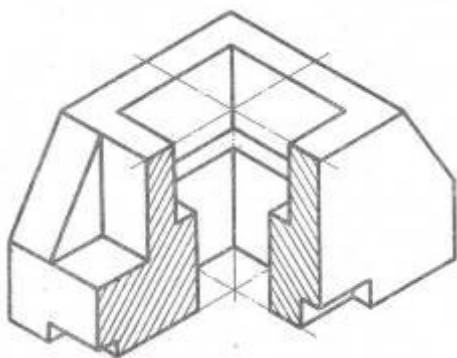
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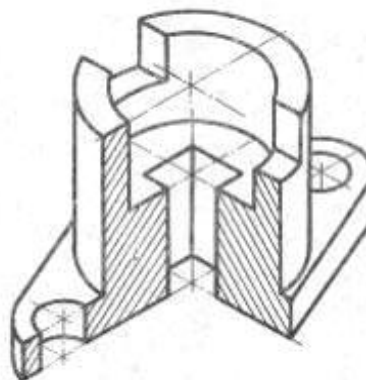
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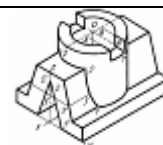
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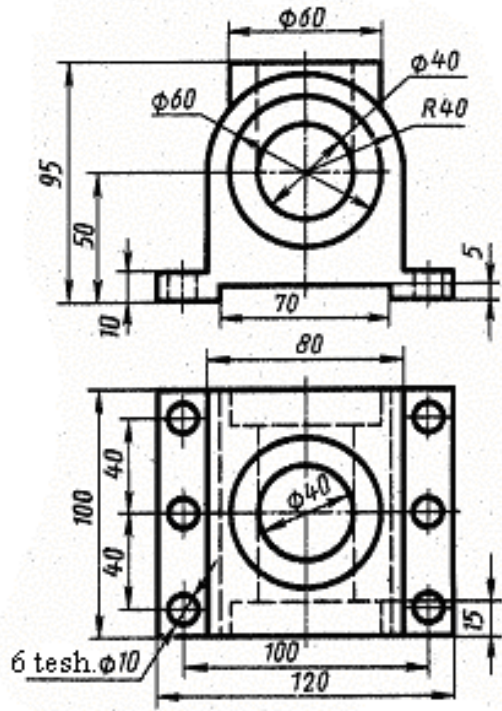
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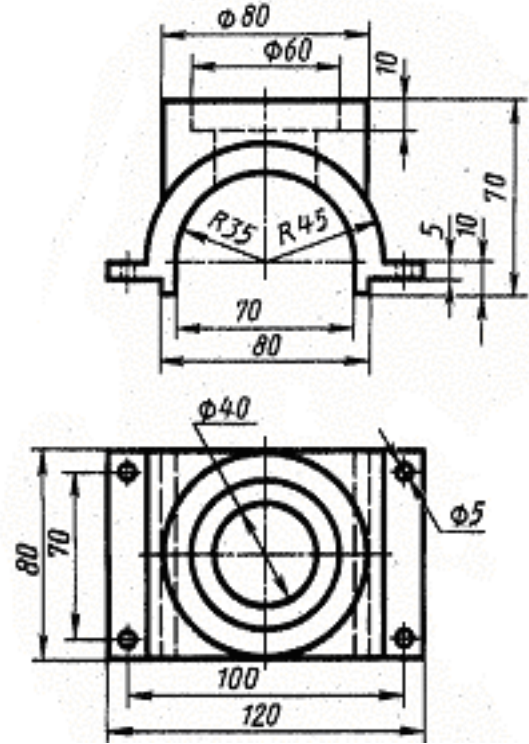
Detalning berilgan ikki proyeksiyasi asosida uchinchi proyeksiyasini topib, sirlarni o'zaro kesishuv chizig'ini yasash hamda zarur qirqim va kesimlar qo'llanilsin



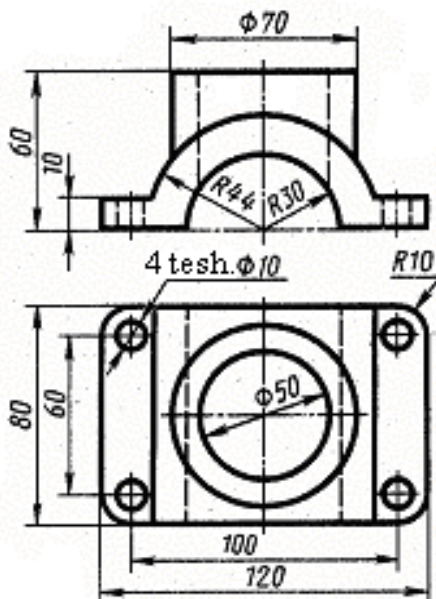
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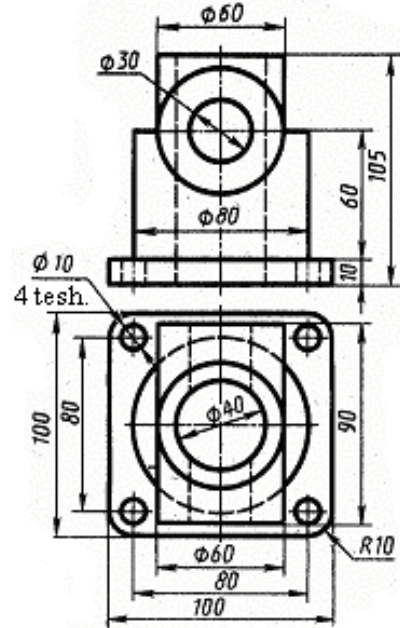
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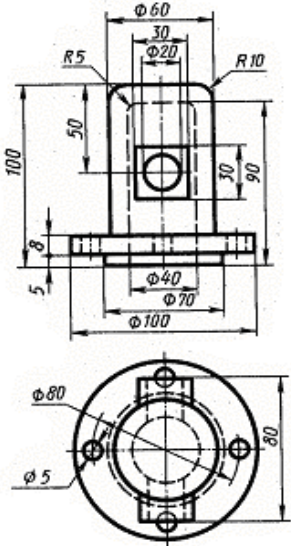
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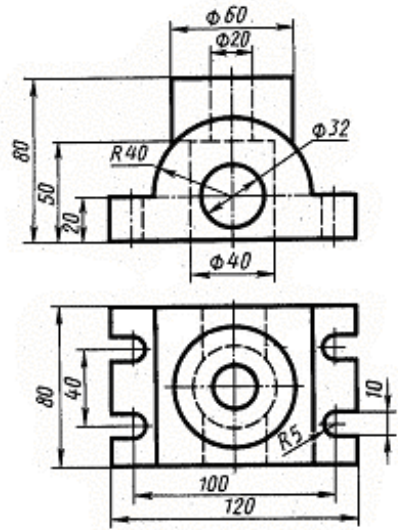
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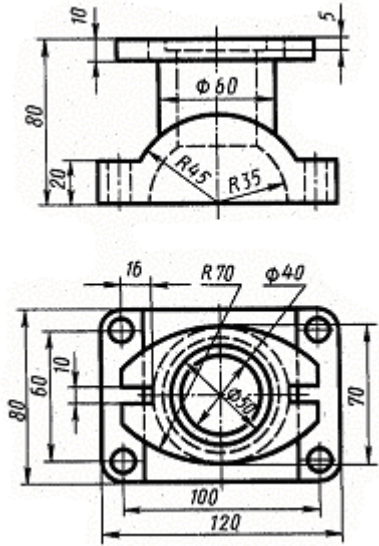
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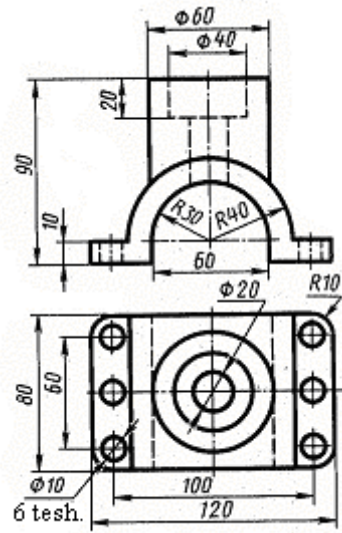
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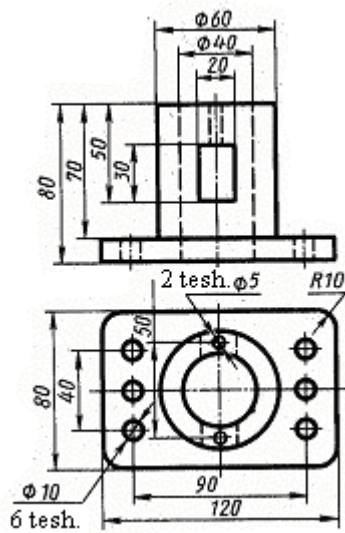
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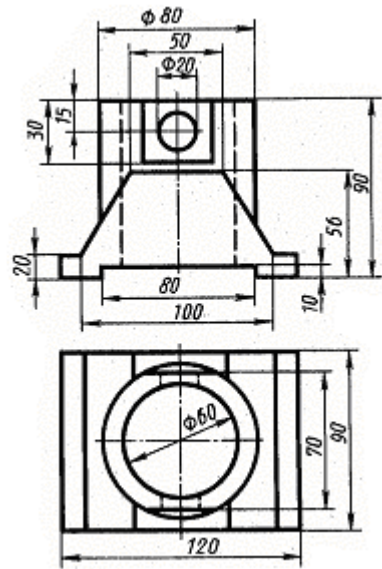
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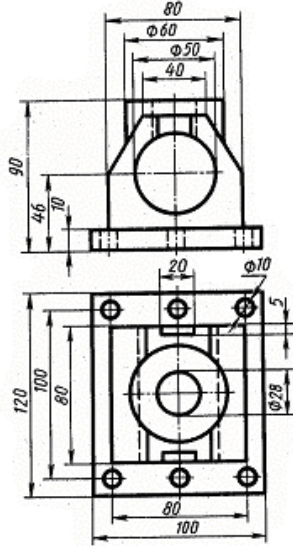
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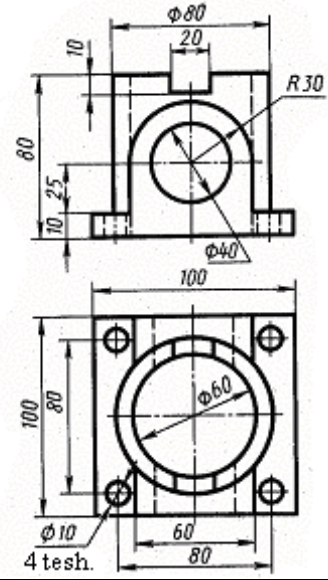
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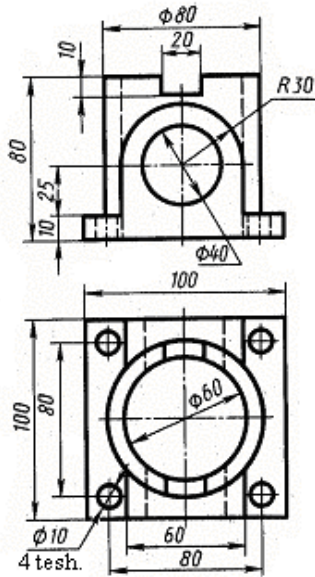
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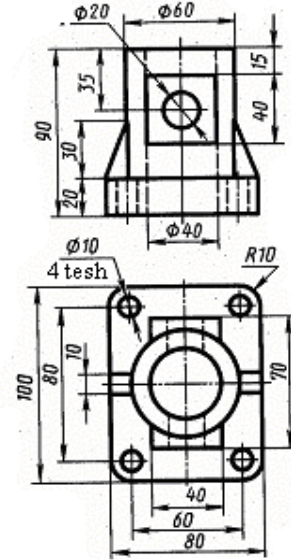
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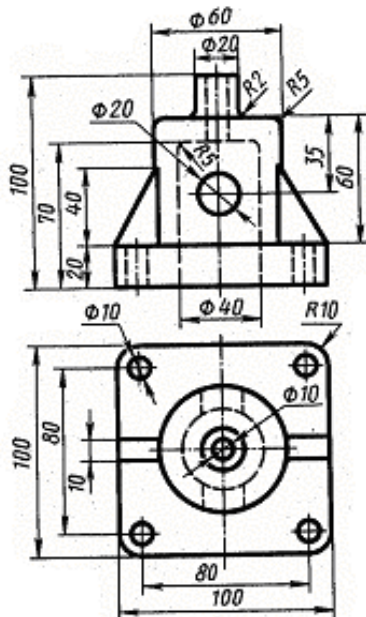
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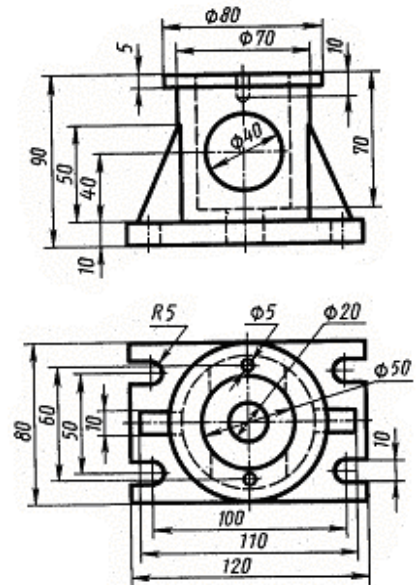
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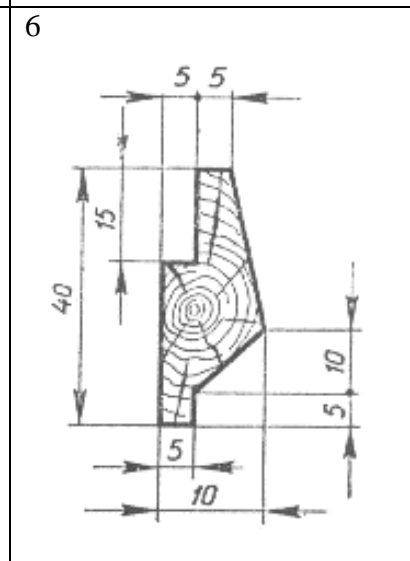
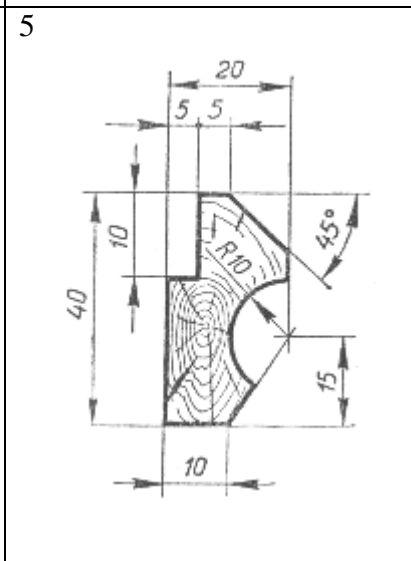
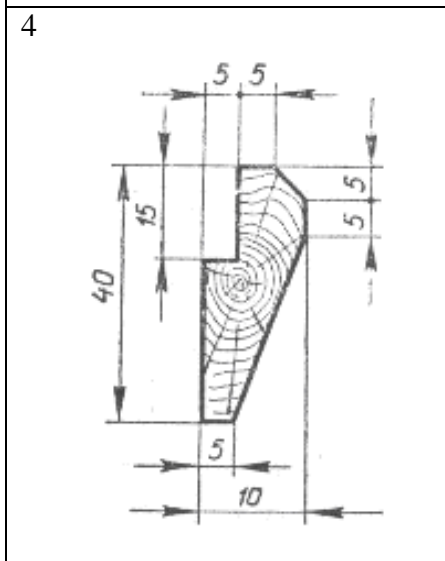
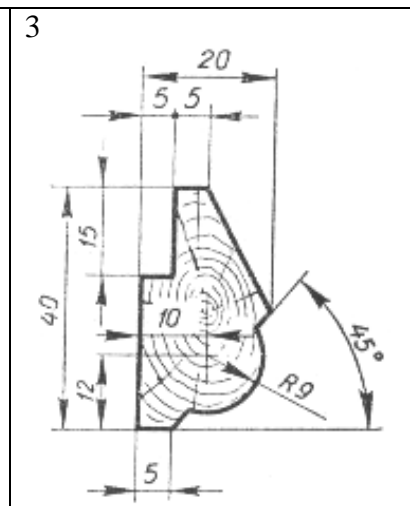
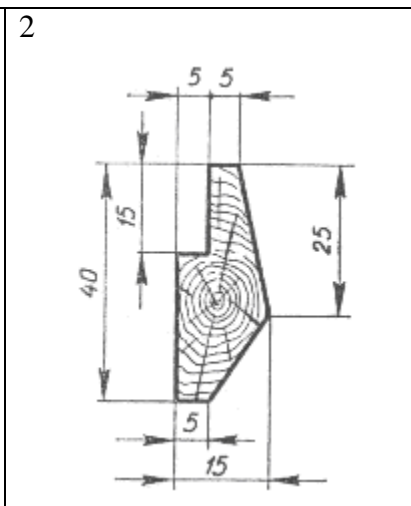
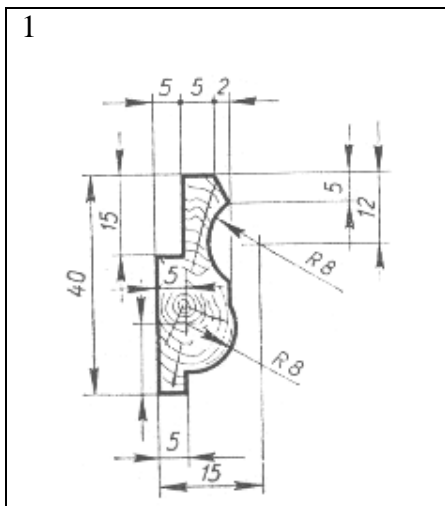
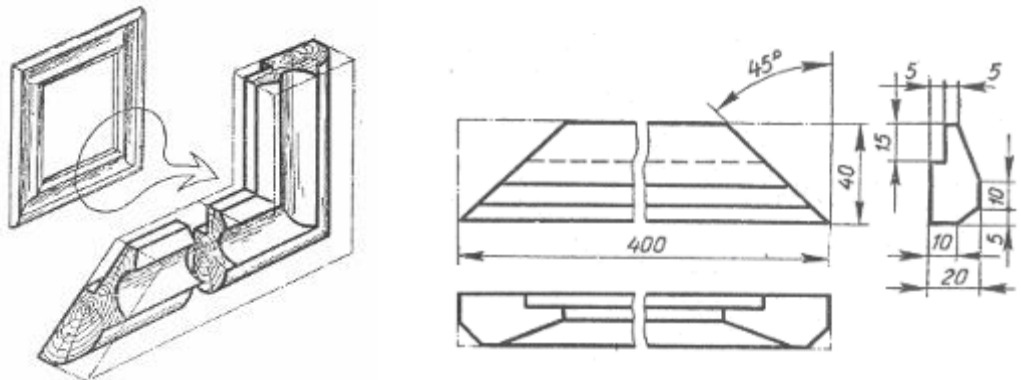
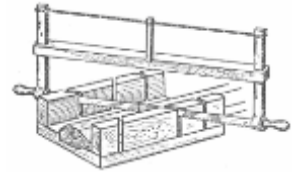
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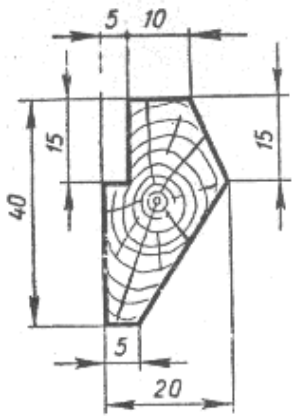
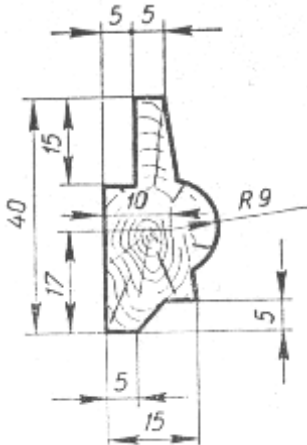
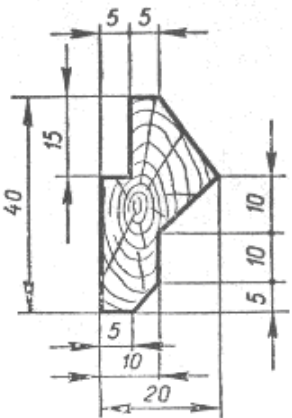
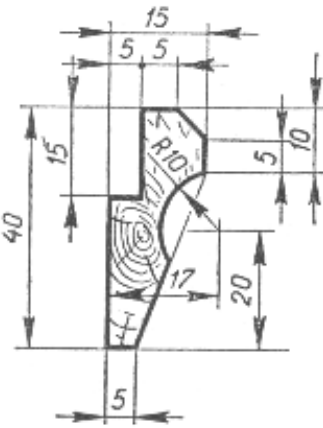
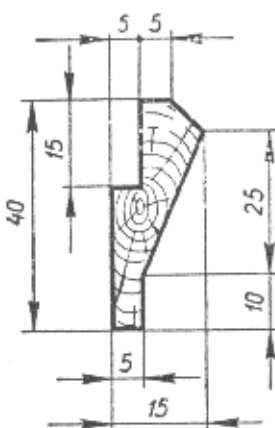
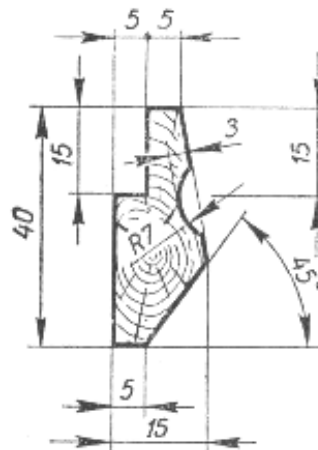


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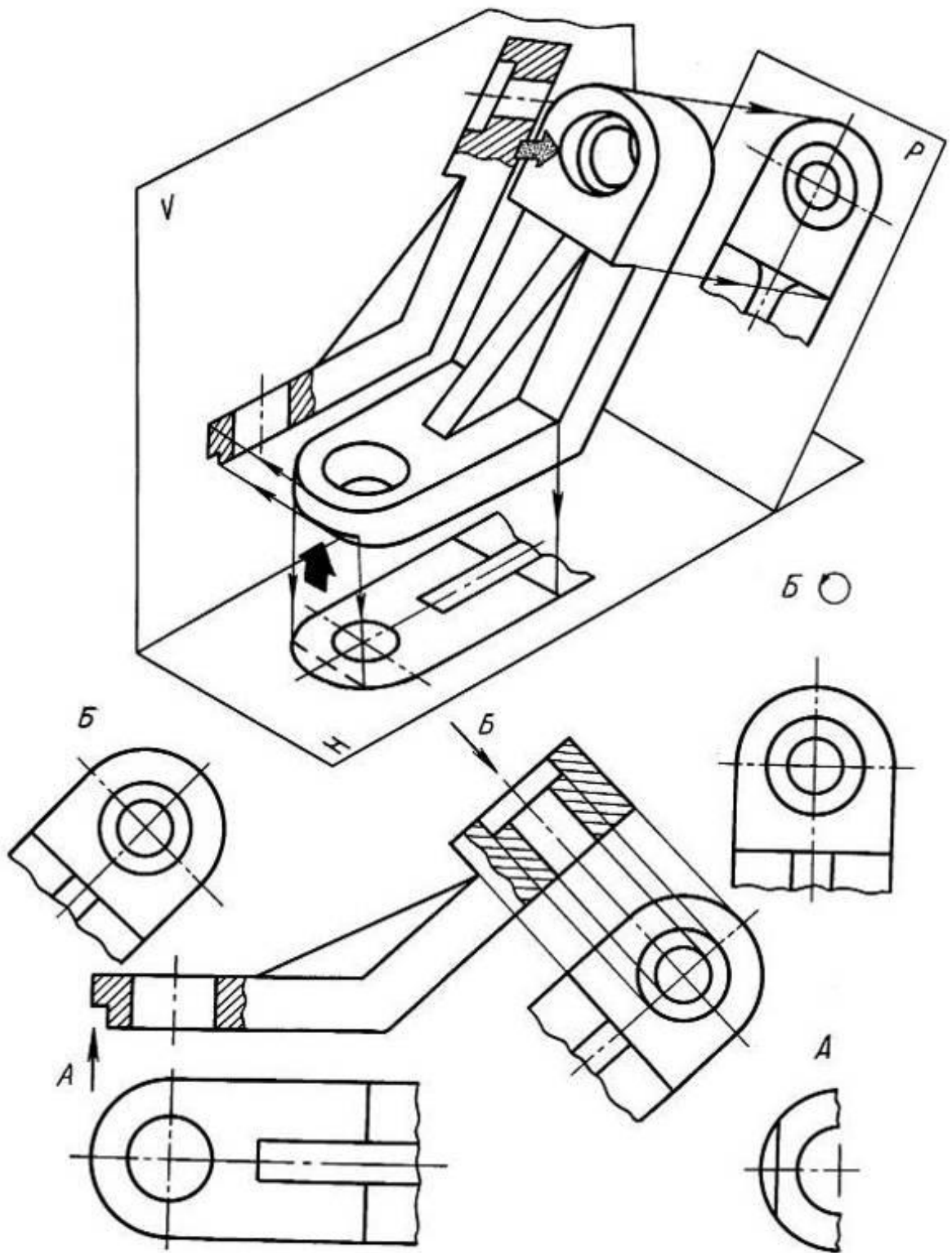
Berilgan kartina ramkasi (hoshiya)ning profili asosida uning uchta ko‘rinishini bajaring



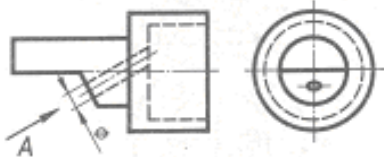
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10 	11 	12 
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16		

Detal chizmasidagi mahalliy va qo'shimcha ko'rinishlarni bajaring

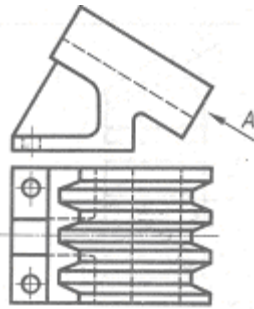




1



2



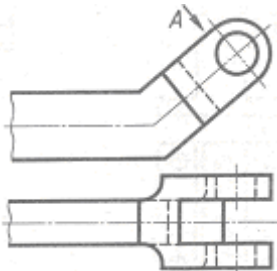
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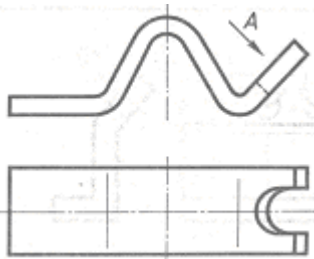
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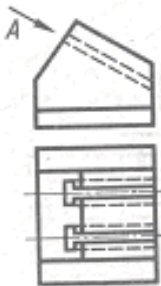
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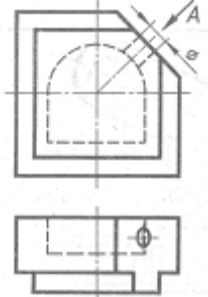
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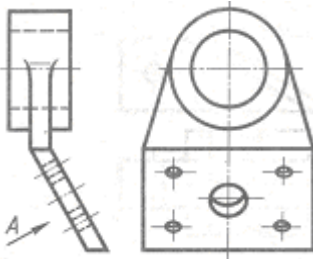
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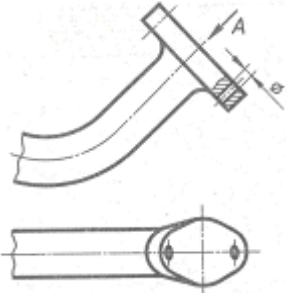
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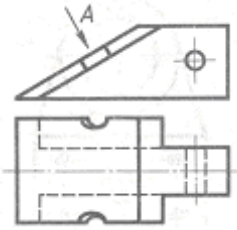
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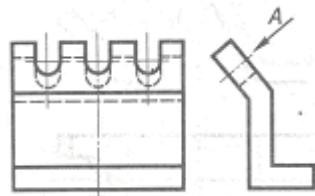
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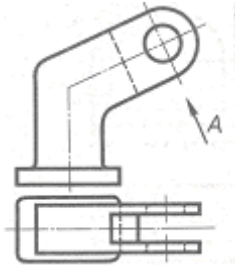
11



12



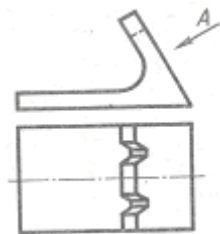
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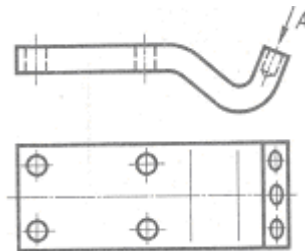
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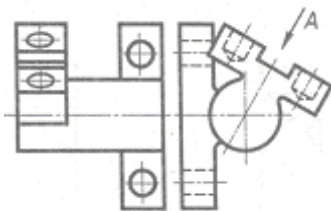
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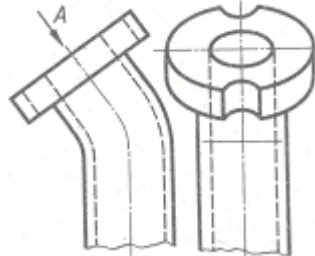
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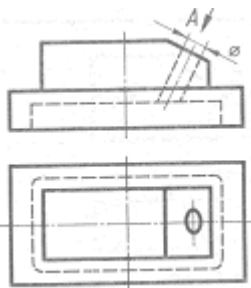
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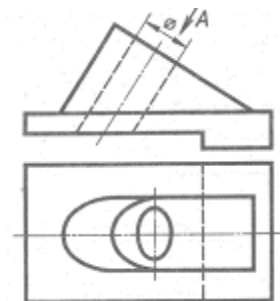
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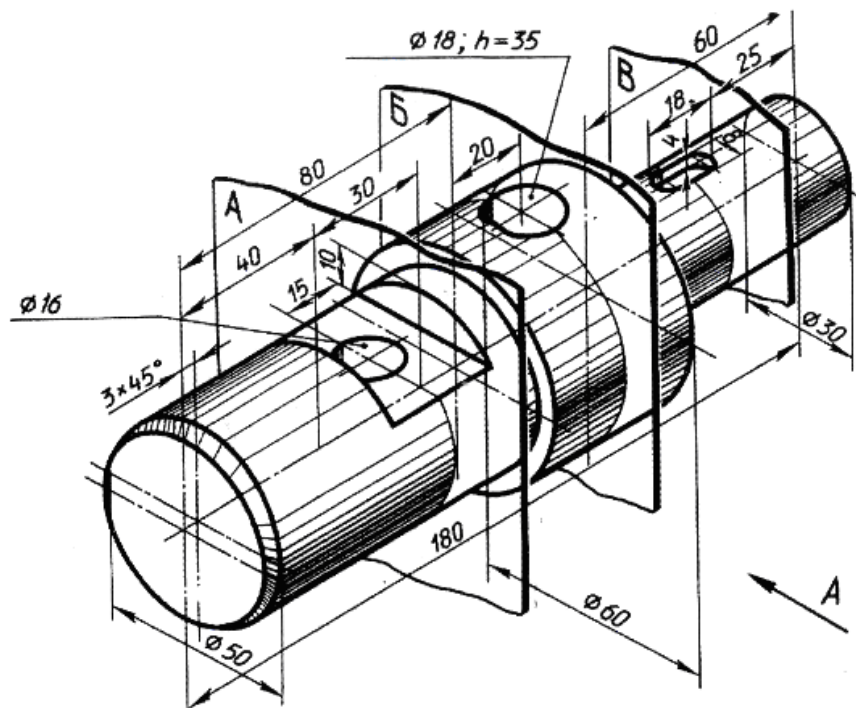
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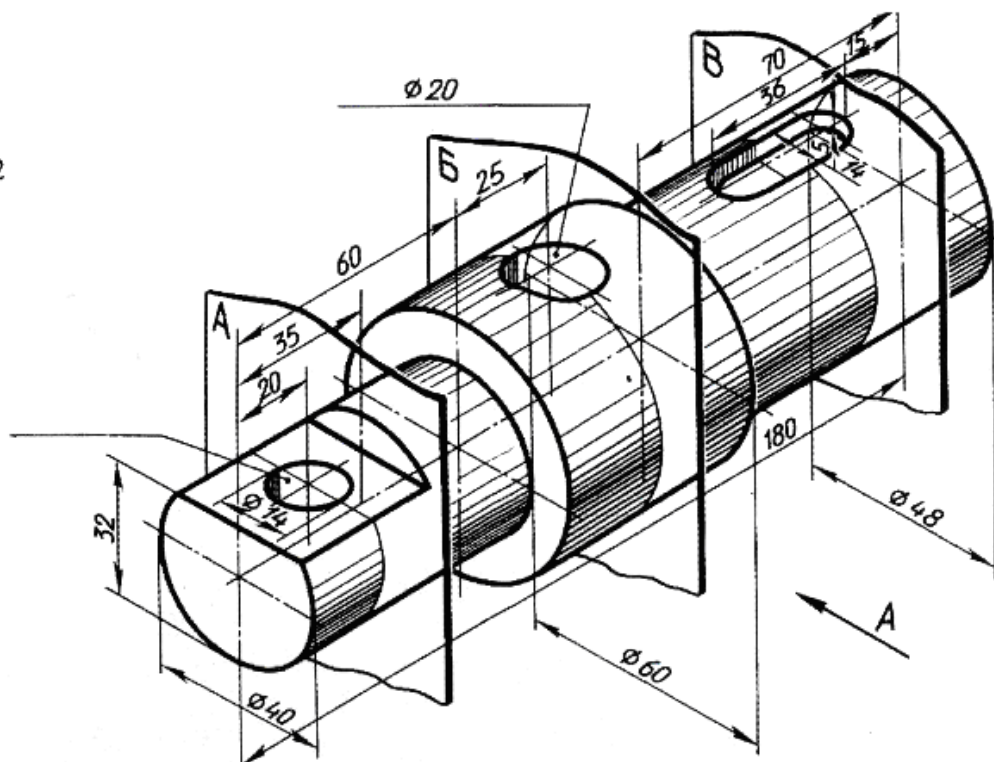
Valda ko'rsatilgan uchta kesim bajarilsin. O'lchamlari qo'yilsin.

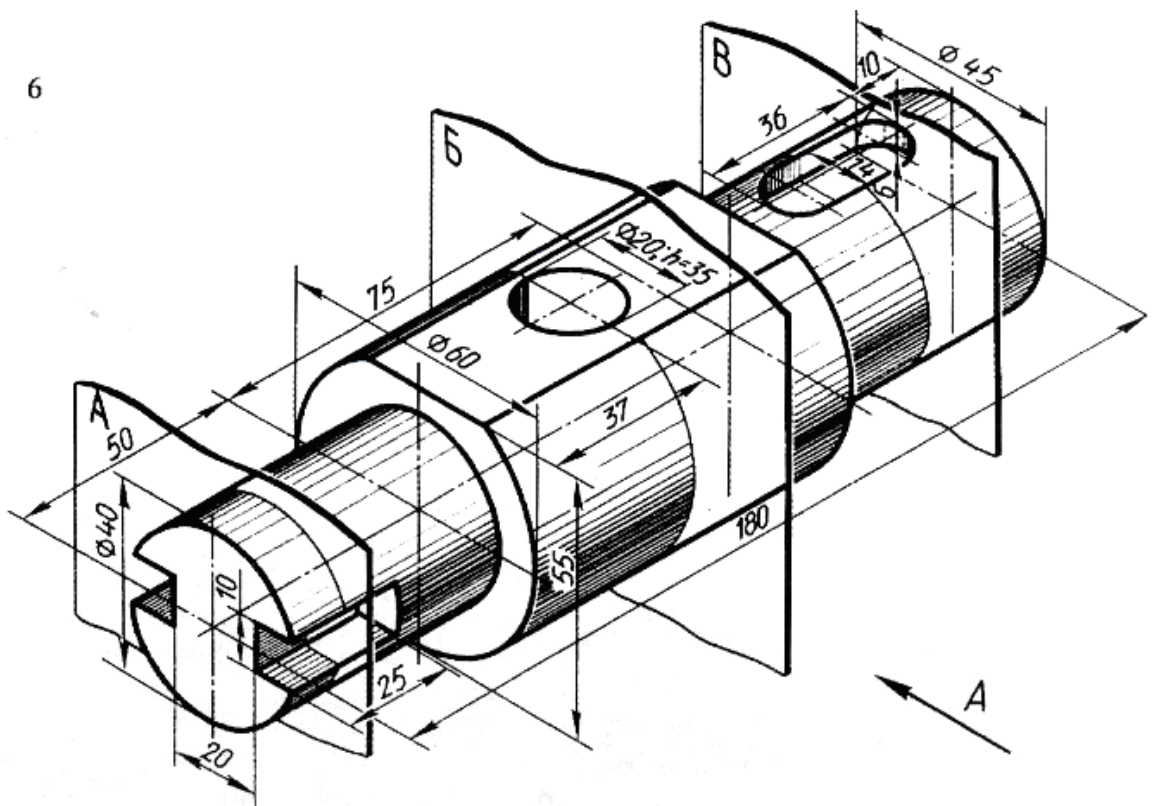
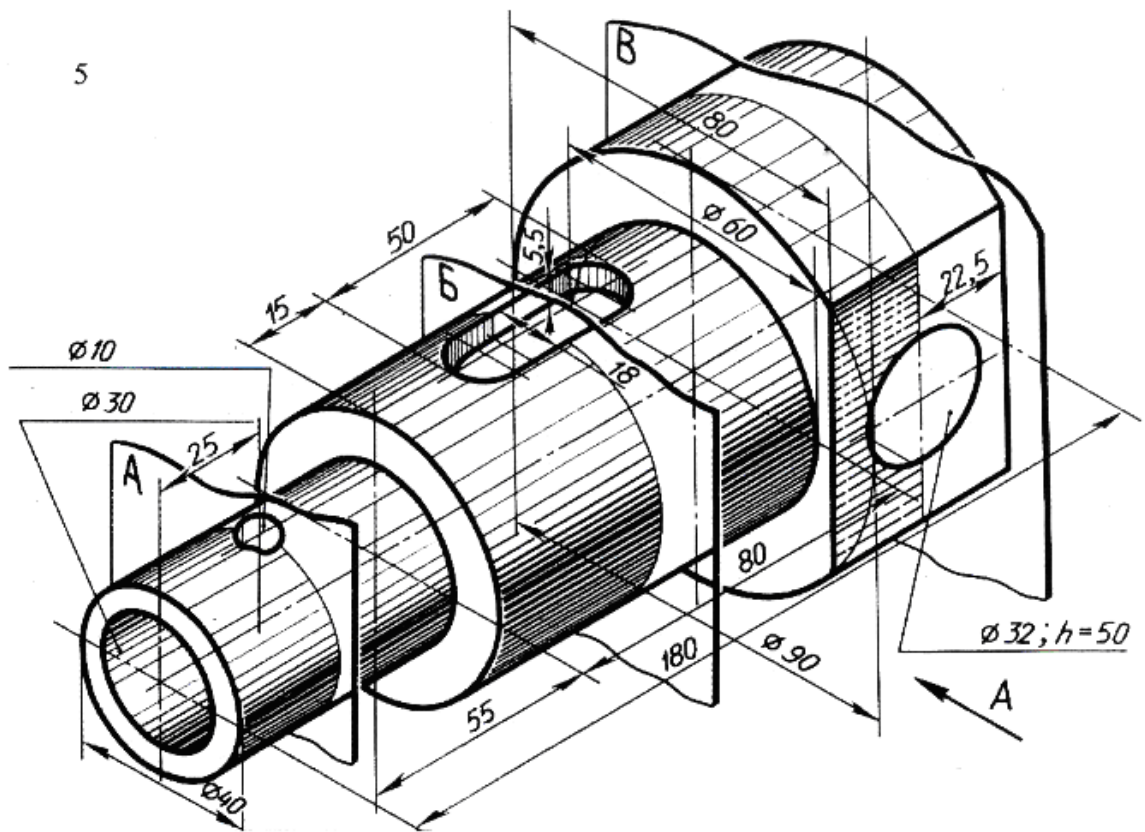


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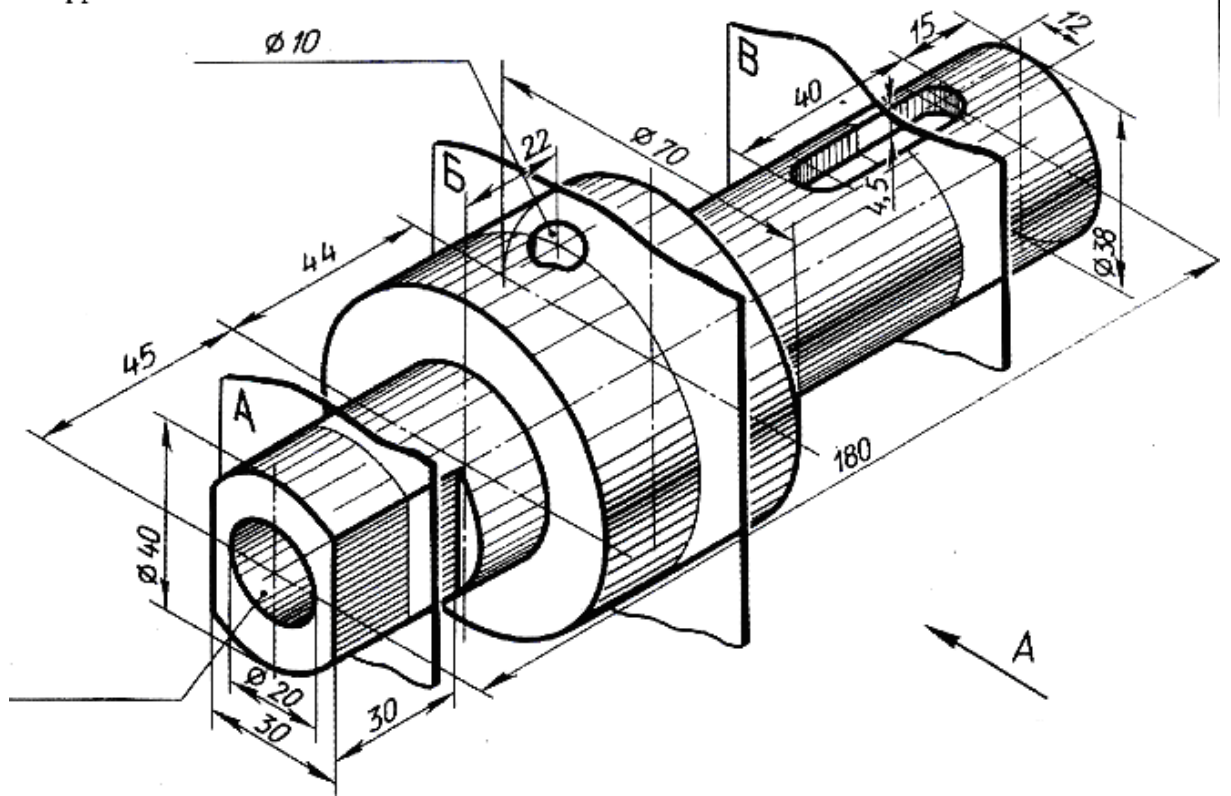


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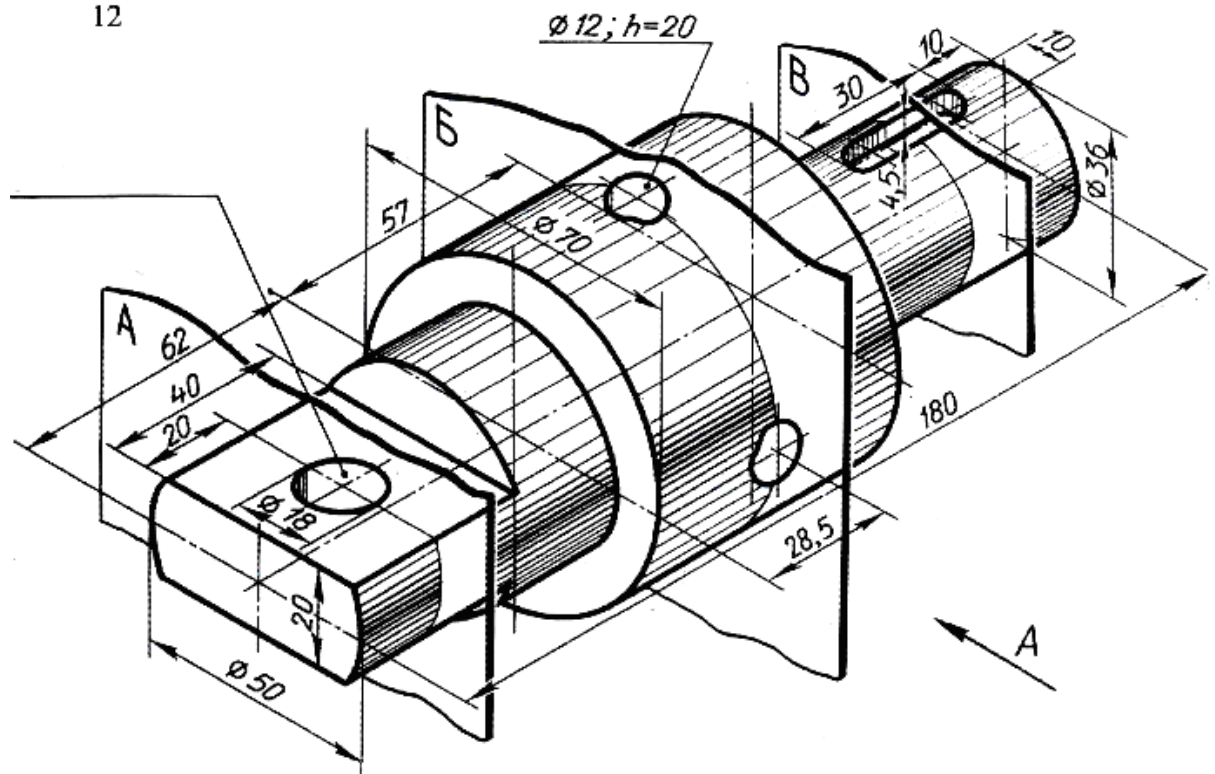




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. Yozma tavsif bo'yicha detalning ortogonal va aksonometrik (izometrik) proyeksiyasi chizilsin.



1. Uzunligi 100 mm, eni 50 mm va balandligi 52 mm prizma berilgan. Uning ustiga o'qi prizmaning markazidan o'tgan diametri 40 mm vertikal silindr qo'yilgan. Uning o'qi bo'yicha yuqoridan boshlab diametri 30 mm va chuqurligi 20 mm silindr o'yib olingan. Silindrning davomida to'rtburchak prizma teshilgan. To'rtburchakning ikki uchi gorizontal o'qqa joylashgan bo'lib, tomonlarining uzunligi 15 mm ga teng. Asosning to'rtta uchi radiusi 10 mm ga teng silindr bilan yumoloqlangan. Asos plitaning chap va o'ng tomonlaridan markazlari simmetriya o'qining kontur chiziq bilan kesishgan nuqtalarida joylashgan ikki yarim silindr o'yib olingan. Uning radiusi 10 mm ga teng.

2. Uzunligi 100 mm, eni 45 mm va qalinligi 12 mm prizma berilgan. Uning chap va o'ng tomonlaridan markazlari frontal simmetriya o'qining kontur chiziqlari kesishgan radiusi 12 mm ga teng. Ikkita yarim silindr o'yib olingan. Bu plitkaning ustiga oldi va orqasidan boshlab qalinligi 7 mm, uzunligi 36 mm va balandligi 38 mm ikkita prizma o'yilgan. Ular markaziy simmetriya vertikal o'qqa simmetrik joylashgan. Asos plitaning o'rtasi orqali diametri 18 mm ga teng vertikal silindr teshib o'tgan.

3. Uzunligi 100 mm, eni 50 mm va balandligi 40 mm prizmaning o'rtasidan vertikal o'q bo'yicha diametri 30 mm, chuqurligi 20 mm silindr o'yilgan. Silindrning davomida diametri 12 mm ikkinchi silindr teshib o'tgan. Asos prizmaning chap va o'ng tomonlaridan pastdan ikkita prizma o'yib olingan, har birining uzunligi 20 mm, balandligi 15 mm ga teng.

4. Uzunligi 70 mm, eni 40 mm va balandligi 15 mm prizma berilgan. Uning chap tomoni 20 mm radiusli silindr bilan yakunlangan. Shu radius markazi orqali diametri 20 mm li vertikal silindrik teshikning o'qi o'tgan. Berilgan prizmaning o'ng oldi va orqasidan boshlab, qalinligi 10 mm, uzunligi 30 mm, balandligi 30 mm li ikki prizma qo'yilgan. Bu prizmalarni o'qi Y ga perpendikulyar diametri 20 mm li silindr teshib o'tgan. Uning markaziy o'qi bo'yicha yuqoridan 20 mm masofada diametri 20 mm li o'qi y ga perpendikulyar silindr teshib o'tgan.

5. Uzunligi 70 mm, eni 40 mm va balandligi 10 mm prizma berilgan. Uning chap tomoni 20 mm radiusli silindr bilan yakunlangan. Shu radius markazi orqali diametri 20 mm vertikal silindrik teshikning o'qi o'tgan. Berilgan prizmaning o'ng oldi va orqasidan boshlab qalinligi 10 mm, uzunligi 30 mm, balandligi 30 mm ikkita prizma qo'yilgan. Oldingi prizmaning oldi tomoni asos prizmani oldi tomoni bilan, orqa prizmaning orqa tomoni asosining orqa tomon bilan, shuningdek, ularning o'ng tomoni asosining o'ng tomoni bilan bir tekislikni tashkil qiladi. Ustiga qo'yilgan ikki prizmaning yuqori tomoni 15 mm radiusli silindr bilan yakunlanib, ularning markazi orqali 20 mm diametrli silindr teshib o'tgan.

6. Uzunligi 70 mm, eni 40 mm va balandligi 15 mm prizma berilgan. Uning chap tomonida markaziy gorizontaal o'qqa simmetrik qilib eni 30, uzunligi 35 mm prizma o'yib olingan. Berilgan prizmaning ustiga o'ng oldi va orqasidan boshlab qalinligi 10 mm, uzunligi 30 mm va balandligi 35 mm li ikkita prizma qo'yilgan bo'lib, ularning yuqori qismi 15 mm radiusli silindr bilan yakunlangan. Ularning markazi orqali o'qi unga perpendikulyar diametri 20 mm ga teng silindrik teshikning o'qi o'tgan. Bu ikki prizmaning tashqi tomonlari asosining oldi, orqasi va o'ng yoni bilan ustma-ust tushgan.

7. Uzunligi 100 mm, eni 50 mm va qalinligi 12 mm prizma berilgan. Uning chap va o'ng tomonlari radiusi 25 mm ga teng vertikal silindrlar bilan o'yib olingan. Bu plitaning ustiga oldi va orqasidan boshlab simmetriya o'qi bo'yicha qalinligi 7 mm, uzunligi 36 mm va balandligi 36 mm ikkita prizma qo'yilgan. Prizmalarning tashqi tomonlari asos prizmaning oldi va orqa tomonlari bilan qo'shib ketgan. Asos plitaning markaziga simmetrik ravishda uzunligi 20 mm, eni 12 mm vertikal prizma teshib o'tgan.

8. Uzunligi 100 mm, eni 45 mm va qalinligi 12 mm prizma berilgan. Uning chap va o'ng tomonlaridan markazlari gorizontaal o'qqa nisbatan simmetrik ravishda uzunligi 18 mm, eni 36 mm ga teng ikki prizma o'yib olingan. Bu plitaning ustiga oldi va orqasidan boshlab qalinligi 7 mm, uzunligi 36 mm va baladligi 38 mm ikkita prizma qo'yilgan. Prizmalarning tashqi tomonlari asos plitaning oldi va orqa tomonlari bilan bitta tekislikni tashkil qiladi. Prizmalarning yuqori qismi radiusi 18 mm ga teng silindrlar bilan o'yib tashlangan. Ularning markazi orqali diametri 18 mmga teng o'qi unga perpendikulyar silindr teshib o'tgan. Asos plitaning o'rtasida diametri 18 mm ga teng vertikal silindr teshib o'tgan.

9. Uzunligi 120 mm, eni 50 mm va qalinligi 12 mm prizma berilgan. Uning chap va o'ng tomonlari radiusi 25 mmga teng vertikal silindrlar bilan yakunlangan. Bu plitaning ustiga oldi va orqasidan boshlab simmetriya o'qi bo'yicha qalinligi 7 mm, uzunligi 36 mm va balandligi 36 mm ikkita prizma qo'yilgan. Prizmalarning tashqi tomonlari asos prizmaning oldi va orqa tomonlari bilan qo'shib ketgan. Asos plitaning o'rtasi orqali diametri 18 mm ga teng vertikal silindr teshib o'tgan.

10. Uzunligi 80 mm, eni 46 mm va balandligi 10 mm plitaning ustiga diametri 40 mm, balandligi 40 mm silindr qo'yilgan. Uning vertikal o'qi prizmaning markazidan o'tgan. Silindrning vertikal o'qi bo'yicha yuqoridan boshlab diametri 14 mm, chuqurligi 20 mm silindr o'yib olingan. Uning davomida bir tomoni unga parallel 12x12 mm vertikal prizma teshib o'tgan. Asosning to'rtta uchi 45° burchak ostida qirqib tashlangan. Kesilgan qismning kateti 10 mm ga teng. Plita ustiga silindrning ikki yoniga 10 mm qalinlikdagi vertikal uchburchakli prizma qovurg'a qo'yilgan. Silindrga yopishgan qismini uzunligi 15 mmga, balandligi 20 mmga teng.

11. Uzunligi 72 mm, eni 46 mm va balandligi 12 mm prizma berilgan. Uning chap tomoni 20 mm radiusli silindr bilan yakunlangan. Shu radius markazi orqali diametri 20 mm li vertical silindr teshikning o'qi o'tgan. Berilgan prizmaning o'ng oldi va orqasidan boshlab qalinligi 12 mm, uzunligi

30 mm, balandligi 30 mm ikki prizma qo'yilgan. Bu prizmalarni o'qi Y o'qiga perpendikulyar diametri 20 mmli silindr teshib o'tgan. Uning markazi prizmalarning o'rta profil o'qi bo'yicha yuqoridan 15 mm masofada o'tgan.

12. Uzunligi 90 mm, eni 50 mm va balandligi 14 mm prizma berilgan. Uning chap va o'ng tomonlari radiusi 25 mmga teng vertikal silindrlar bilan yo'nib olingan. Bu plitaning ustiga oldi va orqasidan boshlab simmetriya o'qi bo'yicha qalinligi 8 mm, uzunligi 36 mmli ikkita prizma qo'yilgan. Prizmalarning tashqi tomonlari asos prizmaning oldi va orqa tomonlari bilan qo'shilib ketgan. Asos plitaning markaziga simmetrik ravishda uzunligi 20 mm, eni 12 mmli vertical prizma teshib o'tgan.

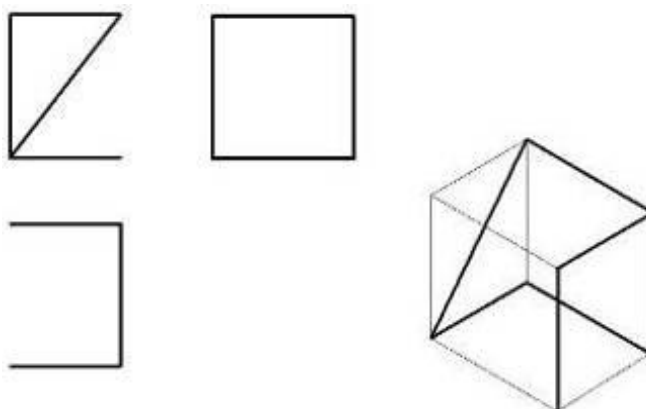
13. Uzunligi 120 mm, eni 50 mm va qalinligi 12 mm prizma berilgan. Uning chap va o'ng tomonlari radiusi 25 mmga teng vertikal silindrlar bilan yakunlangan. Bu plitaning ustiga oldi va orqasidan boshlab simmetriya o'qi bo'yicha qalinligi 7 mm, uzunligi 36 mm va balandligi 36 mm ikkita prizma qo'yilgan. Prizmalarning tashqi tomonlari asos prizmaning oldi va orqa tomonlari bilan qo'shilib ketgan. Asos plitaning o'rtasi orqali diametri 18 mm ga teng vertikal silindr teshib o'tgan.

14. Uzunligi 80 mm, eni 46 mm va balandligi 10 mm plitaning ustiga diametri 40 mm, balandligi 40 mm silindr qo'yilgan. Uning vertikal o'qi prizmaning markazidan o'tgan. Silindrning vertikal o'qi bo'yicha yuqoridan boshlab diametri 14 mm, chuqurligi 20 mm silindr o'yib olingan. Uning davomida bir tomoni unga parallel 12x12 mm vertikal prizma teshib o'tgan. Asosning to'rtta uchi 45° burchak ostida qirqib tashlangan. Kesilgan qismning kateti 10 mm ga teng. Plita ustiga silindrning ikki yoniga 10 mm qalinlikdagi vertikal uchburchakli prizma qovurg'a qo'yilgan. Uning silindrga yopishgan qismining uzunligi 15 mmga, balandligi 20 mm ga teng.

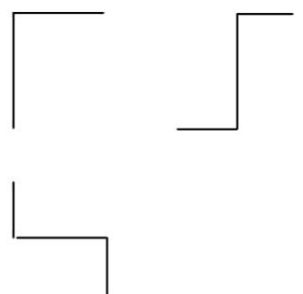
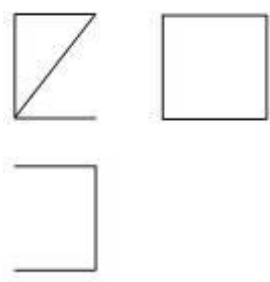
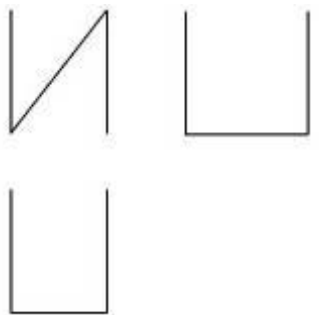
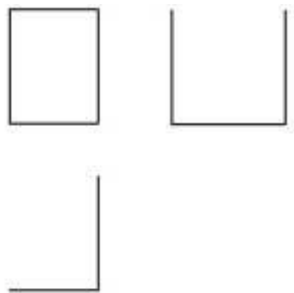
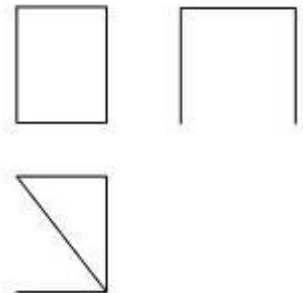
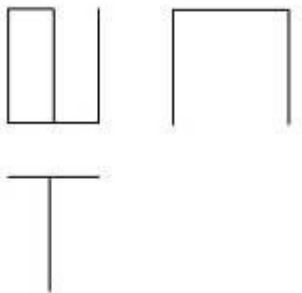
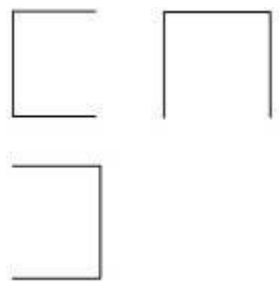
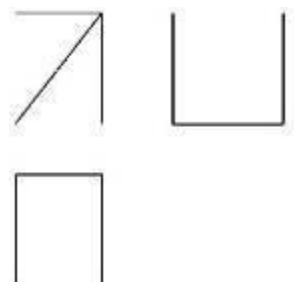

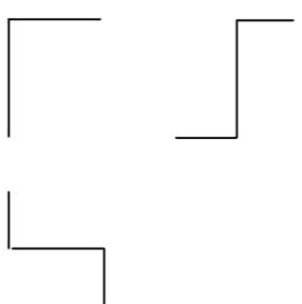
15. Uzunligi 80 mm, eni 44 mm va balandligi 14 mm prizma berilgan. Uning chap tomoni 22 mm radiusli silindr bilan yakunlangan. Shu radius markazi orqali diametri 20 mm li vertikal silindrik teshikning o'qi o'tgan. Berilgan prizmaning o'ng oldi va orqasidan boshlab, qalinligi 10 mm, uzunligi 30 mm, balandligi 30 mm li ikki prizma qo'yilgan. Bu prizmalarni o'qi Y ga perpendikulyar diametri 20 mm li silindr teshib o'tgan. Uning markaziy o'qi bo'yicha yuqoridan 20 mm masofada diametri 20 mm li o'qi y ga perpendikulyar silindr teshib o'tgan.

16. Uzunligi 80 mm, eni 50 mm va balandligi 12 mm prizma berilgan. Uning chap tomoni 25 mm radiusli silindr bilan yakunlangan. Shu radius markazi orqali diametri 22 mm vertikal silindrik teshikning o'qi o'tgan. Berilgan prizmaning o'ng oldi va orqasidan boshlab qalinligi 12 mm, uzunligi 30 mm, balandligi 30 mm ikkita prizma qo'yilgan. Oldingi prizmaning oldi tomoni asos prizmani oldi tomoni bilan, orqa prizmaning orqa tomoni asosining orqa tomon bilan, shuningdek, ularning o'ng tomoni asosining o'ng tomoni bilan bir tekislikni tashkil qiladi. Ustiga qo'yilgan ikki prizmaning yuqori tomoni 15 mm radiusli silindr bilan yakunlanib, ularning markazi orqali 20 mm diametrli silindr teshib o'tgan.

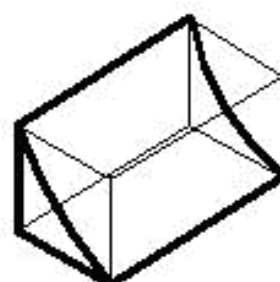
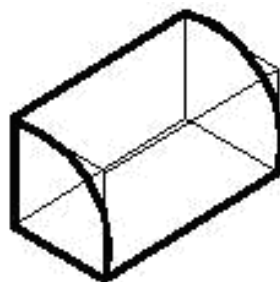
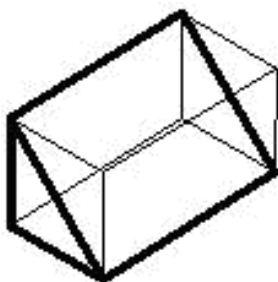
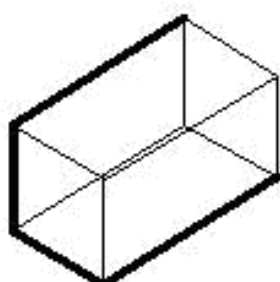
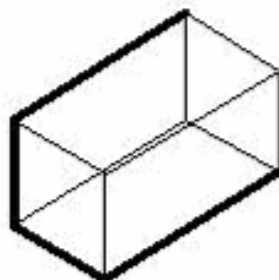
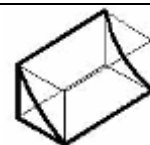
Simdan yasalgan detalning ortogonal proyeksiyasiga asosan yaqqol tasvirini bajaring va modelini yasang.



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<p>3</p>	<p>4</p>
<p>5</p>	<p>6</p>

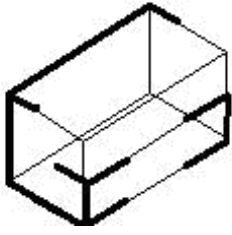
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<p>15</p> 	<p>16</p> 

Belgilangan qismini o'yish orqali detal yasash

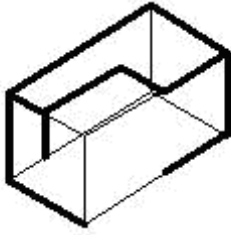


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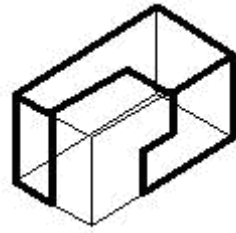
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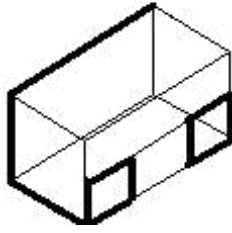
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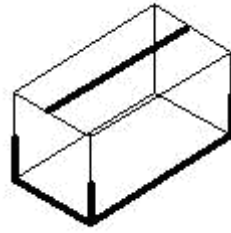
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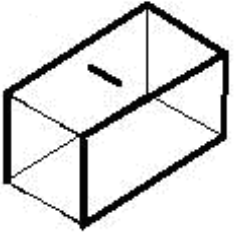
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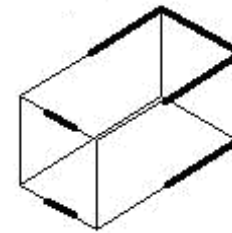
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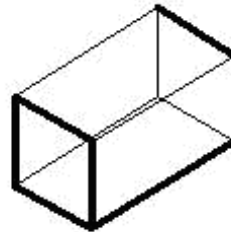
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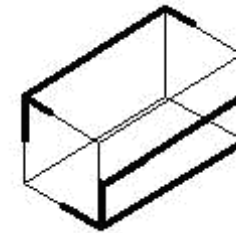
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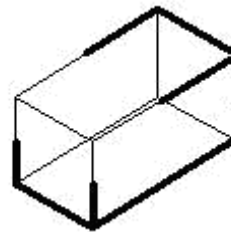
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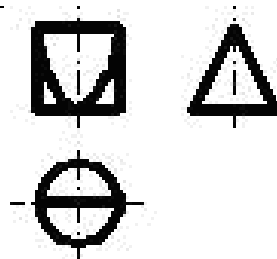
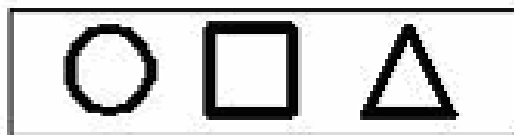
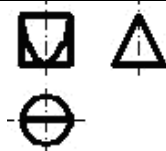
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Berilgan teshikdan tig'iz o'tadigan modelning uchta ko'rinishi va yaqqol tasvirini yasang

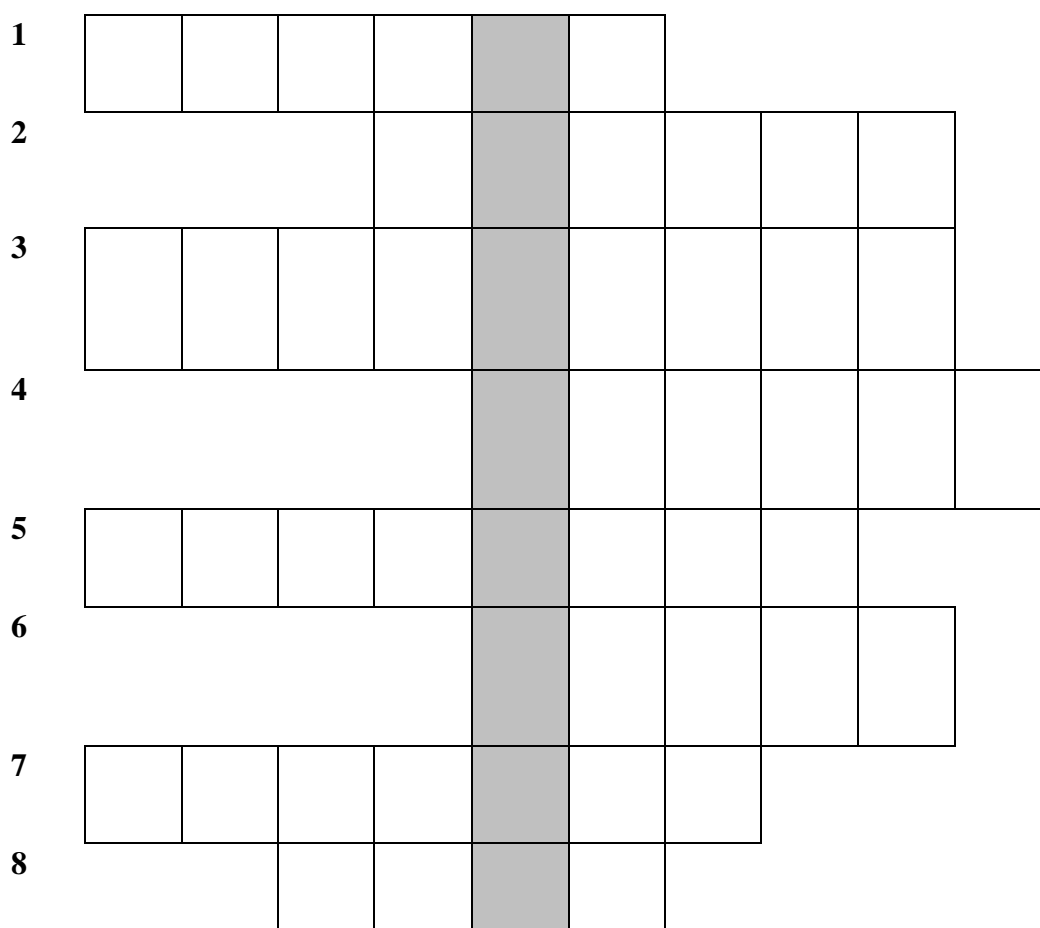


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Mavzularni mustahkamlashga oid boshqotirma yechish



Ushbu uslubdan foydalanish qiziqarli va oson tuyulsada, amma anchagina murakkabliklar tug`diradi. Bu murakkabliklar nimada? - degan savol tug`ilishi tabiiydir. Ushbu murakkabliklarning asosi shundaki, hozirgi ta'lim tizimining dars jarayonlari o`quvchi va talabalarga qiyin tuyuladi, sababi chizmachilik darslarida turlicha atamalar, nomlar uchraydi. O`quvchi va talabalarning ayrimlari chizmachilik fanida uchraydigan atama, nomlarni farqlay olmaydi, ya'ni chizmachilik darslarida uchraydigan, shu fanga oid terminologik so`zlarga tushunmaydi. Chizmachilik fanlari murakkab fanlar tizimida bo`lishi bilan bir qatorda o`quvchi va talabalardan har tomonlama ma'suliyat talab qiladi. Ushbu fanning o`quvchi va talabalardan qilinayotgan talabning asosiysi ularda fazoviy tasavvurning shakllanishidir. O`quvchi va talabalarlarni keng tasavvurga ega bo`lishiga o`rgatish bilan bir qatorda chizmalarni o`qiy olish qobiliyatini ham shakllantirishimiz kerak. Ushbu muammolarni hal etish yuzasidan bir qancha uslublar qatorida boshqotirmalarning ham o`rni kattadir.

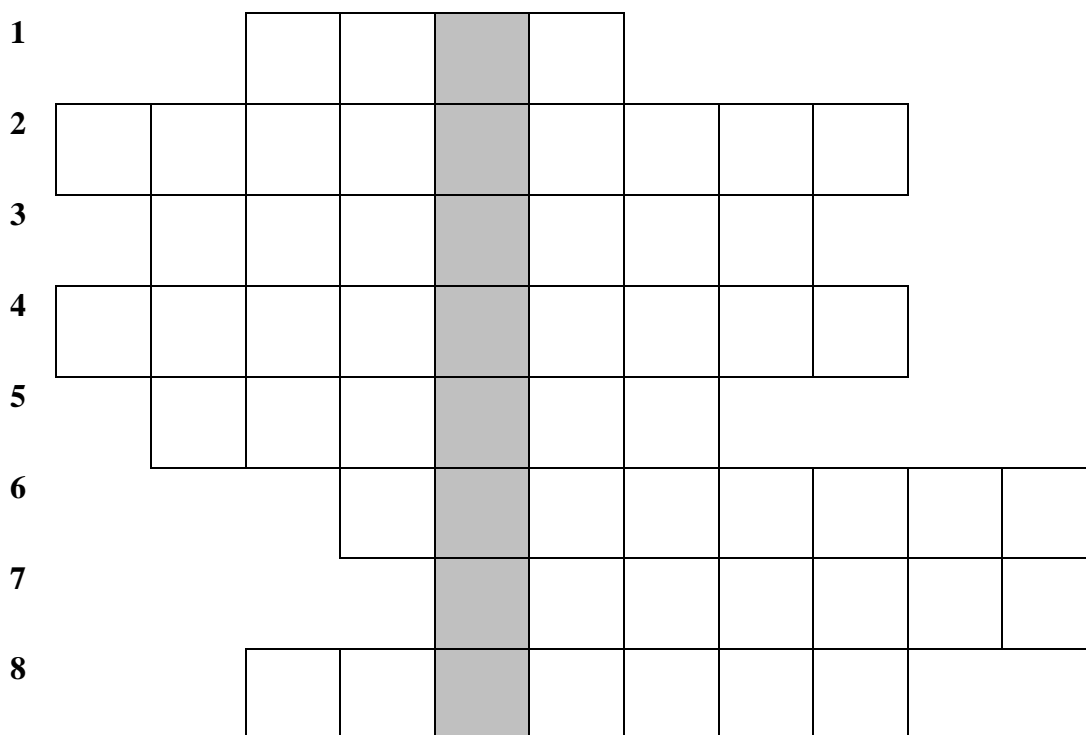


Savollar:

1. Konus kesmalaridan biri bo`lgan tekis yopiq egri chiziq qanday ataladi?
2. Aylana yoki shar markazini aylana yoki sharning istalgan nuqtasi bilan birlashtiruvchi kesma nomi?
3. Fokus deb ataluvchi F_1 va F_2 nuqtalardan uzoqliklari orasidagi ayirmalar o`zgarmas va o`zaro teng bo`lgan va shu fokuslar tekisligida yotgan to`plami nima deyiladi?

4. Tekislikdan biror nuqta (markaz)dan bir xil uzoqlikda joylashgan nuqtalar to`plami nima deyiladi?
5. Tekislikda fokus deb ataluvchi F nuqtadan va direktrisa deb ataluvchi to`g`ri chiziqdan barobar uzoqlikda yotgan nuqtalar to`plami, ikkinchi tartibli tekis egri chiziq nima deyiladi?
6. Tuxumsimon qavariq tekis yopiq egri chiziq nima deyiladi?
7. Jismni chegaralovchi yuzalar nima deyiladi?
8. Aylana yoylarini turli markazdan sirkul yordamida tutashtirib hosil qilingan spiralsimon egri chiziq nima deyiladi?

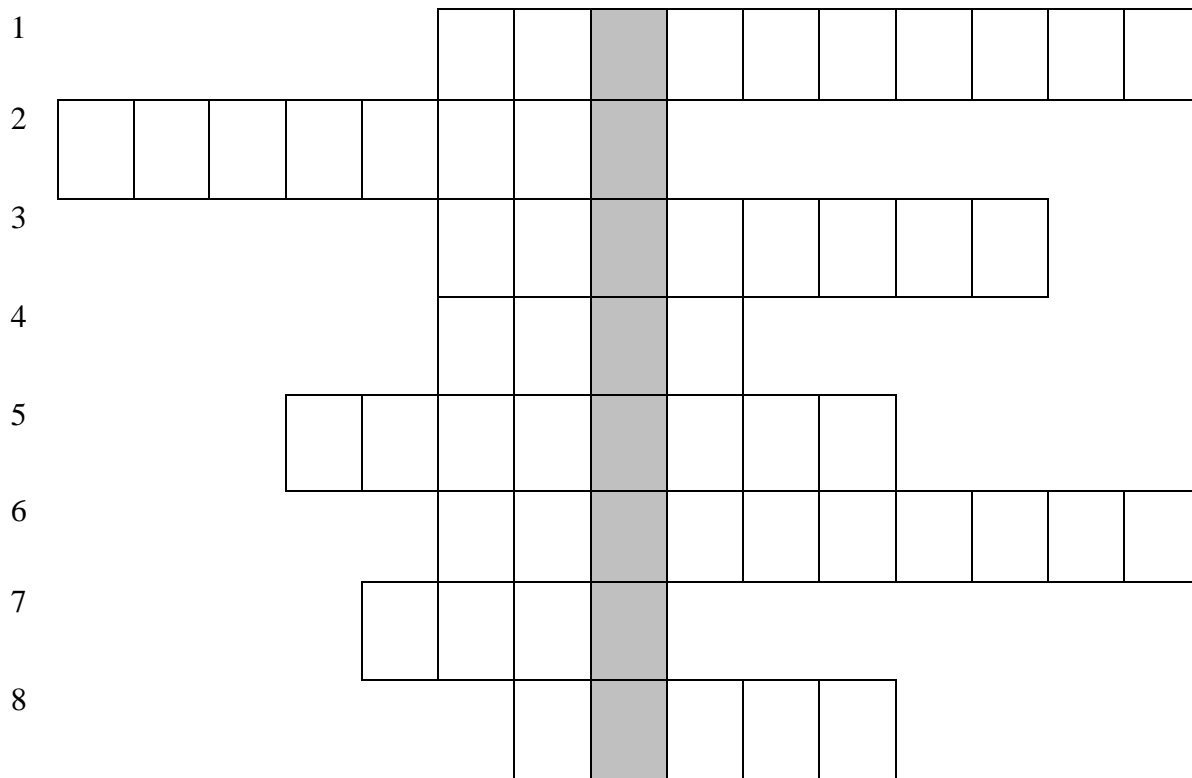
Kalit so`z:



Savollar:

1. Tuxumsimon qavariq tekis yopiq egri chiziq nima deyiladi?
2. Sinusning o`z argumentiga qarab o`zgarishini tasvirlovchi davriy tekis egri chiziq nima deyiladi?
3. Jismni chegaralovchi yuzalar nima deyiladi?
4. Fokus deb ataluvchi F1 va F2 nuqtalardan uzoqliklari orasidagi ayirmalar o`zgarmas va o`zaro teng bo`lgan va shu fokuslar tekisligida yotgan nuqtalar to`plami nima deyiladi?
5. Sirkul bilan chizib bo`lmaydigan egri chiziqlarni chizish uchun ishlatiladigan mahsus chizg`ich nima deyiladi?
6. Aylananing yo`naltiruvchi to`g`ri chiziq bo`ylab chirg`almasdan bir marta to`liq yumalab chiqishida aylanadagi biror nuqta hosil qilgan chiziq nima deyiladi?
7. Aylanani markazidan o`tib, uning ikki qarama-qarshi nuqtasini birlashtiruvchi kesma nima deyiladi?
8. Tekislikda fokus deb ataluvchi F nuqtadan va direktrisa deb ataluvchi to`g`ri chiziqdan barobar uzoqlikda yotgan nuqtalar to`plami, ikkinchi tartibli tekis egri chiziq nima deyiladi?

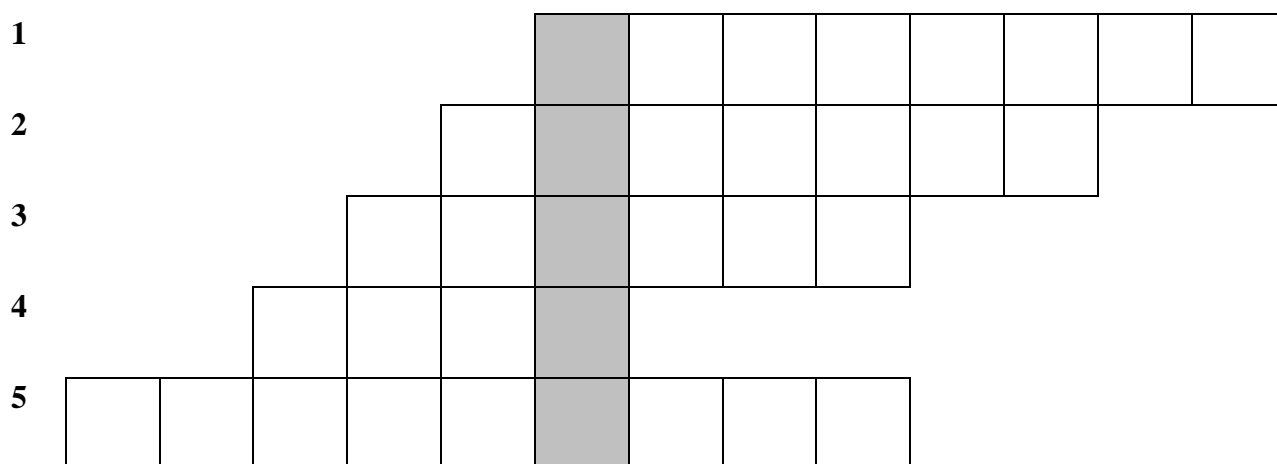
Kalit so`z:



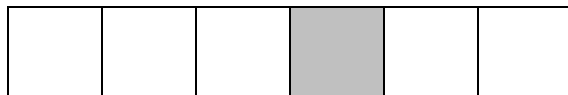
Savollar:

1. Fokus deb ataluvchi F1 va F2 nuqtalardan uzoqliklari orasidagi ayirmalar o'zgarmas va o'zaro teng bo'lgan va shu fokuslar tekisligida yotgan nuqtalar to'plami nima deyiladi?
2. Aylananing yo'naltiruvchi to'g'ri chiziq bo'ylab sirg'almasdan bir marta to'liq yumalab chiqishida aylanadagi biror nuqta hosil qilgan egri chiziq nima deyiladi?
3. Jisimni chegaralovchi yuzalari nima deyiladi?
4. Aylana yoylarini turli markazdan sirkul yordamida tutashtirib hosil qilingan spiralsimon egri chiziq nima deyiladi?
5. Tekislikda fokus deb ataluvchi F nuqtadan va direktrisa deb ataluvchi to'g'ri chiziqdan barobar uzoqlikda yotgan nuqtalar to'plami, ikkinchi tartibli tekis egri chiziq nima deyiladi?
6. Evolyuta deb ataluvchi egri chiziqning yoyilmasidan iborat tekis egri chiziq nima deyiladi?
7. Tuxumsimon qavariq tekis yopiq egri chiziq nima deyiladi?
8. Aylana yoki shar markazini aylana yoki sharning istalgan nuqtasi bilan birlashtiruvchi kesma nima deyiladi?

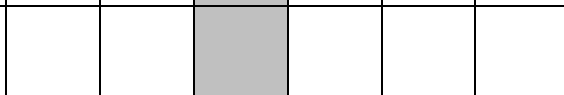
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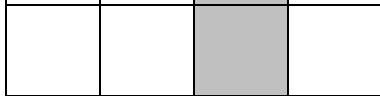
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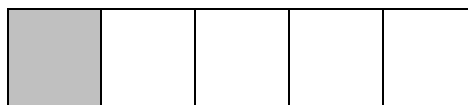


Savollar:

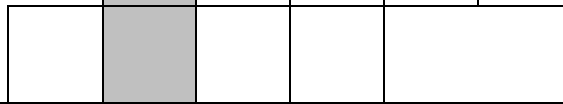
1. Aylananing yo`naltiruvchi to`g`ri chiziq bo`ylab sirg`almasdan bir marta yumalab chiqishida aylanadagi biror nuqta hosil qilgan egri chiziq nima deyiladi?
2. Jismni chegaralovchi yuzalari nima deyiladi?
3. Sirkul bilan chizib bo`lmaydigan egri chiziqlarni chizish uchun ishlatiladigan mahsus chizg`ich nima deyiladi?
4. Tuxumsimon qavariq tekis yopiq egri chiziq nima deyiladi?
5. Sinusning o`z argumentiga qarab o`zgarishini tasvirlovchi davriy tekis chiziq nima deyiladi?
6. Konus kesmalaridan biri bo`lgan tekis yopiq egri chiziq nima deyiladi?
7. Aylana yoki shar markazini aylana yoki sharning istalgan nuqtasi bilan birlashtiruvchi kesma nima deyiladi?
8. Aylana yoylarini turli markazdan sirkul yordamida tutashtirib hosil qilingan spiralsimon egri chiziq nima deyiladi?

Kalit so`z:

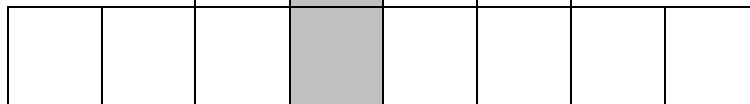
1



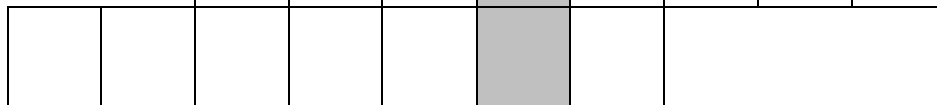
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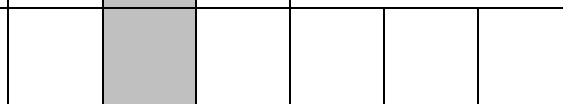
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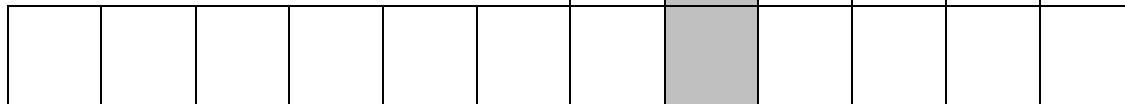
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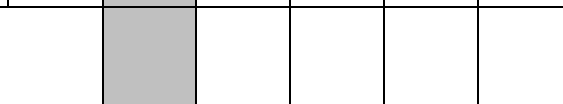
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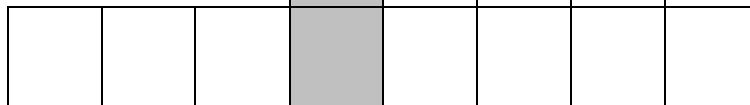
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7



8



Savollar:

1. Konusaviy sirt va uni yopiq egri chiziq bo`yicha kesib utgan tekislik bilan chegaralangan geometrik jism nima deyiladi?
2. Tuxumsimon qavariq tekis yopiq egri chiziq nima deyiladi?

3. Asosi ko'pburchaklik bo'lgan, yon yoqlari esa umumiy uchga ega bo'lgan uchburchaklardan iborat ko'p yoqli geometrik jism nima deyiladi?
4. Yopiq silindrik sirt va ikkita tekkislik bilan chegaralangan jism nima deyiladi?
5. Yon yoqlari o'zaro parallel bo'lgan ko'p yoqli geomterik jism nima deyiladi:
6. Yopiq siniq chiziq bilan chegaralangan shakl nima deyiladi?
7. O'lchamga ega bo'lmagan eng kichik geometrik obraz nima deyiladi?
8. Jismni chegaralovchi yuzalar nima deyiladi?

Kalit so'z:

Chizmachilik (Geometrik va proyeksion chizmachilik) fanidan test savollari



1. Standartga asosan qattiq qalam qanday belgilanadi?
 - A) M;
 - B) HB;
 - C) TM;
 - D) T;
2. Standartga asosan yumshoq qalam qanday belgilanadi?
 - A) 2T;
 - B) T;
 - C) HB;
 - D) M;
3. Standartga asosan o'rtacha yumshoq qalam qanday belgilanadi?
 - A) 2T;
 - B) T;
 - C) TM;
 - D) H;
4. Standartga asosan A3 formatning o'lchamlari qanday?
 - A) 297x210;
 - B) 594x420;
 - C) 594x841;
 - D) 297x420;
5. Standartga asosan A4 formatning o'lchamlari qanday?
 - A) 297x210;
 - B) 594x420;
 - C) 594x841;
 - D) 297x420;
6. Standartga asosan kattalashtirish masshtabini aniqlang.
 - A) 1:1;
 - B) M1:1;
 - C) 1:2;
 - D) M2:1;

7. Standartga asosan qaysi javobda standart shriftlari o'lchamlari to'liq ko'rsatilgan?
A) 2,5;3,5;4;5;7;10;14;20;28;40;
B) 2,5;3;3,5;4;5;7;10;14;20;28;40;
C) 2,5;3;4;5;14;28;40;
D) 2,5;3,5;5;7;10;14;20;28;40;
8. Agar bir ixtiyoriy tekislik to'g'ri doiraviy konusni hamma yasovchilarini o'tkir burchak ostida kesib o'tsa, tekislik yuzasida qanday egri chiziq hosil bo'ladi?
A) Oval;
B) Giperbola;
C) Parabola;
D) Ellips;
9. Chizma chizish jarayonida qaysi chizma formati vertikal holda joylashtiriladi?
A) 22 (A2);
B) 12 (A3);
C) 11 (A4);
D) 24 (A1);
10. Chizmada shriftlar qanday qiyalikda yoziladi?
A) 70°;
B) 35°;
C) 90°;
D) 75°;
11. Bosh harf 14 shrift o'lchamida bo'lsa, yozma harfi qanday o'lchamda yoziladi?
A) 14;
B) 7;
C) 5;
D) 10;
12. Har xil uzunlikdagi radiuslar bilan chizilgan aylana yo'ylaridan tuzigan ochiq ravon egri chiziq nima deb ataladi?
A) Aylana evolventasi;
B) Oval;
C) O'rama;
D) Ellips;
13. Kesuvchi tekislikning yo'nalishini ko'rsatish uchun kesimning boshi va oxiri qanday chiziq bilan chiziladi?
A) Asosiy tutash chiziq;
B) Uzuq chiziq;
C) Shtrix chiziq;
D) Ingichka tutash chiziq;
14. Chizmani ko'rinib turadigan kontur chizig'i, qirqim va kesim kontrulari qanday chiziq bilan chiziladi?
A) Asosiy tutash chiziq;
B) Uzuq chiziq;
C) Shtrix chiziq;
D) Ingichka tutash aniq chiziq;
15. Teng yoqli uchburchakli piramidaning asosiga parallel tekislik bilan kesilsa, qanday shakl hosil bo'ladi?
A) Kvadrat;

- B) Aylana;
- C) To'rtburchak;
- D) Uchburchak;

16. Asoslari kvadrat to'g'ri prizma yon yoqlari qiya tekislik bilan kesilsa, qanday shakl hosil bo'ladi?

- A) To'rtburchak;
- B) Uchburchak;
- C) Romb;
- D) Aylana;

17. Kubning barcha vertikal qirralarini kesib o'tadigan kesuvchi tekislik bilan kesilsa, qanday shakl hosil bo'ladi?

- A) Beshburchak;
- B) Oltiburchak;
- C) To'rtburchak;
- D) Romb;

18. To'g'ri doiraviy konusning barcha yasovchilari o'qiga og'ma kesuvchi tekislik bilan kesilsa, tekislik yuzasida qanday egri chiziq hosil bo'ladi?

- A) Aylana;
- B) Parabola;
- C) Giperbola;
- D) Ellips;

19. To'g'ri doiraviy konusning ikkita yasovchisiga yoki o'qiga parallel bo'lgan kesuvchi tekislik bilan kesilsa, tekislik yuzasida qanday egri chiziq hosil bo'ladi?

- A) Aylana;
- B) Parabola;
- C) Giperbola;
- D) Ellips;

20. To'g'ri doiraviy silindrning asosiga perpendikulyar tekislik bilan kesilsa, tekislik yuzasida qanday shakl hosil bo'ladi?

- A) Aylana;
- B) To'rtburchak;
- C) Parabola;
- D) Giperbola;

21. To'g'ri doiraviy konusning o'qiga perpendikulyar tekislik bilan kesilsa, tekislik yuzasida qanday shakl hosil bo'ladi?

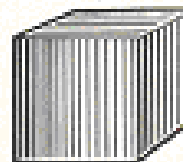
- A) Aylana;
- B) Parabola;
- C) Giperbola;
- D) Ellips;

22. Sferaning eng katta paralleli nima deyiladi?

- A) Meridian;
- B) Ekvator;
- C) Aylana;
- D) Ellips;

23. Chizmada qanday geometrik jism tasvirlangan va unga qanday pardoqlash usuli qo'llanilgan?

- A) Piramida-tushovka usuli;
- B) Kub-shtrixovka usuli;
- C) Prizma-shrafirovka usuli;
- D) Sfera-bo‘yoqlash usuli;



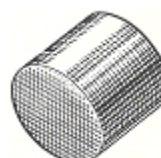
24. Chizmada qanday geometrik jism tasvirlangan va unga qanday pardoqlash usuli qo‘llanilgan?

- A) Sfera-tushovka usuli;
- B) Kub- shrafirovka usuli;
- C) Konus- shtrixovka usuli;
- D) Silindr- pardoqlanmagan;



25. Chizmada qanday geometrik jism tasvirlangan va unga qanday pardoqlash usuli qo‘llanilgan?

- A) Sfera- shtrixovka usuli;
- B) Silindr-shrafirovka usuli;
- C) Konus- pardoqlanmagan;
- D) Kub-bo‘yoqlash usuli;



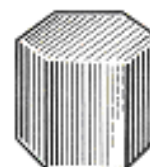
26. Chizmada qanday geometrik jism tasvirlangan?

- A) Konus;
- B) Kub;
- C) Piramida;
- D) Sfera;



27. Chizmada qanday geometrik jism tasvirlangan?

- A) Sfera-tushovka usuli;
- B) Kub- shrafirovka usuli;
- C) Konus- shtrixovka usuli;
- D) Piramida-bo‘yoqlash usuli;



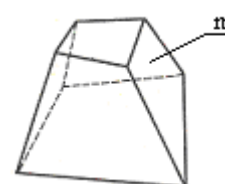
28. Ko‘pyoqlikning f elementi nomini ayting.

- A) Qirra;
- B) Uch;
- C) Yoq;
- D) Aasos;



29. Ko‘pyoqlikning m elementi nomini ayting.

- A) Qirra;
- B) Uch;
- C) Yoq;
- D) Aasos;



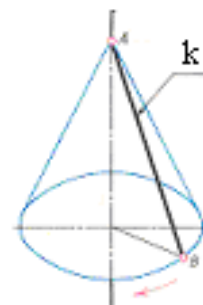
30. Ko‘pyoqlikning n elementi nomini ayting.

- A) Qirra;
- B) Uch;
- C) Yoq;
- D) Aasos;

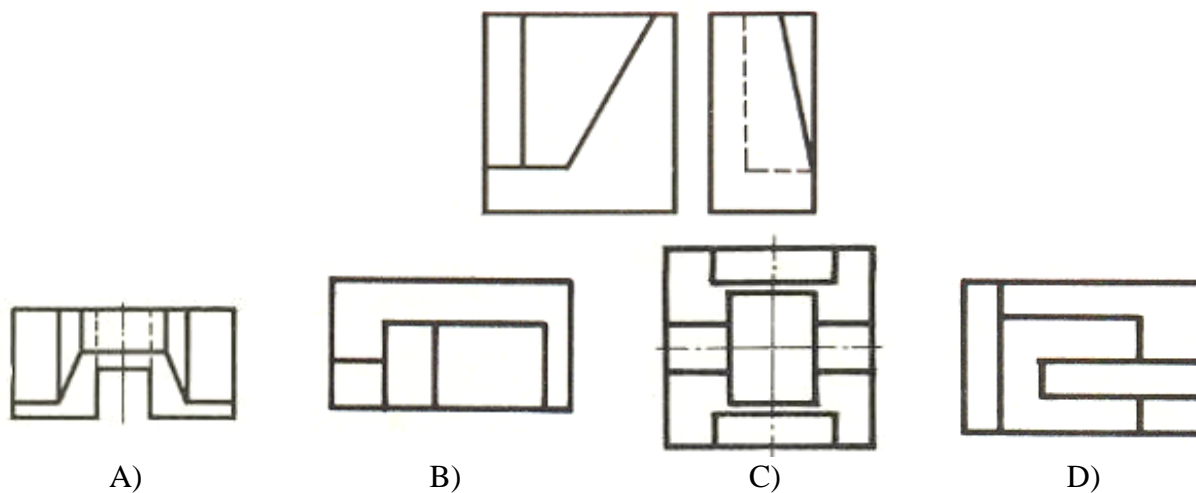


31. Chizmada qanday geometrik jism tasvirlangan va undagi k element nomini ayting.

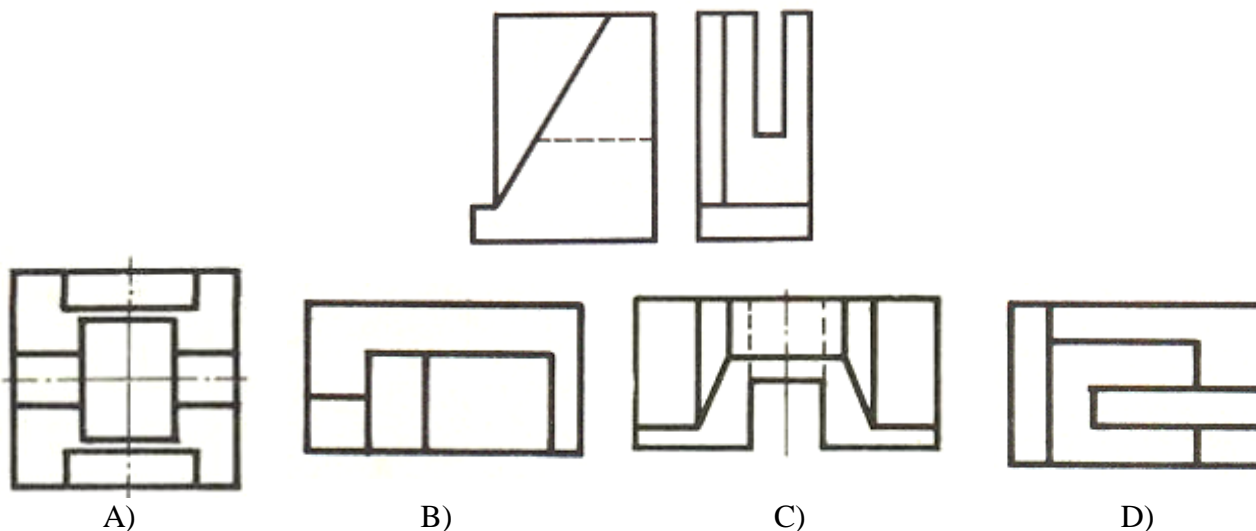
- A) Sfera- ekvatori;
- B) Silindr-ustki asosi;
- C) Konus- yasovchisi;
- D) Kub-uchi;



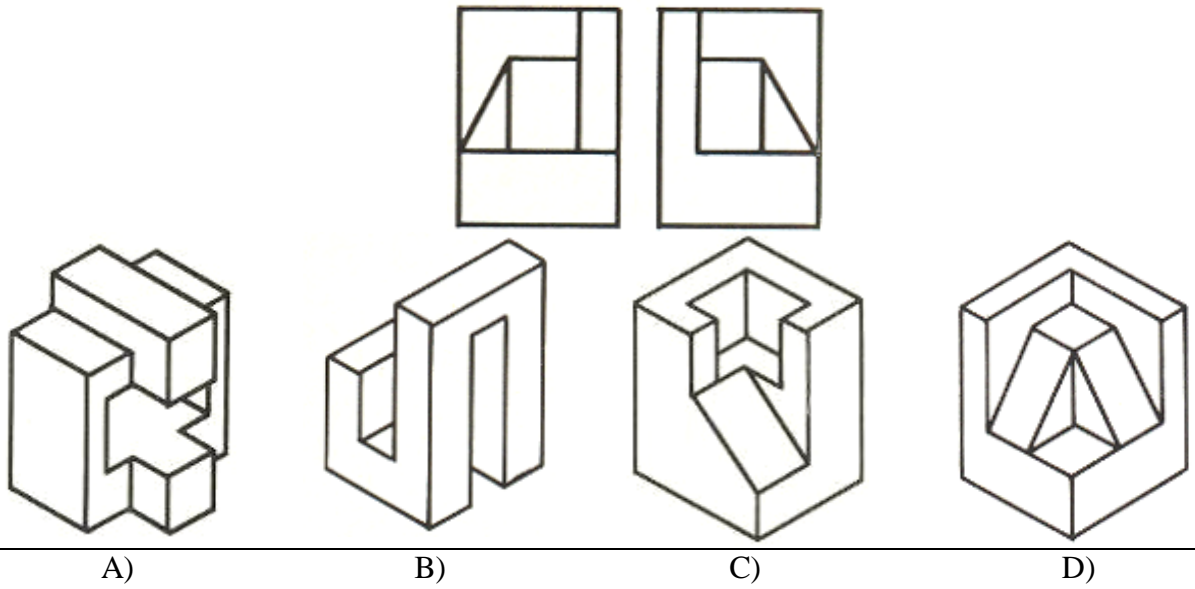
32. Detalning ikki ko‘rinishiga asosan uning uchinchi ko‘rinishini aniqlang.



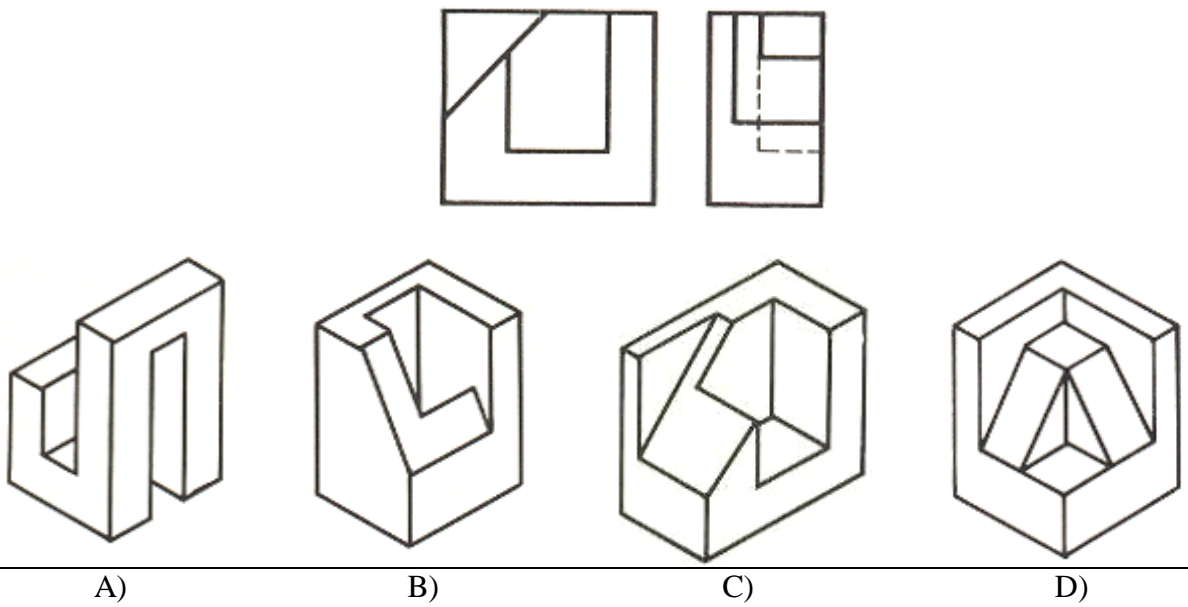
33. Detalning ikki ko‘rinishiga asosan uning uchinchi ko‘rinishini aniqlang.



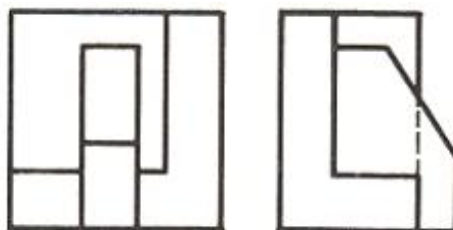
33. Detalning ikki ko‘rinishiga asosan uning yaqqol tasvirini aniqlang.



34. Detalning ikki ko‘rinishiga asosan uning yaqqol tasvirini aniqlang.



35. Detalning ikki ko‘rinishiga asosan uning yaqqol tasvirini aniqlang.





A)



B)

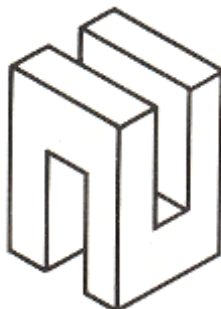


C)

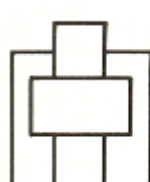


D)

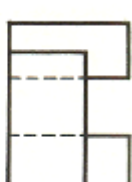
36. Detalning yaqqol tasviriga asosan uning ikki ko‘rinishini aniqlang.



A)



B)



C)



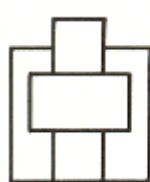
D)



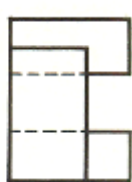
37. Detalning yaqqol tasviriga asosan uning ikki ko‘rinishini aniqlang.



A)



B)



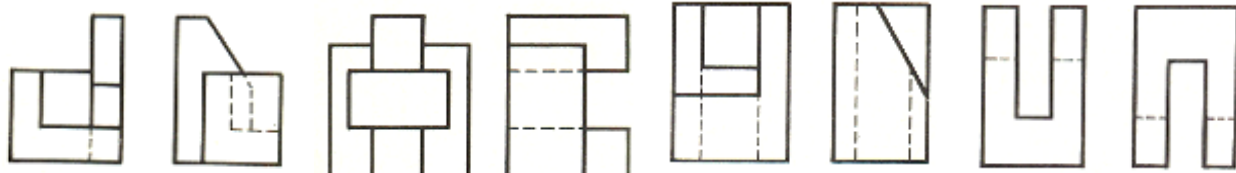
C)



D)



38. Detalning yaqqol tasviriga asosan uning ikki ko‘rinishini aniqlang.



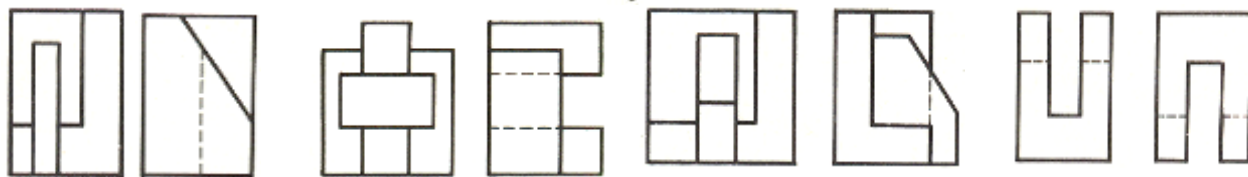
A)

B)

C)

D)

39. Detalning yaqqol tasviriga asosan uning ikki ko‘rinishini aniqlang.



A)

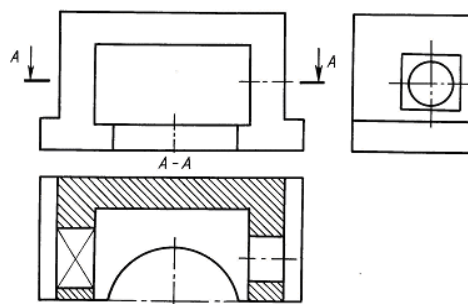
B)

C)

D)

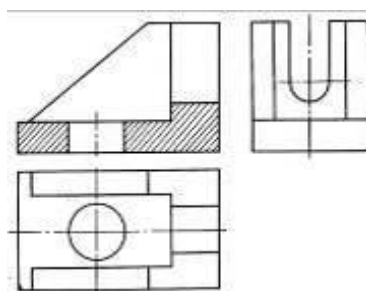
40. Qanday qirqim tatbiq qilingan?

- A) Frontal;
- B) Gorizontal;
- C) Mahalliy;
- D) Profil;



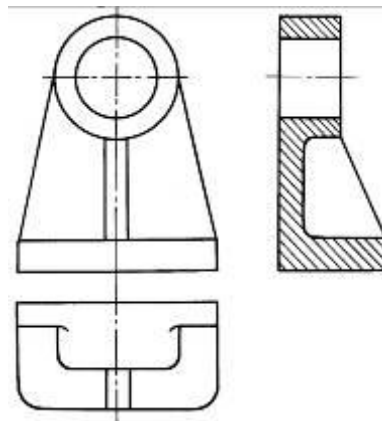
41. Qanday qirqim tatbiq qilingan?

- A) Profil;
- B) Pog‘onali;
- C) Frontal;
- D) Og‘ma;

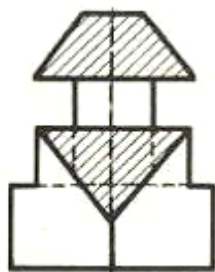
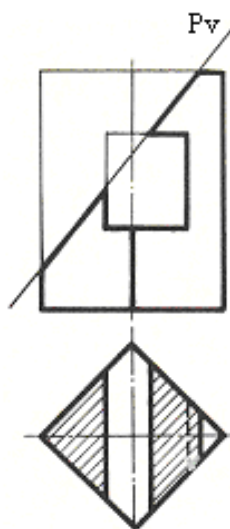


42. Qanday qirqim tatbiq qilingan?

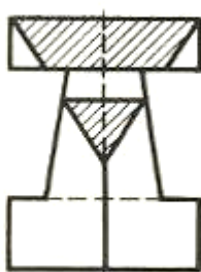
- A) Siniq;
- B) Profil;
- C) Mahalliy;
- D) Gorizontal;



43. O'g'ma qirqim tatbiq qilingan detalning ikki ko'rinishiga asosan uning yetishmovchi uchinchi ko'rinishini aniqlang.



A)



B)

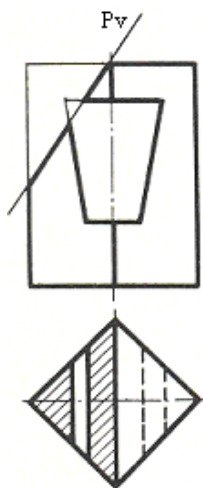


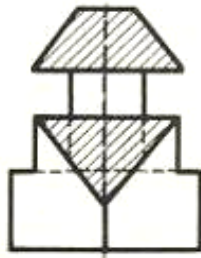
C)



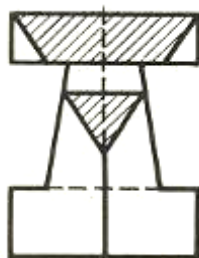
D)

44. O'g'ma qirqim tatbiq qilingan detalning ikki ko'rinishiga asosan uning yetishmovchi uchinchi ko'rinishini aniqlang.





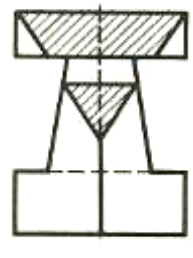
A)



B)

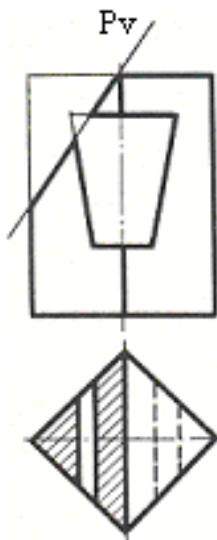


C)

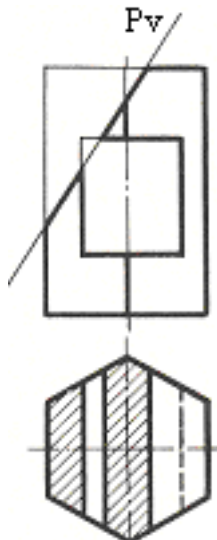


D)

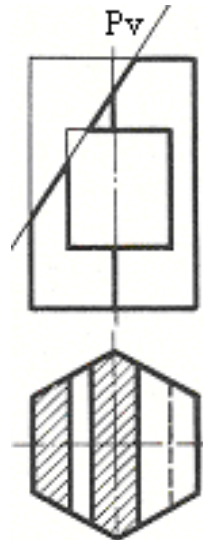
45. O'g'ma qirqim tatbiq qilingan detalning uchinchi ko'rinishiga asosan uning yetishmovchi ikki ko'rinishini aniqlang.



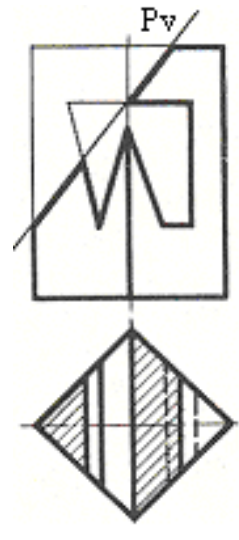
A)



B)

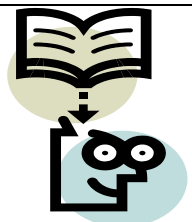


C)



D)

Talabalar mustaqil ishlashlari uchun savonomalar majmuasi



1. Geometrik va proyeksiyon chizmachilik fani nimani o'rgatadi.
2. Geometrik va proyeksiyon chizmachilik fanining maqsad va vazifalari.
3. Chizmaning inson amaliy faoliyatida tutgan o'rni va ahamiyati.
4. Chizmaning O'rta Osiyo shu jumladan O'zbekistonda shakllanishi va rivojlanishi.
5. Chizmachilik fanining jahon miqiyosidagi taraqqiyoti.
6. Chizmachilik asbob uskuna va moslamalarini ishga tayyorlash va undan foydalanish qoidalari.
7. Davlat standart (GOST)lari.

8. GOST 2.301.-68 ga muvofiq asosiy chizma formatlari
9. Chizmalarning qo‘shimcha formatlari
10. Chiziq turlari va ulardan foydalanish.
11. Standart chizma shriftlari.
12. Bosh xarf 10 mm bo‘lsa, yozma xarfi necha mm yoziladi?
13. Qanday xollarda xarflar oralig‘i kamaytiriladi?
14. Chizmada gabarit o‘lchamlari deb nimaga aytiladi?
15. Agar shtrixlash chiziqlari yo‘nalishi kontur yoki o‘q yo‘nalishiga to‘g‘ri kelib qolsa, shtrix chizislari necha gradusda chiziladi?
16. Qiyalik deb nimaga aytiladi va qiyalik o‘lchami qanday aniqlanadi?
17. Konuslik deb nimaga aytiladi?
18. “Tutashma” tushunchasini ta’riflang?
19. Tashqi, ichki va aralash tutashmalar deb nimaga aytiladi?
20. Tutashish nuqtalari qanday aniqlanadi?
21. Urinmalar deb nimaga aytiladi?
22. Konus kesimlari va ularning turlari.
23. Ikkinchi tartibli tekis egri chiziqlar va ularni yasash qoidalari.
24. Ko‘rinishlarning hosil bo‘lishi.
25. Buyumni frontal proyeksiyalar tekisligidagi tasviri nima deb ataladi?
26. Qo‘shimcha ko‘rinish va ularni tasvirlash.
27. Mahalliy ko‘rinish va uning asosiy ko‘rinishlardan farqi hamda asosiy belgilari.
28. Ko‘rinishlarda “A” va “E” tizimning farqi?
29. Asosiy proyeksiyalar tekisliklarini aytib bering?
30. “Aksonometriya” so‘zini ta’riflang?
31. Aksonometrik proyeksiyalarning turini aytib bering?
32. To‘g‘ri burchakli izometriya, dimetriya, qiyshiq burchakli frontal dimetriya va izometrik proyeksiya.
33. To‘g‘ri burchakli izometriyada to‘g‘ri doiraviy silindr proyeksiyasining yasash tartibi qanday?
34. Asosi frontal proyeksiyalar tekisligida joylashgan to‘g‘ri doiraviy silindr va muntazam olti yoqli prizma proyeksiyalari qanday tartibda yasaladi?
35. Kesimda nima ko‘rsatiladi?
36. Chizmada yoyilmalardagi bukilish chiziqlari qanday chiziqlar bilan tasvirlanadi?
37. Qirqim nima va u qanday maqsadda foydalaniladi?
38. Oddiy qirqim deganda nimani tushunasiz?
39. Qanday qirqimlar bo‘ylama va ko‘ndalang qirqimlar deyiladi?
40. Kesim yuzasi qanday shtrixlanadi?

41. Pog'onali qirqim qanday qirqim turiga kiradi?
42. O'tish chiziqari deganda nimani tushinasiz?
43. Texnikaviy rasm aksonometrik proyeksiyalardan qanday farq qiladi?
44. Texnikaviy rasm qanday tartibda bajariladi?
45. Eskiz deganda nimani tushunasiz?
46. Qirqim va kesimning qanday farqi bor?
47. Simmetrik tasvirlarda qirqim bajarishning o'ziga xos qanday afzalligi bor?
48. Kesim turlarini aytib o'ting?
49. Qanday qirqim qiya qirqim deyiladi?
50. Tekis qirqim nima?
51. Trimetriya nima?
52. Asosiy tutash chiziq yo'g'onligining o'lchami nimalarni tasvirlashda foydalaniladi?
53. Shtrix, shtrix-punktir va to'qlinsimon chiziqlarni asosiy tutash chiziq yo'g'onligiga nisbatan qanday yo'g'onlikda chiziladi va qanday maqsadda foydalaniladi?
54. Shriftning qanday o'lchamlari belgilangan?
55. Shriftning o'lchami nima bilan aniqlanadi?
56. Bosh harf 10 mm bo'lsa, yozma harfi necha mm yoziladi?
57. Qanday hollarda harflar oralig'i kamaytiriladi?
58. Chizmada gabarit o'lchamlari deb nimaga aytiladi?
59. Chizmada o'lcham chiziqlari bir-biri bilan kesishishi mumkinmi?
60. Agar shtrixlash chiziqlari yo'nalishi kontur yoki o'q yo'nalishiga to'g'ri kelib qolsa, shtrix chiziqlari necha gradusda chiziladi?
61. To'g'ri doiraviy konusning hamma yasovchilari biror tekislik bilan kesilsa, konus kesimidan qanday egri chiziq hosil qiladi?
62. Parabolaning hosil bo'lishini tushuntiring?
63. Sikloida, episikloida va giposikloidalarni yasash qonunlari.
64. Ko'rinishlar mavzusini yoritib bering?

Mustaqil ishlarni bajarish jarayonida talabalar foydalanishiga

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Mundarija

So`z boshi.....	3
Talabalar mustaqil ishlarini tashkil qilish maqsad va vazifalari.....	4
Berilgan shriftlarni ko`chirib yozing.....	7
Shtrixlangan yuzalarni ko`chiring.....	8
Detal chizmasini chizishda tadbqiq qilingan chiziq turlariga ta`rif bering. Detalga chizmasida	

tadbiq qilingan kesim yoki qirqimni aniqlab, izohlang Detal chizmasini chizishda tadbiq qilingan chiziq turlariga ta'rif bering. Detalga chizmasida tadbiq qilingan kesim yoki qirqimni aniqlab, izohlang.....	9
Burchaklikni berilgan o'lcham asosida chizing.....	11
Masshtabga rioya qilgan holda chizma chizilsin.....	12
Aylana teng bo'laklarga bo'linsin.....	14
Tarkibida qiyalik va konuslik qatnashgan detal chizmasi bajarilsin.....	16
Sirkul egri chizig'i chizmasini bajaring.....	19
Detalning olddan ko'rinishi ovallar yasash qoidasiga asosan bajarilib, uning profil ko'rinishi bilan proyeksion bog'lanish ta'minlansin. O'lchamlar qo'yilsin...	21
Tarkibida tutashma elementlari qatnashgan detal chizmasi bajarilsin.....	22
Lekalo egri chizig'i chizmasini bajaring.....	25
Detalning berilgan ikki ko'rinishi asosida yetishmovchi uchinchi ko'rinishini toping va yaqqol tasvirini bajaring.....	28
Detalning asosiy ko'rinishlari asosida yaqqol tasviri chizilsin.....	30
Qirrali va aylanish sirtlaridan iborat bo'lgan detalning aksonometrik proyeksiyasi asosida uning ortogonal proyeksiyasini bajaring.....	36
Detalning berilgan ikki proyeksiyasi asosida uchinchi proyeksiyasini topib, Sirtlarni o'zaro kesishuv chizig'ini yasash hamda zarur qirqim va kesimlar qo'llanilsin.....	38
Berilgan kartina ramkasi (hoshiya)ning profili asosida uning uchta ko'rinishini bajaring.....	41
Detal chizmasidagi mahalliy va qo'shimcha ko'rinishlarni bajaring.....	43
Valda ko'rsatilgan uchta kesim bajarilsin. O'lchamlari qo'yilsin.....	46
Yozma tavsif bo'yicha detalning ortogonal va aksonometrik (izometrik) proyeksiyasi chizilsin.....	52
Simdan yasalgan detalning ortogonal proyeksiyasiga asosan yaqqol tasvirini bajaring va modelini yasang.....	56
Belgilangan qismini o'yish orqali detal yasash.....	58
Berilgan teshikdan tig'iz o'tadigan modelning uchta ko'rinishi va yaqqol tasvirini yasang.....	60
Mavzularni mustahkamlashga oid boshqotirma yechish.....	61
Chizmachilik (Geometrik va proyeksion chizmachilik) fanidan test savollari.....	67
Talabalar mustaqil ishlashlari uchun savonomalar majmuasi.....	77
Mustaqil ishlarni bajarish jarayonida talabalar foydalanishiga tavsiya etilgan adabiyotlar.....	80
Talabalar mustaqil ishlarini bajarish jarayonida foydalanadigan elektron ta'lim resurslari.....	80

**Низомий номидаги ТДПУ ката ўқитувчиси М.Халимов ва
Қарши Давлат Университети катта ўқитувчиси, т.ф.н. Ф.Э.Очиловлар томонидан ёзилган
Чизмачилик(геометрик ва проекцион чизмачиликдан мустақил ишлаш учун
топшириқлар номли методик қўлланмасига**

ТАҚРИЗ

Методик қўлланмада Олий Педагогика ўқув юртларининг 5110800-Тасвирий санъат ва муҳандислик графикаси» ва 5111000-Қасб таълими барча йўналишлари бўйича билим олаётган бакалаврият босқичи талабалари учун мўлжалланган. Қўлланма «Чизмачилик» фани намунавий дастури асосида ишлаб чиқилган бўлиб, дастурда талабалар мустақил равишда бажаришлари мўлжалланган топшириқлар вариантлари, уларни бажариш бўйича кўрсатмаларнинг мавжудлиги талабанинг ўз вариантыдан ташқари бошқа алтернатив вариантлар устида бош қотириб, тўлақонли билим олишига шароит яратади.

Қўлланманинг чизмачиликнинг деярли барча қисмларини ўзида мужассам этганлиги, мавзуларни мустаҳкамлаш юзасидан бошқотирмаларнинг ва тест саволларининг мавжудлиги, унинг содда ва раво тилда ёзилганлиги ўқувчи учун анча қулайлик яратади.

Қўлланмадан тўлақонли фойдаланиш талабаларнинг билим ва тафаккурининг шаклланишига, уларнинг фазовий тасаввурининг ўсишига олиб келади ва бу ишлаб чиқаришда, педагогик фаолиятда жуда қўл келади деб ўйлайман.

Юқоридагиларни ҳисобга олиб, қўлланмани чоп қилиш ва ундан баркамол авлодни тарбиялашда фойдаланиш мумкин ҳисоблайман.

Қарши Давлат Университети “Меҳнат таълими ва чизмачилик” кафедраси мудири,
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