

GEOMETRIK JISMLAR VA ULARNING FAZOVIIY HOLATLARINI TARIFLASHDA ULARNING ASOSIY TAYANCH MANBALARINI HISOBGA OLISH



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ANNOTATSIYA

Ushbu maqolada geometrik jismlarni ularning fazoviy holatini hisobga olgan holda tavsiflash va proyeksiya holatini yozma yoki og‘zaki tavsiflashda proyeksiya tekisliklariga, ularning asosiy tayanch manbalari va tushunchalaridan foydalanish masalasi ko‘rilgan.

Kalit so‘zlar. *geometrik jism, yozma tavsif, pozitsion munosabat, metrik munosabat, proyeksiy tekislikligi, _vertikal prizma, gorizontaal prizma, dekartd koordinatalar sistemasi.*

АННОТАЦИЯ

В данной статье рассматривается вопрос об использовании плоскостей проекции, их основных базовых источников и понятий при описании геометрических тел с учетом их пространственного положения и письменной или устной описании проекционного состояния.

Ключевые слова. *Геометрическое тело, письменное описание, позиционное отношение, метрическое отношение, плоскость проекции, вертикальная призма. горизонтальная призма, декартова система координат.*

ABSTRACT

This article discusses the use of geometric bodies taking into account their phase state and projection process, their main sources and use in writing or using projection cases.

Keywords. *Geometric body, written description, positional relation, metric relation, projection plane, vertical prism. horizontal prism, Cartesian coordinate system.*

KIRISH

Har qanday model yoki detalning tuzilishi uning ish bajarish vazifasiga ko‘ra o‘zaro turli xil vaziyatda joylashgan har xil turdagi geometrik jismlar (sirtlar)dan yoki ularning yig‘indisidan iborat bo‘ladi. Agar biron buyum yoki detal tarkibi bo‘yicha

ikki geometrik jism yig'indisidan iborat bo'lsa, ular bir biriga nisbatan ma'lum pozitsion va metrik munosabatda bo'ladi. Shu detalni yozma tavsiflash uchun detaldagi ikki geometrik jismning o'zaro egallagan vaziyatini aniq ko'ra bilish va uni aniq qilib yoza olish zarur bo'ladi. Shuning uchun ham ularni yozma tavsiflashda tarkibidagi har bir jismning tutgan holatini alohida va unga nisbatan boshqa jismlarning vaziyatlarini alohida ta'riflashga to'g'ri keladi. Dastlab jismning, albatta, proeksiyalar tekisligiga nisbatan egallagan holati aniqlanadi. Asosiy qiyinchilik ham aslida shu erdan boshlanadi. Chunki birinchi jismga nisbatan ikkinchi jism ma'lum metrik va pozitsion munosabatda joylashtirilsa, uni birinchi jismning qaysi tomoniga, shuningdek, qanday masofada joylashtiriladi va qanday aniqlikda ta'riflanadi, qanday ta'riflansa qulay va aniq tushunarli bo'ladi kabi masalalar kelib chiqadi. Bu jism tarkibini aniq bilish va aniq tasavvur qila olish va ma'lum darajada topqirlikni talab qiladi. Ana shu maqsadda har bir boshlang'ich geometrik jismni alohida-alohida tahlil qilishga to'g'ri keladi. Asosiy geometrik jismlar, masalan: prizma, piramida, silindr, konus, shar, xalqa va hokozalardan iboratdir.

MUHOKAMA VA NATIJALAR

PRIZMA. Ikki yoqi teng ko'pburchaklar va boshqa yoqlari to'rtburchaklardan iborat bo'lgan ko'pyoqlik.

PIRAMIDA. Yoqlaridan biri tekis ko'pburchak bo'lib, qolgan yoqlari esa umumiy uchga ega bo'lgan uchburchaklardan tuzilgan ko'pyoqlik.

SILINDR. To'g'ri chiziqning unga parallel to'g'ri chiziq atrofida aylanishidan hosil bo'lgan sirt silindr sirti va u o'rab turgan jism silindr deyiladi.

KONUS. To'g'ri chiziqning aylanish o'qini kesib uning atrofida aylanishdan hosil bo'lgan sirt konus sirti, o'rab turgan jism konus deyiladi.

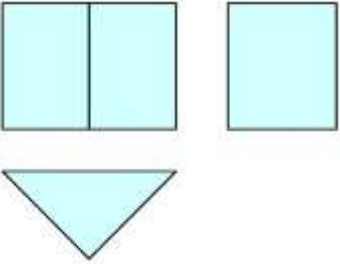
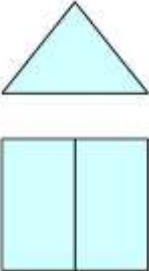
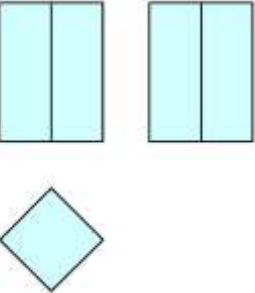
SHAR. Aylananing o'z diametri atrofida aylanishidan hosil bo'lgan sirt sfera deyilib, u o'rab turgan qismi shar deyiladi.

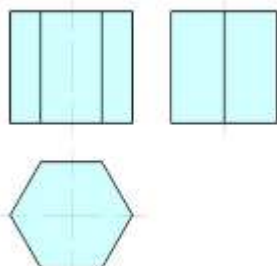
Model yoki detallar tarkibida ishtirok etayotgan geometrik jismlar ko'pincha xususiy holda uchraydi. Masalan, ular umumiy o'qqa ega bo'ladi yoki H va V ga nisbatan xususiy vaziyatlarda joylashadi. Shuning uchun ham har bir geometrik jismning fazodagi har xil holatlarini tekshirayotganimizda asosiy e'tibor ularning xususiy vaziyatlariga qaratiladi. Jismga tavsif berilganda uning shakli va holati qo'shib aytiladi. Masalan, prizma haqida aytilganda u vertikal, gorizonta so'zlari qo'shib aytilishi mumkin. Bunda uning yon qirralari asosiy aniqlovchi rolni o'ynaydi, ya'ni aytilgan iboralar yon qirralarining proeksiyalar tekisligiga nisbatan tutgan vaziyatiga

nisbatan aytiladi. Agar yon qirralari H ga perpendikulyar joylashgan bo'lsa, prizma vertikal prizma, H ga parallel joylashgan bo'lsa gorizontal prizma deyiladi.

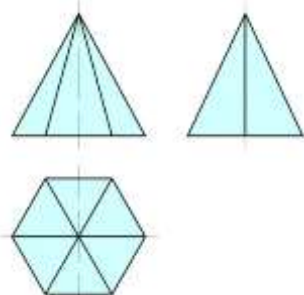
Prizma gorizontal holatda V ga yoki W ga parallel joylashgan bo'lishi ham mumkin. Bu aytilganlar silindr sirtiga ham to'la taaluqlidir.

Piramida konus bilan o'xshash bo'lib ularning holatiga uchlari va o'qlari aniqlik kiritadi. Endi ana shu geometrik jismlarni alohida-alohida ko'rib, ularning ta'rifiga e'tibor beraylik.

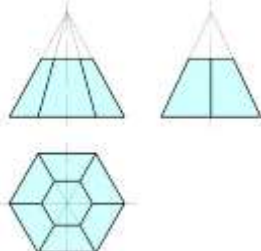

Bir yon yoqi bilan V ga parallel joylashgan uchburchakli vertikal prizma

Yon qirralari V ga perpendikulyar va bir yoqi H ga parallel joylashgan to'g'ri uchburchakli prizma

Asosi kvadrat bo'lib, uning ikki uchi gorizontal o'qda joylashgan to'g'ri to'rtburchakli vertikal prizma



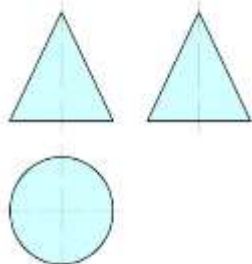
Asosi muntazam oltiburchak bo'lib, uning ikki uchi gorizontal o'qda joylashgan oltiburchakli vertikal prizma



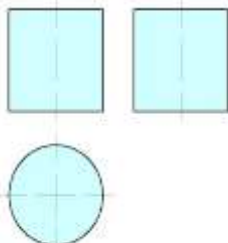
Uchi yuqoriga qaragan muntazam oltiburchakli to'g'ri piramida



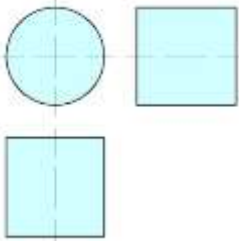
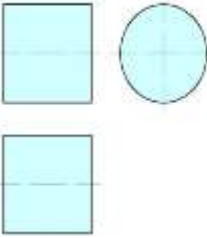

Uchi yuqoriga qaragan oltiburchakli kesik piramida



Uchi yuqoriga qaragan to'g'ri doiraviy konus

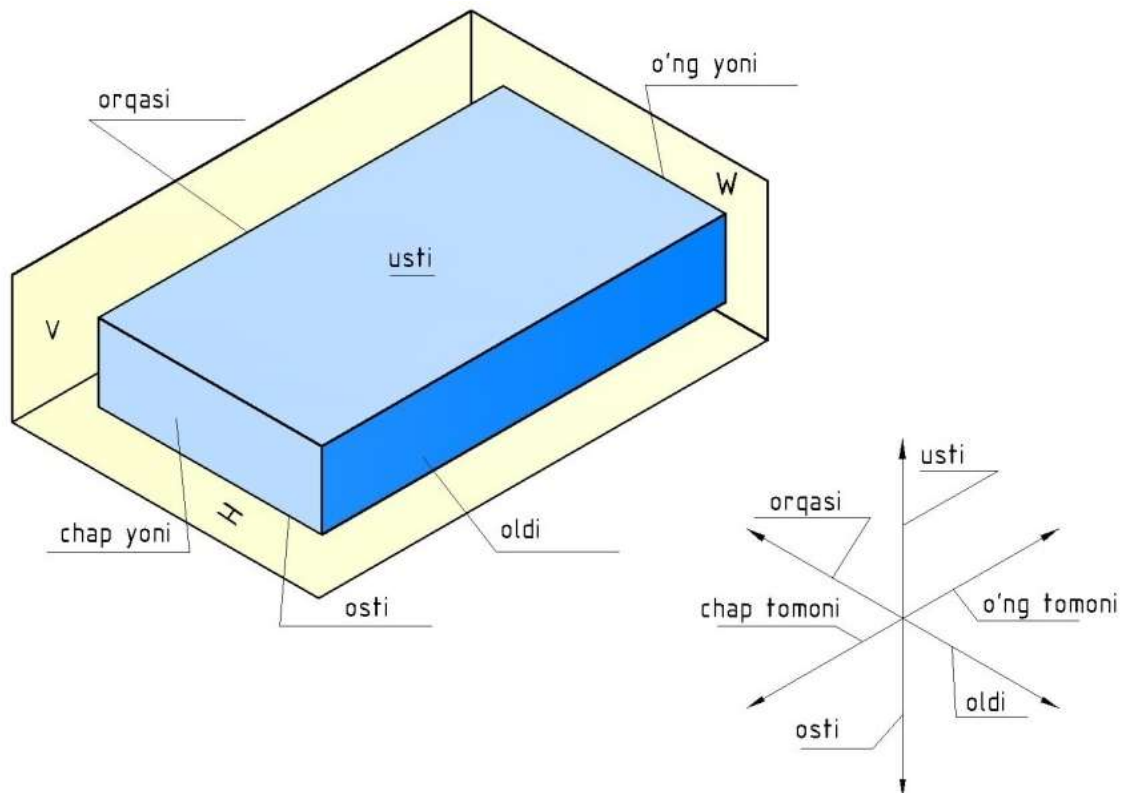


To'g'ri doiraviy vertikal silindr. O'qi H ga perpendikulyar to'g'ri doiraviy

silindr

O'qi V ga perpendikulyar to'g'ri doiraviy silindr

Aylanish o'qi W ga perpendikulyar doiraviy silindr

Yon qirralari W ga perpendikulyar va bir yoni H ga parallel joylashgan uchburchak prizma

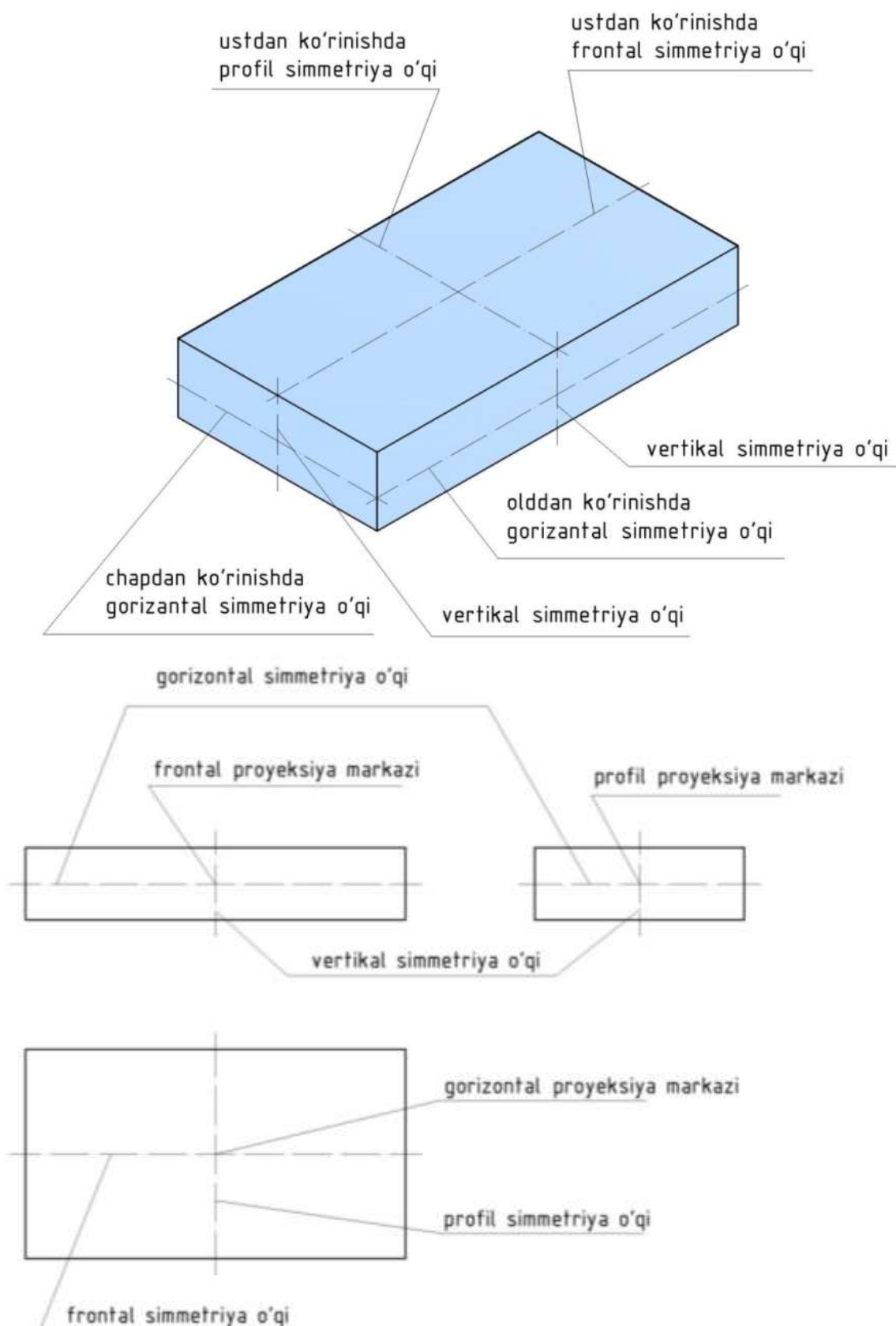
Tavsif avvaldan kelishib, shartlashib olingan qonun-qoidalarga va shartli yo'nalishlarga asoslangan holda amalga oshiriladi. Masalan, biron shaharning joylashgan o'zni geografik kartasida shimoldan janubga tortilgan meridian va ularga perpendikulyar o'tkazilgan parallellarga nisbatan aniqlanadi. Xuddi shunday, biron jismni tavsiflash uchun oldi va orqasi, chap va o'ng yonlari, usti va osti kabi tushunchalari qaysi yo'nalishga nisbatan aytilishi lozimligini avvaldan bilishi va kelishib olinishi shart. Ana shu maqsadda, biror geometrik sirtini, masalan parallelepiped (to'g'ri burchakli prizma)ni Dekard koordinatalar sistemasida qabul qilingan proyeksiy tekisliklariga nisbatan mos holda (chizmada berilgan holatda) joylashtirib, unga nisbatan o'ng, chap, orqa, oldi, usti va osti termin-ifodalari bilan bog'liq korinishlarni qabul qilamiz va ularga oid tayanch tyushunchalarga ega bo'lamiz. Yozma tavsif jarayonida ham ana shu shartlarga rioya qilish va ko'rinishlarni rasmiylashtirish amal qilinadi.

Buyumning proyeksiy tekisliklariga nisbatan joylashuvi



Buyumning proyeksiya tekisliklaridagi tasvir joylari





Bundan tashqari jism tarkibidagi elementlarni, ya'ni qismlar joylarini aniqlashda simmetriya o'qlari katta ahamiyatga ega. Quyidagi shaklda proeksiyalardagi simmetriya o'qlari va ularning nomlanishi keltirilgan. Bu shartliliklar yaqqol tasvirlar va unga mos ravishda ortogonal proeksiyalarda ham tasvirlangan. Bu qabul qilingan shartli tushunchalar o'quvchining ko'z oldida hamma vaqt turishi kerak. Ana shunday qilganda o'quvchining fazoviy tasavvuri shakllanib boradi va rivojlanadi.

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