

GEOMETRIYA

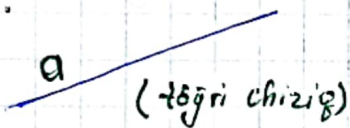
Planimetriya

Boshlang'ich tushunchalar

* **Nuqta** Ölchamlarini hisobga olmasa ham bōladigan jismlarning geometrik timsoli sifatida geometriyaga kiritiladi, lotin alifbasining katta harflari bilan belgilanadi. Tarixsiy tushuncha sifatida kiritilgan.

A
(nuqta)

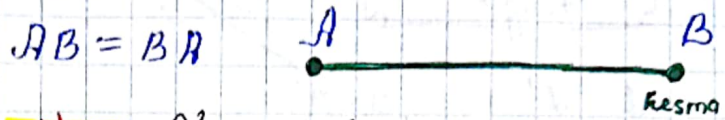
* **Tōgri chiziq**: ikkala tarafi ham cheksizlikka intilgan ta'riq tushuncha. Real hayotda mavjud emas. Lotin harflari-ning kichik harflari bilan belgilanadi.



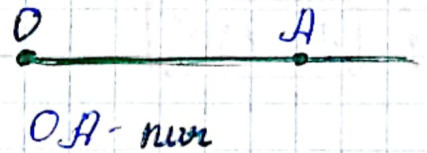
* **Tekislik**: Bu ham ta'riqsiz tushuncha, real hayotda mavjud emas. Grek alifbasining kichik harflari bilan belgilanadi. Misol tariqasida, qōzozimni qaysidir qismi bir uchun tekislik vazifasini bajarib beradi.



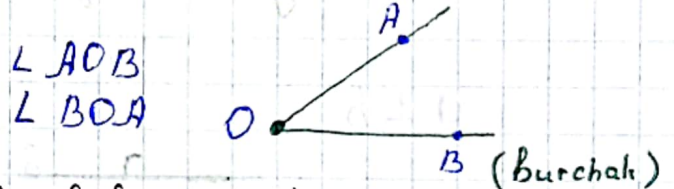
* **Kesma**: Tōgri chiziqning bōlagi. Tōgri chiziqning berilgan ikki nuqtalari orasida yotuvchi hamma nuqtalardan iborat bōlgan qismga aytiladi.



* **Nur**: Tōgri chiziqning biror nuqtasidan faqat bir tomonda yotgan barcha nuqtalardan iborat shakl bixda nur bōlarkan.

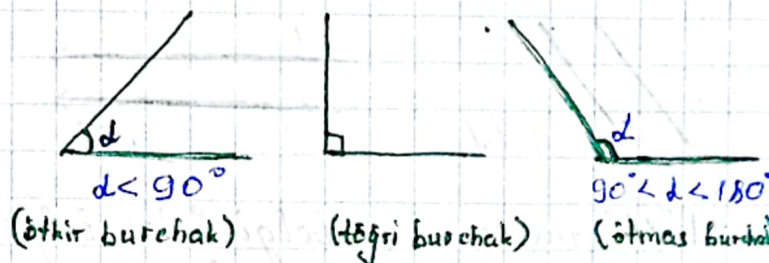


* **Burchak**: Nuqta va undan chiquvchi 2 nurdan iborat shakl.



Burchak gradusda ōlchanadi. Ōlchaydigan asbob transporter deb nomlanadi.

Turlari:



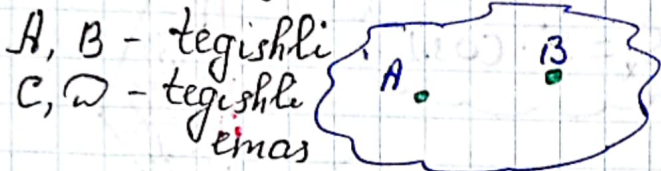
* **Qōshni burchaklar**: bittadan tomoni umumiy, qolgan tomonlari bir-birini tōldiruvchi nurlardan iborat burchaklar.

STEREOMETRIYA

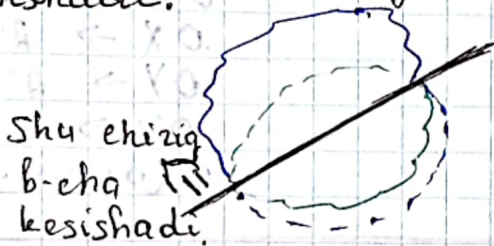
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Yakshanba
3.08.2025

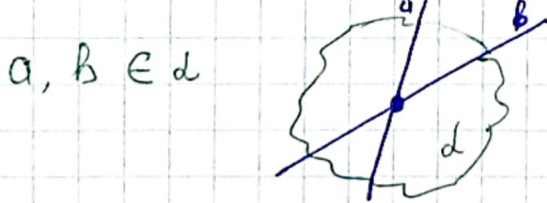
Aksioma: Tekislik qanday bōlmasin bu tekislikka tegishli bōlgan nuqtalar ham tegishli bōlmagan nuqtalar ham mavjud.



Aksioma: Agar 2 ta turli tekislik umumiy nuqtaga ega bōlsa, ular tōgri chiziq bōyicha kesikishadi.

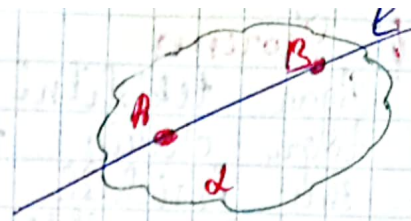


Aksioma: Agar ikkita turli tōgri chiziq umumiy nuqtaga ega bōlsa, ular orqali bitta va faqat bitta tekislik otkazish mumkin.

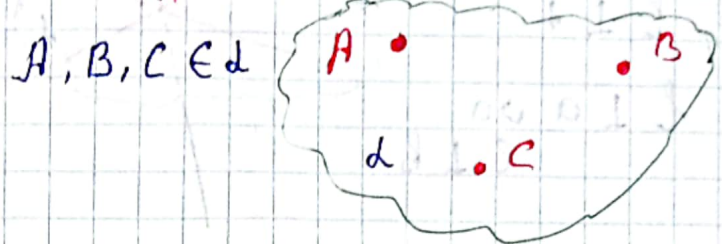


Teorema: Tōgri chiziqning ikkita nuqtasi tegishli bōlsa, u holda tōgri chiziqning o'zi ham tekislikka tegishli bōladi.

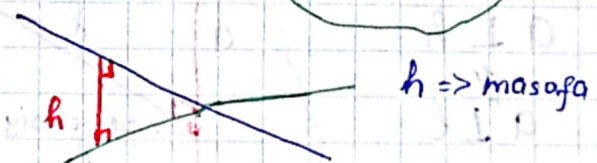
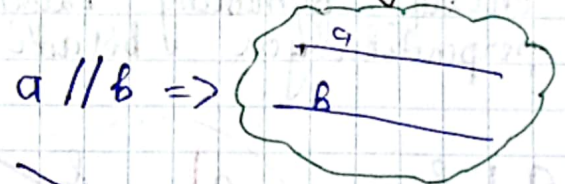
$A, B \in d$
 $K \in d$
 $L \in d$



Teorema: Bitta tōgri chiziqda yotmaydigan 3 ta nuqtadan bitta va faqat bitta tekislik otkazish mumkin.



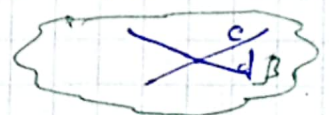
Definiция: Kesishmaydigan va bir tekislikda yotmaydigan tōgri chiziq aygash tōgri chiziq deyiladi.



Teorema: Ikki tekislikdan biri ikkinchi tekislikda yotgan kesishuvchi ikki tōgri chiziqqa parallel bōlsa, bu ikki tekislik parallel bōladi.



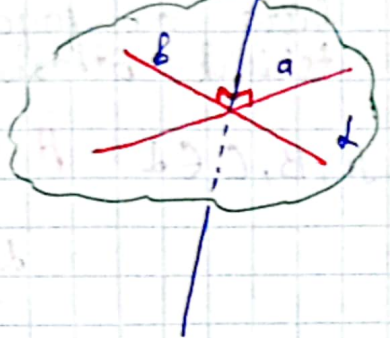
$a \parallel c$ va $b \parallel d \Rightarrow d \parallel \beta$



Teorema

Agar tekislikni kesib o'tuvchi to'g'ri chiziq tekislikdagi shu kesishish nuqtasidan o'tuvchi ikki to'g'ri chiziqqa perpendikulyar bolsa bu to'g'ri chiziq tekislikka perpendikulyar bo'ladi.

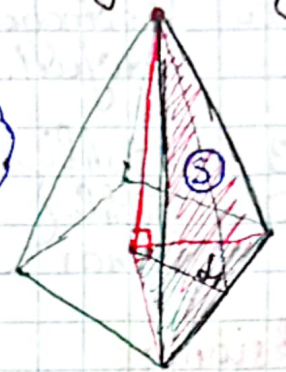
$l \perp a$
 $l \perp b$
 $l \perp \alpha$



Teorema

Köpburchakning tekislikdagi ortogonal proyeksiyasining yuzi köpburchak yuzini uning tekisligi bilan proyeksiyasi tekisligi orasidagi burchak kosinusiga ko'paytmasiga teng.

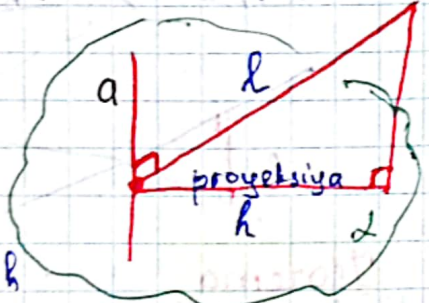
$S_x = S \cdot \cos \alpha$



3 perpendikulyar haqida teorema

Tekislikda oqmaning asosidan uning proyeksiyasiga perpendikulyar qilib o'tkazilgan to'g'ri chiziq oqmaning o'ziga ham perpendikulyar bo'ladi.

$a \perp b$
 $a \perp l$
 $a \perp l \Rightarrow a \perp b$



Simmetriya

- $A(x; y; z)$
- $Oxz \rightarrow A'(x; -y; z)$
 - $OyZ \rightarrow A'(-x; y; z)$
 - $OXY \rightarrow A'(x; y; -z)$
 - $Ox \rightarrow A'(x; -y; -z)$
 - $Oy \rightarrow A'(-x; y; -z)$
 - $Oz \rightarrow A'(-x; -y; z)$
 - $O(0; 0; 0) \rightarrow A'(-x; -y; -z)$

Ta'rif

Aygash to'g'ri chiziqlar orasidagi burchak deb ularga parallel kesishuvchi to'g'ri chiziqlar orasidagi burchakka aytiladi.

