So‘zboshi

“AHA! Matematika” – qo‘lingizdagi darslikni shunday nomladik. “AHA!” so‘zi, bir tomondan, matematika fani sirlarini kashf qilish jarayonidagi zavqli hayqiriq bo‘lsa, ikkinchi tomondan, bu mo‘jizakor fanga berilgan “aniq”, “hayratlanarli” va “ajoyib” ta’riflarining bosh harflaridan yasalgan so‘zdir.

“AHA! Matematika” O‘zbekiston sharoitiga moslab mahalliylashtirilgan darslikdir. U “Moddiy-rasmli-timsolli” yondashuviga asoslangan bo‘lib, AKT yordamida matematik tushunchalarni yaxshiroq o‘rganishga yordam beradi. Darslik tarkibidagi amaliy topshiriqlar matematikani o‘qitish samaradorligini oshirishga xizmat qiladi.

Darslikdagi ruknlar o‘quvchilarning faol o‘rganishini rivojlantirishga yo‘naltirilgan. O‘quvchilar ushbu darslik yordamida nafaqat yangi matematik bilim va ko‘nikmalarni o‘zlashtiradi, balki muammoli vaziyatlarda kerak bo‘ladigan mantiqiy fikrlash va mulohaza yuritish kabi hayotiy ko‘nikmalarga ham ega bo‘ladi.

Matematika olamiga sayohatingiz qiziqarli va maroqli bo‘lsin!

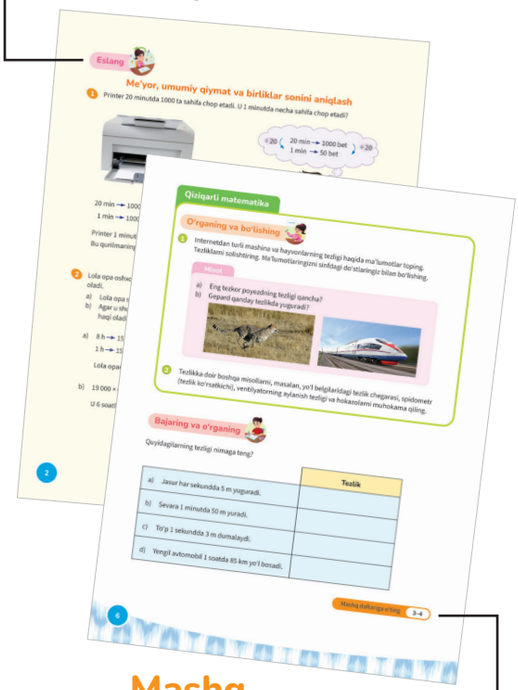


Muhokama qiling

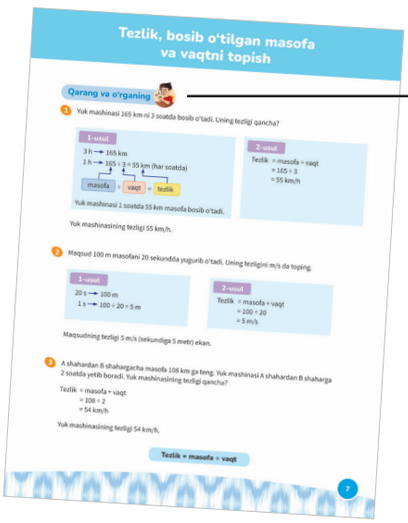
rukni o‘quvchilarni yangi matematik tushunchalarni o‘rganishga tayyorlaydi. O‘qituvchi o‘quvchilarni mavzuga oid rasm yoki video asosida suhbat (muhokama)ga jalb qiladi va uni boshqaradi.

Eslang

rukni o‘quvchilarni yangi mavzuga oid oldin o‘rgangan tayanch bilimlarini takrorlashga yo‘naltiradi.







Qarang va o‘rganing

rukni matematik tushunchalarni rasm orqali tanishtiradi, ularni abstrakt (timsolli) darajada tushunishga yordam beradi.

Mashq daftariga o‘ting

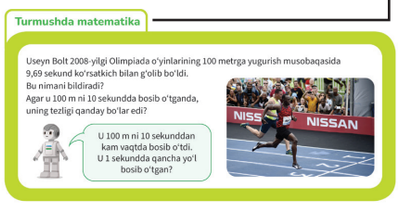
darslikning tegishli joylariga qo‘yilgan bo‘lib, mashq daftari bilan ishlash zarurligini bildiradi.

O‘ylab ko‘ring

rukni o‘quvchilarni topshiriq yoki mashqlarni bajarishdan oldin o‘ylashga va mulohaza yuritishga undaydi.

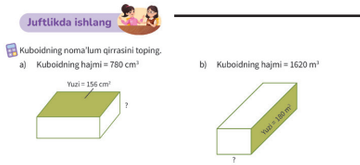
Turmushda matematika

rukni o‘quvchilarga kundalik turmushda uchraydigan vaziyatlarda matematikaning qo‘llanishini ko‘rsatadi.



Juftlikda ishlang

rukni o‘quvchilarga bir-birining o‘rganganlarini baholash uchun juft bo‘lib ishlash sharoitini yaratadi.



Qo‘lda bajariladigan mashq

rukni o‘quvchilarni matematik tushunchalarini rivojlantirish uchun maxsus ko‘rgazmali materiallardan foydalanishga undaydi.





AKT mashqi

rukni egallangan bilimlarni maxsus platformadagi axborot texnologiyalaridan foydalangan holda namoyish qilish kerakligini anglatadi.

Masalani yechishda kalkulyatordan foydalanishga ruxsat beriladi.

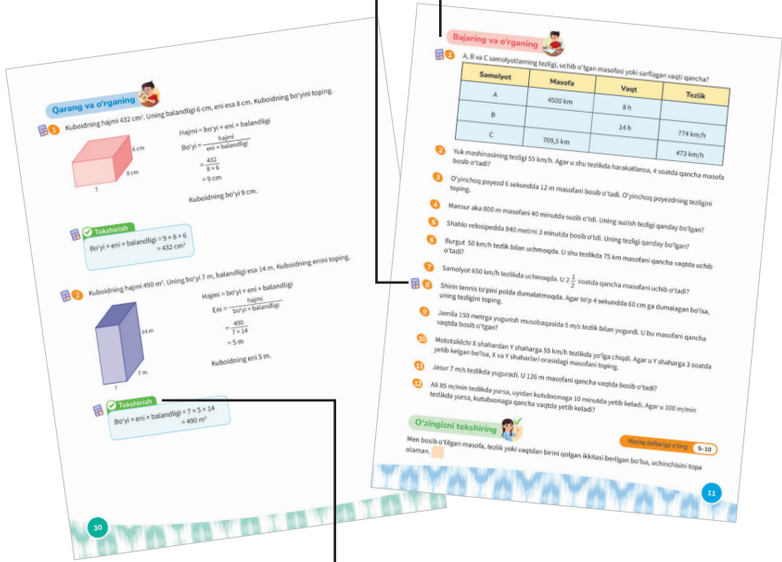
Bajaring va o‘rganing

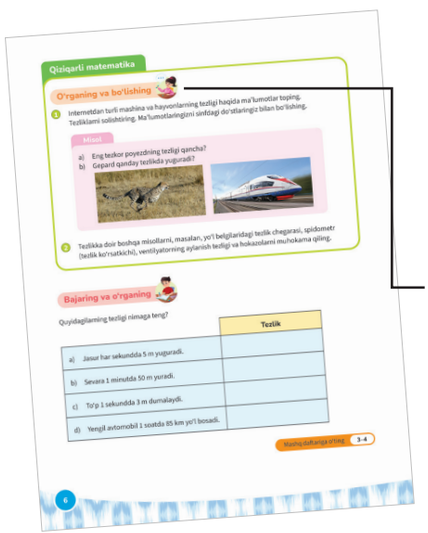
ruknida o‘quvchilar mashqlarni bajarish orqali o‘z bilimlarini tekshiradi.



O‘zingizni tekshiring

rukni o‘quvchilarga bilimini tekshirish va o‘z-o‘zini baholashda yordam beradi.





O‘rganing va bo‘lishing

rukni o‘quvchilarga muloqot qilish va o‘rgangan bilimlarini bir-birlari bilan bo‘lishish imkonini beradi.

Tekshirish

O‘quvchilar masalalar javoblarini tekshirish uchun kalkulyatordan foydalanishi mumkin.

Hamrohlar

Madina, Aziza, Akmal, Sardor va Robi – qalin do‘stlar. Ular o‘zlarining fikrlari, takliflari, izohlari va savollari orqali siz bilan birgalikda matematikani o‘rganadi.



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7 Tezlik

Muhokama qiling



Poygada qatnashayotgan toshbaqaning tezligini qanday topasiz?



Eng tez harakatlangan toshbaqa 100 santimetr masofani 40 sekundda bosib o‘tdi.

Uning tezligini berilgan masofa va vaqtdan foydalanib topsa bo‘ladimi?

Eslang



Me’yor, umumiy qiymat va birliklar sonini aniqlash

1 Printer 20 minutda 1000 ta sahifa chop etadi. U 1 minutda necha sahifa chop etadi?





20 min → 1000 bet

1 min → 1000 ÷ 20 = 50 bet

Printer 1 minutda 50 ta sahifa chop etadi.

Bu qurilmaning ish me’yori deb yuritiladi.

2 Lola opa oshxonada idish yuvuvchi bo‘lib ishlaydi. U har kuni 8 soat ishlab, 152 000 so‘m haq oladi.

a) Lola opa soatiga qancha ish haqi oladi?

b) Agar u shunday ish haqi me’yorida ishlasa, 6 soatlik ishi uchun qancha ish haqi oladi?

a) 8 h → 152 000 so‘m

1 h → 152 000 ÷ 8 = 19 000 so‘m

Lola opaning ish haqi me’yori soatiga 19 000 so‘m.

b) 19 000 × 6 = 114 000 so‘m

U 6 soatlik ishi uchun 114 000 so‘m ish haqi oladi.



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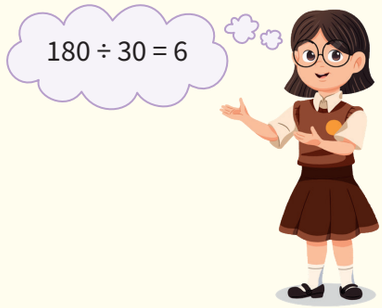
3 Mohira bir minutda 30 ta so‘z yozadi. U 180 ta so‘zni yozish uchun qancha vaqt sarflaydi?

30 so‘z → 1 min

1 so‘z → $\frac{1}{30}$ min

180 so‘z → $\frac{1}{30} \times 180 = 6$ min

Mohira 180 ta so‘zni 6 minutda yozadi.

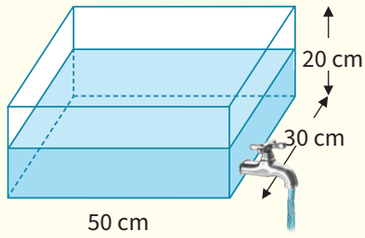


4 Kuboid shaklidagi idish suv bilan to‘ldirildi. Idishni bo‘shatish uchun har minutda 15 litr suv oqadigan jo‘mrak ochildi. Qancha vaqtda idish butunlay bo‘shaydi?

Idishning hajmi $= 50 \times 30 \times 20$

$= 30\,000\ cm^3$

$= 30\ \ell$

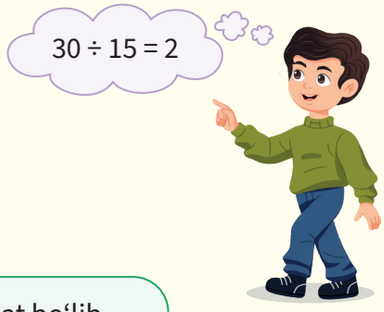


15 ℓ → 1 min

1 ℓ → $\frac{1}{15}$ min

30 ℓ → $\frac{1}{15} \times 30 = 2$ min

Idish 2 minutda butunlay bo‘shaydi.



Me’yor ikki miqdor orasidagi munosabat bo‘lib, u bir miqdorning ikkinchi miqdor birligiga mos keladigan qiymatini ifodalaydi.



Mashq daftariga o‘ting **1–2**

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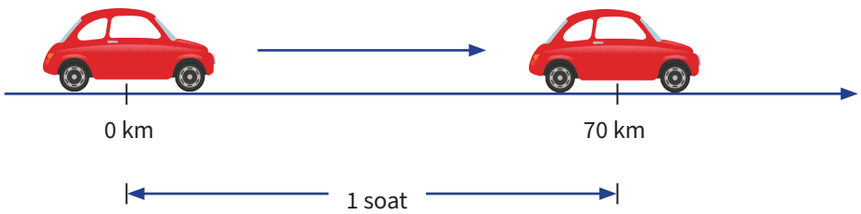
Tezlik

Qarang va o‘rganing



1 Avtomobil har soatda 70 km yo‘l bosadi. Avtomobilning tezligi 70 km/h.
Avtomobil 1 soatda 70 km yo‘l bosadi.
Bu yerda km/h – tezlikning o‘lchov birligi.



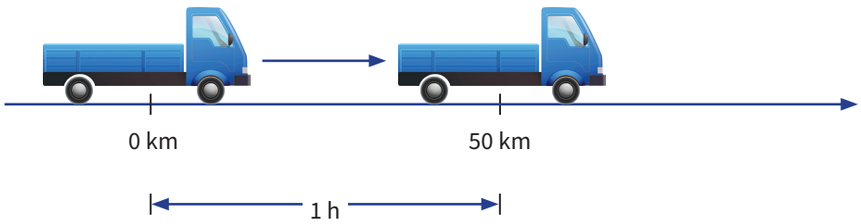


Tezlik – vaqt birligi ichida bosib o‘tilgan masofa.



2 Yuk mashinasining tezligi 50 km/h.
Yuk mashinasi 1 soatda qancha yo‘l yuradi?





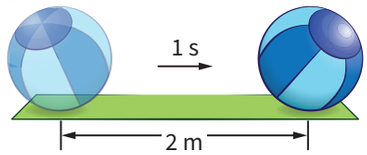
Yengil mashina 1 soatda 70 km yo‘l yuradi.
Yuk mashinasi 1 soatda 50 km yo‘l yuradi.
Qaysi mashina tezroq harakat qiladi?



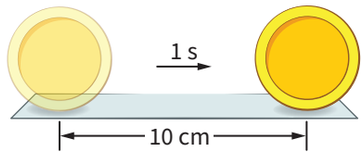
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3 Tezlik m/s, cm/s yoki m/min kabi birliklarda ham o‘lchanishi mumkin.

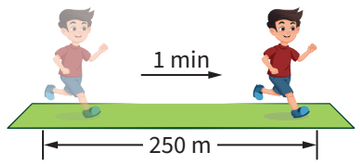
a) To‘p yo‘lak bo‘ylab 2 m masofani 1 sekundda dumalab o‘tadi. To‘p 2 m/s tezlik bilan dumalaydi.

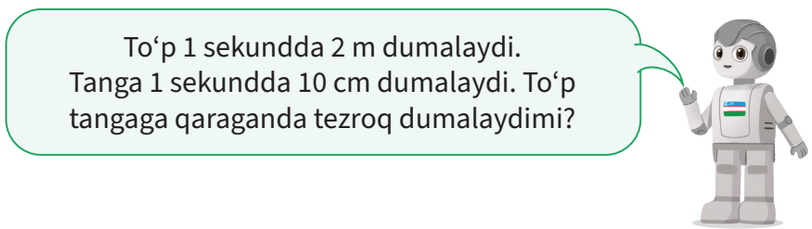


b) Tanga polda 10 cm masofani 1 sekundda dumalab o‘tadi. Tanga 10 cm/s tezlik bilan dumalaydi.



c) Sportchi 250 m masofani 1 minutda yugurib o‘tadi. Sportchining tezligi 250 m/min.





Juftlikda ishlang



1 Quyidagi holatlarda tezlik nimaga teng?

a) Yengil mashina 1 soatda 90 km yo‘l bosdi.
b) Suzuvchi 100 m masofani 1 minutda suzib o‘tdi.
c) Jonivor har sekundda 10 m masofaga yugurdi.

2 Quyidagi tezliklar orasidagi farqni muhokama qiling.

a) 20 m/s va 20 m/min
b) 50 cm/s va 50 m/s

Namuna



Agar Jamilaning tezligi 30 m/min bo‘lsa, bu Jamila 1 minutda 30 m yo‘l yurishini bildiradi.

Agar Jamol 30 km/h tezlik bilan velosiped haydasa, bu Jamol 1 soatda 30 km masofani bosib o‘tishini bildiradi.



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Qiziqarli matematika

O‘rganing va bo‘lishing



1 Internetdan turli mashina va hayvonlarning tezligi haqida ma’lumotlar toping. Tezliklarni solishtiring. Ma’lumotlaringizni sinfdagi do‘stlaringiz bilan bo‘lishing.

Misol

a) Eng tezkor poyezdning tezligi qancha?
b) Gepard qanday tezlikda yuguradi?





2 Tezlikka doir boshqa misollarni, masalan, yo‘l belgilaridagi tezlik chegarasi, spidometr (tezlik ko‘rsatkichi), ventilyatorning aylanish tezligi va hokazolarni muhokama qiling.

Bajaring va o‘rganing



Quyidagilarning tezligi nimaga teng?

	Tezlik
a) Jasur har sekundda 5 m yuguradi.	
b) Sevara 1 minutda 50 m yuradi.	
c) To‘p 1 sekundda 3 m dumalaydi.	
d) Yengil avtomobil 1 soatda 85 km yo‘l bosadi.	

Mashq daftariga o‘ting 3–4

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Tezlik, bosib o‘tilgan masofa va vaqtni topish

Qarang va o‘rganing



1 Yuk mashinasi 165 km ni 3 soatda bosib o‘tadi. Uning tezligi qancha?

1-usul

3 h → 165 km

1 h → 165 ÷ 3 = 55 km (har soatda)

masofa ÷ vaqt = tezlik

Yuk mashinasi 1 soatda 55 km masofa bosib o‘tadi.

2-usul

Tezlik = masofa ÷ vaqt
= 165 ÷ 3
= 55 km/h

Yuk mashinasining tezligi 55 km/h.

2 Maqsud 100 m masofani 20 sekundda yugurib o‘tadi. Uning tezligini m/s da toping.

1-usul

20 s → 100 m

1 s → 100 ÷ 20 = 5 m

2-usul

Tezlik = masofa ÷ vaqt
= 100 ÷ 20
= 5 m/s

Maqsudning tezligi 5 m/s (sekundiga 5 metr) ekan.

3 A shahardan B shahargacha masofa 108 km ga teng. Yuk mashinasi A shahardan B shaharga 2 soatda yetib boradi. Yuk mashinasining tezligi qancha?

Tezlik = masofa ÷ vaqt
= 108 ÷ 2
= 54 km/h

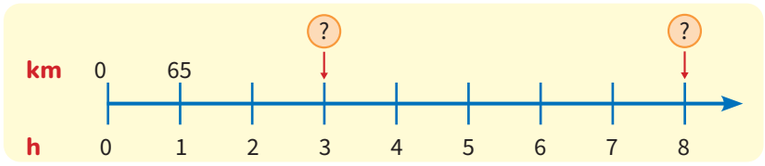
Yuk mashinasining tezligi 54 km/h.

Tezlik = masofa ÷ vaqt

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4 Tohir amaki mashinasini 65 km/h tezlikda haydab ketmoqda. Agar u shu tezlikda harakat qilsa:

a) 3 soatda qancha masofani bosib o‘tadi? b) 8 soatda-chi?



65 km/h tezlik bir soatda 65 km masofa bosib o‘tilishini bildiradi.



a)

1-usul

1 h → 65 km

3 h → 65 × 3 = 195 km

tezlik × vaqt = masofa

2-usul

Masofa = tezlik × vaqt
= 65 × 3
= 195 km

U 3 soatda 195 km masofani bosib o‘tadi.

b)

1-usul

1 h → 65 km

8 h → 65 × 8 = 520 km

2-usul

Masofa = tezlik × vaqt
= 65 × 8
= 520 km

Demak, u 8 soatda 520 km yo‘l bosadi.

5 O‘yinchoq mashina 6 cm/s tezlik bilan harakatlanadi. U shu tezlikda 5 sekundda qancha masofani bosib o‘tadi?

1-usul

1 s → 6 cm

5 s → 6 × 5 = 30 cm

2-usul

Yo‘l = tezlik × vaqt
= 6 × 5
= 30 cm

O‘yinchoq mashina 5 sekundda 30 cm masofani bosib o‘tadi.

6 Jamshid velosipedni 450 m/min tezlik bilan haydadi. U 30 minutda necha kilometr masofani bosib o‘tadi?

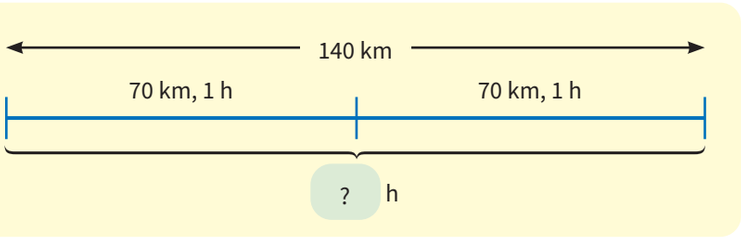
Masofa = tezlik × vaqt
= 450 × 30
= 13 500 m
13 500 m = 13,5 km

U 30 minutda 13,5 km masofani bosib o‘tadi.

Masofa = tezlik × vaqt

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7 Avtobusning tezligi 70 km/h. Avtobus 140 km masofani bosib o‘tish uchun qancha vaqt sarflaydi?



1-usul

70 km → 1 h

140 km → 140 ÷ 70 = 2 h

masofa ÷ tezlik = vaqt

2-usul

Vaqt = masofa ÷ tezlik
= 140 ÷ 70
= 2 h

Avtobus 140 km ni 2 soatda bosib o‘tadi.

8 Poyezd 240 km masofani 80 km/h tezlik bilan bosib o‘tdi. Poyezd qancha vaqt yurgan?

1-usul

80 km → 1 h

240 km → 240 ÷ 80 = 3 h

2-usul

Vaqt = masofa ÷ tezlik
= 240 ÷ 80
= 3 h

Poyezd 3 soat yurgan.

9 Islom aka mashinada 51 km/h tezlik bilan harakatlansa, X shahardan Y shahargacha bo‘lgan 153 km masofani qancha vaqtda bosib o‘tadi?

Vaqt = masofa ÷ tezlik
= 153 ÷ 51
= 3 h

Islom aka X shahardan Y shahargacha bo‘lgan masofani 3 soatda bosib o‘tadi.

Vaqt = masofa ÷ tezlik

81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 9 12/11/24 13:14

Turmushda matematika

Useyn Bolt 2008-yilgi Olimpiada o‘yinlarining 100 metrga yugurish musobaqasida 9,69 sekund ko‘rsatkich bilan g‘olib bo‘ldi.
Bu nimani bildiradi?
Agar u 100 m ni 10 sekundda bosib o‘tganda, uning tezligi qanday bo‘lar edi?





U 100 m ni 10 sekunddan kam vaqtda bosib o‘tdi. U 1 sekundda qancha yo‘l bosib o‘tgan?

Juftlikda ishlang



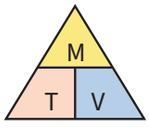
Namunadan foydalanib uchta kattalik (bosib o‘tilgan masofa, vaqt va tezlik)ning bir-biriga bog‘liqligini ko‘rsating. Ixtiyoriy bir kattalikni qolgan ikkitasi orqali ifodalang. Misollaringizni partadoshingiz bilan bo‘lishing.

Namuna

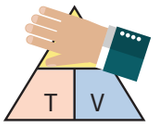
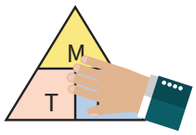
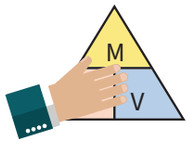
1. Sardor ota-onasi bilan sayohatga chiqdi. Uning otasi mashinani 85 km/h tezlikda haydab, shaharga 2 soatda yetib keldi. Ular qancha yo‘l bosib o‘tgan?

2. A va B qishloqlar orasidagi masofa 16 km ga teng. Doniyor A qishloqdan B qishloqqa velosipedda 2 soatda yetib bordi. Uning tezligini toping.

Chizmadan bosib o‘tilgan masofa, tezlik va vaqt orasidagi bog‘lanishni eslab qolish uchun foydalaning.



M → Masofa
T → Tezlik
V → Vaqt

 Masofa = tezlik × vaqt	 $\text{Vaqt} = \frac{\text{masofa}}{\text{tezlik}}$	 $\text{Tezlik} = \frac{\text{masofa}}{\text{vaqt}}$

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Bajaring va o‘rganing



1 A, B va C samolyotlarning tezligi, uchib o‘tgan masofasi yoki sarflagan vaqti qancha?

Samolyot	Masofa	Vaqt	Tezlik
A	4500 km	8 h	
B		14 h	774 km/h
C	709,5 km		473 km/h

2 Yuk mashinasining tezligi 55 km/h. Agar u shu tezlikda harakatlansa, 4 soatda qancha masofa bosib o‘tadi?

3 O‘yinchoq poyezd 6 sekundda 12 m masofani bosib o‘tadi. O‘yinchoq poyezdning tezligini toping.

4 Mansur aka 800 m masofani 40 minutda suzib o‘tdi. Uning suzish tezligi qanday bo‘lgan?

5 Shahlo velosipedda 840 metrni 3 minutda bosib o‘tdi. Uning tezligi qanday bo‘lgan?

6 Burgut 50 km/h tezlik bilan uchmoqda. U shu tezlikda 75 km masofani qancha vaqtda uchib o‘tadi?

7 Samolyot 650 km/h tezlikda uchmoqda. U $2\frac{1}{2}$ soatda qancha masofani uchib o‘tadi?

8 Shirin tennis to‘pini polda dumalatmoqda. Agar to‘p 4 sekundda 60 cm ga dumalagan bo‘lsa, uning tezligini toping.

9 Jamila 150 metrga yugurish musobaqasida 5 m/s tezlik bilan yugurdi. U bu masofani qancha vaqtda bosib o‘tgan?

10 Mototsiklchi X shahardan Y shaharga 55 km/h tezlikda yo‘lga chiqdi. Agar u Y shaharga 3 soatda yetib kelgan bo‘lsa, X va Y shaharlari orasidagi masofani toping.

11 Jasur 7 m/s tezlikda yuguradi. U 126 m masofani qancha vaqtda bosib o‘tadi?

12 Ali 85 m/min tezlikda yursa, uyidan kutubxonaga 10 minutda yetib keladi. Agar u 100 m/min tezlikda yursa, kutubxonaga qancha vaqtda yetib keladi?

O‘zingizni tekshiring



Mashq daftariga o‘ting **5–10**

Men bosib o‘tilgan masofa, tezlik yoki vaqtdan birini qolgan ikkitasi berilgan bo‘lsa, uchinchisini topa olaman.

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Ikki xil tezlikdagi harakatga doir matnli masalalar

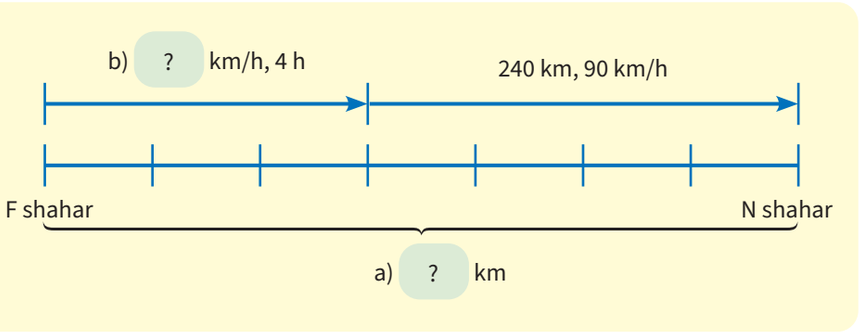
Qarang va o‘rganing



1 Abdusamad amaki F shahardan N shaharga avtomobilda sayohat qildi. U yo‘lning $\frac{3}{7}$ qismini bosib o‘tishga 4 soat sarfladi. Qolgan 240 km ni esa 90 km/h tezlik bilan bosib o‘tdi.

a) F va N shaharlar orasidagi masofani toping.

b) F va N shaharlar orasidagi masofaning dastlabki $\frac{3}{7}$ qismini qanday tezlik bilan bosib o‘tgan?



a) F va N shaharlar orasidagi masofaning $\frac{4}{7}$ qismi = 240 km

F va N shaharlar orasidagi masofaning $\frac{1}{7}$ qismi = 240 ÷ 4
= 60 km

F va N shaharlar orasidagi masofaning $\frac{7}{7}$ qismi = 7 × 60
= 420 km

F va N shaharlar orasidagi masofa 420 km ga teng.

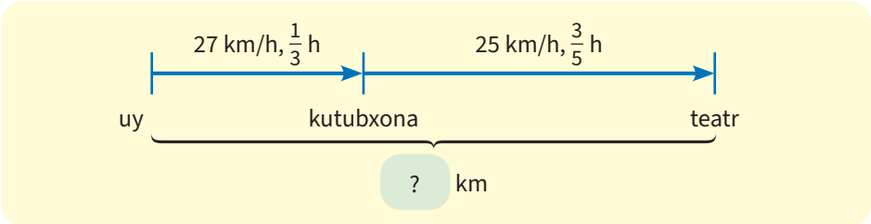
b) F va N shaharlar orasidagi masofaning $\frac{3}{7}$ qismi = 3 × 60
= 180 km

Tezlik = masofa ÷ vaqt
= 180 ÷ 4
= 45 km/h

Abdusamad amaki F va N shaharlar orasidagi masofaning dastlabki $\frac{3}{7}$ qismini 45 km/h tezlik bilan bosib o‘tgan.

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2 Ravshan velosipedda 27 km/h tezlik bilan harakatlanib, uyidan kutubxonagacha $\frac{1}{3}$ soatda yetib bordi. So‘ng u 25 km/h tezlikda harakatlanib, kutubxonadan teatrga $\frac{3}{5}$ soatda yetib oldi. Ravshan hammasi bo‘lib qancha masofa bosib o‘tgan?



Ravshanning uyidan kutubxonagacha masofa $= 27 \times \frac{1}{3}$

$= 9$ km

Kutubxonadan teatrgacha masofa $= 25 \times \frac{3}{5}$

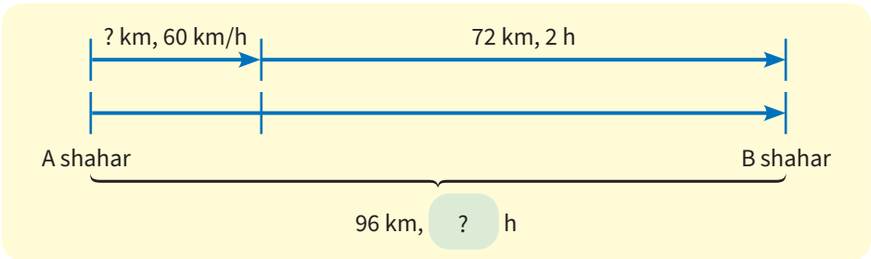
$= 15$ km

Jami masofa $= 9 + 15$

$= 24$ km

Ravshan hammasi bo‘lib 24 km masofa bosib o‘tgan.

3 Sayohatchi avtomobilida A shahardan B shahargacha 96 km masofa bosib o‘tdi. U yo‘lning birinchi qismida 60 km/h tezlikda harakatlandi. So‘ng yo‘lning qolgan 72 km ini 2 soatda bosib o‘tdi. U A shahardan B shaharga borish uchun qancha vaqt sarflagan?



Safarning birinchi qismida bosib o‘tilgan masofa $= 96 - 72$

$= 24$ km

Safarning birinchi qismida sarflangan vaqt = masofa ÷ tezlik

$= 24 \div 60$

$= \frac{2}{5}$ h

Jami vaqt $= \frac{2}{5} + 2$

$= 2\frac{2}{5}$ h

Sayohatchi A shahardan B shaharga borish uchun $2\frac{2}{5}$ soat vaqt sarflagan.

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Bajaring va o‘rganing



Quyidagi matnli masalalarni yeching.

1 Samolyot A shahardan B shahargacha 900 km/h tezlik bilan 8 soat uchdi. So‘ng 850 km/h tezlik bilan yana 5 soat uchib, C shaharga yetib keldi. Samolyot hammasi bo‘lib qancha masofa uchib o‘tgan?

2 Sportchi yugurish marafonida avval 10 km/h tezlik bilan 14 km yugurdi. Qolgan 28 km ni esa 7 km/h o‘zgarmas tezlik bilan bosib o‘tdi. Sportchi marafonga qancha vaqt sarflagan?

3 Sayohatchi A shahardan B shaharga yetib keldi. U yo‘lning $\frac{4}{9}$ qismini 2 soatda, qolgan 150 km ni esa o‘zgarmas 75 km/h tezlik bilan bosib o‘tdi.

a) A shahardan B shahargacha masofani toping.
b) Sayohatchi yo‘lning birinchi qismida qanday tezlik bilan harakatlangan?

4 Diyor aka yo‘lning $\frac{2}{3}$ qismini mashinada 75 km/h o‘zgarmas tezlik bilan bosib o‘tdi. Agar u qolgan 180 km ni 3 soatda bosib o‘tgan bo‘lsa, Diyor aka safarga hammasi bo‘lib qancha vaqt sarflagan?

5 Mohira velosipedda 15 km/h tezlik bilan harakatlanib, A shahardan B shaharga 40 minutda yetib bordi. Qaytishda tezligini pasaytirib, 12 km/h tezlikda harakatlandi. U B shahardan A shaharga qaytishga qancha vaqt sarflagan?

6 Jamshid aka X shahardan Z shaharga qarab ertalab soat 9:30 da avtomobilda yo‘lga chiqdi. Yo‘lning $\frac{5}{8}$ qismigacha 90 km/h tezlik bilan yurib, $\frac{1}{2}$ soatda Y shaharga yetib oldi. Agar yo‘lning qolgan qismini 54 km/h tezlikda bosib o‘tgan bo‘lsa, Jamshid aka Y shahardan Z shaharga borish uchun qancha vaqt sarflagan?

Mashq daftariga o‘ting 11–14

O‘zingizni tekshiring



Men ikki xil tezlikdagi harakatga doir matnli masalalarni yechishni bilaman.

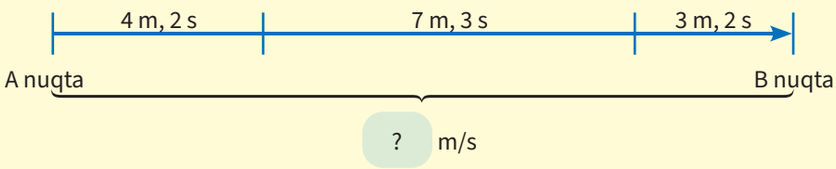
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O‘rtacha tezlik

Qarang va o‘rganing



1 Sardor A nuqtadan B nuqtagacha to‘xtamasdan yugurdi. Agar birinchi 4 metrni 2 sekundda, keyingi 7 metrni 3 sekundda va oxirgi 3 metrni 2 sekundda bosib o‘tgan bo‘lsa, u A nuqtadan B nuqtagacha qanday o‘rtacha tezlik bilan yugurgan?



Jami masofa = 4 + 7 + 3
= 14 m

Jami vaqt = 2 + 3 + 2
= 7 s

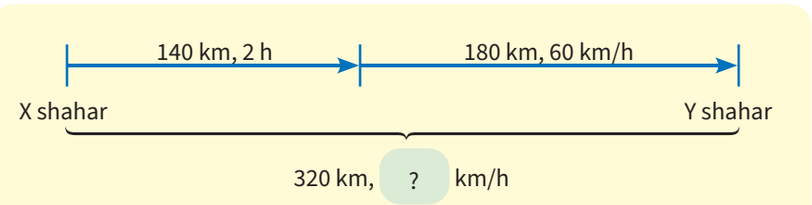
O‘rtacha tezlik = jami masofa ÷ jami vaqt
= 14 ÷ 7
= 2 m/s

O‘rtacha tezlik = $\frac{\text{jami masofa}}{\text{jami vaqt}}$



Sardor A nuqtadan B nuqtagacha 2 m/s o‘rtacha tezlik bilan yugurgan.

2 X shahardan Y shahargacha bo‘lgan masofa 320 km. Davron aka avtomobilda yo‘lning birinchi 140 km ini 2 soatda bosib o‘tdi. Agar u qolgan 180 km ni 60 km/h tezlik bilan bosib o‘tgan bo‘lsa, uning o‘rtacha tezligini toping.



Qolgan 180 km ga sarflangan vaqt = 180 ÷ 60
= 3 h

Jami sarflangan vaqt = 2 + 3
= 5 h

O‘rtacha tezlik = jami masofa ÷ jami vaqt
= 320 ÷ 5
= 64 km/h

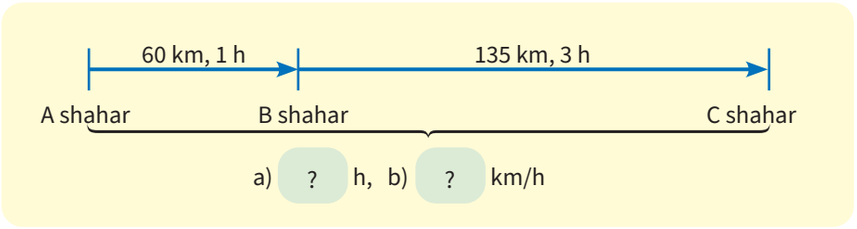
Davron akaning o‘rtacha tezligi 64 km/h.

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3 Sardor aka avtomobilda A va B shaharlar orasidagi 60 km masofani 1 soatda, B va C shaharlar orasidagi 135 km masofani 3 soatda bosib o‘tdi.

a) Sardor aka A shahardan C shaharga borish uchun jami qancha vaqt sarfladi?

b) Uning butun safar davomidagi o‘rtacha tezligini toping.



a) Jami vaqt = 1 + 3
= 4 h

Sardor aka A shahardan C shaharga borish uchun 4 soat sarfladi.

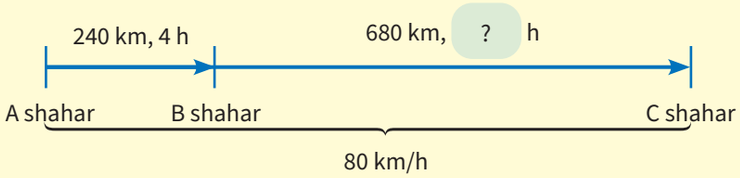
b) Jami masofa = 60 + 135
= 195 km

O‘rtacha tezlik = jami masofa ÷ jami vaqt
= 195 ÷ 4
= $48\frac{3}{4}$ km/h yoki 48,75 km/h

Uning butun safar davomidagi o‘rtacha tezligi 48,75 km/h.

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4 Poyezd A shahardan B shahargacha bo‘lgan 240 km masofani 4 soatda bosib o‘tdi. So‘ng B shahardan C shahargacha bo‘lgan 680 km masofani bosib o‘tdi. Butun safar davomida poyezdning o‘rtacha tezligi 80 km/h ekani ma’lum bo‘lsa, uning B shahardan C shaharga yetib olish uchun sarflagan vaqtini toping.



A shahardan C shahargacha masofa = 240 + 680
= 920 km

Jami vaqt = jami masofa ÷ o‘rtacha tezlik
= 920 ÷ 80
$= 11\frac{1}{2}$ h

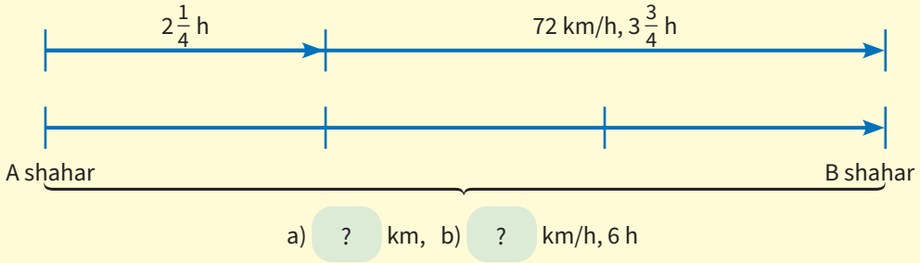
B shahardan C shaharga borish vaqti $= 11\frac{1}{2} - 4$
$= 7\frac{1}{2}$ h

Poyezd B shahardan C shaharga borish uchun $7\frac{1}{2}$ soat sarflagan.

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5 Sharif aka avtomobilda A shahardan B shaharga qarab yo‘lga chiqdi. U yo‘lning $\frac{1}{3}$ qismiga $2\frac{1}{4}$ soat sarfladi va qolgan yo‘lni 72 km/h tezlikda bosib o‘tib, $3\frac{3}{4}$ soatda manzilga yetib oldi.

a) Sharif aka hammasi bo‘lib necha km masofa bosib o‘tgan?
b) Uning butun safar davomidagi o‘rtacha tezligini toping.



a) Yo‘lning $\frac{2}{3}$ qismining uzunligi $= 72 \times 3\frac{3}{4}$
$= 270$ km

Yo‘lning $\frac{1}{3}$ qismining uzunligi $= 270 \div 2$
$= 135$ km

Jami masofa $= 135 \times 3$
$= 405$ km

Sharif aka butun safar davomida 405 km masofa bosib o‘tgan.

b) O‘rtacha tezlik = jami masofa ÷ jami vaqt
$= 405 \div 6$
$= 67\frac{1}{2}$ km/h

Sharif akaning o‘rtacha tezligi $67\frac{1}{2}$ km/h.

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Bajaring va o‘rganing



Quyidagi masalalarni yeching.

1 Davron aka avtomobilda X shahardan Y shahargacha bo‘lgan 40 km masofani $\frac{1}{2}$ soatda, Y shahardan Z shahargacha bo‘lgan 120 km masofani esa $1\frac{1}{2}$ soatda bosib o‘tdi. Uning o‘rtacha tezligini toping.

2 A va B shaharlar orasidagi masofa 12 km ga teng. Abdusamad aka A shahardan B shaharga yugurib borib keldi. Butun yo‘l davomida uning o‘rtacha tezligi 8 km/h bo‘lsa, Abdusamad aka butun masofani bosib o‘tishga qancha vaqt sarflagan?

3 Bobur aka avtomobilda yo‘lning birinchi qismida 80 km/h tezlik bilan 2 soat harakatlandi. Yo‘lning qolgan qismi uzunligi 181 km ekani va Bobur aka butun yo‘lga $5\frac{1}{2}$ soat sarflagani ma’lum.

a) Bobur aka hammasi bo‘lib qancha masofa yo‘l yurgan?
b) Uning yo‘l davomidagi o‘rtacha tezligi nechaga teng?

4 Komil aka bir-biridan 435 km masofada bo‘lgan J shahardan K shaharga qarab avtomobilda yo‘lga chiqdi. Tezligini oshirishdan oldin $2\frac{1}{4}$ soat yurdi. So‘ng qolgan 300 km ni 80 km/h tezlik bilan bosib o‘tdi.

a) U jami qancha vaqt yo‘lda bo‘lgan?
b) Uning yo‘l davomidagi o‘rtacha tezligi nechaga teng?

5 Shirin Y shahardan Z shaharga velosipedda bordi. U $3\frac{1}{2}$ soatda yo‘lning $\frac{3}{5}$ qismini, qolgan qismini esa 20 km/h tezlikda $1\frac{1}{2}$ soatda bosib o‘tdi.

a) Shirin jami necha km masofani bosib o‘tgan?
b) Uning safar davomidagi o‘rtacha tezligini toping.

Mashq daftariga o‘ting **15–18**

O‘zingizni tekshiring



Men o‘rtacha tezlik qatnashgan masalalarni yecha olaman.

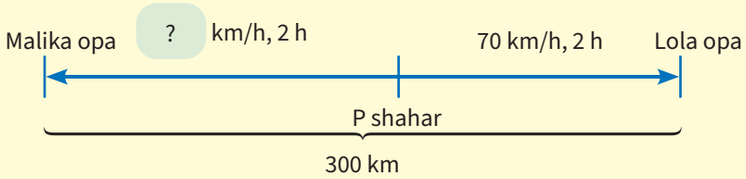
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Ikkita jism harakatiga doir matnli masalalar

Qarang va o‘rganing



1 Malika bilan Lola opa P shahardan o‘z mashinalarida qarama-qarshi tomonga qarab yo‘lga chiqdi. Agar 2 soatdan so‘ng ular orasidagi masofa 300 km va Lola opaning tezligi 70km/h ekani ma’lum bo‘lsa, Malika opaning tezligini toping.



Lola opa bosib o‘tgan masofa = 70 × 2
= 140 km

Malika opa bosib o‘tgan masofa = 300 – 140
= 160 km

Malika opaning tezligi = 160 ÷ 2
= 80 km/h

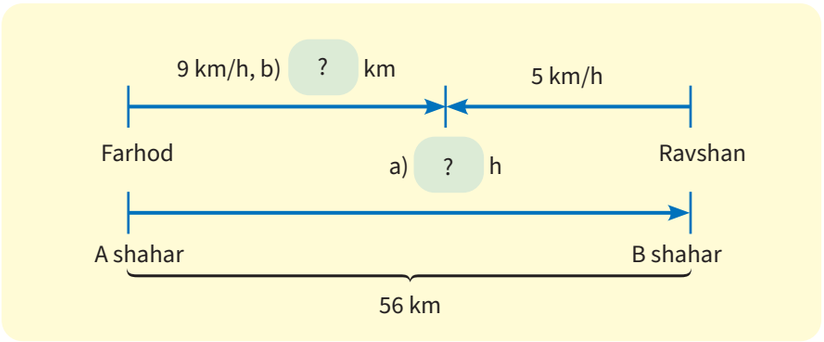
Malika opaning tezligi 80 km/h ga teng.

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2 A va B shaharlar orasidagi masofa 56 km. Farhod A shahardan B shaharga qarab o‘zgarmas 9 km/h tezlik bilan yugurmoqda. Bir vaqtning o‘zida Ravshan B shahardan A shaharga qarab 5 km/h tezlik bilan yo‘lga chiqdi.

a) Qancha vaqtdan keyin bolalar uchrashadi?

b) Farhod Ravshan bilan uchrashganda qancha masofa bosib o‘tgan bo‘ladi?



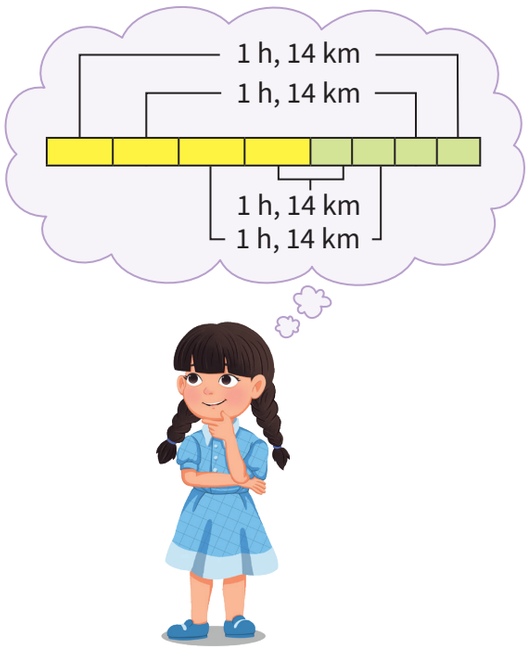
a) Ravshan va Farhod birgalikda 1 soatda bosib o‘tgan masofa = 9 + 5
= 14 km

Ravshan va Farhod uchrashishi uchun sarflangan vaqt = 56 ÷ 14
= 4 h

Bolalar 4 soatdan keyin uchrashadi.

b) Farhod bosib o‘tgan masofa = 9 × 4
= 36 km

Farhod Ravshan bilan uchrashguncha 36 km masofa bosib o‘tadi.

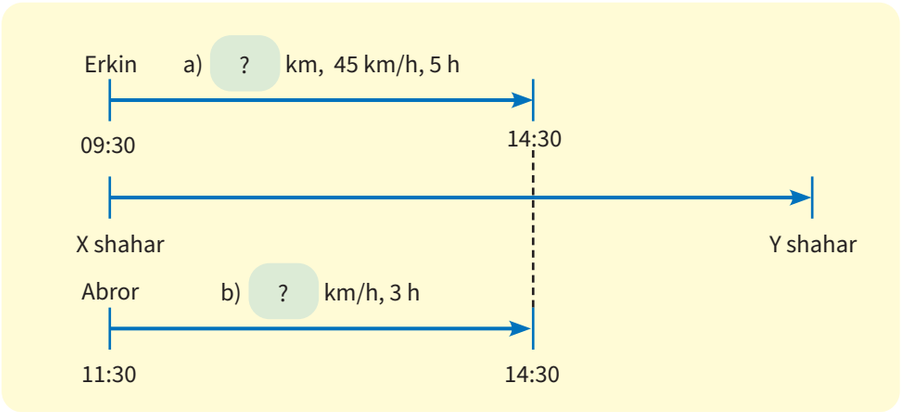


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3 Ertalab soat 09:30 da Erkin X shahardan Y shaharga qarab avtomobilda o‘zgarmas 45 km/h tezlik bilan yo‘lga chiqdi. Abror esa 11:30 da X shahardan Y shaharga qarab o‘zgarmas tezlik bilan yo‘lga chiqdi va 3 soatdan keyin Erkinni quvib yetdi.

a) Erkin Abror bilan uchrashgan vaqtda qancha masofani bosib o‘tgan?

b) Abrorning tezligini toping.



a) 09:30 dan 11:30 gacha → 2 soat

Erkin Abror bilan uchrashguncha ketgan vaqt = 3 + 2
= 5 h

Erkin bosib o‘tgan masofa = 45 × 5
= 225 km

Erkin Abror bilan uchrashguncha 225 km yo‘l yurgan.

b) Erkin bosib o‘tgan masofa = Abror bosib o‘tgan masofa

Abrorning tezligi = 225 ÷ 3
= 75 km/h

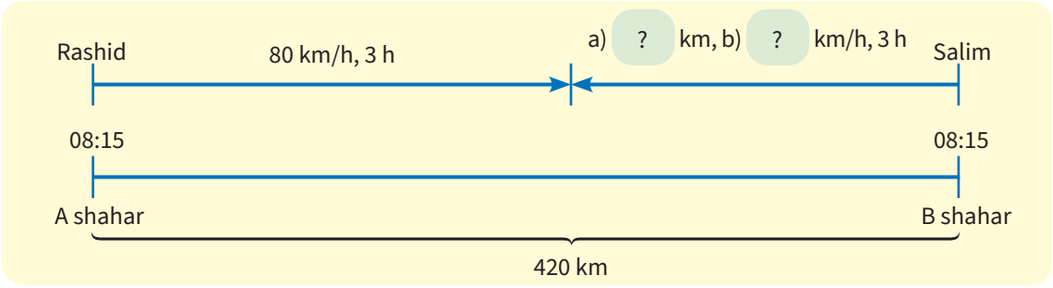
Abrorning tezligi 75 km/h.

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4 A shahar B shahardan 420 km uzoqlikda joylashgan. Rashid mashinasida soat 08:15 da A shahardan B shaharga qarab 80 km/h tezlik bilan yo‘lga chiqdi. Xuddi shu paytda Salim ham mashinasida B shahardan A shaharga qarab o‘zgarmas tezlik bilan yo‘lga chiqdi. Ular 3 soatdan keyin uchrashishdi.

a) Salim bosib o‘tgan masofani toping.

b) Salimning tezligini toping.



a) Rashid bosib o‘tgan yo‘l = 80 × 3
= 240 km

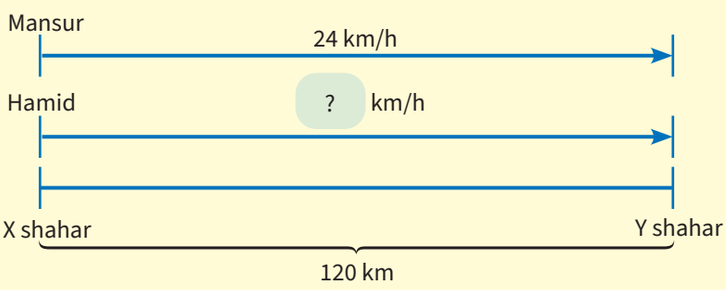
Salim bosib o‘tgan yo‘l = 420 – 240
= 180 km

Salim bosib o‘tgan yo‘l 180 km ga teng.

b) Salimning tezligi = 180 ÷ 3
= 60 km/h

Salimning tezligi 60 km/h.

5 Mansur velosipedda o‘zgarmas 24 km/h tezlik bilan X shahardan 120 km uzoqlikdagi Y shaharga qarab yo‘lga chiqdi. Undan $\frac{1}{2}$ soat keyinroq, xuddi shu yo‘l bo‘ylab Hamid yo‘lga chiqdi. Ammo u Y shaharga Mansurdan $\frac{1}{2}$ soat oldin yetib keldi. Hamidning tezligini toping.



Mansur sarflagan vaqt = 120 ÷ 24
= 5 h

Hamid sarflagan vaqt = $5 - \frac{1}{2} - \frac{1}{2}$
= 4 h

Hamidning tezligi = 120 ÷ 4
= 30 km/h

Hamidning tezligi 30 km/h.

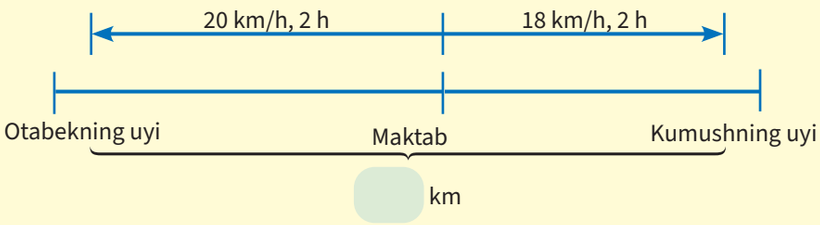
81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 23 12/11/24 13:14

Juftlikda ishlang

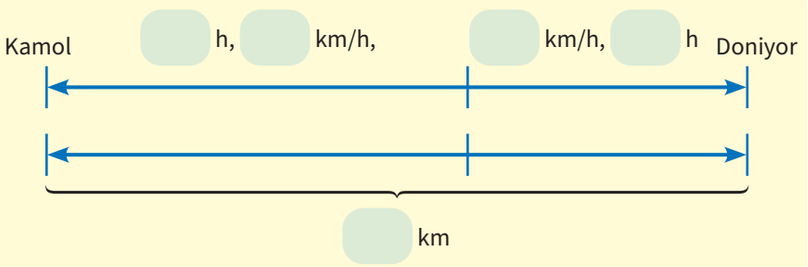


Sherigingiz bilan matnli masalalarni yeching.
Yechimni namoyish qilish uchun chizma-model chizishingiz mumkin.
Masalalar yechimini sinfdoshingizga tushuntiring.

1 Otabek va Kumush velosipedda maktabdan uylariga qarab qarama-qarshi yo‘nalishda yo‘lga chiqdi. Otabek o‘zgarmas 20 km/h tezlik bilan, Kumush esa o‘zgarmas 18 km/h tezlik bilan harakatlandi. 2 soatdan keyin ular orasidagi masofa qancha bo‘ladi?



2 Kamol va Doniyor bir vaqtda bir joydan qarama-qarshi yo‘nalishda yo‘lga chiqdi. Ular orasidagi masofa $\frac{2}{3}$ soatdan keyin 100 km ga teng bo‘ldi. Doniyor o‘zgarmas 60 km/h tezlik bilan harakatlandi. Kamol ham o‘zgarmas tezlik bilan harakatlangani ma’lum bo‘lsa, uning tezligini toping.



3 A va B qishloqlar orasidagi masofa 84 km ga teng. Malika A qishloqdan B qishloqqa velosipedda o‘zgarmas 10 km/h tezlik bilan yo‘lga chiqdi. Xuddi shu payt Rahima B qishloqdan A qishloqqa qarab o‘zgarmas 11 km/h tezlik bilan yo‘lga chiqdi. Rahima Malika bilan uchrashganda qancha masofa bosib o‘tgan bo‘ladi?

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Bajaring va o‘rganing



Matnli masalalarni yeching.

1 Ali bilan Vali avtomobilda bir vaqtda o‘zgarmas tezlik bilan bir nuqtadan qarama-qarshi yo‘nalishlarda yo‘lga chiqdi. Agar 4 soatdan keyin ular orasidagi masofa 416 km va Ali 68 km/h tezlik bilan harakatlangani ma’lum bo‘lsa, Valining tezligi qancha?

2 P va Q shaharlar orasidagi masofa 360 km ga teng. Yuk mashinasi P shahardan Q shaharga qarab o‘zgarmas 50 km/h tezlik bilan yo‘lga chiqdi. Bir vaqtda Q shahardan P shaharga qarab yengil avtomobil o‘zgarmas 70 km/h tezlik bilan yo‘lga chiqdi. Yengil avtomobil yuk mashinasi bilan uchrashganda Q shahardan qancha uzoqlikda bo‘ladi?

3 Soat 11:30 da Jamol avtomobilda A shahardan B shaharga qarab 50 km/h o‘zgarmas tezlik bilan yo‘lga chiqdi. Soat 13:00 da Bobur A shahardan B shaharga qarab yo‘lga chiqdi va 2 soatdan keyin Jamolni quvib yetdi. Boburning tezligini toping.

4 A va B qishloqlar orasidagi masofa 30 km. Behzod A qishloqdan B qishloqqa qarab 10 km/h tezlik bilan yugurishni boshladi. Oradan $\frac{1}{2}$ soat o‘tgandan keyin Javlon A qishloqdan B qishloqqa qarab yo‘lga chiqdi va B qishloqqa Behzoddan $\frac{1}{2}$ soat oldinroq yetib bordi. Javlonning tezligini toping.

5 Jamila va Jasur X bog‘chadan Y bog‘chaga qarab soat 08:30 da yo‘lga chiqdi. Jamila Y bog‘chaga 30 minutda yetib bordi, bu vaqtda Jasur yo‘lning $\frac{5}{6}$ qismini bosib o‘tdi. X va Y bog‘chalar orasidagi masofa 1080 m.

a) Jasur Y bog‘chaga qachon yetib borgan?
b) Jasurning tezligi qancha?

6 P va Q shaharlar orasidagi masofa 60 km. Soat 12:15 da Rashid velosipedda P shahardan Q shaharga qarab 12 km/h tezlik bilan yo‘lga chiqdi. Ayni vaqtda shu yo‘ldan Rahim Q shahardan P shaharga qarab velosipedda 15 km/h tezlik bilan yo‘lga chiqdi. Agar yo‘l davomida bolalarning tezligi o‘zgarmagan bo‘lsa, ular orasidagi masofa 20 minutdan so‘ng qancha bo‘ladi?

7 Tohir va Lola o‘zgarmas tezlik bilan Y shahardan Z shaharga qarab avtomobilda yo‘lga chiqdi. Tohir Lolaga qaraganda $\frac{1}{2}$ soat oldin yo‘lga chiqqan edi. Ammo Lola Z shaharga undan 2 soat oldinroq yetib keldi. Lola Z shaharga yetib kelganida Tohir yo‘lning $\frac{4}{5}$ qismini bosib o‘tgan va Z shahardan 60 km uzoqlikda edi. Masala yechimini quyidagi savollar orqali tushuntiring.

a) Y va Z shaharlar orasidagi masofa qancha?
b) Tohir 1 soatda necha km yo‘l bosgan?

O‘zingizni tekshiring



Mashq daftariga o‘ting **19–26**

Men ikkita harakatlanayotgan jism tezliklari qatnashgan masalalarni yecha olaman.

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O‘ylab ko‘ring



Ali va Vali stadionning 400 metrlik yo‘lagi bo‘ylab yugurmoqda. Ular bir vaqtda bir nuqtadan yugurishni boshladi. Ali 180 m/min tezlik bilan yugurdi. Vali Aliga nisbatan 30 m/min sekinroq yugurdi. Ali Valiga qaraganda 450 m ko‘p yugurdi. Bu vaqtda Ali yo‘lakni necha marta to‘liq aylanib chiqadi?

Mashq daftariga o‘ting **27–28**

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8 Hajm

Muhokama qiling



Bolalar hajmni o‘rganishyapti.

Sardor, bu akvariumning hajmi sening kuboiding hajmi bilan bir xil. Akvariumning bo‘yi qancha?

Bu kuboid 420 ta birlik kubchalardan yasalgan. Uning hajmi qancha?

Akmal, akvariumdagi suv sathining balandligini qanday aniqlaysan?

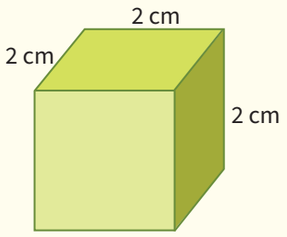
Himm...

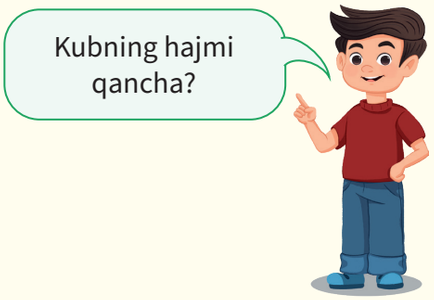
Eslang



Kub, kuboid va suyuqliklarning hajmi

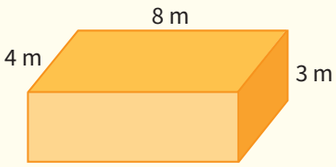
1 Kubning o‘lchamlari: 2 cm, 2 cm va 2 cm.





Kubning hajmi = qirrasi × qirrasi × qirrasi
= 2 × 2 × 2
= 8 cm^3

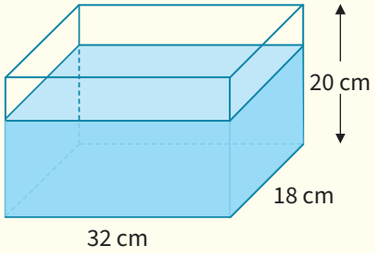
2 Kuboidning o‘lchamlari: 8 m, 4 m va 3 m.





Kuboidning hajmi = bo‘yi × eni × balandligi
= 8 × 4 × 3
= 96 m^3

3 O‘lchamlari 32 cm, 18 cm va 20 cm bo‘lgan kuboid shaklidagi akvariumning $\frac{2}{3}$ qismi suv bilan to‘ldirildi. Akvariumdagi suvning hajmini toping.



Akvariumdagi suv hajmi = $\frac{2}{3}$ × 32 × 18 × 20
= 7680 cm^3

Mashq daftariga o‘ting **29–30**

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Kuboidning qirrasini topish

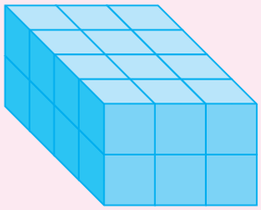
Kuboidning berilgan hajmi va ikkita qirrasiga ko‘ra uchinchi qirrasini topish

Qo‘lda bajariladigan mashq



Guruh bo‘lib ishlang.
24 ta birlik kubdan foydalanib hajmi bir xil bo‘lgan turli kuboidlarni yasang.

Namuna



Bo‘yi × eni × balandligi = hajm

O‘lchamlarni yozing.

Kuboid	Bo‘yi (birlik)	Eni (birlik)	Balandligi (birlik)	Hajmi (kub birlik)
A	4	3		24
B				24
C				24

Balandligi $= \frac{\text{hajmi}}{\text{bo‘yi} \times \text{eni}}$

$= \frac{24}{4 \times 3}$

$= \frac{24}{12}$

$= 2$ birlik



Kuboidning bitta o‘lchami bilan uning hajmi va boshqa o‘lchamlari o‘rtasida qanday bog‘liqlik bor?

Kuboidning balandligi $= \frac{\text{hajmi}}{\text{bo‘yi} \times \text{eni}}$

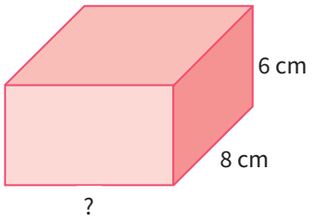
Kuboidning bo‘yi $= \frac{\text{hajmi}}{\square \times \square}$

Kuboidning eni $= \frac{\text{hajmi}}{\square \times \square}$

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Qarang va o‘rganing

1 Kuboidning hajmi 432 cm^3. Uning balandligi 6 cm, eni esa 8 cm. Kuboidning bo‘yini toping.



Hajmi = bo‘yi × eni × balandligi

$$\text{Bo‘yi} = \frac{\text{hajmi}}{\text{eni} \times \text{balandligi}}$$

$$= \frac{432}{8 \times 6}$$

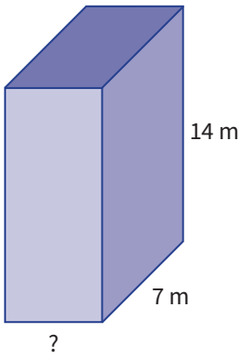
$$= 9 \text{ cm}$$

Kuboidning bo‘yi 9 cm.

Tekshirish

Bo‘yi × eni × balandligi = 9 × 8 × 6
= 432 cm^3

2 Kuboidning hajmi 490 m^3. Uning bo‘yi 7 m, balandligi esa 14 m. Kuboidning enini toping.



Hajmi = bo‘yi × eni × balandligi

$$\text{Eni} = \frac{\text{hajmi}}{\text{bo‘yi} \times \text{balandligi}}$$

$$= \frac{490}{7 \times 14}$$

$$= 5 \text{ m}$$

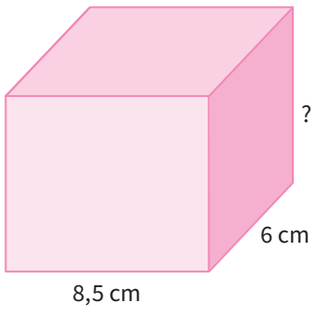
Kuboidning eni 5 m.

Tekshirish

Bo‘yi × eni × balandligi = 7 × 5 × 14
= 490 m^3

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3 Kuboidning hajmi 357 cm^3. Bo‘yi 8,5 cm, eni esa 6 cm. Kuboidning balandligini toping.



Hajmi = bo‘yi × eni × balandligi

$$\text{Balandligi} = \frac{\text{hajmi}}{\text{bo‘yi} \times \text{eni}}$$

$$= \frac{357}{8{,}5 \times 6}$$

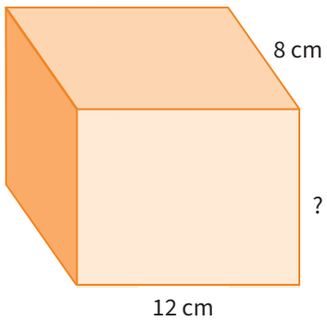
$$= 7 \text{ cm}$$

Kuboidning balandligi 7 cm.

Tekshirish

Bo‘yi × eni × balandligi = 8,5 × 6 × 7
= 357 cm^3

4 Kuboid shaklidagi qutining bo‘yi 12 cm, eni 8 cm, hajmi esa 912 cm^3. Qutining balandligini toping.



$$\text{Balandligi} = \frac{912}{12 \times 8}$$

$$= 9{,}5 \text{ cm}$$

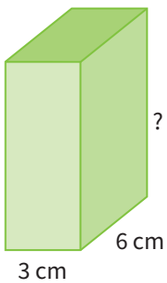
Qutining balandligi 9,5 cm.

Bajaring va o‘rganing

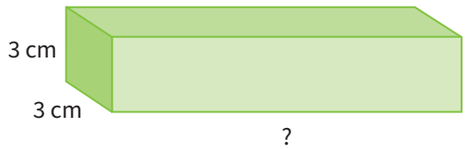


Har bir kuboidning hajmi 144 cm^3. Noma’lum qirrani toping.

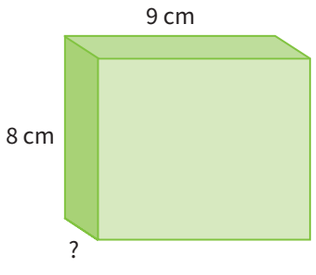
a)



b)



c)



Mashq daftariga o‘ting **31–32**

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Kuboidning hajmi va asosining yuziga ko‘ra balandligini topish

Qo‘lda bajariladigan mashq



Guruh bo‘lib ishlang.

Qirrasi 1 cm bo‘lgan birlik kublardan foydalanib har birining hajmi 36 cm^3 bo‘lgan turli kuboidlarni yasang.

a) Kuboidlarning o‘lchamlarini yozing.

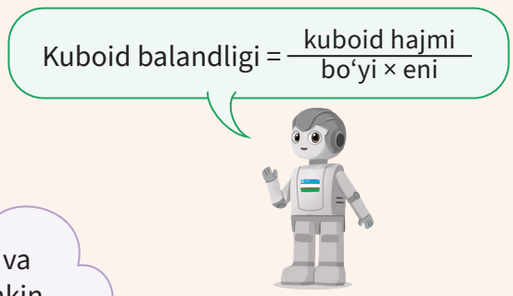
Kuboid	Hajmi (cm^3)	Asosi		Asosining yuzi (cm^2)	Balandligi (cm)
		Bo‘yi (cm)	Eni (cm)		
A	36	4	3	$4 \times 3 = 12$	
B	36				
C	36				



b) Kuboid asosining yuzi = ____ × ____

c) Kuboidning balandligi bilan uning hajmi va asosining yuzi o‘rtasida qanday bog‘liqlik bor?

Kuboid balandligi = $\frac{\text{____}}{\text{____}}$

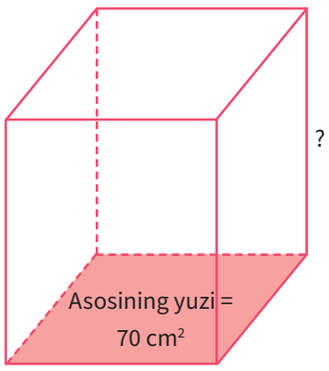




81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 32 12/11/24 13:14

Qarang va o‘rganing

1 Kuboid asosining yuzi 70 cm^2. Hajmi esa 840 cm^3. Kuboidning balandligini toping.



Hajmi = asosi yuzi × balandligi

Balandligi = hajmi ÷ asosi yuzi

$$= \frac{\text{hajmi}}{\text{asosi yuzi}}$$

$$= \frac{840}{70}$$

$$= 12 \text{ cm}$$

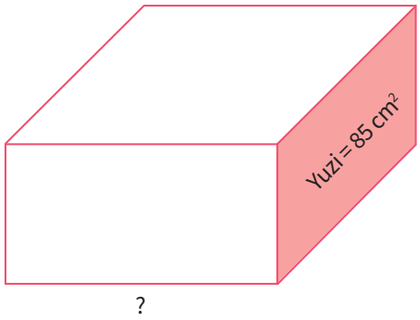
Kuboidning balandligi 12 cm.

Tekshirish

Asosi yuzi × balandligi = 70 × 12
= 840 cm^3

2 Kuboidning hajmi va bo‘yalgan yog‘ining yuzi berilgan. Kuboidning noma’lum qirrasini toping.

a) Kuboidning hajmi 1190 cm^3.



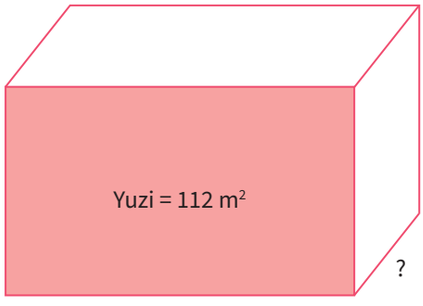
$$\text{Bo‘yi} = \frac{\text{hajmi}}{\text{bo‘yalgan yog‘ining yuzi}}$$

$$= \frac{1190}{85}$$

$$= 14 \text{ cm}$$

Kuboidning bo‘yi (noma’lum qirrasi) 14 cm.

b) Kuboidning hajmi 448 m^3.



$$\text{Eni} = \frac{\text{hajmi}}{\text{bo‘yalgan yog‘ining yuzi}}$$

$$= \frac{448}{112}$$

$$= 4 \text{ m}$$

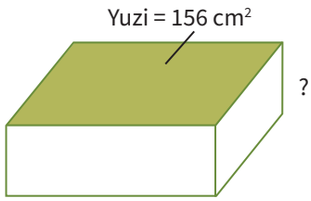
Kuboidning eni (noma’lum qirrasi) 4 m.

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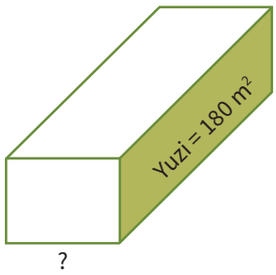
Juftlikda ishlang

Kuboidning noma’lum qirrasini toping.

a) Kuboidning hajmi = 780 cm^3



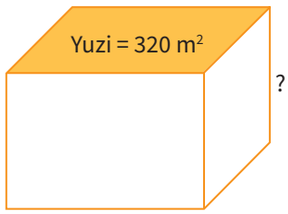
b) Kuboidning hajmi = 1620 m^3



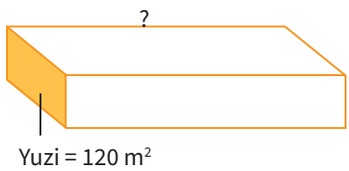
Bajaring va o‘rganing

1 Har bir kuboidning hajmi 4800 m^3. Kuboidning quyida berilgan bir yog‘ining yuziga ko‘ra noma’lum qirrasini toping.

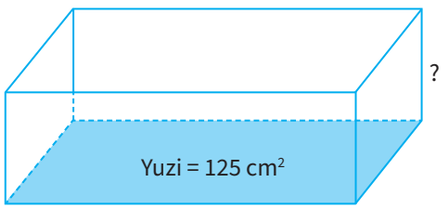
a)



b)



2 Kuboid asosining yuzi 125 cm^2. Hajmi 750 cm^3. Kuboidning balandligini toping.



Mashq daftariga o‘ting **33–34**

O‘zingizni tekshiring

a) Kuboidning hajmi va ikki qirrasi berilgan bo‘lsa, uning noma’lum qirrasini topishni bilaman.

b) Kuboidning hajmi va bir yog‘i yuzi berilgan bo‘lsa, uning noma’lum qirrasini topishni bilaman.

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Kubning qirrasini topish

Kubning berilgan hajmi yoki asosining yuziga ko‘ra qirrasini topish

Qo‘lda bajariladigan mashq



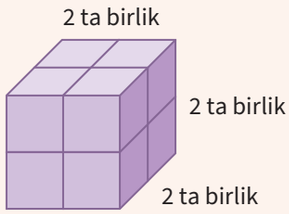
Guruh bo‘lib ishlang.

Birlik kublardan foydalanib quyidagi kublarni yasang. Har bir yasalgan kublarning hajmini toping.

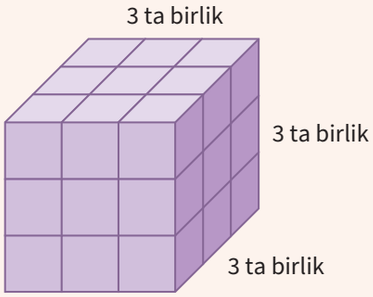
a) X kubning har bir qirrasi 2 birlikka teng.
b) Y kubning har bir qirrasi 3 birlikka teng.
c) Z kubning har bir qirrasi 4 birlikka teng.



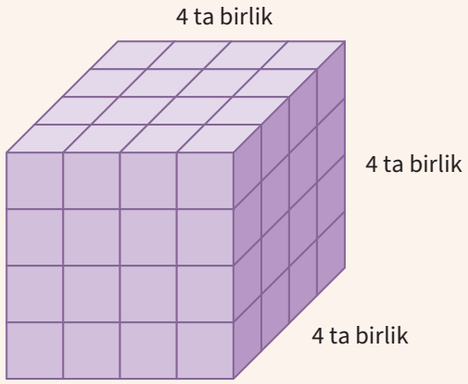
W
(birlik kub)



X



Y



Z

Kub	Bo‘yi = eni = balandligi (birlik)	Hajm = qirrasi × qirrasi × qirrasi (kub birlik)
W	1	1 × 1 × 1 = 1
X	2	
Y	3	
Z	4	

Kub qirralarining uzunligi bir xil bo‘lgani uchun:

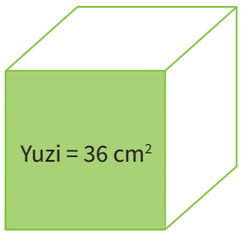
Qirrasi × qirrasi × qirrasi = kubning hajmi

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Qarang va o‘rganing



1 Kubning bo‘yalgan yog‘i yuzi 36 cm^2. Kubning qirrasi uzunligini toping.



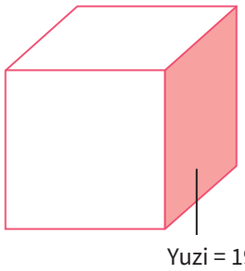
Qirrasi × qirrasi = yuzi

6 cm × 6 cm = 36 cm^2

qirrasi = 6 cm

Kub qirrasining uzunligi 6 cm.

2 Kubning bo‘yalgan yog‘i yuzi 196 cm^2. Kub qirrasining uzunligini toping.



Qirrasi × qirrasi = yuzi

qirra = $\sqrt{\text{yuzi}}$

= $\sqrt{196}$

= 14 cm

Kub qirrasining uzunligi 14 cm.

Tekshirish

Qirrasi × qirrasi = 14 × 14

= 196 cm^2



Kvadratning tomoni yuzining kvadrat ildiziga teng.

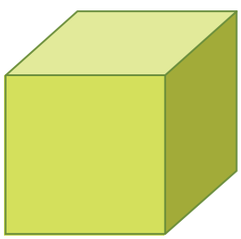
$\sqrt{\ }$ – kvadrat ildiz.

$\sqrt{196}$ – “kvadrat ildiz ostida 196” deb o‘qiladi.



Kvadratning tomoni = $\sqrt{\text{yuzi}}$

3 Hajmi 125 cm^3 bo‘lgan kubning qirrasi uzunligini toping.



Qirrasi × qirrasi × qirrasi = hajmi

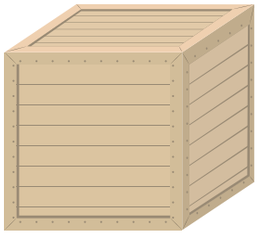
5 cm × 5 cm × 5 cm = 125 cm^3

Qirra = 5 cm

Kub qirrasining uzunligi 5 cm.

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4 Hajmi 343 cm^3 bo‘lgan kub shaklidagi qutining bitta qirrasi uzunligini toping.



Qirrasi × qirrasi × qirrasi = hajmi

Qirra = $\sqrt[3]{\text{hajmi}}$

= $\sqrt[3]{343}$

= 7 cm

Qutining bitta qirrasi uzunligi 7 cm.

Tekshirish

Qirra × qirra × qirra = 7 × 7 × 7

= 343 cm^3

Kubning qirrasi uzunligi kub ildiz ostidagi hajmga teng.

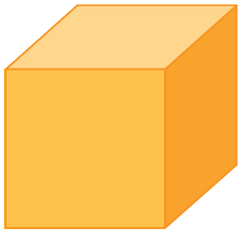


$\sqrt[3]{\ }$ – kub ildiz belgisi.

$\sqrt[3]{343}$ – “kub ildiz ostida 343” deb o‘qiladi.



5 Kubning hajmi 1728 m^3. Kub qirrasi uzunligini toping.



Hajm = 1728 m^3

Qirra = $\sqrt[3]{1728}$

= 12 m

Kubning bitta qirrasi uzunligi 12 m.

Kubning qirrasi = $\sqrt[3]{\text{hajm}}$

Juftlikda ishlang



1 Kubning bir yog‘i yuzi berilgan. Uning qirrasini toping. So‘ng “qirra × qirra”ni toping.

a) 49 cm^2 b) 225 cm^2 c) 361 m^2

“Qirra × qirra = kvadrat yuzi” tengligi o‘rinlimi?

2 Kubning hajmi berilgan. Uning qirrasini toping. So‘ng “qirra × qirra × qirra”ni toping.

a) 216 cm^3 b) 729 cm^3 c) 2744 m^3

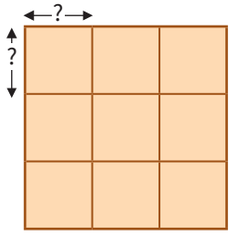
“Qirra × qirra × qirra = kubning hajmi” tengligi o‘rinlimi?

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Qiziqarli matematika

O‘rganing va bo‘lishing

Guruh bo‘lib ishlang.
Rasmda yuzi 81 cm^2 bo‘lgan kvadrat berilgan.
U 9 ta kichik kvadratchalardan yasalgan. Har bir kichik kvadratning tomonini toping.
Javobni sinf bilan bo‘lishing.



Bajaring va o‘rganing

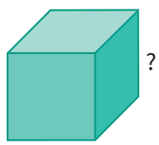
1 Quyidagilarning qiymatini toping.

a) $\sqrt{144}$ b) $\sqrt{289}$ c) $\sqrt{361}$

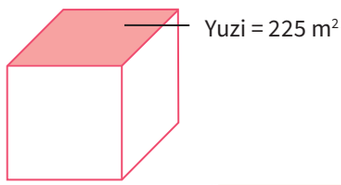
2 Quyidagilarning qiymatini toping.

a) $\sqrt[3]{1331}$ b) $\sqrt[3]{3375}$ c) $\sqrt[3]{4096}$

3 Hajmi 5832 cm^3 bo‘lgan kubning qirrasini toping.



4 Kubning bo‘yalgan yog‘i yuzi 225 m^2.
Kubning qirrasini toping.



Mashq daftariga o‘ting **35–36**

O‘zingizni tekshiring

a) Kubning hajmi berilgan bo‘lsa, uning qirrasini topishni bilaman.

b) Kub yog‘ining yuzi berilgan bo‘lsa, uning qirrasini topishni bilaman.

c) Kalkulyator yordamida kvadrat ildiz ($\sqrt{\ }$) va kub ildiz ($\sqrt[3]{\ }$)ni topishni bilaman.

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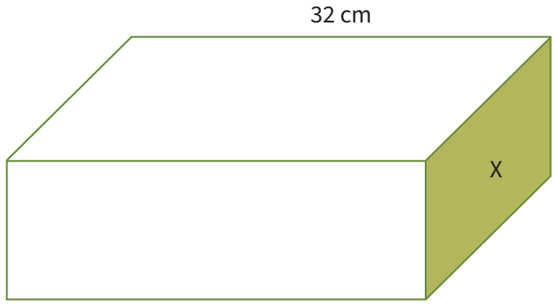
Kuboid va kubning bir yog‘i yuzini topish

Qarang va o‘rganing

Kuboidning hajmi va qirrasiga ko‘ra yog‘ining yuzini topish

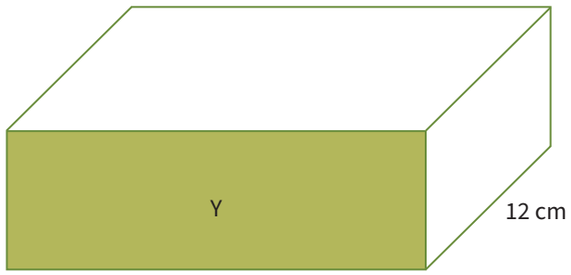
1 Kuboidning hajmi 3840 cm^3. Bo‘yalgan yog‘i yuzini toping.

a)



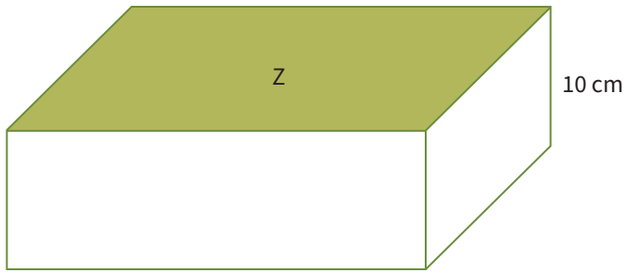
$$\text{X ning yuzi} = \frac{\text{hajmi}}{\text{qirrasi}} = \frac{3840}{32} = 120\ cm^2$$

b)



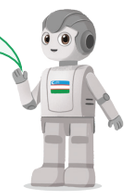
$$\text{Y ning yuzi} = \frac{\text{hajmi}}{\text{qirrasi}} = \frac{3840}{12} = 320\ cm^2$$

c)



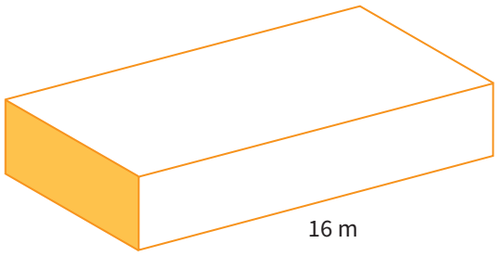
$$\text{Z ning yuzi} = \frac{\text{hajmi}}{\text{qirrasi}} = \frac{3840}{10} = 384\ cm^2$$

Yuqorida berilgan misollarda kuboid yog‘ining yuzini topishda nimani payqadingiz?



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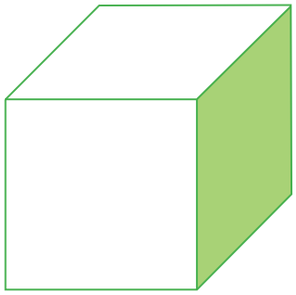
2 Kuboidning hajmi 256 m^3. Qirralaridan biri 16 m.
Bo‘yalgan yog‘i yuzini toping.



$$\text{Bo‘yalgan yog‘i yuzi} = \frac{\text{hajmi}}{\text{qirrasi}}$$
$$= \frac{256}{16}$$
$$= 16\ m^2$$

Bo‘yalgan yog‘i yuzi 16 m^2.

3 Kubning hajmi 5832 cm^3. Uning bo‘yalgan yog‘i yuzini toping.



Hajmi = qirrasi × qirrasi × qirrasi

$$\text{Qirra} = \sqrt[3]{5832}$$
$$= 18\ cm$$

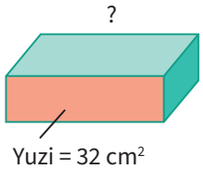
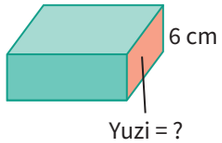
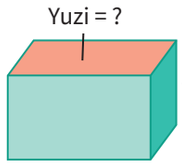
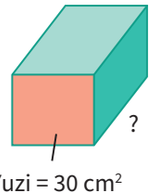
Kub yog‘ining yuzi = qirrasi × qirrasi
$$= 18 \times 18$$
$$= 324\ cm^2$$

Kubning bo‘yalgan yog‘i yuzi 324 cm^2.

Juftlikda ishlang



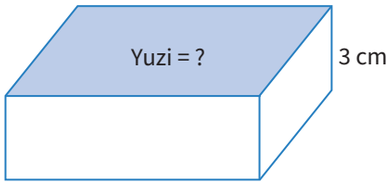
Quyidagi kuboidlardan qaysi birining yog‘i yuzini yoki noma’lum qirrasini topa olasiz?

A ning hajmi = 320 cm^3	B ning hajmi = 1200 cm^3	C ning hajmi = 189 cm^3	D ning hajmi = 330 cm^3
			

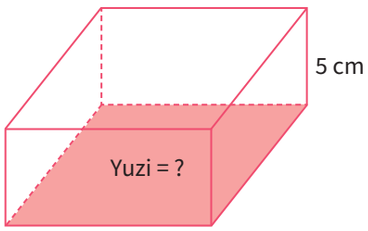
81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 40 12/11/24 13:14

Bajaring va o‘rganing

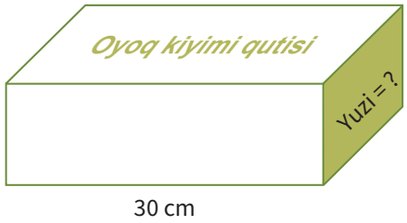
1 Kuboidning balandligi 3 cm, hajmi esa 168 cm^3. Bo‘yalgan yog‘i yuzini toping.



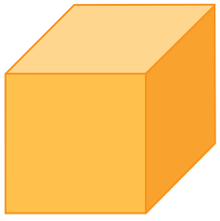
2 Kuboidning hajmi 840 cm^3, balandligi esa 5 cm. Uning asosi yuzini toping.



3 Oyoq kiyimi qutisining bo‘yi 30 cm, hajmi esa 5400 cm^3. Bo‘yalgan yog‘i yuzini toping.



4 Kubning hajmi 512 m^3. Uning yog‘i yuzini toping.



Mashq daftariga o‘ting 37–38

O‘zingizni tekshiring

a) Kuboidning hajmi va bir qirrasi berilgan bo‘lsa, yog‘i yuzini topishni bilaman.

b) Kubning hajmi berilgan bo‘lsa, bitta yog‘i yuzini topishni bilaman.

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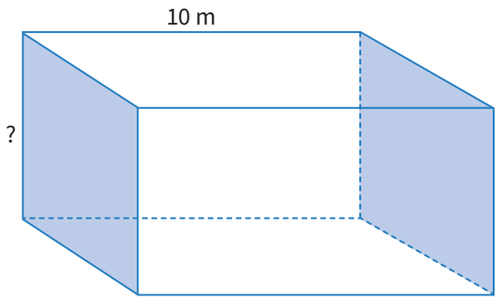
Matnli masalalar

Qarang va o‘rganing



1 Kuboidning bir qirrasi 10 m, hajmi esa 250 m^3. Kuboidning ikkita qarama-qarshi kvadrat shaklidagi yoqlari bor. Shu yoqlarining tomonini toping.

$$\text{Kuboid yog‘ining yuzi} = \frac{\text{hajmi}}{\text{qirrasi}}$$
$$= \frac{250}{10}$$
$$= 25\ m^2$$



$$\text{Kvadrat shaklidagi yog‘ining tomoni} = \sqrt{25}$$
$$= 5\ m$$

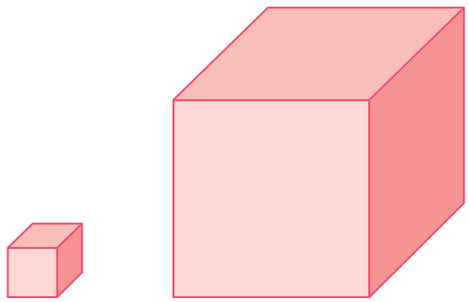
Kuboidning kvadrat shaklidagi yog‘ining tomoni 5 m.

2 A kubning hajmi 27 cm^3. B kubning qirrasi A kubning qirrasidan 4 marta uzun. B kubning hajmini toping.

$$\text{A kubning qirrasi} = \sqrt[3]{27}$$
$$= 3\ cm$$

$$\text{B kubning qirrasi} = 4 \times 3$$
$$= 12\ cm$$

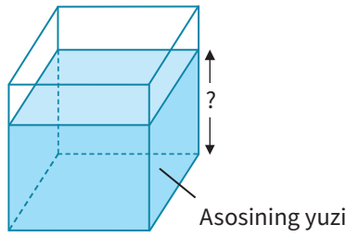
$$\text{B kubning hajmi} = 12 \times 12 \times 12$$
$$= 1728\ cm^3$$



B kubning hajmi 1728 cm^3.

3 Kuboid shaklidagi akvarium asosining yuzi 12 m^2. Akvariumda 36 m^3 suv bor. Akvariumdagi suv sathining balandligini aniqlang.

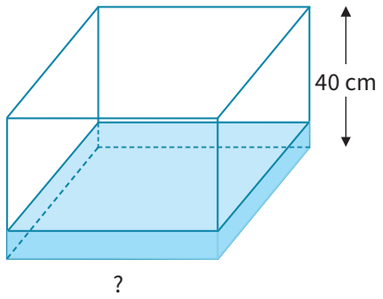
$$\text{Suv sathining balandligi} = \frac{\text{hajm}}{\text{asosining yuzi}}$$
$$= \frac{36}{12}$$
$$= 3\ m$$



Akvariumdagi suv sathining balandligi 3 m.

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4 Kuboid shaklidagi idishning balandligi 40 cm, asosi esa kvadratdan iborat. Uning $\frac{1}{5}$ qismi 28,8 ℓ suv bilan to‘ldirilgan.



a) Idish asosining yuzini toping.

b) Idish asosining tomonini toping.

a) Idishning $\frac{1}{5}$ qismi suv bilan to‘lgandagi suv sathi balandligi

$= \frac{1}{5} \times 40$

$= 8$ cm

Idishning $\frac{1}{5}$ qismi to‘lgandagi suvning hajmi $= 28{,}8\ \ell$

$28{,}8\ \ell = 28{,}8 \times 1000$

$= 28\,800\ \text{cm}^3$

$$\text{Idish asosining yuzi} = \frac{\text{hajmi}}{\text{balandligi}}$$

$= \frac{28\,800}{8}$

$= 3600\ \text{cm}^2$

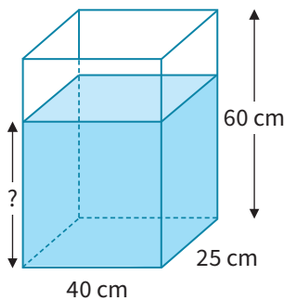
Idish asosining yuzi 3600 cm^2.

b) Idish asosining tomoni $= \sqrt{3600}$

$= 60$ cm

Idish asosining tomoni 60 cm.

5 Kuboid shaklidagi akvariumning o‘lchamlari 40 cm, 25 cm va 60 cm. Unga 45 ℓ suv quyilgan.



a) Suv sathining balandligi qancha?

b) Akvariumni to‘ldirish uchun yana necha litr suv quyish kerak?

a) Akvarium asosining yuzi = bo‘yi × eni

$= 40 \times 25$

$= 1000\ \text{cm}^2$

Suvning hajmi $= 45\ \ell$

$45\ \ell = 45\,000\ \text{cm}^3$

$$\text{Suv sathining balandligi} = \frac{\text{hajmi}}{\text{asosining yuzi}}$$

$= \frac{45\,000}{1000}$

$= 45$ cm

Suv sathining balandligi 45 cm.

b) Suv bilan to‘lmagan akvariumning balandligi $= 60 - 45$

$= 15$ cm

Akvariumni to‘ldirish uchun zarur suv hajmi $= 40 \times 25 \times 15$

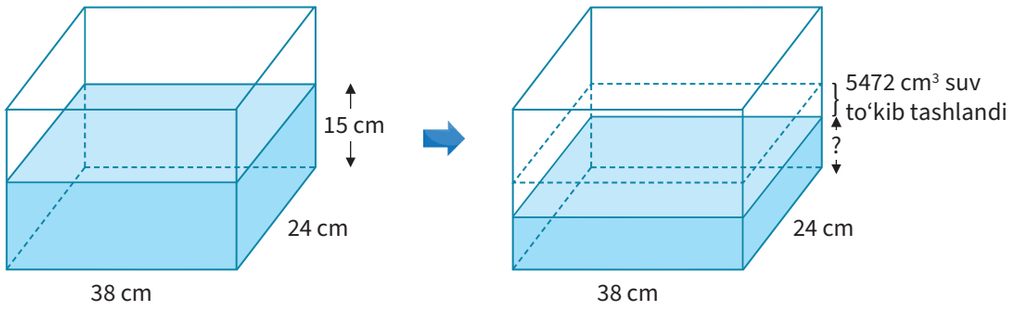
$= 15\,000\ \text{cm}^3$

$15\,000\ \text{cm}^3 = 15\ \ell$

Akvariumni to‘ldirish uchun yana 15 ℓ suv quyish kerak.

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6 Kuboid shaklidagi akvariumning bo‘yi 38 cm, eni 24 cm. Akvariumdagi suv sathining balandligi 15 cm. Ozoda xola akvariumdan 5472 cm^3 hajmdagi suvni to‘kib tashladi. Akvariumda qolgan suv sathining balandligi qancha?



1-usul

Suv sathi balandligining kamayishi

$$= \frac{5472}{38 \times 24}$$

$$= 6 \text{ cm}$$

Qolgan suv sathining balandligi

$$= 15 - 6$$

$$= 9 \text{ cm}$$

2-usul

Dastlabki suv hajmi $= 38 \times 24 \times 15$

$$= 13\,680 \text{ cm}^3$$

Qolgan suvning hajmi $= 13\,680 - 5472$

$$= 8208 \text{ cm}^3$$

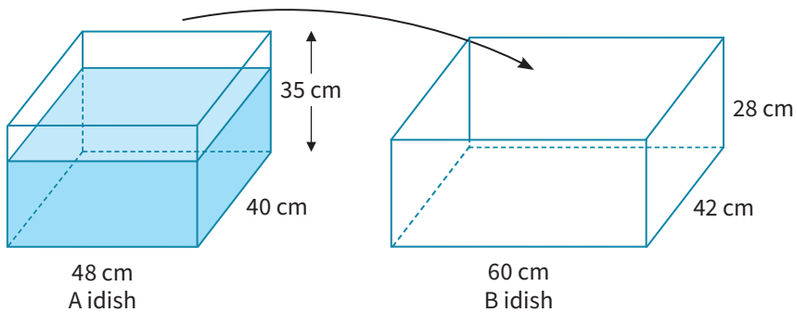
Qolgan suv sathining balandligi

$$= \frac{8208}{38 \times 24}$$

$$= 9 \text{ cm}$$

Akvariumda qolgan suv sathining balandligi 9 cm.

7 A va B idishlar kuboid shaklida. A idishning o‘lchamlari 48 cm, 40 cm va 35 cm. A idishning $\frac{3}{4}$ qismi suv bilan to‘ldirilgan. B idishning o‘lchamlari 60 cm, 42 cm va 28 cm. A idishdagi suv B idishga quyildi. B idishdagi suv sathining balandligini toping.



A idishdagi suvning hajmi $= \frac{3}{4} \times 48 \times 40 \times 35$

$$= 50\,400 \text{ cm}^3$$

B idishdagi suv sathining balandligi $= \frac{\text{hajmi}}{\text{bo‘yi} \times \text{eni}}$

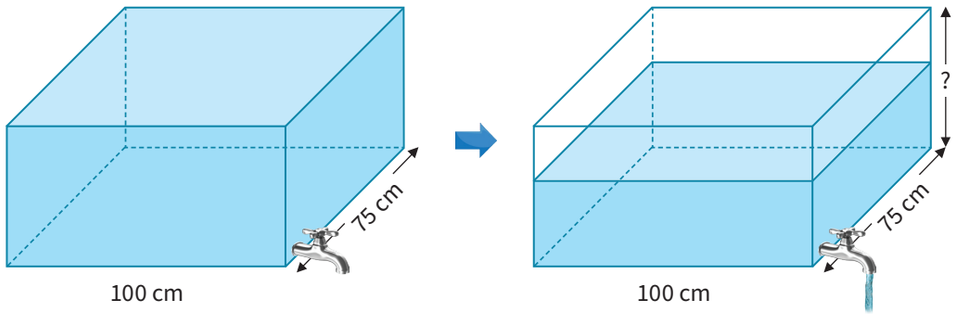
$$= \frac{50\,400}{60 \times 42}$$

$$= 20 \text{ cm}$$

B idishdagi suv sathining balandligi 20 cm.

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8 Kuboid shaklidagi idishning bo‘yi 100 cm, eni esa 75 cm. Avvaliga u suv bilan to‘la edi. Jo‘mrak ochilib, suv minutiga 16 ℓ dan oqib chiqa boshladi. Agar idishdagi suv 24 minutda to‘liq chiqib ketgan bo‘lsa, idishning balandligi qancha?



1 min → 16 ℓ

24 min → 16 × 24= 384 ℓ

384 ℓ = 384 000 cm^3

$$\text{Idishning balandligi} = \frac{\text{hajmi}}{\text{bo‘yi} \times \text{eni}}$$

$$= \frac{384\,000}{100 \times 75}$$

$$= 51{,}2 \text{ cm}$$

Idishning balandligi 51,2 cm.

Bajaring va o‘rganing

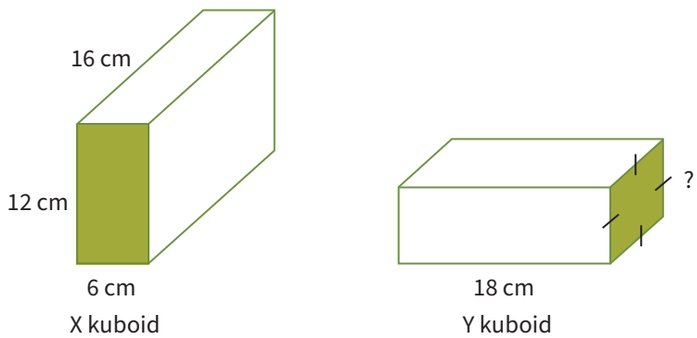


Matnli masalalarni yeching.

1 X kuboidning hajmi Y kuboidning hajmi bilan bir xil.

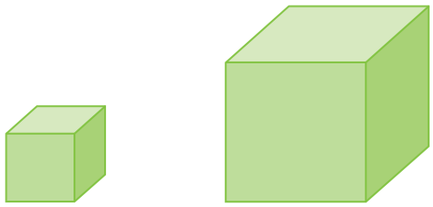
a) Y kuboidning bo‘yalgan yog‘i yuzini toping.

b) Y kuboidning bo‘yalgan kvadrat shaklidagi yog‘i bo‘yini toping.

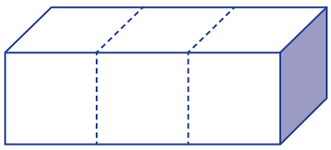


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2 A kubning hajmi 64 cm^3. B kubning qirrasi A kub qirrasidan ikki marta uzun.
B kubning hajmini toping.

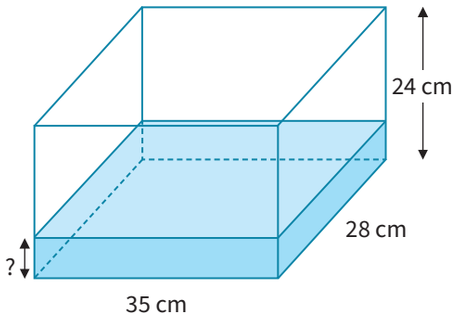


3 Kuboidning hajmi 2187 cm^3. U 3 ta bir xil kubga bo‘lindi.
Bitta kubning qirrasi uzunligini toping.

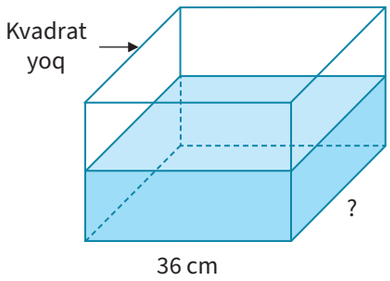


4 Kuboid shaklidagi akvariumning o‘lchamlari 35 cm, 28 cm va 24 cm.
Akvariumdagi suvning hajmi 5,88 ℓ.

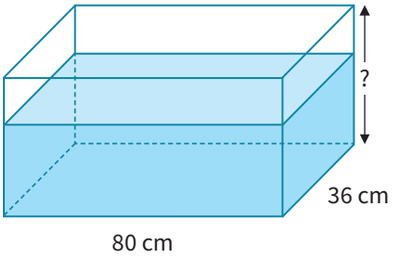
a) Suv sathining balandligini toping.
b) Akvariumni to‘ldirish uchun yana qancha suv kerak?
Javobni litrda ifodalang.



5 Kuboid shaklidagi akvariumning bo‘yi 36 cm. Uning ikki qarama-qarshi yog‘i kvadrat shaklida.
Akvariumning yarmi 10,368 ℓ suv bilan to‘ldirilgan. Akvariumning enini toping.

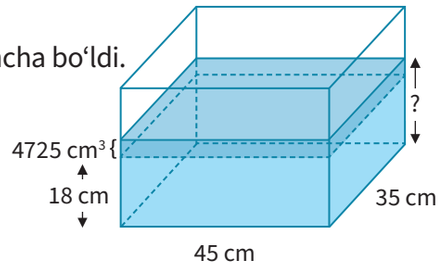


6 Kuboid shaklidagi akvariumning bo‘yi 80 cm, eni esa 36 cm.
Uning $\frac{2}{3}$ qismi 80,64 ℓ suv bilan to‘ldirilgan.
Akvariumning balandligini toping.

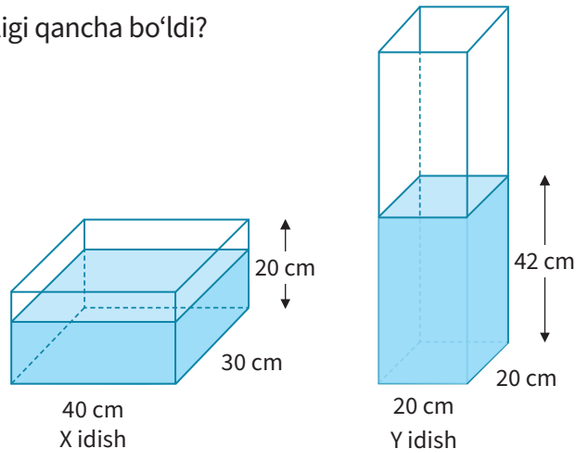


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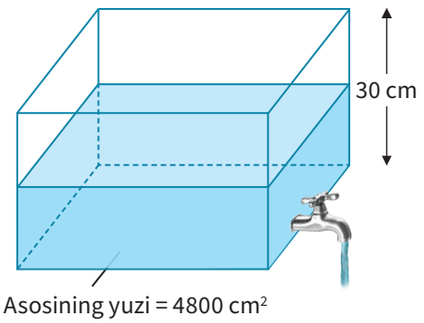
7 Kuboid shaklidagi idish asosining o‘lchamlari 45 cm va 35 cm. Dastlab idishdagi suv sathining balandligi 18 cm edi. Idishga 4725 cm^3 suv quyilganidan keyingi suv sathining balandligi qancha bo‘ldi.



8 Kuboid shaklidagi X idishning $\frac{5}{8}$ qismi suv bilan to‘ldirilgan. Asosi kvadratdan iborat bo‘lgan kuboid shaklidagi Y idishga solingan suv sathining balandligi 42 cm. X idishdagi suv Y idishga quyilganidan keyin Y idishdagi suv sathining balandligi qancha bo‘ldi?



9 Asosining yuzi 4800 cm^2 va balandligi 30 cm bo‘lgan kuboid shaklidagi idish yarmigacha suv bilan to‘ldirilgan. Jo‘mrak ochilib, har minutda 18 litrdan suv oqa boshladi. Idishdagi suv qancha vaqtda oqib ketadi?



O‘zingizni tekshiring



Mashq daftariga o‘ting 39–52

a) Matnli masalalarda kuboidning hajmi, asosining yuzi yoki ikki tomoni berilgan bo‘lsa, balandligini topishni bilaman.

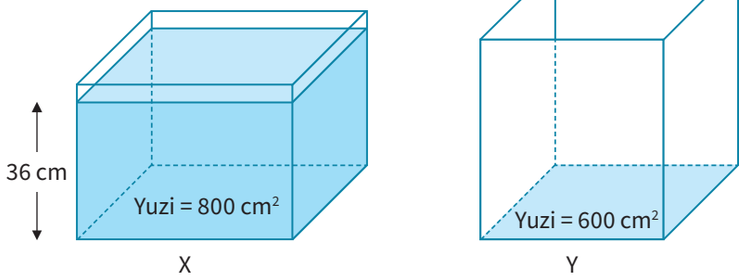
b) Matnli masalalarda kubning hajmi berilgan bo‘lsa, yog‘ining yuzini yoki qirrasini topishni bilaman.

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O‘ylab ko‘ring



Rasmda kuboid shaklidagi X va Y idishlar ko‘rsatilgan. X idish asosining yuzi 800 cm^2. Y idish asosining yuzi esa 600 cm^2. X idishning balandligi Y idish balandligining $\frac{5}{6}$ qismiga teng. X idishdagi suvning sathi 36 cm. X idishdagi suv bilan Y idishni to‘ldirish mumkin. X idishni to‘ldirish uchun yana qancha suv kerak bo‘ladi?

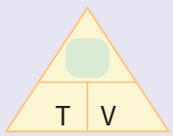
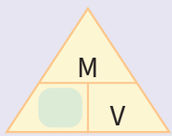
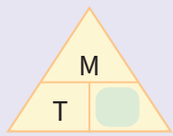


Mashq daftariga o‘ting **53–56**

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I TAKRORLASH Tezlik va hajm

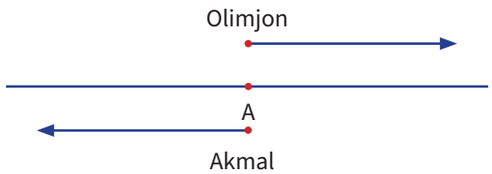
1 Tezlik, masofa yoki vaqtni toping.

a)	b)	c)
		
Tezlik = 70 km/h	**Masofa = 30 m**	**Tezlik = 25 km/h**
Vaqt = 2 h	**Vaqt = 6 s**	**Masofa = 90 km**
Masofa = _____	**Tezlik =** _____	**Vaqt =** _____

2 Temur aka $\frac{3}{4}$ soatda 9 km yugurdi. Uning tezligini toping.

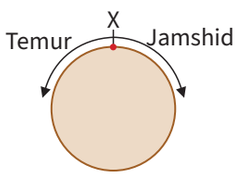
3 Murodning uyi do‘kondan 720 m uzoqlikda joylashgan. U uyidan do‘konga 8 minutda yetib bordi. Do‘kondan uyiga esa 15 minutda yetib keldi. Uning o‘rtacha tezligi qancha?

4 Akmal bilan Olimjon A qishloqdan chiqib, to‘g‘ri chiziqli yo‘l bo‘ylab qarama-qarshi tomonga yura boshladi. Agar 54 minutdan so‘ng ular orasidagi masofa 9 km bo‘lgan va Akmal 6 km/h tezlikda yurgan bo‘lsa, Olimjonning tezligini toping.



5 Kamola va Hilola velosipedda A qishloqdan 5,6 km uzoqlikda joylashgan B qishloqqa qarab o‘zgarmas tezlik bilan harakatlandi. Kamolaning tezligi 400 m/min bo‘lib, u B nuqtaga yetganida Hilola undan 350 m orqada ekani ma’lum bo‘ldi. Hilolaning tezligini toping.

6 Temur va Jamshid aylana shaklidagi 6 kilometrlik yo‘l bo‘ylab uning X nuqtasidan qarama-qarshi yo‘nalishda yugurishni boshladi. Ikkalasi ham o‘zgarmas tezlikda yugurgani ma’lum. Temur 4 km yo‘l bosganda Jamshid uning yonidan o‘tib ketdi. Temur 48 minutda bu aylanma yo‘lni bir marta to‘liq aylanib chiqqan bo‘lsa, Jamshid har minutda qancha yo‘l bosib o‘tgan?

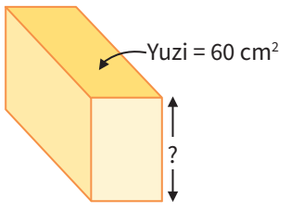


7 Kubning hajmi 4096 cm^3 bo‘lsa, bitta yog‘ining yuzini toping.

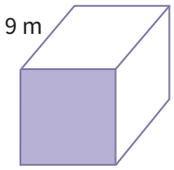


81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 49 12/11/24 13:14

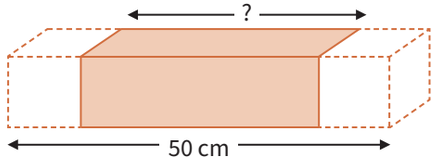
8 a) Agar kuboidning hajmi 504 cm^3 bo‘lsa, uning balandligini toping.



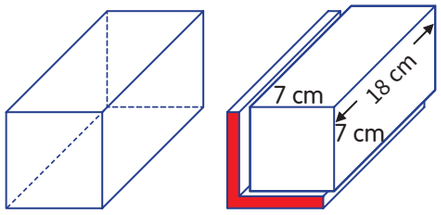
b) Agar kuboidning hajmi 441 m^3 bo‘lsa, bo‘yalgan yog‘i yuzini toping.



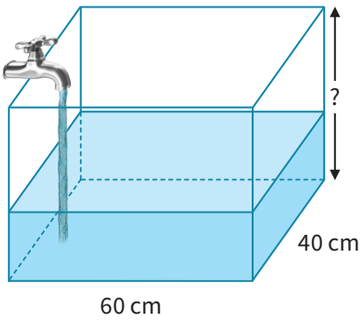
9 Kuboid shaklidagi g‘ishtning bo‘yi 50 cm edi. G‘ishtning ikki chetidan har biri 343 cm^3 hajmli ikkita kub kesib olindi. Qolgan g‘isht bo‘lagining bo‘yini toping.



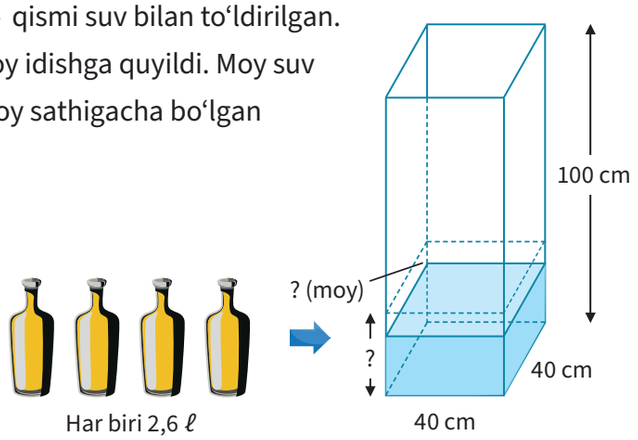
10 Hajmi 1458 cm^3 bo‘lgan kuboid shaklidagi yog‘och bo‘lagining ikkita qarama-qarshi yog‘i kvadratlardan iborat. Undan o‘lchamlari 7 cm, 7 cm va 18 cm bo‘lgan bo‘lak rasmda ko‘rsatilganidek kesib olindi. Rasmda bo‘yab ko‘rsatilgan sohaning yuzini toping.



11 Bo‘yi 60 cm, eni esa 40 cm bo‘lgan bo‘sh idishga jo‘mrakdan minutiga 12 litrdan suv oqib tushmoqda. Idish 9 minutda suv bilan to‘lsa, uning balandligini toping.



12 Kuboid shaklidagi idishning balandligi 100 cm, uning asosi esa tomonlari 40 cm bo‘lgan kvadratdan iborat. Idishning $\frac{1}{5}$ qismi suv bilan to‘ldirilgan. Har biri 2,6 litrdan bo‘lgan 4 ta shishadagi moy idishga quyildi. Moy suv ustiga chiqib qoldi. Idish asosidan boshlab moy sathigacha bo‘lgan balandlikni toping.



Mashq daftariga o‘ting **57–62**

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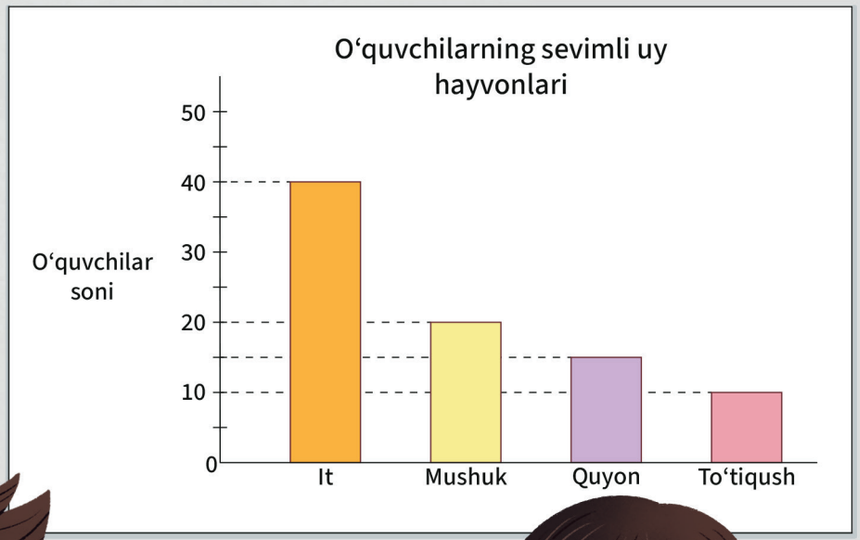
9 Doiraviy diagrammalar

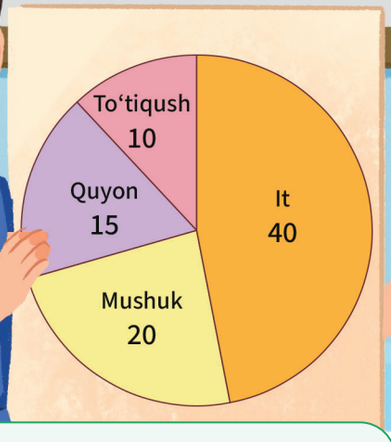
Muhokama qiling



Ma’lumotlarni taqdim etishning turli usullari mavjud.

Sevimli uy hayvonlari	O‘quvchilar soni
It	40
Mushuk	20
Quyon	15
To‘tiqush	10





Doiraviy diagramma nima?

Ma’lumotlarni taqdim etish uchun doiraviy diagrammadan foydalanishimiz mumkin.

Eslang



Jadvallar, ustunli va chiziqli diagrammalar

1 Jadvalda Mahmud akaning turli poyabzallarni sotishdan olgan 1 oylik daromadi ko‘rsatilgan.

Poyabzal turlari	Daromad miqdori
 Shippaklar	710 000 so‘m
 Krossovkalar	1 420 000 so‘m
 Futbol butsalari	500 000 so‘m
 Tuflilar	3 870 000 so‘m

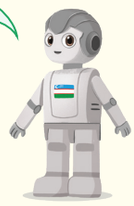
a) Mahmud aka eng katta daromadni tufli sotishdan olgan.

b) U futbol butsalari sotishdan 500 000 so‘m daromad olgan.

c) Krossovkalar sotishdan olingan daromad shippaklar sotishdan olingan daromaddan ikki baravar ko‘p.

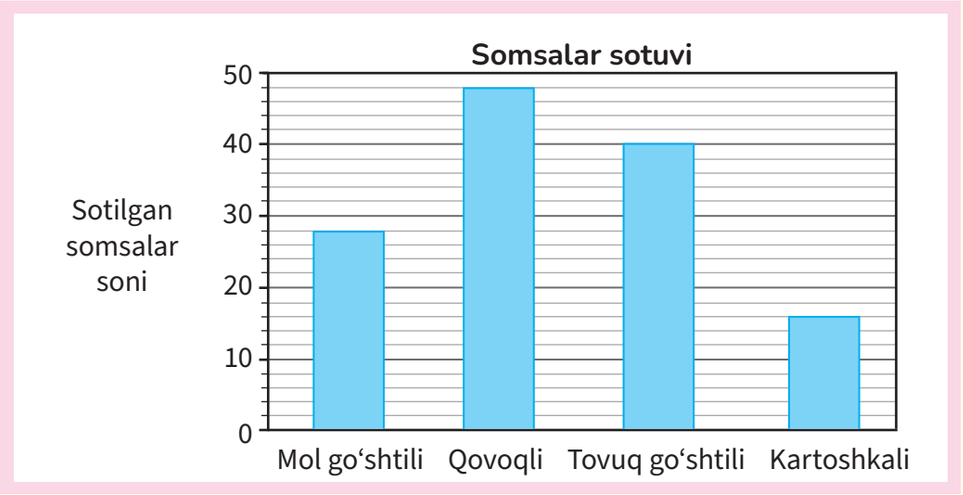
d) Mahmud akaning jami daromadi 6 500 000 so‘m.

Mahmud aka tufli sotishdan futbol butsalari sotishga qaraganda qancha ko‘p daromad olgan?



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2 Quyidagi ustunli diagrammada Ozoda xola sotgan somsalarning soni va turlari berilgan.

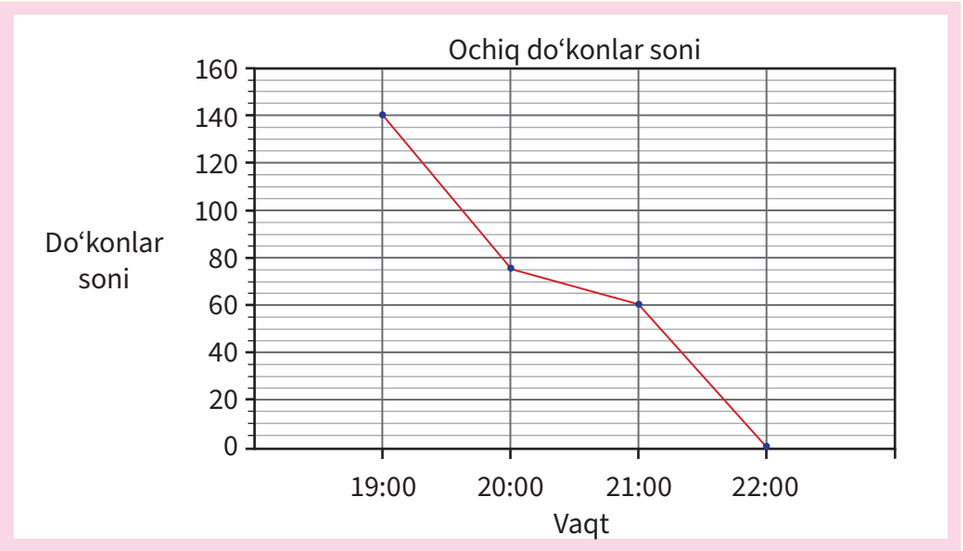


a) Ozoda xola jami qancha somsa sotgan? **132**

b) Sotilgan qaysi turdagi somsalar soni sotilgan qovoqli somsalar sonining $\frac{1}{3}$ qismiga teng? **Kartoshkali**

c) Agar qovoqli somsaning har biri 6000 so‘mdan sotilgan bo‘lsa, jami qovoqli somsalarning puli qancha? **288 000 so‘m**

3 Quyidagi chiziqli grafikda juma kuni soat 19:00 dan 22:00 gacha ochiq bo‘lgan do‘konlar soni ko‘rsatilgan.



a) Soat 21:00 da nechta do‘kon ochiq bo‘lgan? **60**

b) Ochiq bo‘lgan do‘konlar soni soat 19:00 va 21:00 o‘rtasida qanchaga kamaygan? **80**

Mashq daftariga o‘ting 63–66

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Doiraviy diagrammada ma’lumotlarni taqdim etish

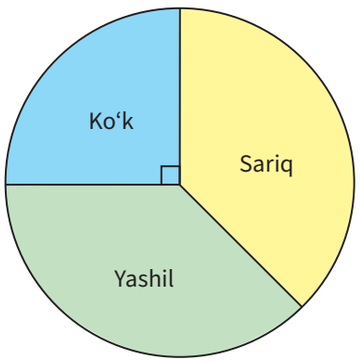
Qarang va o‘rganing



1 Jadvalda turli rangdagi maktab futbolkalarini sotib olgan o‘quvchilar soni ko‘rsatilgan.

Futbolkalar rangi	Sariq	Yashil	Ko‘k
O‘quvchilar soni	15	15	10

Yuqoridagi ma’lumotlarni doiraviy diagrammada ifodalashimiz mumkin.

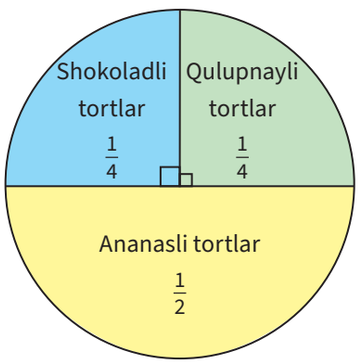


Qaysi ikki rangning doiraviy diagrammadagi ulushi bir xil? Siz buni qayerdan bildingiz?



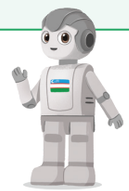
2 Shirinlik do‘konida tortlarning $\frac{1}{4}$ qismi qulupnayli, $\frac{1}{4}$ qismi shokoladli, $\frac{1}{2}$ qismi esa ananasli edi.

Yuqoridagi ma’lumotlarni ulushlar yordamida doiraviy diagrammada ko‘rsatishimiz mumkin.



Doiraviy diagrammada doira bir butunni ifodalaydi. Barcha ulushlarning yig‘indisi esa 1 ga teng.

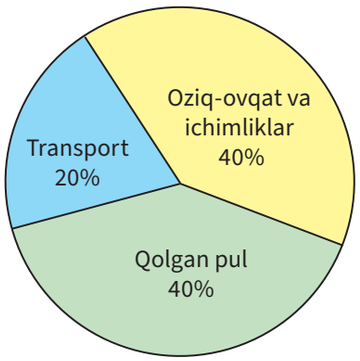
$$\frac{1}{4}+\frac{1}{4}+\frac{1}{2}=1$$



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3 Kamola pulining 40 foizini oziq-ovqat va ichimliklarga, 20 foizini esa transportga sarfladi. Qolgan pulini ishlatmadi.

Yuqoridagi ma’lumotlarni doiraviy diagrammada foizdan foydalanib ko‘rsatishimiz mumkin.



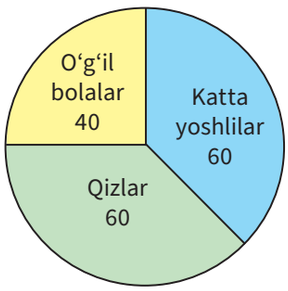
100% − 40% − 20% = 40%



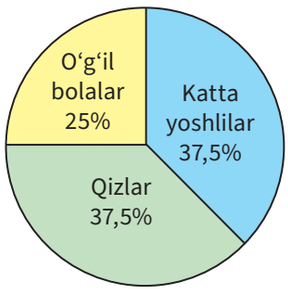
4 Quyidagi jadvalda konsert zalidagi katta yoshlilar, o‘g‘il bolalar va qizlar soni ko‘rsatilgan. Shuningdek, tomoshabinlarning qancha qismi katta yoshlilar, o‘g‘il bolalar va qizlar ekani haqidagi ma’lumotlar kasrlar va foizlarda ham ifodalangan.

	Katta yoshlilar	O‘g‘il bolalar	Qizlar	Jami
Soni	60	40	60	160
Kasr ko‘rinishida	$\frac{60}{160}=\frac{3}{8}$	$\frac{40}{160}=\frac{1}{4}$	$\frac{60}{160}=\frac{3}{8}$	1
Foiz ko‘rinishida	$\frac{60}{160}\times 100\% = 37{,}5\%$	$\frac{40}{160}\times 100\% = 25\%$	$\frac{60}{160}\times 100\% = 37{,}5\%$	100%

Xuddi shu ma’lumotlarni doiraviy diagramma orqali sonlar, kasrlar yoki foizlarda ifodalash mumkin.









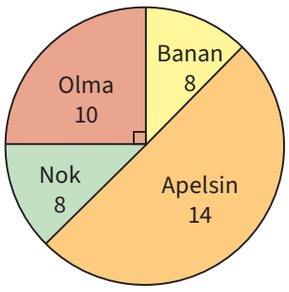
81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 55 12/11/24 13:14

Bajaring va o‘rganing

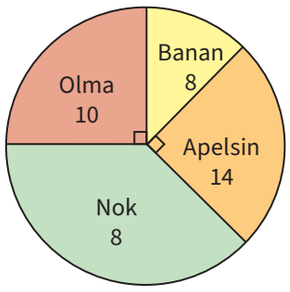
1 Quyidagi jadvalda o‘quvchilarning sevimli meva turlari ko‘rsatilgan. Sinfda 40 nafar o‘quvchi bor.

Meva	Olma	Banan	Apelsin	Nok
O‘quvchilar soni	10	8	14	8

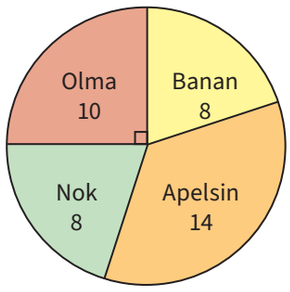
Quyidagi doiraviy diagrammalarning qaysi biri ma’lumotlarni to‘g‘ri ifodalagan? Javobingizni tushuntiring.



A



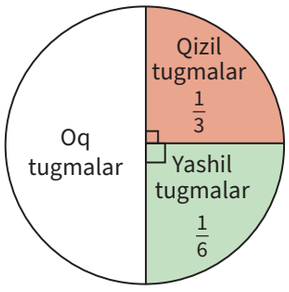
B



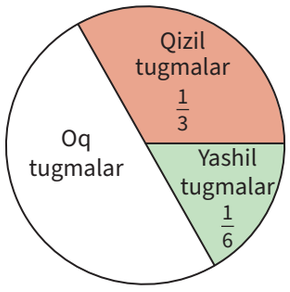
C

2 Lolada 3 xil rangli tugma bor. Tugmalarning $\frac{1}{3}$ qismi qizil, $\frac{1}{6}$ qismi yashil, qolgan qismi esa oq.

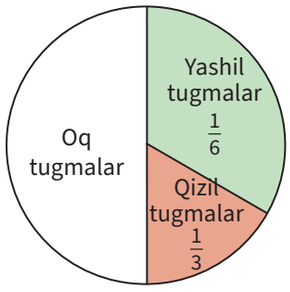
Quyidagi doiraviy diagrammalarning qaysi biri ma’lumotlarni to‘g‘ri ifodalagan? Javobingizni asoslang.



X



Y



Z

Mashq daftariga o‘ting 67–70

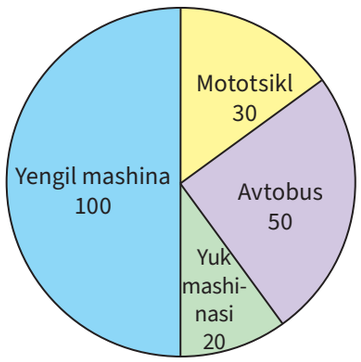
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Doiraviy diagrammalardagi ma’lumotlarni o‘qish va talqin qilish

Qarang va o‘rganing



1 Avtoturargohda 100 ta yengil mashina, 30 ta mototsikl, 50 ta avtobus va 20 ta yuk mashinasi bor. Ma’lumotlar doiraviy diagrammada ifodalangan.



a) Avtoturargohdagi yengil mashinalar soni avtobuslar sonidan qanchaga ko‘p?

100 – 50 = 50

Avtoturargohdagi yengil mashinalar soni avtobuslar sonidan 50 taga ko‘p.

b) Jami qancha transport vositasi bor?

100 + 30 + 50 + 20 = 200

Jami 200 ta transport vositasi bor.

c) Transport vositalarining qancha qismi yengil mashinalardan iborat?

$\frac{100}{200} = \frac{1}{2}$

Transport vositalarining $\frac{1}{2}$ qismi yengil mashinalardan iborat.

d) Transport vositalarining qancha qismini yuk mashinalari tashkil qiladi?

$\frac{20}{200} = \frac{1}{10}$

Transport vositalarining $\frac{1}{10}$ qismini yuk mashinalari tashkil qiladi.

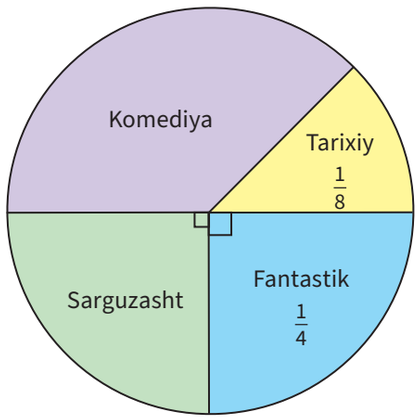
e) Transport vositalarining necha foizini mototsikllar tashkil qiladi?

$\frac{30}{200} \times 100\% = 15\%$

Transport vositalarining 15 foizini mototsikllar tashkil qiladi.

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2 Quyidagi doiraviy diagrammada 80 nafar o‘quvchining sevimli film turlari ko‘rsatilgan.



a) Qaysi turdagi filmlar eng ommabop?

Komediya turidagi filmlar eng ommabop.

b) Necha nafar o‘quvchi fantastik filmlarni tomosha qilishni yaxshi ko‘radi?

$\frac{1}{4} \times 80 = 20$

20 nafar o‘quvchi fantastik filmlarni tomosha qilishni yaxshi ko‘radi.

c) O‘quvchilarning qancha qismi komedik filmlarni tomosha qilishni yaxshi ko‘radi?

$1 - \frac{1}{4} - \frac{1}{4} - \frac{1}{8} = 1 - \frac{2}{8} - \frac{2}{8} - \frac{1}{8}$

$= \frac{3}{8}$

O‘quvchilarning $\frac{3}{8}$ qismi komedik filmlarni tomosha qilishni yaxshi ko‘radi.

d) Qancha o‘quvchi sarguzasht filmlardan ko‘ra komedik filmlarni afzal ko‘radi?

$\frac{3}{8} - \frac{2}{8} = \frac{1}{8}$

$\frac{1}{8} \times 80 = 10$

10 nafar o‘quvchi sarguzasht filmlardan ko‘ra komedik filmlarni afzal ko‘radi.

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3 Doiraviy diagrammada Saida 240 000 so‘m pulni qanday sarflagani ko‘rsatilgan.



a) Saida pulining qancha qismini ertak kitoblarga sarflagan?

Saida pulining $\frac{1}{2}$ qismini ertak kitoblarga sarflagan.

b) U pulining qancha qismini o‘quv qurollariga sarflagan?

$\frac{1}{2} - \frac{1}{6} = \frac{1}{3}$

U pulining $\frac{1}{3}$ qismini o‘quv qurollariga sarflagan.

c) Saida yegulikka qancha pul sarflagan?

$\frac{1}{6} \times 240\,000$ so‘m $= 40\,000$ so‘m

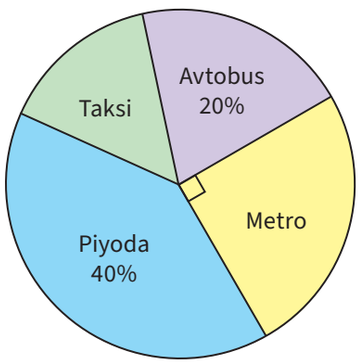
U yegulikka 40 000 so‘m sarflagan.

d) U ertak kitob va o‘quv qurollariga jami qancha pul sarflagan?

240 000 so‘m − 40 000 so‘m = 200 000 so‘m

U ertak kitob va o‘quv qurollariga jami 200 000 so‘m sarflagan.

4 Doiraviy diagrammada 400 nafar o‘quvchining maktabga qanday borishi ko‘rsatilgan.



a) O‘quvchilarning necha foizi maktabga metroda boradi?

$\frac{1}{4} \times 100\% = 25\%$

25% o‘quvchilar maktabga metroda boradi.

b) O‘quvchilarning necha foizi maktabga taksida boradi?

100% – 40% – 25% – 20% = 15%

O‘quvchilarning 15% i maktabga taksida boradi.

c) Necha nafar o‘quvchi maktabga piyoda boradi?

$\frac{40}{100} \times 400 = 160$

160 nafar o‘quvchi maktabga piyoda boradi.

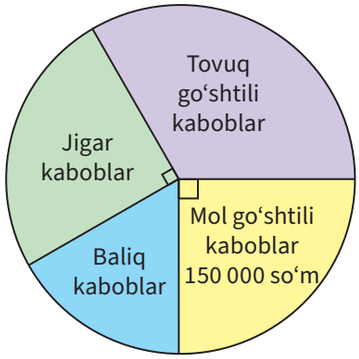
d) Maktabga piyoda boradigan o‘quvchilar soni avtobusda boradigan o‘quvchilar soniga qaraganda necha marta ko‘p?

40% ÷ 20% = 2

Maktabga piyoda boradigan o‘quvchilar soni avtobusda boradiganlar sonidan 2 marta ko‘p.

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5 Doiraviy diagrammada turli xil kaboblar sotuvidan olingan bir kunlik daromad miqdori ko‘rsatilgan.



a) Jigar kaboblar sotuvidan olingan daromad qancha?
Jigar kaboblar sotuvidan olingan daromad 150 000 so‘m.

b) Kaboblar sotuvidan olingan jami daromad qancha?

$\frac{1}{4}$ → 150 000 so‘m

$\frac{4}{4}$ → 150 000 so‘m × 4 = 600 000 so‘m

Kaboblar sotuvidan olingan jami daromad 600 000 so‘m.

c) Tovuq go‘shtili va baliq kaboblar sotuvidan olingan jami daromad qancha?

$1 - \frac{1}{4} - \frac{1}{4} = \frac{1}{2}$

$\frac{1}{2}$ → 150 000 so‘m × 2 = 300 000 so‘m

Tovuq go‘shtili va baliq kaboblar sotuvidan olingan jami daromad 300 000 so‘m.

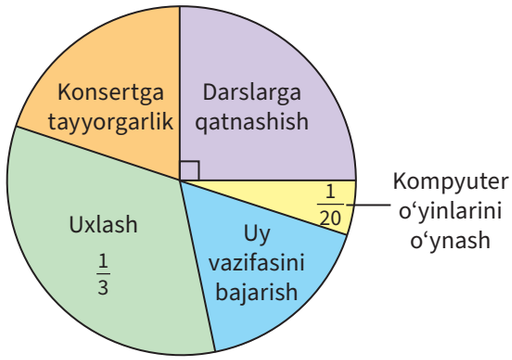
d) Tovuq go‘shtili kaboblar sotuvidan olingan daromad baliq kaboblar sotuvidan olingan daromaddan 2 baravar ko‘p.
Baliq kaboblar sotuvidan qancha daromad olingan?

300 000 so‘m ÷ 3 = 100 000 so‘m

Baliq kaboblar sotuvidan olingan daromad 100 000 so‘m.

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6 Doiraviy diagrammada Mahmud dushanba kuni 24 soatni qanday sarflagani ko‘rsatilgan.



a) Mahmud necha soat uxlagan?

$\frac{1}{3} \times 24 \text{ h} = 8 \text{ h}$

Mahmud 8 soat uxlagan.

b) Mahmud yarim sutkani kompyuter o‘yinlarini o‘ynashga, darslarga qatnashishga va konsertga tayyorgarlik uchun sarfladi. U sutkaning qancha qismini konsertga tayyorgarlik uchun sarflagan?

$$\frac{1}{2} - \frac{1}{4} - \frac{1}{20} = \frac{10}{20} - \frac{5}{20} - \frac{1}{20}$$
$$= \frac{4}{20}$$
$$= \frac{1}{5}$$

U sutkaning $\frac{1}{5}$ qismini konsertga tayyorgarlik uchun sarflagan.

c) Mahmud uy vazifasini bajarishga sarflagan vaqtning sutkadagi jami vaqtga nisbati qanday?

$$\frac{1}{2} - \frac{1}{3} = \frac{3}{6} - \frac{2}{6}$$
$$= \frac{1}{6}$$

U uy vazifasini bajarishga sarflagan vaqtning sutkadagi jami vaqtga nisbati 1 : 6 ga teng.

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Qo‘lda bajariladigan mashq



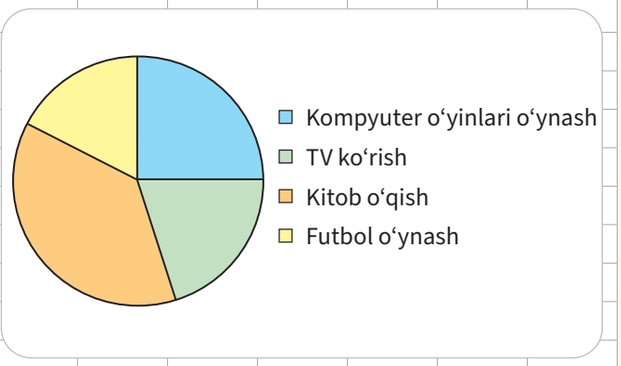
Guruh bo‘lib ishlang.
Ma’lumot yig‘ish uchun sinfda so‘rovnoma o‘tkazing.
So‘ng kompyuterdagi **elektron jadval** yoki **doiraviy diagramma** ilovasidan foydalanib doiraviy diagramma tuzing va uni chop eting. Chop etilgan ma’lumotlarni sinfdoshlaringiz bilan o‘qing va sharhlang.
Quyidagi mavzulardan biri bo‘yicha so‘rovnoma o‘tkazishingiz mumkin.

a) Sevimli mashg‘ulot, meva yoki rang.
b) Bir sutka davomida turli xil mashg‘ulotlarga sarflangan vaqt.

Namuna

Sinfda sevimli mashg‘ulot turlari haqida so‘rovnoma o‘tkazing.

A	B	C	D	E	F	G	H	I
Sevimli mashg‘ulot turlari	Soni							
Kompyuter o‘yinlari o‘ynash	10							
Televizor ko‘rish	8							
Kitob o‘qish	15							
Futbol o‘ynash	7							



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Qiziqarli matematika

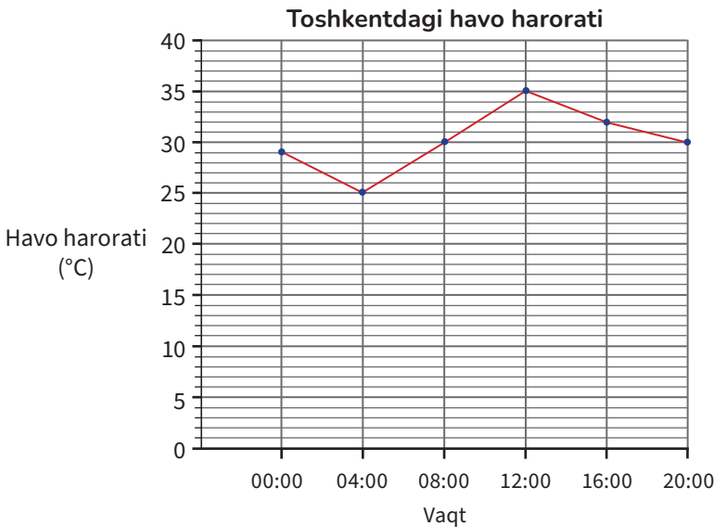
O‘rganing va bo‘lishing

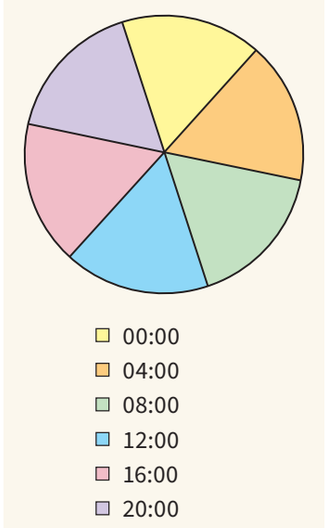


Guruh bo‘lib ishlang.
Quyidagi jadvalda Toshkent shahrida soat 00:00 dan 20:00 gacha qayd etilgan havo harorati keltirilgan.

Soat	Havo harorati (°C)
00:00	29
4:00	25
8:00	30
12:00	35
16:00	32
20:00	30

a) Jadvaldagi ma’lumotlarni tasvirlash uchun chiziqli va doiraviy diagrammalardan foydalanamiz.
Ma’lumotlarni tasvirlash uchun qaysi diagrammadan foydalanasiz? Nima uchun?
Sabablarini sinf bilan bo‘lishing.

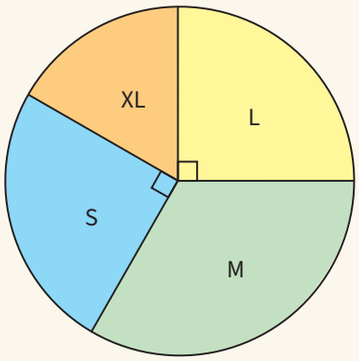




b) Qanday ma’lumotlar doiraviy diagrammalarda tasvirlanishini muhokama qiling.
Ularni boshqa turdagi diagrammalarda ham ifodalash mumkinmi?

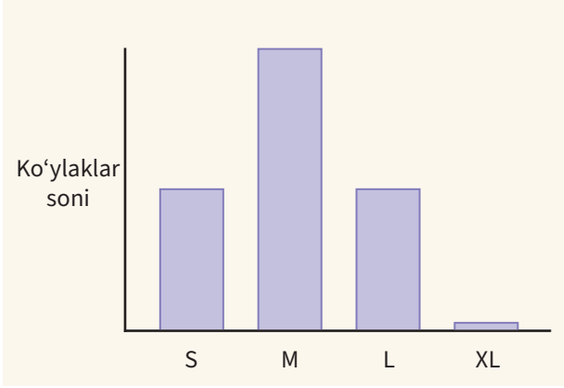
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c) Doiraviy diagrammada do‘konda sotilayotgan turli o‘lchamdagi ko‘ylaklar soni ko‘rsatilgan.

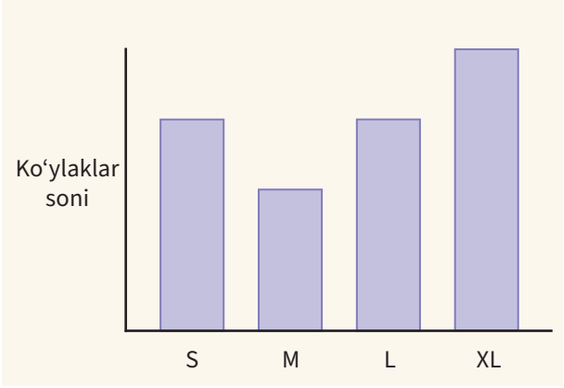


XL – eng katta
L – katta
M – o‘rtacha
S – kichik

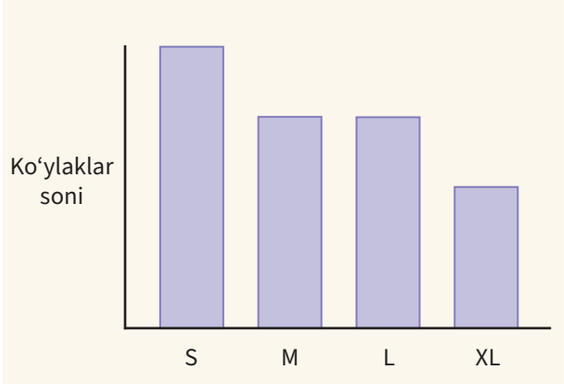
Doiraviy diagrammadagi ma’lumotlarni qaysi ustunli diagramma to‘g‘ri ifodalashini muhokama qiling. Javobingizni tushuntiring.



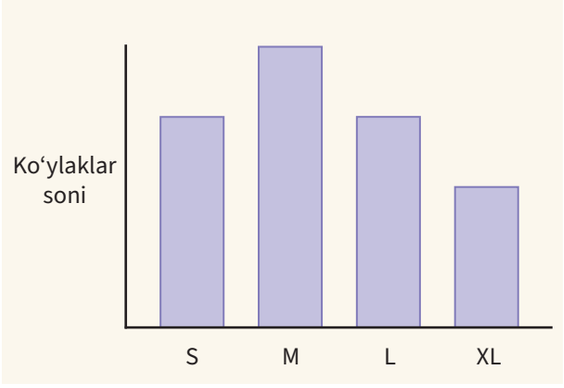
A



B



C

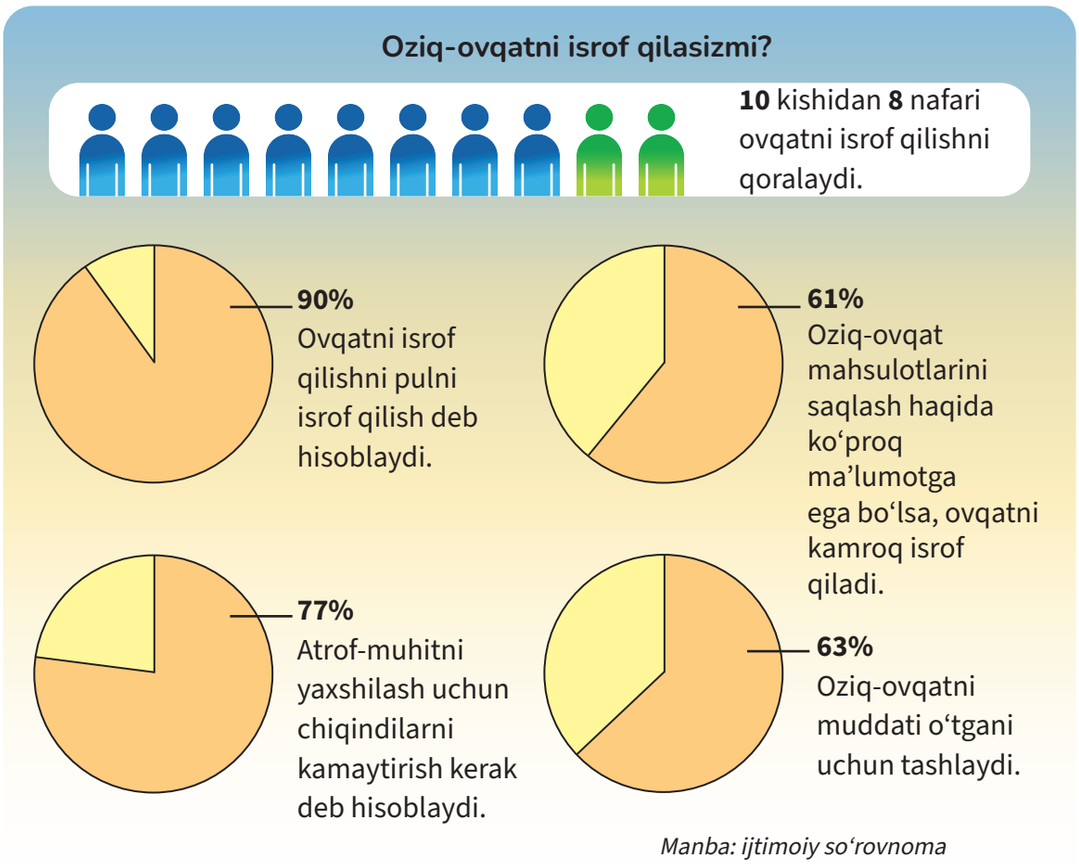


D

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Turmushda matematika

Siz odatda ovqatning hammasini yeysizmi yoki bir qismini tashlab yuborasizmi? Quyidagi doiraviy diagrammalarda 1016 kishining oziq-ovqat isrofi haqidagi fikrlari keltirilgan.



Manba: ijtimoiy so‘rovnoma

Guruh bo‘lib ishlang.
Quyidagilardan birini tanlab, ma’lumot to‘plang. So‘rovnoma natijalarini ko‘rsatish uchun doiraviy diagramma tuzing.

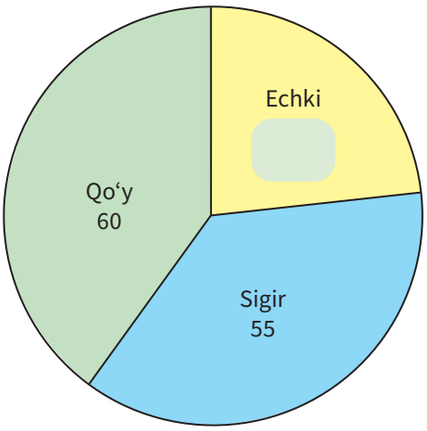
a) Oziq-ovqat isrofini qanday kamaytirish mumkin?
b) Siz nima sababdan oziq-ovqatni tashlab yuborasiz?

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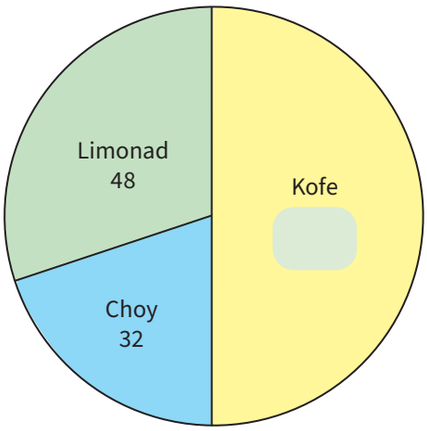
Bajaring va o‘rganing

1 Doiraviy diagrammalarda tushib qolgan sonlarni yozing.

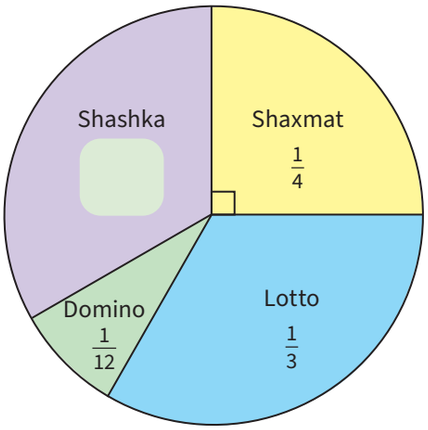
a) Doiraviy diagrammada fermadagi turli xil hayvonlar miqdori ko‘rsatilgan. Fermadagi sigir, qo‘y va echkilarning jami soni – 150 ta. Fermada qancha echki bor?



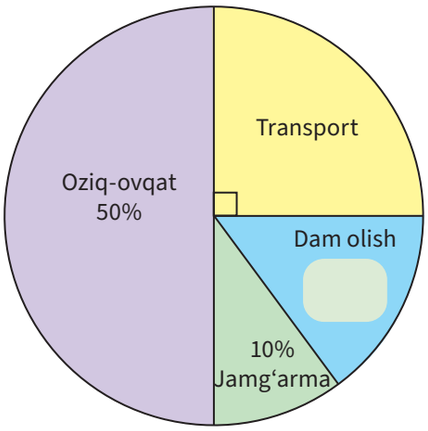
b) Doiraviy diagrammada bir guruh odamlarning sevimli ichimlik turlari ko‘rsatilgan. Kofe necha kishining sevimli ichimligi?



c) Doiraviy diagrammada bir guruh bolalarning sevimli o‘yinlari ko‘rsatilgan. Bolalarning qanday qismi shashkani yoqtiradi?

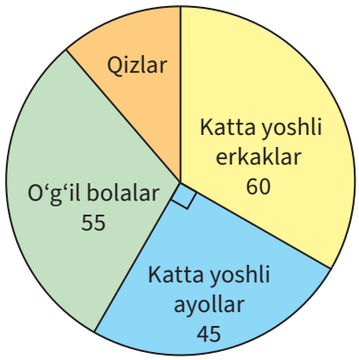


d) Doiraviy diagrammada Azamat aka maoshini qanday sarflagani ko‘rsatilgan. U maoshining necha foizini dam olishga sarflagan?



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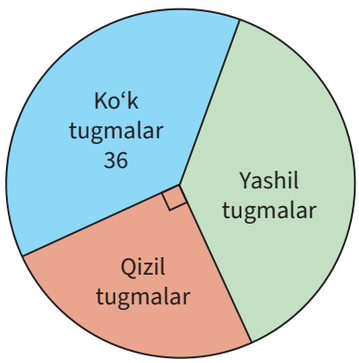
2 Doiraviy diagrammada dam olish kunlarida kinoteatrga kelgan tomoshabinlar soni ko‘rsatilgan.



a) Kinoteatrdagi jami tomoshabinlar soni qancha?

b) Kinoteatrga necha nafar qizlar borgan?

3 Doiraviy diagrammada Hiloladagi turli rangdagi tugmalar soni ko‘rsatilgan. Uning ko‘k va yashil tugmalari soni bir xil.



a) Tugmalarning qancha qismi ko‘k va yashil rangda?

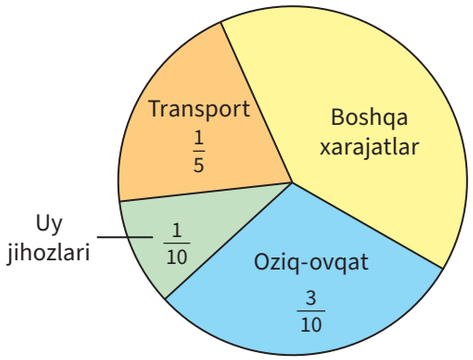
b) Tugmalarning qancha qismi ko‘k rangda?

c) Tugmalarning necha foizi yashil rangda?

d) Hilolada nechta qizil tugma bor?

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4 Doiraviy diagrammada Aziza opa iyul oyida pulini qanday sarflagani ko‘rsatilgan.



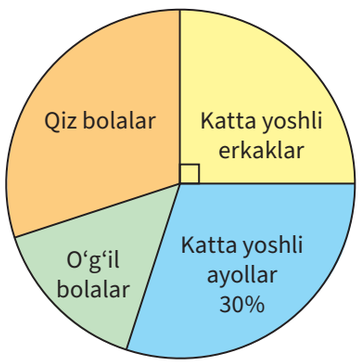
a) Aziza opa pulining qancha qismini boshqa xarajatlarga sarflagan?

b) Agar Aziza opa transportga 120 000 so‘m sarflagan bo‘lsa, pulining umumiy miqdori qancha edi?

c) Boshqa xarajatlar uchun qancha sarflagan?

d) Uy jihozlariga sarflangan pul miqdori oziq-ovqatga sarflangan pul miqdoridan 3 marta ko‘p. Bu fikr to‘g‘rimi? Tushuntiring.

5 Doiraviy diagrammada xiyobonda dam oluvchilarning turli guruhlari ko‘rsatilgan. Katta yoshli erkaklar soni 275 nafar, qizlar o‘g‘il bolalardan 2 marta ko‘p.



a) Xiyobonda dam oluvchilarning necha foizi bolalar?

b) Qizlar va o‘g‘il bolalarning jami soni qancha?

c) Jami dam oluvchilar soni necha nafar?

d) Agar xiyobonga kirish uchun bolalar chiptasi narxi 5000 so‘m bo‘lsa, bunday chiptalarni sotishdan jami qancha pul yig‘ilgan?

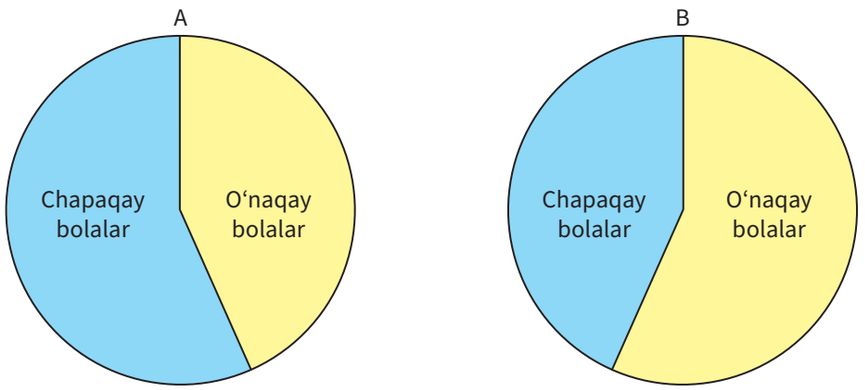
81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 68 12/11/24 13:14

6 Jadvalda chapaqay yoki o‘naqay o‘g‘il va qiz bolalar soni berilgan.

a) Tushirib qoldirilgan sonlarni yozing.

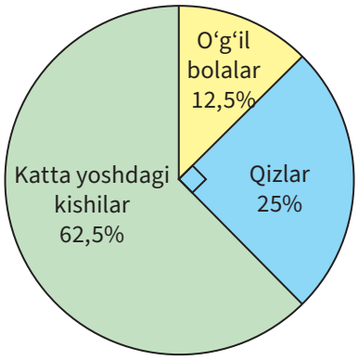
	Chapaqay	O‘naqay	Jami
O‘g‘il bolalar soni	28	_____	_____
Qiz bolalar soni	_____	30	54
Jami	_____	_____	120

b) Quyidagi qaysi doiraviy diagrammada jadvaldagi ma’lumotlar to‘g‘ri ifodalangan?

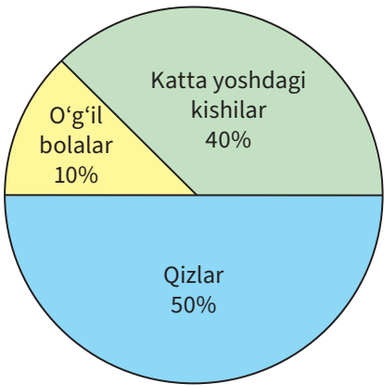


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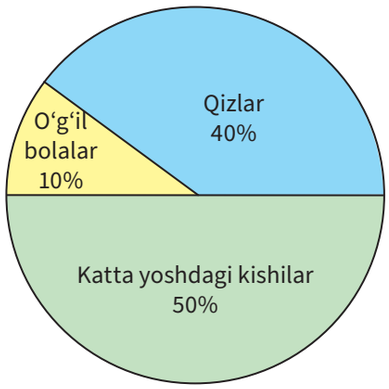
7 Bog‘da 150 nafar katta yoshdagi kishi, 30 nafar o‘g‘il bola, 60 nafar qiz bola bor edi. Yana 60 nafar qiz bola bog‘ga kirib keldi. Quyidagi doiraviy diagramma katta yoshdagi kishilar, o‘g‘il bolalar va qizlar sonini foizda ko‘rsatadi.



Quyidagi doiraviy diagrammalarning qaysi bir 60 nafar qiz bola bog‘ga kirib kelganidan keyingi foizni to‘g‘ri ko‘rsatadi? Tushuntiring.



A



B

Mashq daftariga o‘ting **71–78**

O‘zingizni tekshiring



a) Men ma’lumotlarni doiraviy diagrammada tasvirlashni bilaman.

b) Men doiraviy diagrammalardagi ma’lumotlarni o‘qish va sharhlashni bilaman.

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O‘rganing va bo‘lishing

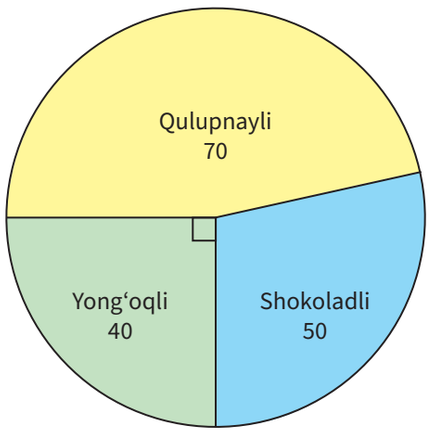


Juft bo‘lib ishlang.

1 Quyidagi doiraviy diagramma Botir aka juma kuni sotgan turli xil muzqaymoqlar sonini ko‘rsatadi. U shanba kuni jami 640 dona muzqaymoq sotmoqchi.

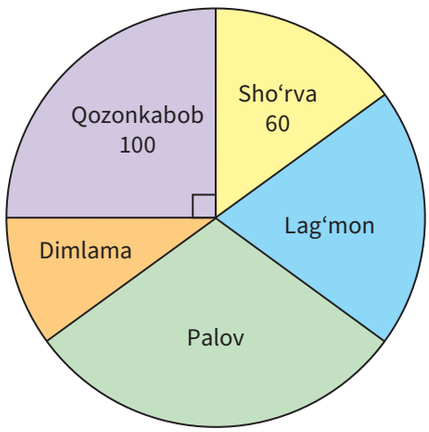
a) Doiraviy diagrammadagi qismlar o‘zgarmasdan qolishi uchun u shanba kuni har bir muzqaymoq turidan nechtadan sotishi kerak? Tushuntiring.

b) Agar u shanba kuni jami 640 dona muzqaymoq sotsa, muzqaymoq turlarining foizi oshadimi?



2 Doiraviy diagrammada 400 kishining sevimli taomlari ko‘rsatilgan. Palovni dimlamaga qaraganda 3 baravar ko‘p odam yaxshi ko‘radi. Quyidagi taomlarning har birini yoqtiradigan odamlar sonini toping.

a) Dimlama b) Palov c) Lag‘mon



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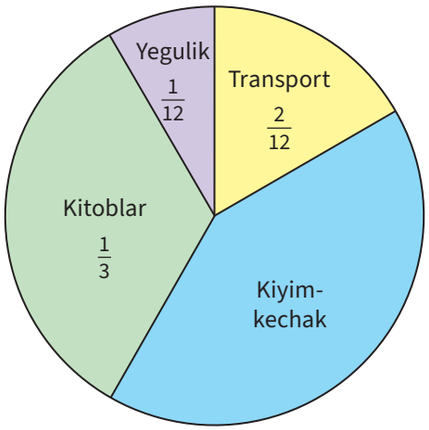
O‘ylab ko‘ring

Doiraviy diagramma Maryam pulini qanday sarflaganini ko‘rsatadi. U yegulikka 64 000 so‘m sarflagan.

a) U pulining qancha qismini kiyim-kechakka sarflagan?

b) U kiyim-kechakka qancha pul sarflagan?

c) Kitoblar va yegulikka sarflangan jami pul miqdori kiyim-kechakka sarflangan pul miqdoriga tengmi? Tushuntiring.



Mashq daftariga o‘ting 79–80

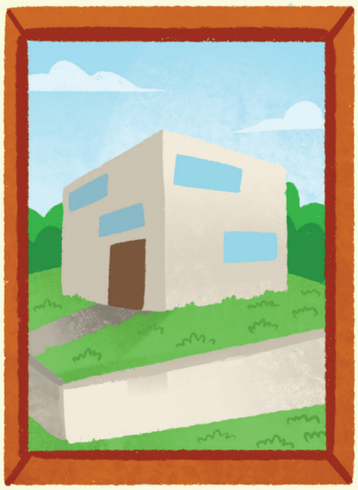
81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 72 12/11/24 13:14

10 Fazoviy jismlar va ularning yoyilmalari

Muhokama qiling



Bolalar fazoviy jismlarni yasamoqda.



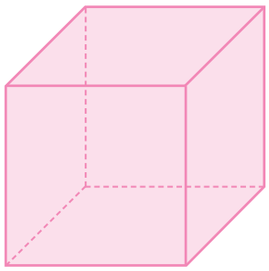




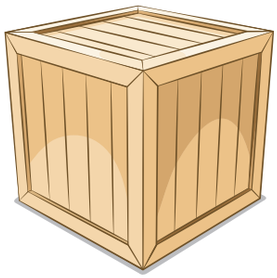
Eslang

Kub va kuboidlar

1 Kubning 6 ta kvadrat shaklidagi yog‘i bor.



Quyidagi narsalar kub shaklida.



Yog‘och quti

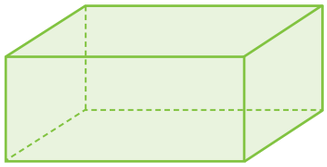


Sovg‘a qutisi



2 Kuboidning 6 ta to‘g‘ri to‘rtburchak shaklidagi yoqlari bo‘lishi mumkin.
Shuningdek, uning 4 ta to‘g‘ri to‘rtburchak va 2 ta kvadrat shaklidagi yoqlari ham bo‘lishi mumkin.





Quyidagi narsalar kuboid shaklida.



G‘isht



Tish pastasi qutisi



Mashq daftariga o‘ting 81–82

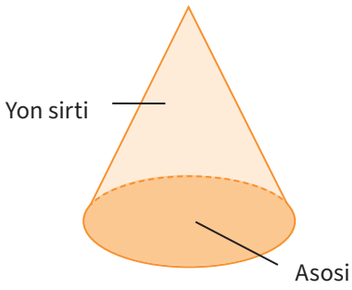
81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 74 12/11/24 13:14

Konus, silindr, prizma va piramida

Qarang va o‘rganing



1 **Konus** bitta yassi **asos** va egri **yon sirt**dan iborat.

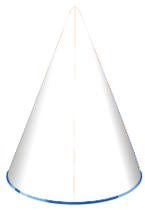




Quyidagi narsalar konus shaklida.

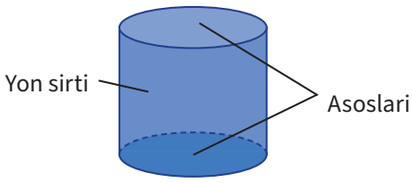


Muzqaymoq noni



Bayram qalpog‘i

2 **Silindr** ikkita yassi **asos** va egri **yon sirt**dan iborat.





Quyidagi narsalar silindr shaklida.



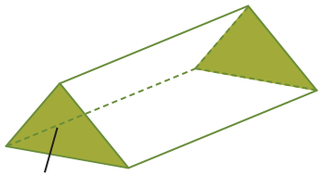
Konserva idishi



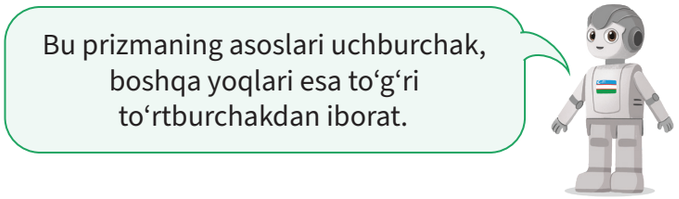
Qahva idishi

81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 75 12/11/24 13:14

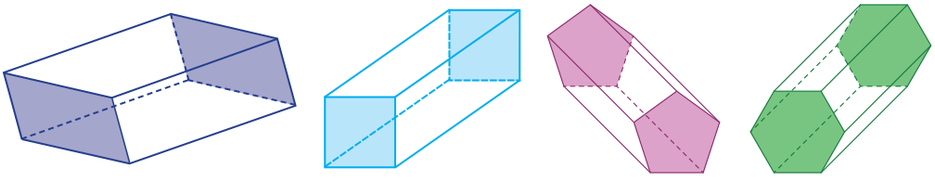
3 **Prizma**ning ikki **asosi** teng ko‘pburchaklardan iborat. Prizmaning barcha yoqlari yassi bo‘ladi.

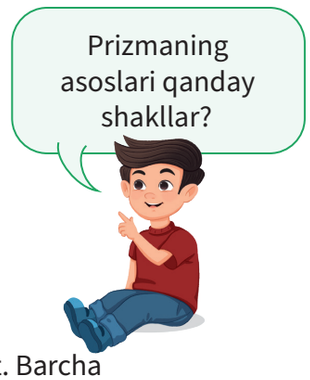


Uchburchak

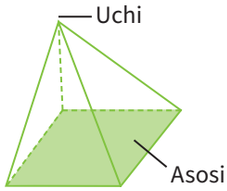
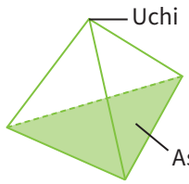
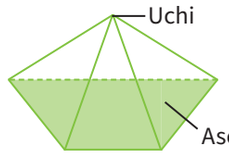


Quyidagi rasmlarda prizmalar tasvirlangan.





4 **Piramida** bitta yassi **asos** va uchburchaklardan iborat qiya **yoqlar**dan iborat. Barcha uchburchaklarning umumiy **uchi piramidaning uchi** deb ataladi.

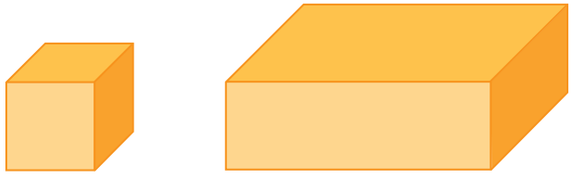
		
Asosi – kvadrat, to‘rtta yog‘i – uchburchak	Asosi – uchburchak, uchta yog‘i – uchburchak	Asosi – trapetsiya, to‘rtta yog‘i – uchburchak.

Piramidaning asosi istalgan ko‘pburchak bo‘lishi mumkin.

Juftlikda ishlang



Sherigingiz bilan muhokama qiling.
Kub va kuboid ham prizma. Nega?



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Qiziqarli matematika

O‘rganing va bo‘lishing



Guruh bo‘lib ishlang.
Prizma va piramidalarga misollar topish uchun atrofingizga nazar soling yoki internetdan foydalaning. Ushbu ikkita fazoviy jism o‘rtasida qanday o‘xshashlik va farqlar bor?

Namuna



Prizma

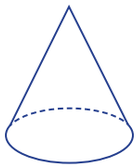
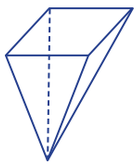
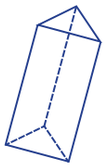
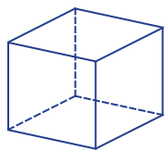
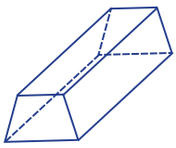
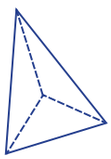
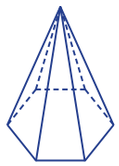


Piramida

Bajaring va o‘rganing



Quyidagi fazoviy jismlarni nomlang.

a) 	b) 	c) 
d) 	e) 	f) 
g) 	h) 	i) 

Mashq daftariga o‘ting **83–84**

O‘zingizni tekshiring



Men konus, silindr, prizma va piramidani farqlashni bilaman.

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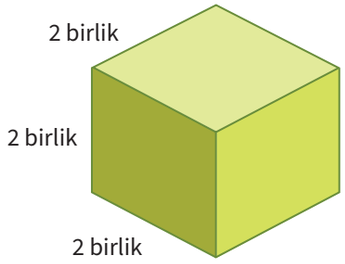
Uch o‘lchamli panjarada fazoviy jismlarni chizish

Qarang va o‘rganing

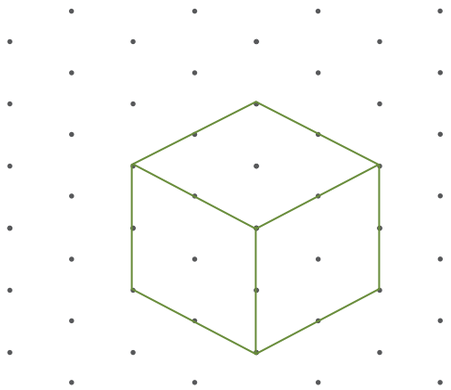


Har bir fazoviy jismni uch o‘lchamli panjarada chizing.

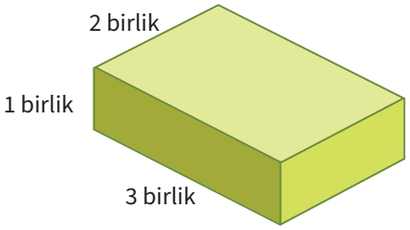
a)



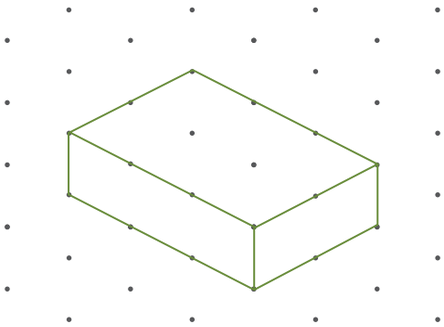
Kub



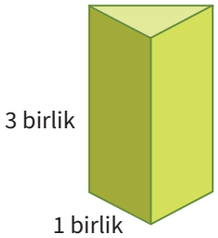
b)



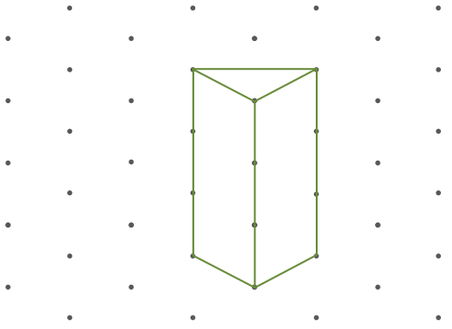
Kuboid



c)

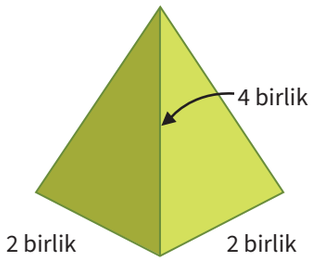


Prizma

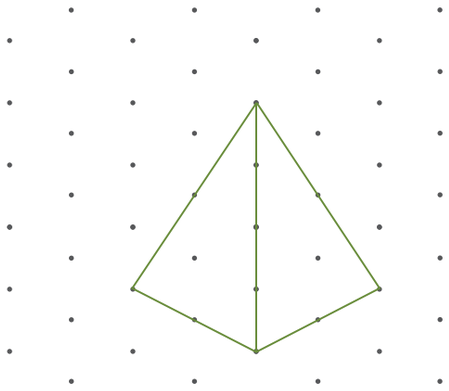


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d)



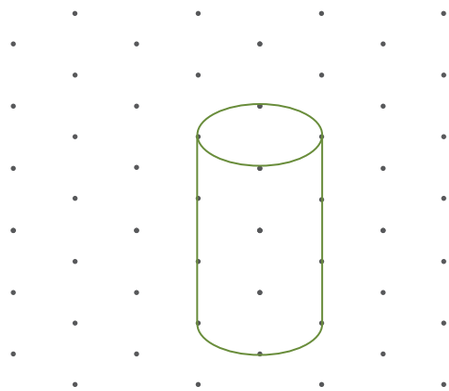
Piramida



e)



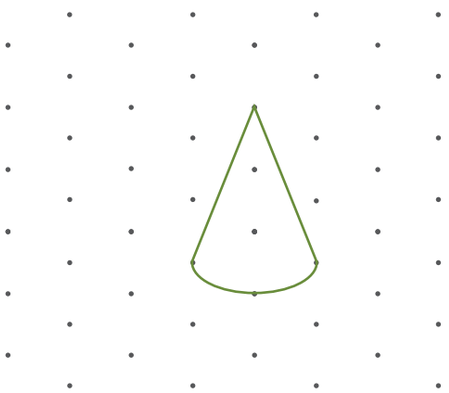
Silindr



f)



Konus



81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 79 12/11/24 13:15

Qiziqarli matematika

O‘rganing va bo‘lishing

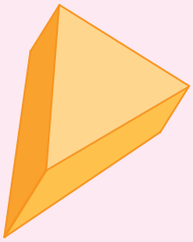


Guruh bo‘lib ishlang.
Prizma yoki piramida shaklidagi narsalar (yoki ularning fotosuratini) olib keling.
Narsalarning shaklini chizing. Chizmalarni uch o‘lchamli panjarada tasvirlashingiz mumkin.

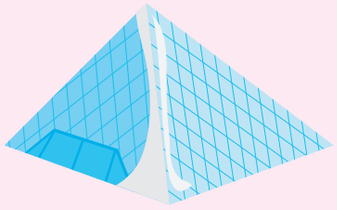
Namuna



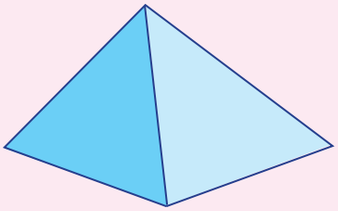
Prizma shaklidagi pishloq



Prizma chizmasi



Luvr muzeyi (Fransiya)



Piramida chizmasi

Guruhingizning chizmasini sinfga ko‘rsating. Chizilgan fazoviy jismlarning nomini so‘rang.
Chizmalar haqiqiy narsaning shakliga o‘xshaydimi?

Turmushda matematika

Hindular chodiri qaysi fazoviy jismga o‘xshaydi?

a) Hindular chodirni nega bunday shaklda qurgan deb o‘ylaysiz?
b) Ular chodirni nimalardan va qanday qurgan?

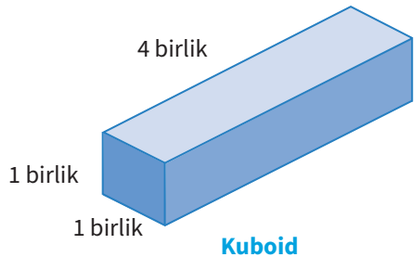


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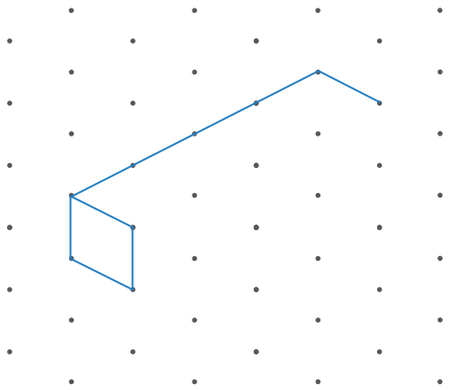
Bajaring va o‘rganing

Uch o‘lchamli panjaradagi chizmalarni yakuniga yetkazing.

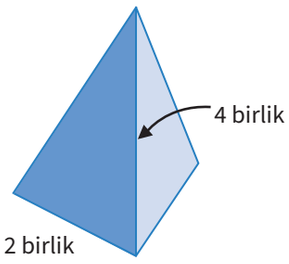
a)



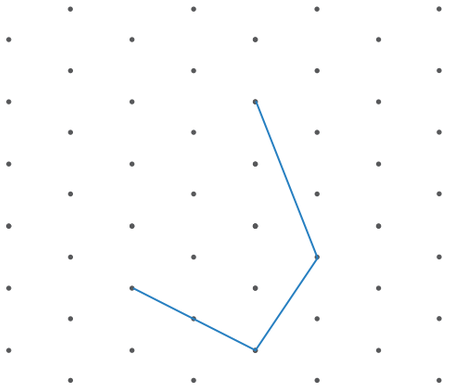
Kuboid



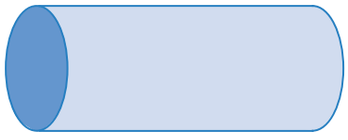
b)



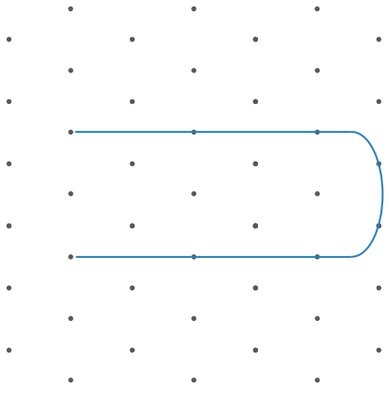
Piramida



c)



Silindr



Mashq daftariga o‘ting **85–88**

O‘zingizni tekshiring

Kub, kuboid, konus, silindr, prizma va piramidalarni uch o‘lchamli panjarada chizishni bilaman.

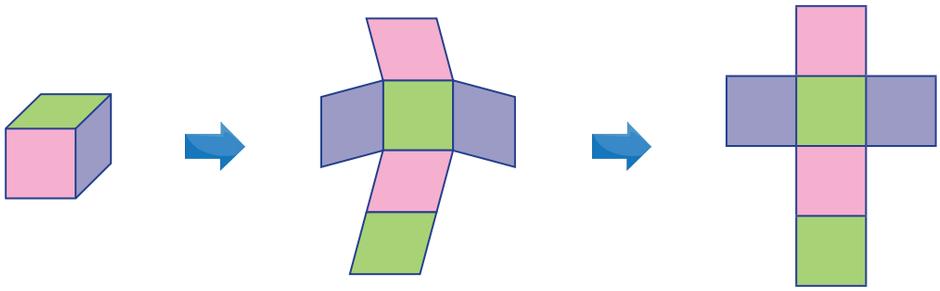
81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 81 12/11/24 13:15

Fazoviy jismlarning yoyilmasi

Qarang va o‘rganing

Kub va kuboidning yoyilmasi

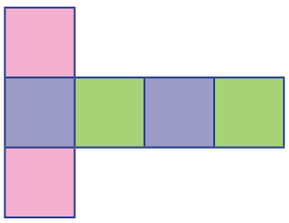
1 Kubning ba’zi qirralari bo‘ylab kesing va uning yoyilmasini hosil qilish uchun oching.



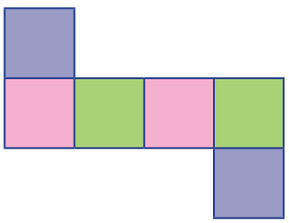
Yoyilma

Quyida ko‘rsatilganidek kubning bir nechta yoyilmasi bor.

a)



b)





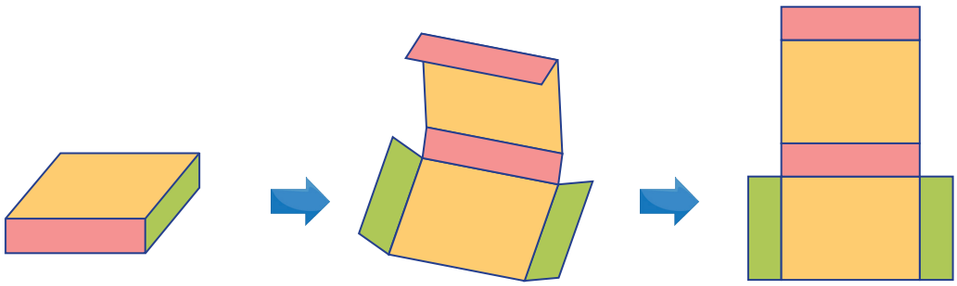


Fazoviy jism yoyilmasini buklab, fazoviy jism hosil qilish mumkin.

81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 82 12/11/24 13:15

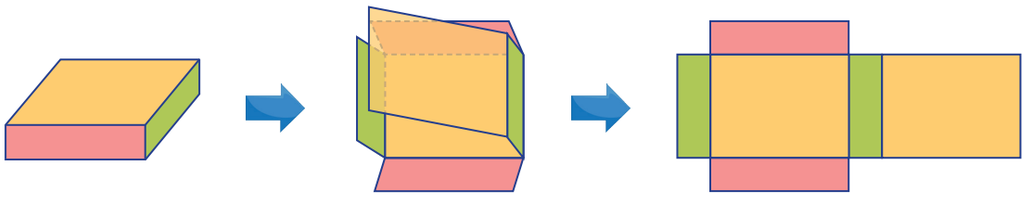
2 Kuboidning ham bir nechta yoyilmasi bor.

a)



Yoyilma

b) Xuddi shu kuboidning boshqa yoyilmasi:

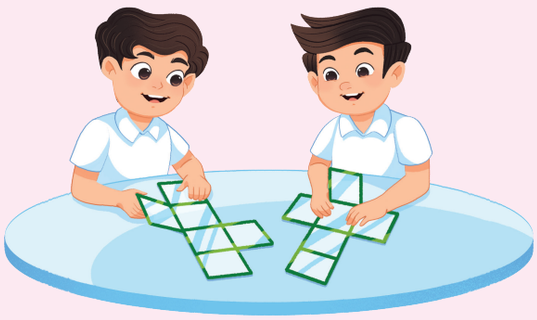


Yoyilma



Juft bo‘lib ishlang.
Kubning turli yoyilmalarini chizing. Yoyilmalarni qirqib oling va ularni buklang.
Har bir yoyilma buklanganda kub hosil bo‘ldimi?

Namuna



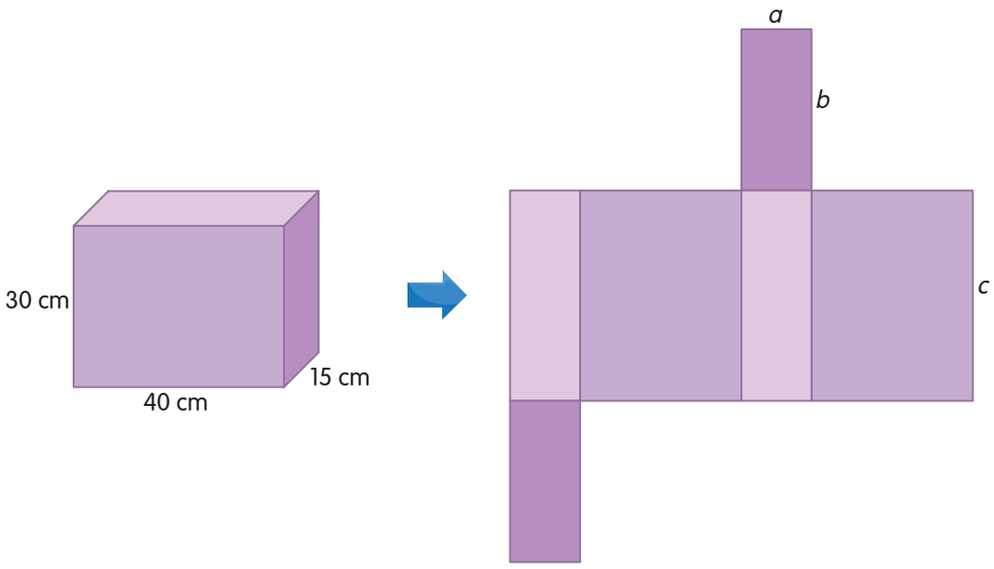
81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 83 12/11/24 13:15

Juftlikda ishlang

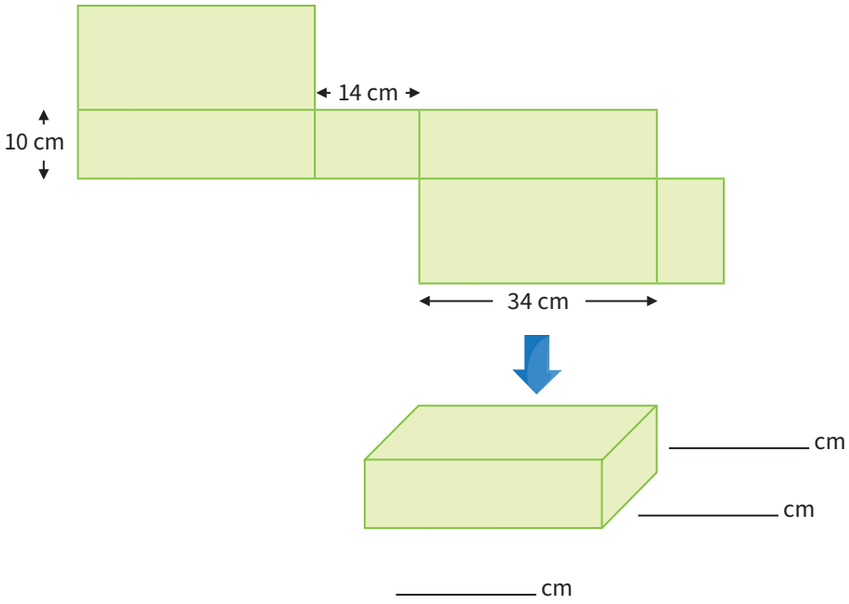


Sherigingiz bilan muhokama qiling.

a) Kuboidning o‘lchamlari 40 cm, 15 cm va 30 cm. Uning yoyilmasi quyida ko‘rsatilgan. Yoyilmada *a*, *b* va *c* bilan belgilangan kesmalarning uzunligi necha cm?



b) Kuboidning yoyilmasi berilgan. Kuboidning eni, bo‘yi va balandligini toping.

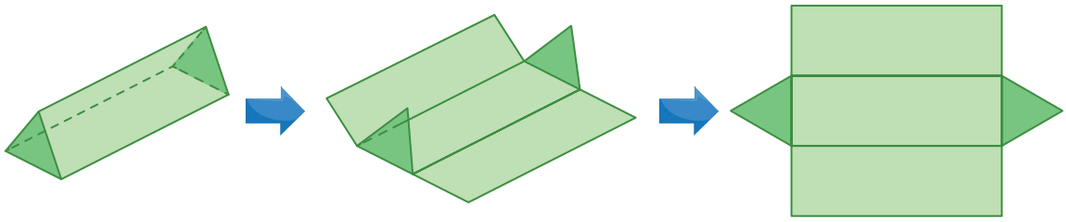


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Prizma va piramidalarning yoyilmasi

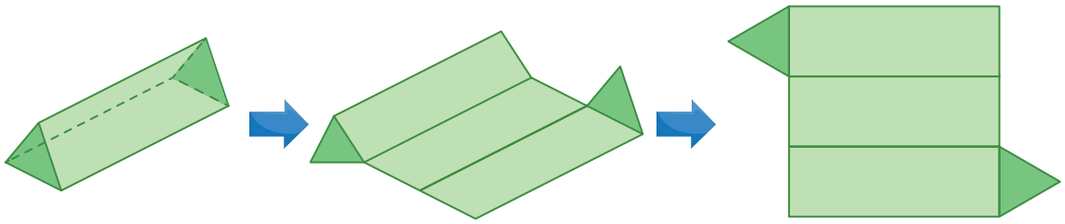
3 Prizmaning bir nechta yoyilmasi bor.

a)



Yoyilma

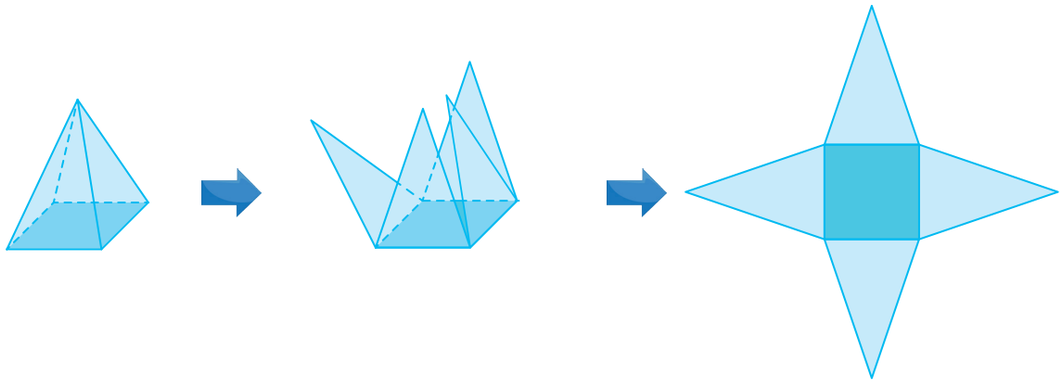
b) Yana prizma yoyilmasiga misol:



Yoyilma

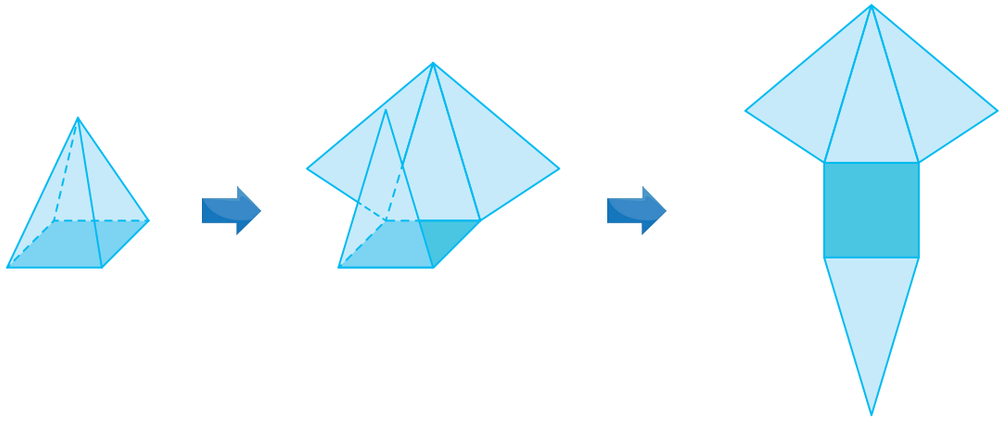
4 Piramidaning bir nechta yoyilmasi bor.

a)



Yoyilma

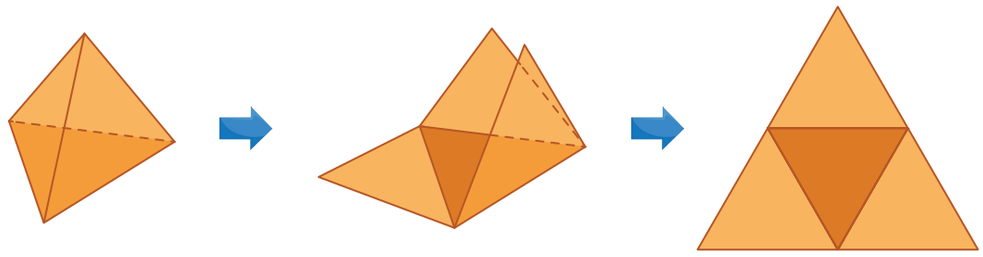
b) Shu piramidaning boshqa yoyilmasi:



Yoyilma

81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 85 12/11/24 13:15

5 Yana bir piramidaning yoyilmasi:



Yoyilma

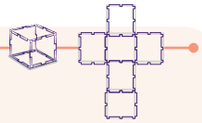
AKT mashqi



“Yoyilmalar – fazoviy jismlar” videolavhasini ko‘rib fazoviy jism yoyilmalaridan fazoviy jismlar hosil qilishni o‘rganing.

Qo‘lda bajariladigan mashq





Guruh bo‘lib ishlang.

1 Geometrik shakllar yordamida fazoviy jism yasang.

a) kub b) kuboid c) prizma d) piramida

2 Geometrik shakllar modelidan foydalanib fazoviy jismlar yoyilmasini yasang.

Namuna



81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 86 12/11/24 13:15

Bajaring va o‘rganing

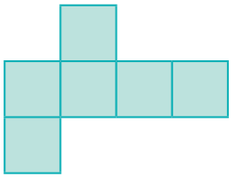


1 a) Quyidagilarning qaysilari kubning yoyilmasi?

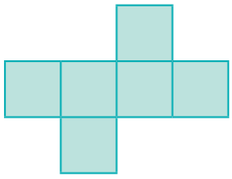
b) Qolganlari nima uchun kubning yoyilmasi bo‘la olmasligini tushuntiring.



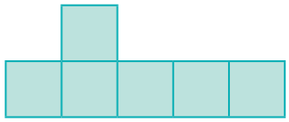
Kub



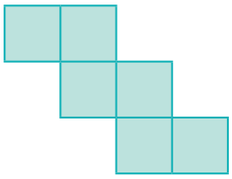
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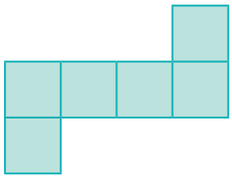
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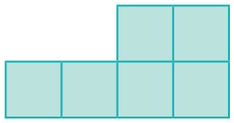
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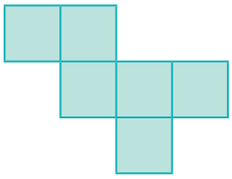
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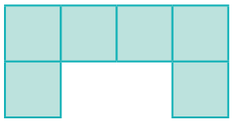
E



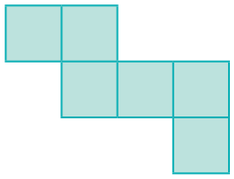
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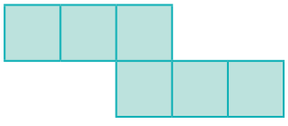
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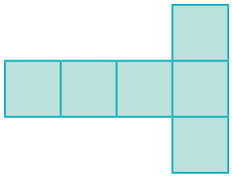
H



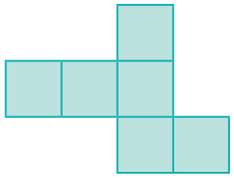
I



J



K



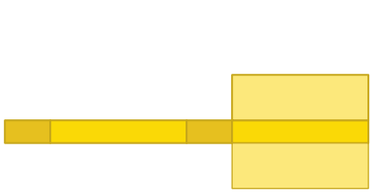
L

81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 87 12/11/24 13:15

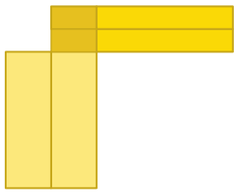
2 Quyidagilarning qaysilari kuboidning yoyilmasi?



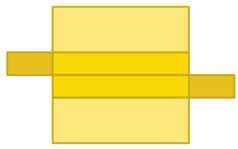
Kuboid



E



F

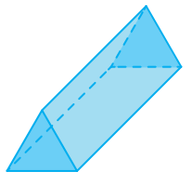


G

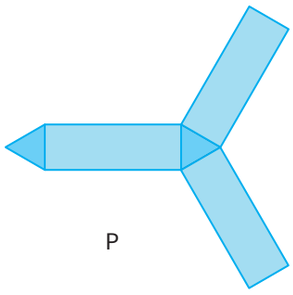


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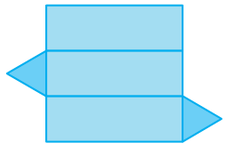
3 Quyidagilarning qaysilari prizmaning yoyilmasi?



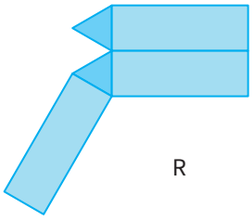
Prizma



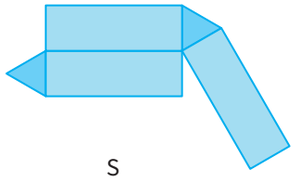
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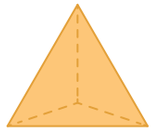


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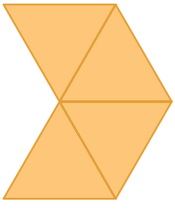


S

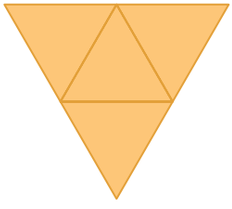
4 Quyidagilarning qaysilari piramidaning yoyilmasi?



Piramida



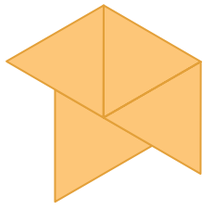
W



X



Y

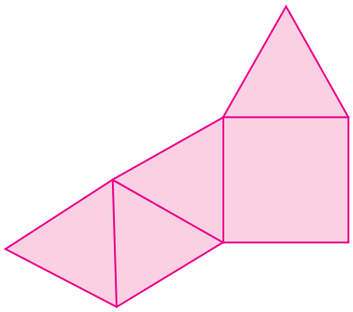


Z

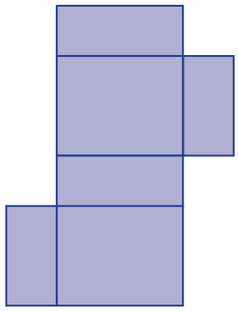
81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 88 12/11/24 13:15

5 Berilgan yoyilmalaridan fazoviy jismlarni aniqlang.

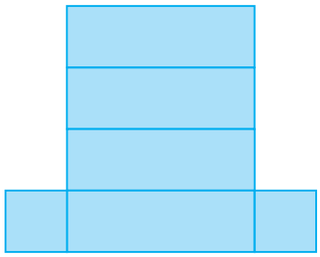
a)



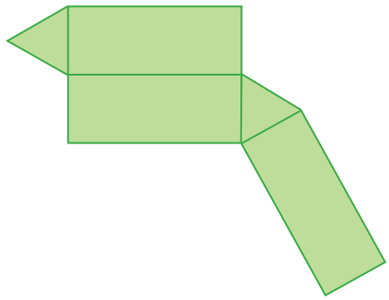
b)



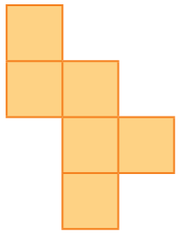
c)



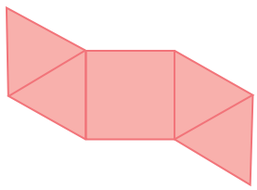
d)



e)



f)



Mashq daftariga o‘ting **89–98**

O‘zingizni tekshiring



a) Men kub, kuboid, prizma va piramidalar yoyilmasini aniqlashni bilaman.

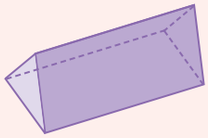
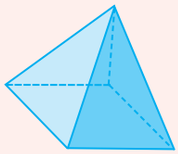
b) Men yoyilmalaridan fazoviy jismlarni aniqlashni bilaman.

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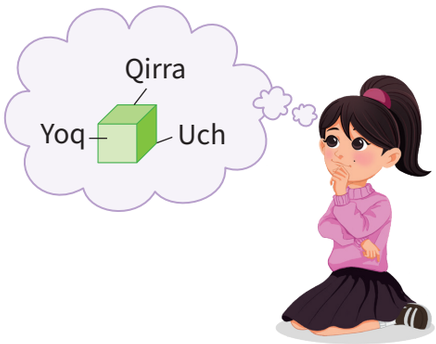
O‘ylab ko‘ring

Guruh bo‘lib ishlang.

Har bir guruhga quyidagi fazoviy jismlardan biri beriladi: kub, kuboid, prizma va piramida. Jismlarning yog‘i, uchi va qirralari sonini toping.

Fazoviy jism	Yoqlari soni (Y)	Uchlari soni (U)	Qirralari soni (Q)	Y + U – Q
a) Kub 				
b) Kuboid 				
c) Prizma 				
d) Piramida 				

Oxirgi ustunda: “yoqlari soni” va “uchlari soni”ning yig‘indisini toping, keyin yig‘indidan “qirralari soni”ni ayiring. Nimani payqadingiz?



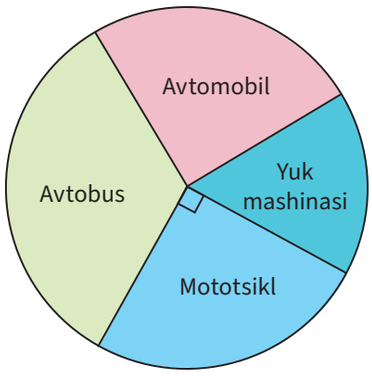
Mashq daftariga o‘ting 99–100

81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 90 12/11/24 13:15

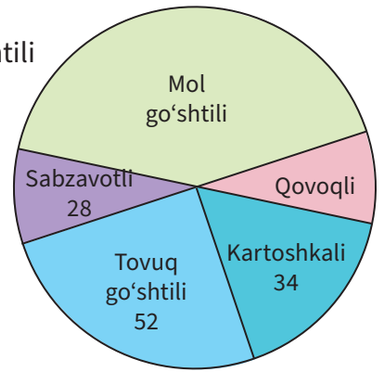
II TAKRORLASH

Doiraviy diagramma, fazoviy jismlar va yoyilmalar

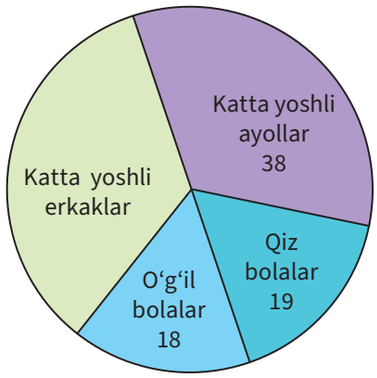
1 Doiraviy diagrammada avtoturargohdagi turli transport vositalari soni ko‘rsatilgan. Qanday transport vositasi avtoturargohning chorak qismini egallagan?



2 Doiraviy diagrammada sotilgan somsalar turi ko‘rsatilgan. Sabzavotli va qovoqli somsalar bir xil miqdorda sotilgan. Mol go‘shtili somsalardan nechta sotilgan?



3 Doiraviy diagrammada kinoteatrdagi tomoshabinlar sonining yarmi qiz bolalar va katta yoshli ayollar ekani ko‘rsatilgan. Katta yoshli erkaklar sonini toping.



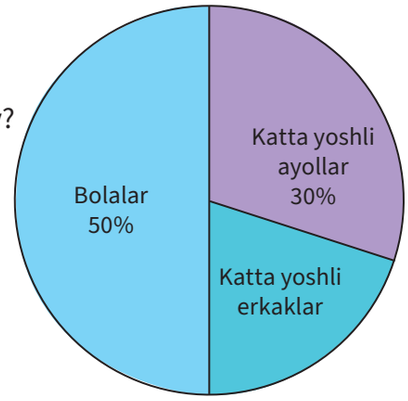
81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 91 12/11/24 13:15

4 Doiraviy diagrammada konsertga kelgan katta yoshli erkaklar, ayollar hamda bolalarning foizi ko‘rsatilgan. Konsertga jami 400 kishi kelgan.

a) Necha nafar katta yoshli ayol kelgan?

b) Necha nafar bola kelgan?

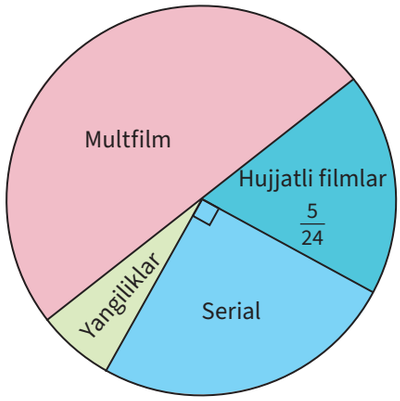
c) Bolalar sonining katta yoshli erkaklar soniga nisbati qanday?



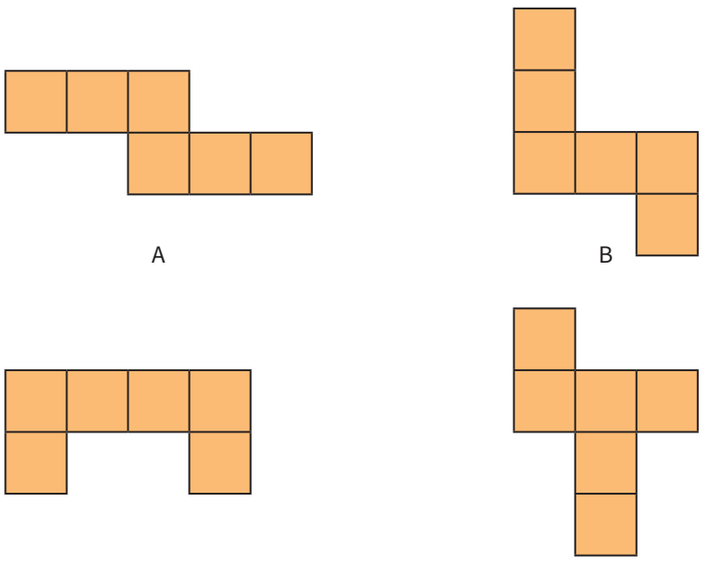
5 Doiraviy diagrammada bolalar tomosha qilishni yoqtiradigan turli teledasturlar ko‘rsatilgan.

a) Bolalarning qanday qismi yangiliklarni tomosha qilishni yoqtiradi?

b) Agar 30 nafar bola hujjatli film tomosha qilishni yoqtirsa, necha nafari multfilm ko‘rishni yoqtiradi?

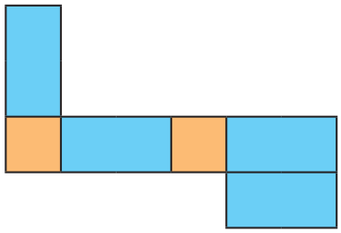


6 Quyidagilarning qaysilari kubning yoyilmasi?

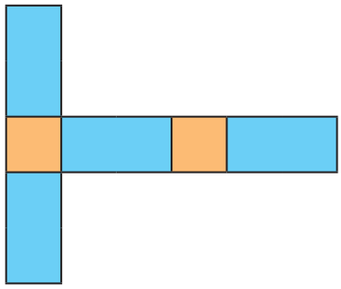


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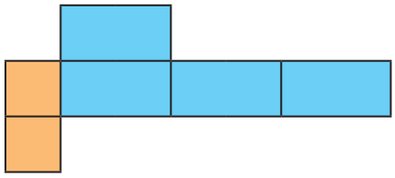
7 Quyidagilarning qaysilari kuboidning yoyilmasi?



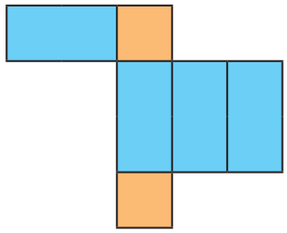
W



X

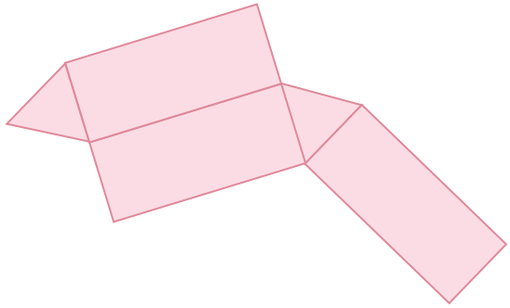


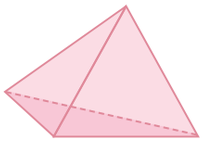
Y



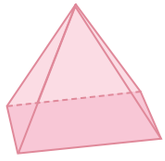
Z

8 Ushbu yoyilma quyidagi qaysi fazoviy jismga tegishli?

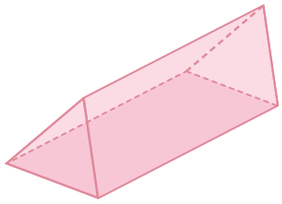




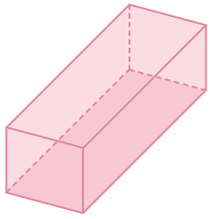
A



B



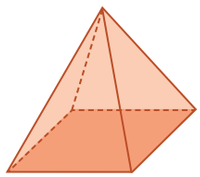
C



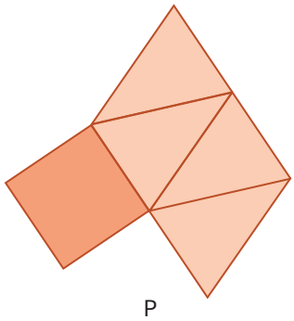
D

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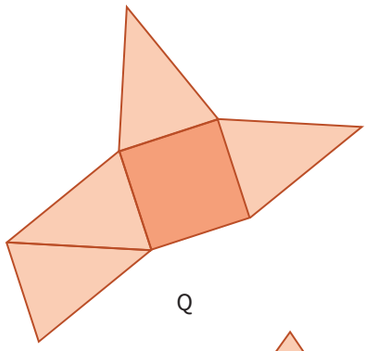
9 Quyida fazoviy jism berilgan.



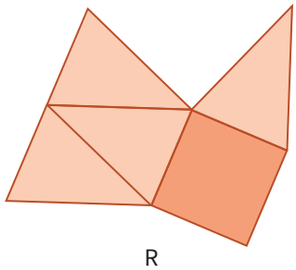
Yoyilmalarning qay biri yuqoridagi fazoviy jismga tegishli?



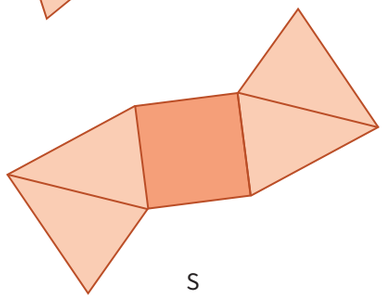
P



Q

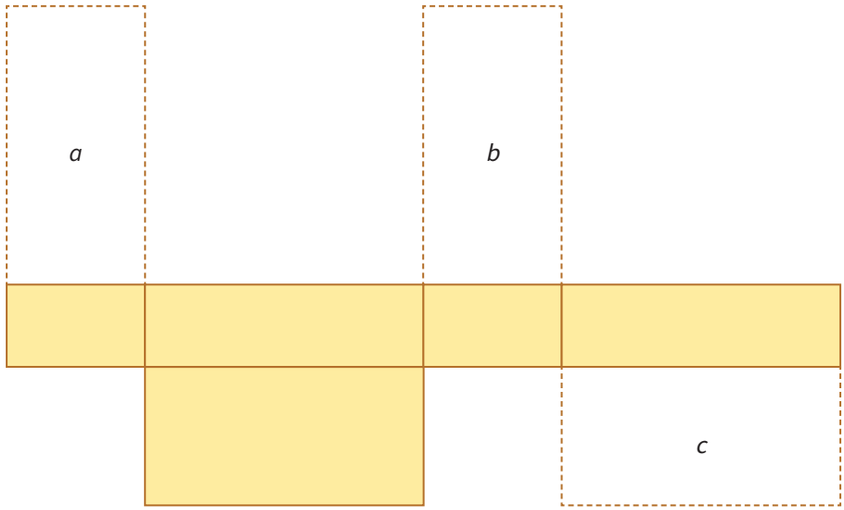


R



S

10 Akmal kuboid yasamoqchi. Quyidagi rasmda kuboidning to‘liq bo‘lmagan yoyilmasi ko‘rsatilgan. Yoyilmani to‘g‘ri to‘ldirishi mumkin bo‘lgan qismni tanlang.



Mashq daftariga o‘ting **101–130**

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O‘zlashtirgan bilim va ko‘nikmalaringizni tekshirib ko‘ring

Siz quyidagi masalalarni yechishni bilasizmi?

Natural sonlar

- **Berilgan sondagi har bir raqamning xona qiymatini toping.**
  1 **82**6 4**5**9 sonidagi **8** raqami 800 000 ni anglatadi,
  5 raqamining qiymati 50 ga teng,
  2 raqami o‘n minglar xonasida turibdi.

- **Berilgan sonlarning karralilarini toping.**
  7 ga karrali dastlabki 5 ta natural son: 7, 14, 21, 28 va 35.
  8 ga karrali uchinchi natural son 24 ga teng.
- **Ikkita sonning dastlabki ikkita umumiy karralisini toping.**
  3 va 4 ning dastlabki ikkita umumiy karralisi 12 va 24 sonlaridir.

- **Berilgan sonning bo‘luvchilarini toping.**
  8 sonining bo‘luvchilari 1, 2, 4 va 8 sonlaridir.
  Barcha sonlar uchun 1 va sonning o‘zi bo‘luvchi bo‘ladi.
  Masalan, 5 sonining bo‘luvchilari 1 va 5 dir.
  Ko‘paytma o‘zining har qanday bo‘luvchisiga qoldiqsiz bo‘linadi.

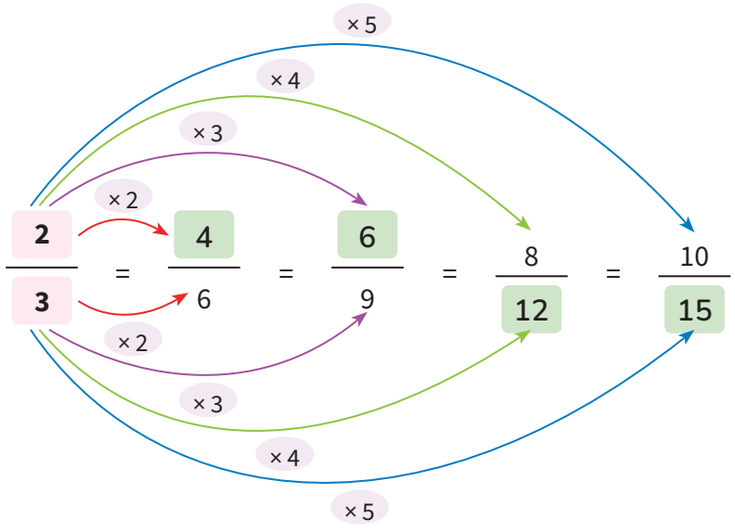
- **Sonni o‘nlar, yuzlar va minglar xonasigacha yaxlitlang.**
  5834 soni **o‘nlar xonasigacha** yaxlitlansa, 5830 bo‘ladi. $5834 \approx 5830$
  5834 soni **yuzlar xonasigacha** yaxlitlansa, 5800 bo‘ladi. $5834 \approx 5800$
  5834 soni **minglar xonasigacha** yaxlitlansa, 6000 bo‘ladi. $5834 \approx 6000$

- **Amallar tartibini aniqlang.**
  a) Ko‘paytirish, bo‘lish, qo‘shish va ayirishga doir aralash amallar:
  $16 + \underline{4 \times 2} - \underline{6 \div 3} = 16 + 8 - 2$ (Oldin chapdan o‘ngga ko‘paytiring yoki bo‘ling)
  $= 24 - 2$ (So‘ng chapdan o‘ngga qo‘shing yoki ayiring)
  $= 22$
  b) Qavsli aralash masalalar:
  $4 \times \underline{(8 - 6)} \div 2 = 4 \times 2 \div 2$ (Oldin qavs ichidagi amalni bajaring)
  $= 8 \div 2$ (So‘ng chapdan o‘ngga ko‘paytiring yoki bo‘ling)
  $= 4$

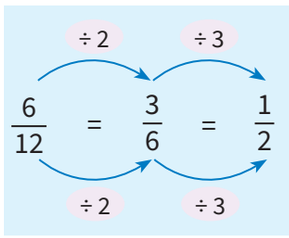
81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 95 12/11/24 13:15

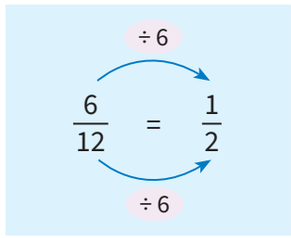
Kasrlar

- **Berilgan kasrga teng kuchli kasrlarni toping.**



- **Kasrlarni qisqarmas ko‘rinishda ifodalang.**





- **Har xil maxrajli kasrlarni qo‘shing va ayiring.**

$$\frac{2}{3}+\frac{1}{2}=\frac{4}{6}+\frac{3}{6}=\frac{7}{6}=1\frac{1}{6}$$

$$\frac{1}{2}-\frac{2}{5}=\frac{5}{10}-\frac{4}{10}=\frac{1}{10}$$

Kasrlarni qo‘shish yoki ayirishdan oldin ularni bir xil maxrajga keltiring.

- **Aralash sonni noto‘g‘ri kasrga aylantiring va aksincha.**

$$1\frac{7}{8}=1+\frac{7}{8}=\frac{8}{8}+\frac{7}{8}=\frac{15}{8}$$

$$\frac{8}{5}=\frac{5}{5}+\frac{3}{5}=1+\frac{3}{5}=1\frac{3}{5}$$

81 MATEMATICS SCHOOLBOOK G6 P2 UZB 220x290 120PG.indd 96 12/11/24 13:15

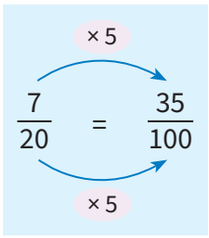
- **Sonlarni bo‘lishni oddiy kasr ko‘rinishida ifodalang.**

  $2 \div 3 = \frac{2}{3}$ Bu 2 ning $\frac{1}{3}$ qismi yoki $2 \times \frac{1}{3}$ bilan bir xil.

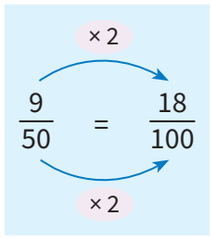
- **Kasrni o‘nli kasrga aylantiring.**

  Maxrajni 10 ning karralilari sifatida ifodalash mumkinligini tekshiring.

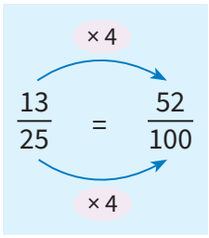
  a) $\frac{7}{20} = \frac{35}{100}$
  $= 0{,}35$

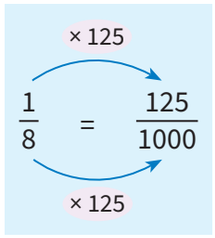
  b) $\frac{9}{50} = \frac{18}{100}$
  $= 0{,}18$

  c) $\frac{13}{25} = \frac{52}{100}$
  $= 0{,}52$

  d) $\frac{1}{8} = \frac{125}{1000}$
  $= 0{,}125$

  Agar maxrajlarni 10 ga karrali qilib ifodalash mumkin bo‘lmasa, “ustunli bo‘lish” usuli yordamida bo‘ling.

  $\frac{6}{11} \approx 0{,}55$

  $\frac{6}{11} = 0{,}55$ (yuzdan birlar xonasigacha yaxlitlangan)

  $6{,}000 \div 11 = 0{,}545\ldots$

  $-\ 55$

  50

  $-\ 44$

  60

  $-\ 55$

  5

- **Oddiy kasrni natural songa ko‘paytiring.**

  $\frac{3}{\cancel{4}_{1}} \times \cancel{8}^{2} = 3 \times 2 = 6$ (Buni 8 ta elementdan iborat to‘plamning $\frac{3}{4}$ qismini topish deb talqin qilish mumkin)

  $\frac{3}{4} \times 8 = \frac{3 \times 8}{4} = \frac{24}{4} = 6$ (Buni 3 ta chorakdan iborat 8 ta guruh deb talqin qilish mumkin)

  $4 \times \frac{7}{3} = \frac{28}{3} = 9\frac{1}{3}$

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- **Kasrlarni ko‘paytiring yoki aralash sonni natural songa ko‘paytiring.**

$\frac{1}{2} \times \frac{4}{5} = \frac{1 \times 4}{2 \times 5}$

$= \frac{4}{10}$

$= \frac{2}{5}$

$\frac{6}{4} \times \frac{8}{3} = \frac{\cancel{6}^{2}}{\cancel{4}_{1}} \times \frac{\cancel{8}^{2}}{\cancel{3}_{1}}$

$= 4$

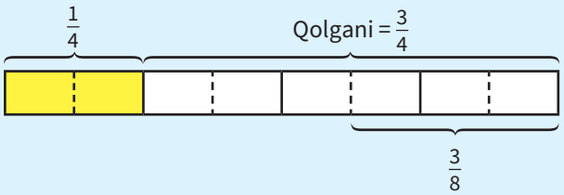
$1\frac{1}{2} \times 3 = \frac{3}{2} \times 3$

$= \frac{9}{2}$

$= 4\frac{1}{2}$

- **Qolgan qismning qismini toping.**

Tasmaning $\frac{1}{4}$ qismi bo‘yalgan. Tasmaning bo‘yalmay qolgan bo‘lagining $\frac{1}{2}$ qismini toping.



Chizma-modeldan tasmaning bo‘yalmay qolgan bo‘lagining $\frac{1}{2}$ qismi $\frac{3}{8}$ ga teng ekani kelib chiqadi.

Qolgan qismining $\frac{1}{2}$ qismi

$= \frac{3}{4} \times \frac{1}{2}$

$= \frac{3}{8}$

- **Oddiy kasrni natural songa bo‘ling.**

$\frac{3}{4} \div 3 = \frac{3}{4} \times \frac{1}{3} = \frac{1}{4}$ (Bu $\frac{3}{4}$ ning $\frac{1}{3}$ qismi sifatida talqin qilinishi mumkin)

- **Natural sonni oddiy kasrga bo‘ling.**

$3 \div \frac{3}{4} = 3 \times \frac{4}{3} = 4$ (Bu 3 ta butunning uchta choragini topish sifatida talqin qilinishi mumkin)

- **Oddiy kasrni oddiy kasrga bo‘ling.**

$\frac{1}{2} \div \frac{1}{8} = \frac{1}{2} \times \frac{8}{1} = 4$ (Buni $\frac{1}{2}$ dagi sakkizdan birlar sonini topish deb talqin qilish mumkin)

Yana bir usul – kasrlarni tegishli kasr ko‘rinishiga keltirish.

$\frac{1}{2} \div \frac{1}{8} = \frac{4}{8} \div \frac{1}{8} = 4$ (Buni $\frac{4}{3}$ dagi sakkizdan birlar sonini topish deb talqin qilish mumkin)

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O‘nli kasrlar

- **O‘nli kasrni birlar, o‘ndan birlar va yuzdan birlar xonasigacha yaxlitlang.**
  5,864 soni **birlar xonasigacha** yaxlitlansa, 6 ga teng bo‘ladi: $5{,}864 \approx 6$
  5,864 soni **o‘ndan birlar xonasigacha** yaxlitlansa, 5,9 ga teng bo‘ladi: $5{,}864 \approx 5{,}9$
  5,864 soni **yuzdan birlar xonasigacha** yaxlitlansa, 5,86 ga teng bo‘ladi: $5{,}864 \approx 5{,}86$

- **O‘nli kasrni qisqarmas oddiy kasr ko‘rinishida ifodalang.**

$$8{,}25 = 8 + 0{,}25$$
$$= 8 + \frac{25}{100}$$
$$= 8\frac{1}{4}$$

Algebra

- **Algebraik ifodalarni yozing.**

Jumla	Algebraik ifoda
10 ga a ni qo‘shing	$a + 10$ yoki $10 + a$
b dan 12 ta ortiq	$b + 12$ yoki $12 + b$
c dan 20 ni ayiring	$c - 20$
d dan 15 ta kam	$d - 15$
x dan 3 marta katta	$3x$
y ni 6 ga bo‘ling	$\frac{y}{6}$

- **Algebraik ifodalarni soddalashtiring.**

$$8h + 4 + 2h - 1 = 8h + 2h + 4 - 1$$
$$= 10h + 3$$

- **Algebraik ifodalarning qiymatini toping.**
  Turli xil sondagi sumkalar bor. Har bir sumkada k ta apelsin bor.

Sumkalar soni	Sumkalardagi apelsinlarning jami soni	$k = 5$ bo‘lganda sumkalardagi apelsinlarning jami soni
2	$2k$	$2 \times \mathbf{5} = 10$
5	$5k$	$5 \times \mathbf{5} = 25$
10	$10k$	$10 \times \mathbf{5} = 50$

- **Sodda tenglamalarni yeching.**

$$p + 4p = 50$$
$$5p = 50$$
$$p = 50 \div 5$$
$$p = 10$$

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Me’yor

- **Me’yorni toping.**

  Me’yor ikki miqdorning o‘zaro munosabatini aniqlaydi va bir miqdorning birligiga mos kelgan ikkinchi miqdor qiymati sifatida ifodalanadi.
  Printerda 400 ta sahifani chop etish 5 minut vaqt oladi. Shu printer har minutda nechta sahifani chop etadi?

  5 min → 400 sahifa

  1 min → 400 ÷ 5 = 80 sahifa

  Printer har minutda 80 ta sahifani chop etadi.

- **Me’yorga ko‘ra umumiy miqdorni toping.**

  Ishchi soatiga 50 000 so‘m maosh oladi. Agar u 8 soat ishlasa, qancha maosh oladi?

  1 soat → 50 000 so‘m

  8 soat → 50 000 × 8 = 400 000 so‘m

  Agar ishchi 8 soat ishlasa, 400 000 so‘m maosh oladi.

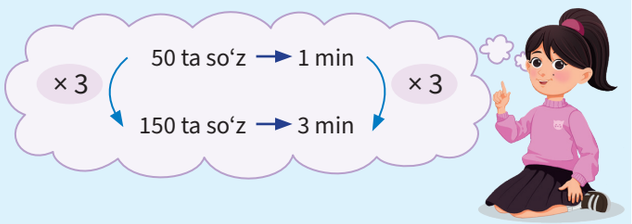
- **Me’yor va umumiy miqdorga ko‘ra birliklar sonini toping.**

  50 ta so‘z → 1 min

  1 ta so‘z → $\frac{1}{50}$ min

  150 ta so‘z → $\frac{1}{50}$ × 150 = 3 min

  Po‘lat 150 ta so‘zni 3 minutda yozadi.



- **Me’yorga doir masalalarni yeching.**

  Jadvalda istirohat bog‘ida velosipedlarni ijaraga olish narxlari ko‘rsatilgan.

Velosipedlar ijarasi narxi	
Birinchi soat uchun	4000 so‘m
Har bir qo‘shimcha soat uchun	2000 so‘m

  Salim velosiped ijarasi uchun 10 000 so‘m to‘ladi.
  U velosipedni necha soatga ijaraga olgan?

  1-soatda → 4000 so‘m

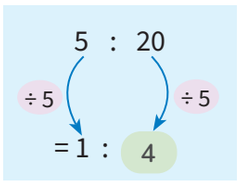
  Keyingi 3 soatda → 6000 so‘m

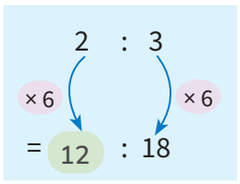
  U velosipedni 4 soatga ijaraga olgan.

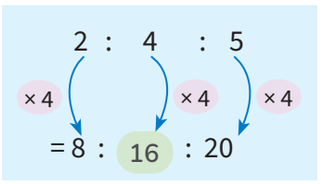
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Nisbat

- **Teng kuchli nisbatlar va noma'lum miqdorlarni toping.**



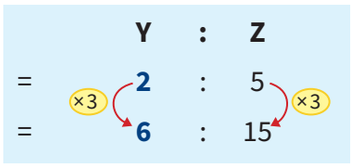




X : Y = 2 : 3 va Y : Z = 2 : 5 bo'lsa, X : Y : Z ni toping.

2 va 3 ning dastlabki umumiy karralisi = 6





X : Y : Z = 4 : 6 : 15

- **Kasrlarni nisbat ko'rinishida ifodalang.**

a) O'g'il bolalar qizlardan $\frac{1}{2}$ marta ko'p.

b) O'g'il bolalar sonining qizlar soniga nisbati 1 : 3 ga teng.

O'g'il bolalar soni		Qizlar soni
1	:	2

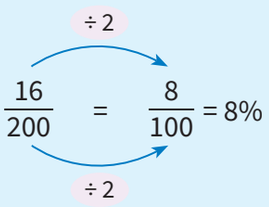
$\frac{\text{O'g'il bolalar soni}}{\text{Qizlar soni}} = \frac{1}{3}$

O'g'il bolalar qizlarga qaraganda $\frac{1}{3}$ marta ko'p.

Foiz

- **Kasrni foiz ko'rinishida ifodalang.**

1-usul



Maxraji 100 bo'lgan teng kuchli kasrni toping.

Eslatma: bir butun 100% ga teng.

2-usul

$\frac{16}{200} \times 100\% = 8\%$

Kasrni 100% ga ko'paytiring.

- **Foizni oddiy yoki o'nli kasr ko'rinishida ifodalang.**

a) $80\% = \frac{80}{100} = \frac{4}{5}$

b) $65\% = \frac{65}{100} = 0{,}65$

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- **Miqdorning foizini toping.**

  Sinfda 40 nafar o‘quvchi bor. Ularning 45 foizini o‘g‘il bolalar tashkil etadi. Sinfda necha nafar o‘g‘il bola bor?

1-usul

$$45\% = \frac{45}{100}$$

$$\frac{45}{100} \times 40 = 18$$

2-usul

$100\% \rightarrow 40$

$$1\% \rightarrow \frac{40}{100} = \frac{2}{5}$$

$$45\% \rightarrow \frac{2}{5} \times 45 = 18$$

Sinfda 18 nafar o‘g‘il bola bor.

- **Foizning o‘sishi yoki kamayishini toping.**

  Bir xonada 8 nafar bola bor edi. Bir necha bola uyiga ketganidan keyin xonada 3 nafar bola qolgan. Bolalar sonining kamayish foizini toping.

$8 - 3 = 5$

$$\text{Foizning kamayishi} = \frac{5}{8} \times 100\%$$

$$= 62{,}5\%$$

O‘sish yoki kamayish foizi =

$$= \frac{\text{miqdorning o‘zgarishi}}{\text{miqdor}} \times 100\%$$

Bolalar sonining kamayish foizi 62,5 ni tashkil etdi.

- **QQS, chegirma va foizlarni toping.**

a) Tovar narxi = 400 000 so‘m

QQS foizi = 12%

$$\text{QQS} = \frac{12}{100} \times 400\,000 \text{ so‘m}$$

$$= 48\,000 \text{ so‘m}$$

b) Olma narxi = 16 000 so‘m

Chegirma = 20%

$$\text{Chegirma miqdori} = \frac{20}{100} \times 16\,000 \text{ so‘m}$$

$$= 12\,000 \text{ so‘m}$$

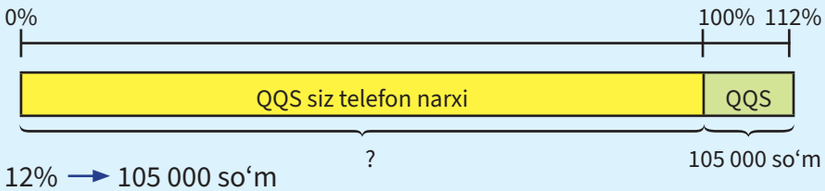
c) Omonatga qo‘yilgan pul = 2000 AQSH dollari, omonat foizi = 6%

$$\text{Foyda} = \frac{6}{100} \times 2000$$

$$= 120 \text{ AQSH dollari}$$

- **QQS foizi, foizli chegirma yoki foiz berilganda umumiy miqdorni toping.**

  Olimtoy sotib olgan telefoni uchun 12% QQS to‘lagan. QQS 105 000 so‘mni tashkil etdi. Telefonning QQSsiz narxi qancha?



$12\% \rightarrow 105\,000$ so‘m

$1\% \rightarrow 105\,000 \div 12 = 8750$ so‘m

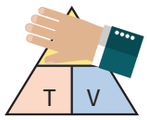
$100\% \rightarrow 8750 \times 100 = 875\,000$ so‘m

Telefonning QQSsiz narxi 875 000 so‘m.

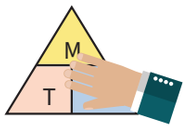
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Tezlik

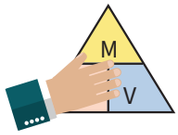
- **Bosib o‘tilgan masofa, vaqt, tezlik va o‘rtacha tezlikni toping.**



Masofa = tezlik × vaqt



$\text{Vaqt} = \frac{\text{masofa}}{\text{tezlik}}$



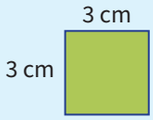
$\text{Tezlik} = \frac{\text{masofa}}{\text{vaqt}}$

O‘rtacha tezlik = jami masofa ÷ jami vaqt

O‘lchash

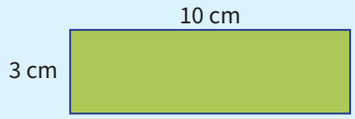
Yuz va perimetr

- **Kvadrat va to‘g‘ri to‘rtburchaklarning perimetri va yuzini toping.**



Kvadratning perimetri = 4 × tomoni
= 4 × 3
= 12 cm

Kvadratning yuzi = tomoni × tomoni
= 3 × 3
= 9 cm^2

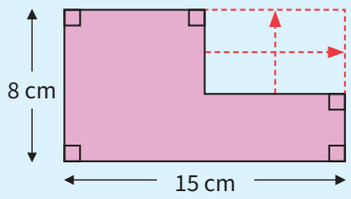


To‘g‘ri to‘rtburchakning perimetri
= bo‘yi + bo‘yi + eni + eni
= 10 + 10 + 3 + 3
= 26 cm

To‘g‘ri to‘rtburchakning yuzi = bo‘yi × eni
= 10 × 3
= 30 cm^2

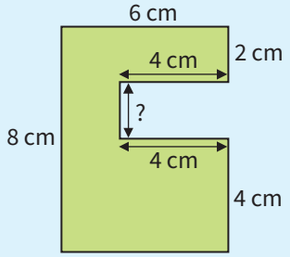
- **Murakkab shakllarning perimetrini toping.**

Shaklning perimetri uni to‘ldiruvchi to‘g‘ri to‘rtburchakning perimetriga teng.



Perimetri = 15 + 15 + 8 + 8
= 46 cm

Avval noma’lum tomonlarni toping, so‘ng perimetrni topish uchun barcha tomonlarni qo‘shing.

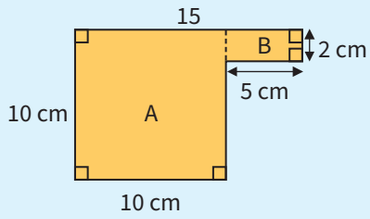


Perimetri = 8 + 6 + 2 + 4 + 2 + 4 + 4 + 6
= 36 cm

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- **Murakkab shakllarning yuzini toping.**

1-usul



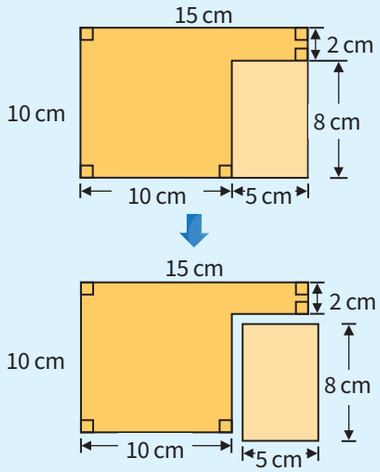
A kvadratning yuzi = 10 × 10
= 100 cm^2

B to‘g‘ri to‘rtburchakning yuzi = 5 × 2
= 10 cm^2

Shaklning yuzi = 100 + 10
= 110 cm^2

2-usul

Avval katta to‘g‘ri to‘rtburchakning yuzini toping. Keyin murakkab shaklning yuzini topish uchun katta to‘g‘ri to‘rtburchak yuzidan kichik to‘g‘ri to‘rtburchakning yuzini ayiring.



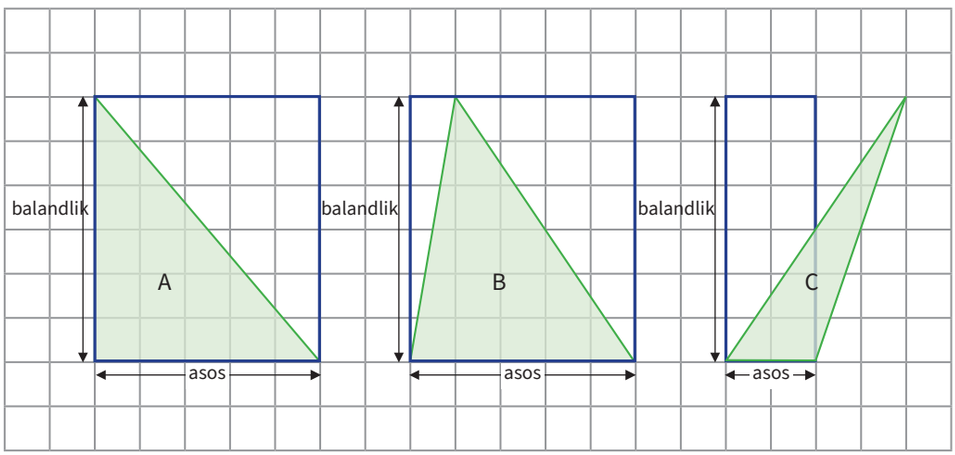
Katta to‘g‘ri to‘rtburchakning yuzi = 15 × 10
= 150 cm^2

Kichik to‘g‘ri to‘rtburchakning yuzi = 8 × 5
= 40 cm^2

Shaklning yuzi = 150 – 40
= 110 cm^2

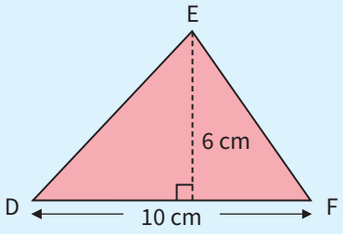
- **Uchburchakning asosi va balandligini aniqlang.**

Uchburchakning balandligi uning asosiga perpendikulyar.



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- **Uchburchakning yuzini toping.**

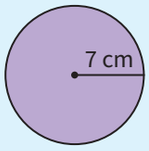


DEF uchburchakning yuzi $= \frac{1}{2} \times$ asos $\times$ balandlik

$= \frac{1}{2} \times 10 \times 6$

$= 30 \text{ cm}^2$

- **Aylananing uzunligi va doiraning yuzini toping.**



Doira aylanasining uzunligi $= 2\pi r$

$= 2 \times \frac{22}{7} \times 7$

$= 44 \text{ cm}$

Doira yuzi $= \pi r^2$

$= \frac{22}{7} \times 7 \times 7$

$= 154 \text{ cm}^2$

Eslatma: π ning qiymatini 3,14 deb ham olish mumkin.

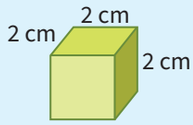
Diametr $= 2 \times$ radius

$= 2r$

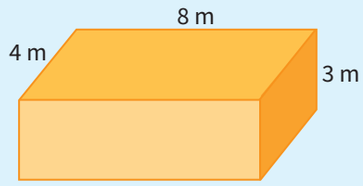
Aylana uzunligi $= 2\pi r$

$= \pi d$

- **Kub yoki kuboid hajmini toping.**



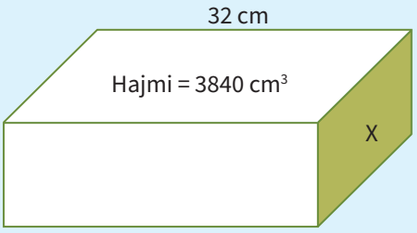
Kub hajmi
= qirrasi × qirrasi × qirrasi
= 2 × 2 × 2
= 8 cm^3



Kuboidning hajmi
= bo‘yi × eni × balandligi
= 8 × 4 × 3
= 96 m^3

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- **Kub yoki kuboid yon yog‘i yuzini toping.**

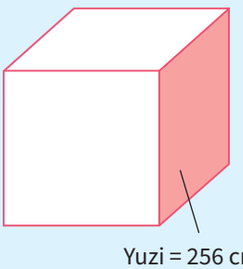


$$\text{Yuzi} = \frac{\text{hajm}}{\text{balandlik}}$$
$$= \frac{3840}{32}$$
$$= 120 \text{ cm}^2$$

Hajm = asos yuzi × balandlik (asosga perpendikulyar)

Asos yuzi = hajm ÷ balandlik

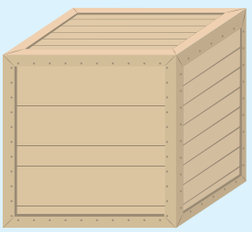
- **Kvadrat tomoni uzunligini toping.**



$$\text{Tomoni} \times \text{tomoni} = \text{yuzi}$$
$$\text{Tomoni} = \sqrt{\text{yuzi}}$$
$$= \sqrt{256}$$
$$= 16 \text{ cm}$$

Kvadrat yuzining **kvadrat ildizi** uning tomoni uzunligiga teng.

- **Kub qirrasining uzunligini toping.**



$$\text{Qirrasi} \times \text{qirrasi} \times \text{qirrasi} = \text{hajmi}$$
$$\text{Qirra} = \sqrt[3]{\text{hajm}}$$
$$= \sqrt[3]{343}$$
$$= 7 \text{ cm}$$

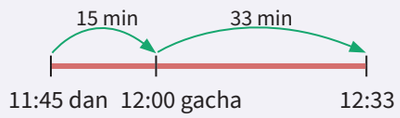
Kub hajmining **kub ildizi** uning qirrasi uzunligiga teng.

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Vaqt

- **Qancha davom etganini toping.**

  Jamol soat 11:45 da kitob o‘qishni boshladi. U o‘qishni soat 12:33 da tugatdi.
  U kitobni qancha vaqt davomida o‘qidi?



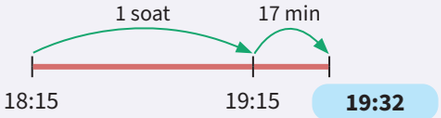
  15 min + 33 min = 48 min

  U kitobni 48 minut davomida o‘qigan.

- **Boshlanish va tugash vaqtini toping.**



(boshlanish vaqti)



(tugash vaqti)

  Vaqt chizig‘i ishning boshlanish va tugash vaqtini aniqlash uchun ishlatiladi.

  Eslatma: yuqoridagi misollarda vaqt 12 soatlik o‘lchovda ham ifodalanishi mumkin.

- **Vaqtni qo‘shing va ayiring.**

1 h 15 min + 1 h 35 min = ?

Soatlarni qo‘shing.

1 h 15 min $\xrightarrow{+\ 1\ \text{soat}}$ 2 h 15 min

Minutlarni qo‘shing.

2 h 15 min $\xrightarrow{+\ 35\ \text{min}}$ 2 h 50 min

4 h 50 min – 2 h 35 min = ?

Soatlarni ayiring.

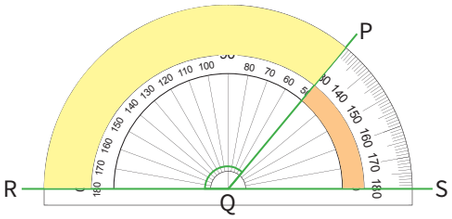
4 h 50 min $\xrightarrow{-\ 2\ \text{soat}}$ 2 h 50 min

Minutlarni ayiring.

2 h 50 min $\xrightarrow{-\ 35\ \text{min}}$ 2 h 15 min

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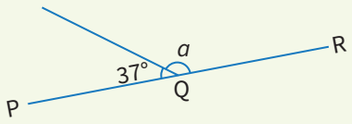
- **Burchaklarni o‘lchang.**



$\angle PQR = 130°$ $\angle PQS = 50°$

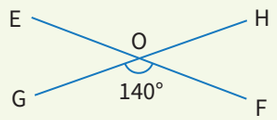
Burchaklar transportirning tashqi yoki ichki shkalasidagi graduslarda o‘lchanadi.

- **Noma’lum burchaklarni toping.**



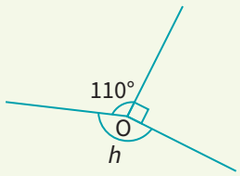
$\angle a = 180° - 37°$
$= 143°$

To‘g‘ri chiziqdagi burchaklar yig‘indisi = 180°.



$\angle EOH = 140°$

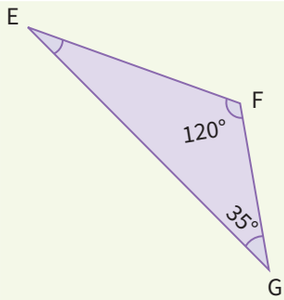
Vertikal burchaklar o‘zaro teng.



$\angle h = 360° - 110° - 90°$
$= 160°$

Bitta nuqta atrofidagi burchaklar yig‘indisi = 360°.

- **Uchburchaklarda noma’lum burchaklarni toping.**



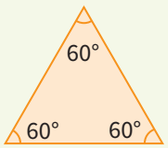
$\angle GEF = 180° - 120° - 35°$
$= 25°$

Uchburchak burchaklari yig‘indisi = 180°.

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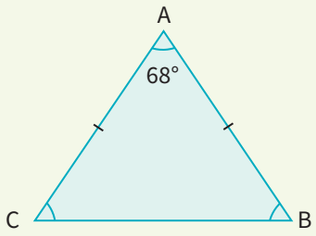
Eslatma: turli xil uchburchaklar bor.

Teng tomonli uchburchak



Har bir burchak 60°.

Teng yonli uchburchak

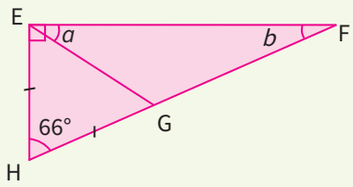


$\angle ACB = \angle ABC$

$\angle ACB + \angle ABC = 180° - 68°$
$= 112°$

$\angle ACB = 112° \div 2$
$= 56°$

To‘g‘ri burchakli uchburchak



$\angle b = 180° - 90° - 66°$
$= 24°$

yoki

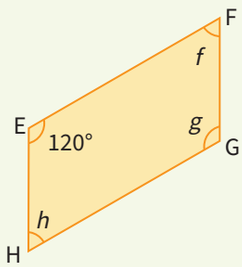
$\angle b = 90° - 66°$
$= 24°$

$\angle GEH = (180° - 66°) \div 2$
$= 57°$

$\angle a = 90° - 57°$
$= 33°$

- **To‘rtburchaklardagi noma’lum burchaklarni toping.**

Parallelogramm

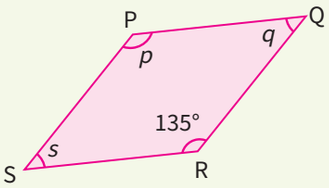


$\angle g = 120°$

$\angle h = 180° - 120°$
$= 60°$

$\angle f = \angle h$
$= 60°$

Romb

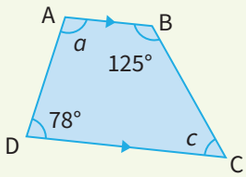


$\angle p = 135°$

$\angle q = 180° - 135°$
$= 45°$

$\angle s = \angle q$
$= 45°$

Trapetsiya



$\angle a = 180° - 78°$
$= 102°$

$\angle c = 180° - 125°$
$= 55°$

Eslatma: parallelogramm yoki rombning qarama-qarshi burchaklari teng.
Parallel tomonlarga yopishgan burchaklar yig‘indisi 180° ga teng.

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Simmetriya

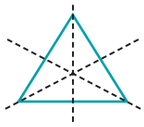
- **Shaklning simmetrik ekanini va simmetriya o‘qini aniqlang.**

a) 

simmetrik emas

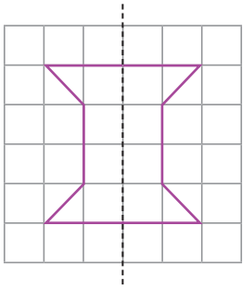
b) 

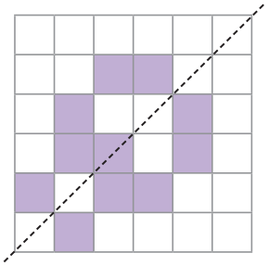
simmetrik emas

c) 

simmetrik

- **Simmetrik shaklni yoki simmetrik naqshni to‘ldiring.**





Fazoviy jismlar va yoyilmalar

- **Fazoviy jismlar turini aniqlang va ularni chizing.**



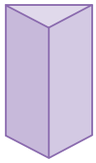
Kub



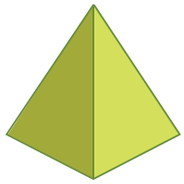
Kuboid



Silindr

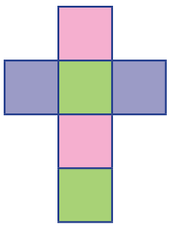


Prizma

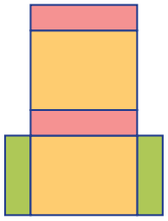


Piramida

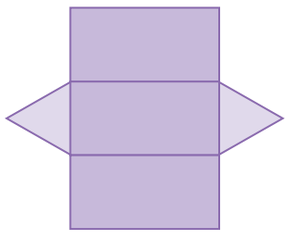
- **Yoyilmasiga ko‘ra fazoviy jismlarni aniqlang va uni uch o‘lchamli panjarada chizing.**



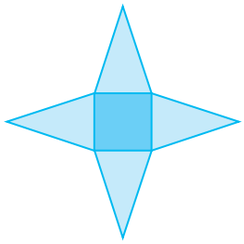
Kub



Kuboid



Prizma



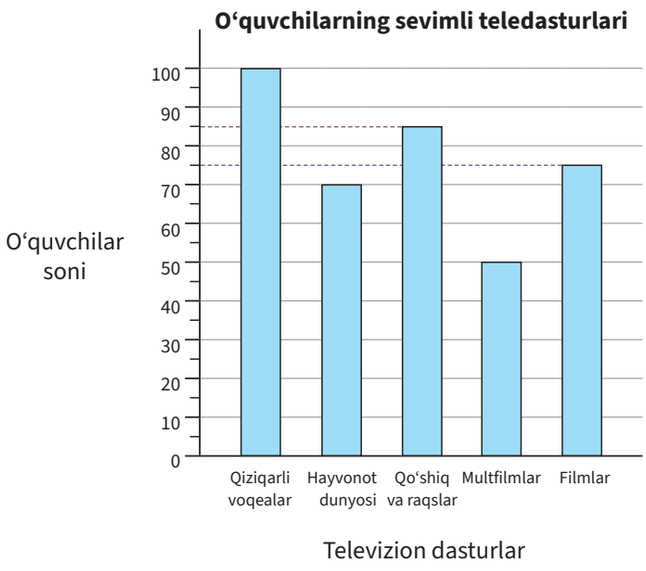
Piramida

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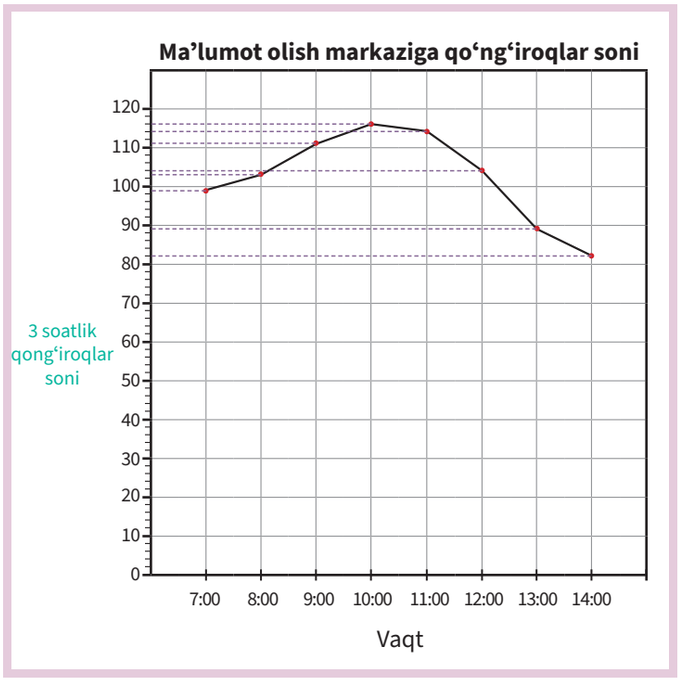
Ma’lumotlarni tahlil qilish

- **Diagrammalarni o‘qing va talqin qiling.**

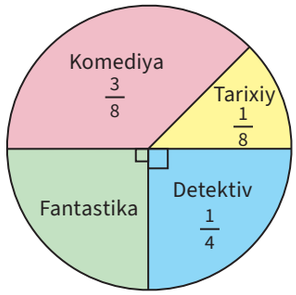
a) ustunli va chiziqli diagramma



b) chiziqli-grafikli diagramma



c) doiraviy diagramma



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- **Ma’lumotlar qatorining o‘rtacha qiymatini toping.**

	Ballar
1-test	83
2-test	76
3-test	78
4-test	80

Umumiy ball = 83 + 76 + 78 + 80
= 317 ball

O‘rtacha ball = 317 ÷ 4
= 79,25 ball

$$\text{O‘rtacha qiymat} = \frac{\text{umumiy qiymat}}{\text{ma’lumotlar soni}}$$

- **Ma’lumotlarning o‘rtacha qiymati va soniga ko‘ra umumiy miqdorini toping.**

Umumiy miqdor = o‘rtacha qiymat × ma’lumotlar soni

- **Ma’lumotlarning o‘rtacha qiymati va umumiy miqdoriga ko‘ra ularning sonini toping.**

Ma’lumotlar soni = umumiy miqdor ÷ o‘rtacha qiymat

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