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!

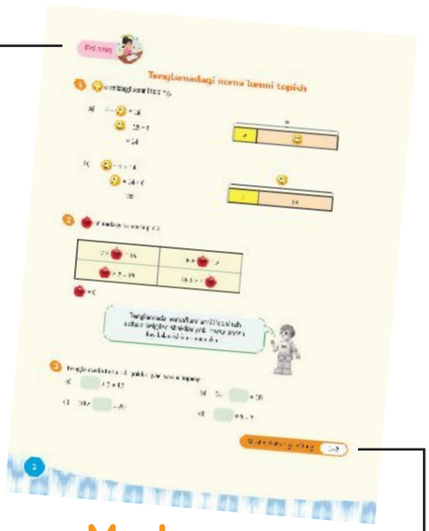


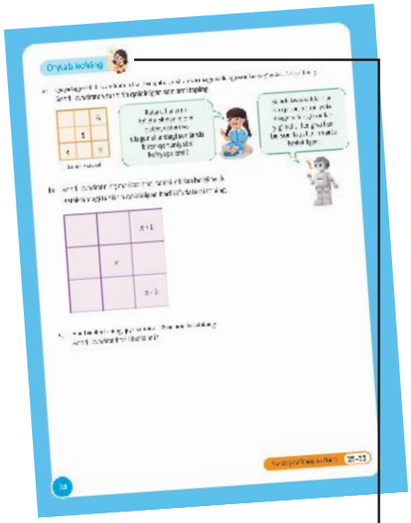
Muhokama qiling

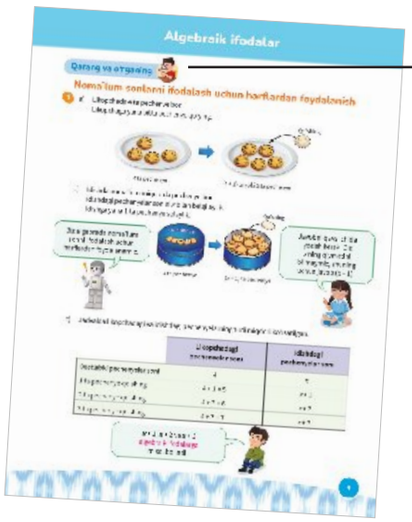
rukni o‘quvchilarni yangi matematik tushunchalarni o‘rganishga tayyorlaydi. O‘qituvchi o‘quvchilarni mavzuga oid rasm yoki video asosida suhbat (muhokama) ga jalb qiladi va uni boshqaradi.

Eslang

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







Mashq daftariga o‘ting

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

Qarang va o‘rganing

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

O‘ylab ko‘ring

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

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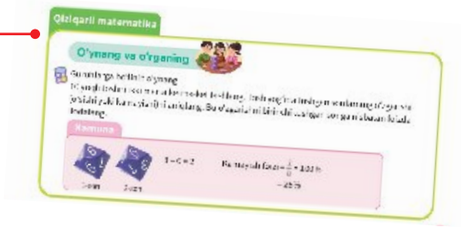
Turmushda matematika

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



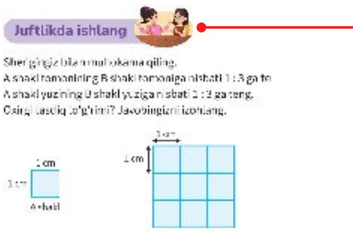
O‘ynang va o‘rganing

rukni o‘quvchilarda topshiriq va o‘yinlar orqali matematik tushunchalarni mustahkamlaydi.



Juftlikda ishlang

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



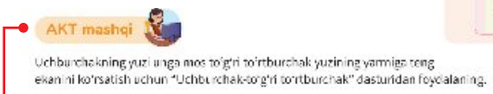
Qo‘lda bajariladigan mashq

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



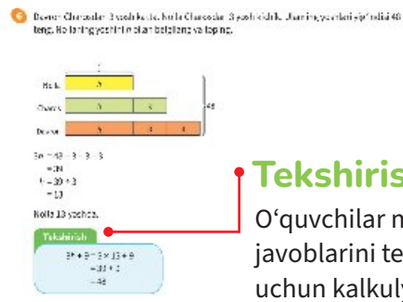
AKT mashqi

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



Tekshirish

O‘quvchilar masalalar javoblarini tekshirish uchun kalkulyatordan foydalanishi mumkin.



Bajaring va o‘rganing

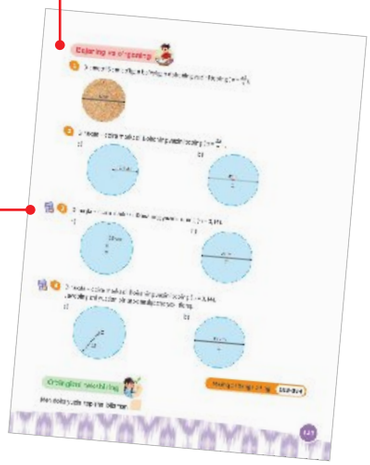
ruknida o‘quvchilar mashqlarni bajarish orqali o‘z bilimlarini tekshiradi.



O‘zingizni tekshiring

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

Masalani yechishda kalkulyatordan foydalanishga ruxsat beriladi.





O‘rganing va bo‘lishing

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

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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1 Algebra

Muhokama qiling



Bolalar do‘konda.

Eslang



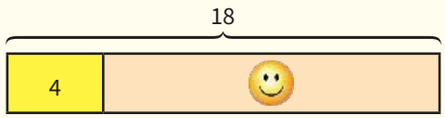
Tenglamadagi noma’lumni topish

1 ☺ o‘rnidagi sonni toping.

a) $4 + ☺ = 18$

$☺ = 18 - 4$

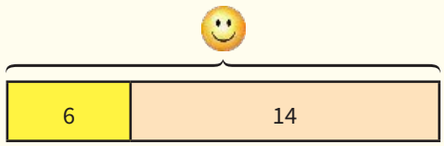
$= 14$



b) $☺ - 6 = 14$

$☺ = 14 + 6$

$= 20$



2 🍎 o‘rnidagi sonni toping.

$2 \times$ 🍎 $= 16$	$16 \div$ 🍎 $= 2$
🍎 $\times 2 = 16$	$16 \div 2 =$ 🍎

🍎 $= 8$

Tenglamada noma’lumlarni ifodalash uchun belgilar, shakllar yoki narsalardan foydalanishimiz mumkin.



3 Tenglamada tushirib qoldirilgan sonni toping.

a) $\square + 2 = 19$

b) $18 - \square = 10$

c) $10 \times \square = 20$

d) $\square \div 5 = 3$

Mashq daftariga o‘ting **1–2**

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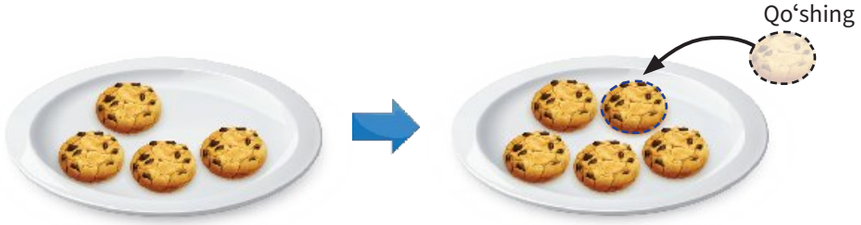
Algebraik ifodalar

Qarang va o‘rganing



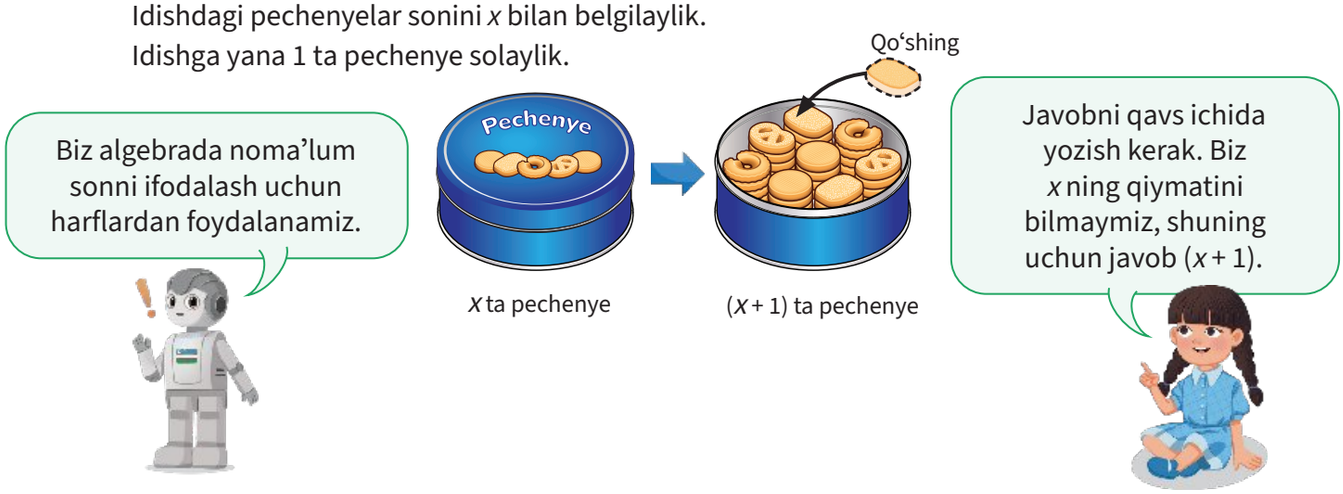
Noma’lum sonlarni ifodalash uchun harflardan foydalanish

1 a) Likopchada 4 ta pechenye bor.
Likopchaga yana bitta pechenye qo‘ying.



4 ta pechenye (4 + 1) ta yoki 5 ta pechenye

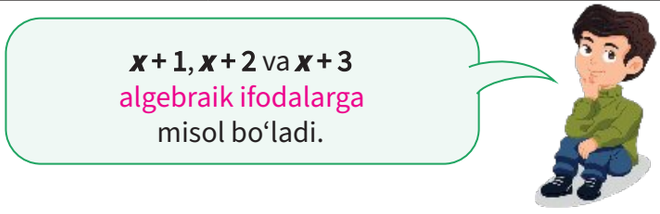
b) Idishda noma’lum miqdorda pechenye bor.
Idishdagi pechenyelar sonini x bilan belgilaylik.
Idishga yana 1 ta pechenye solaylik.



x ta pechenye $(x + 1)$ ta pechenye

c) Jadvalda likopchadagi va idishdagi pechenyelarning turli miqdori ko‘rsatilgan.

	Likopchadagi pechenyelar soni	**Idishdagi pechenyelar soni**
Dastlabki pechenyelar soni	4	x
1 ta pechenye qo‘shing	$4 + 1 = 5$	$x + 1$
2 ta pechenye qo‘shing	$4 + 2 = 6$	$x + 2$
3 ta pechenye qo‘shing	$4 + 3 = 7$	$x + 3$



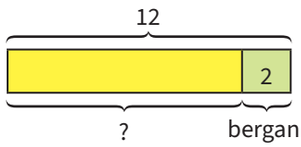
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2 Ravshanda dastlab 12 ta olma bor edi. Agar u olmalarining:

a) 2 tasini Davronga bersa, Ravshanda nechta olma qoladi?

b) y tasini Donoga bersa, Ravshanda nechta olma qoladi?

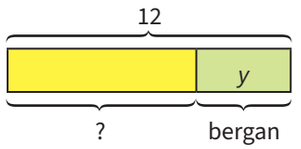
a)



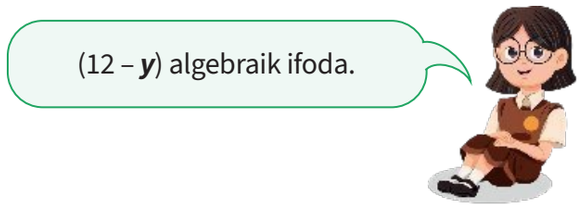
$12 - 2 = 10$

Ravshanda 10 ta olma qoladi.

b)



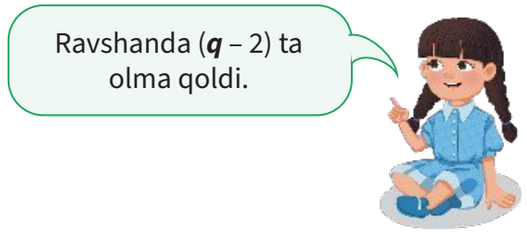
Ravshanda $(12 - y)$ ta olma qoladi.





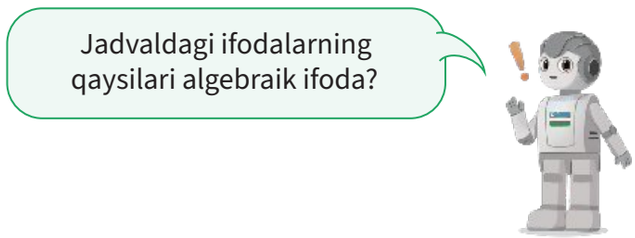
Yana bir misol

Ravshanda q ta olma bor edi,
2 tasini Davronga berdi.
Unda nechta olma qoldi?



3 Davron hozir 12 yoshda. Uning turli vaqtlardagi yoshini aniqlang.

Vaqt	Davronning yoshi
Hozir	12
3 yildan keyin	$12 + 3 = 15$
x yildan keyin	$12 + x$
y yildan keyin	$12 + y$
5 yil oldin	$12 - 5 = 7$
z yil oldin	$12 - z$



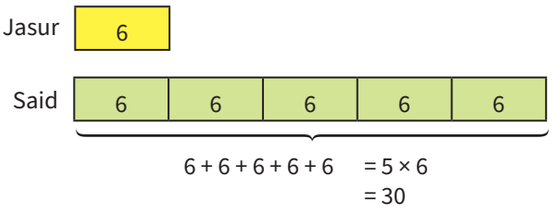
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4 Saidning ruchkalari soni Jasurnikidan 5 marta ko‘p. Agar Jasurning ruchkalari:

a) 6 ta bo‘lsa, Saidda nechta ruchka bor?

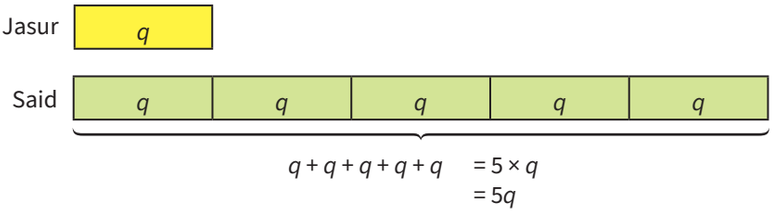
b) q ta bo‘lsa, Saidda nechta ruchka bor?

a)



Saidda 30 ta ruchka bor.

b)



Saidda $5q$ ta ruchka bor.



$5 \times q = q \times 5$
Biz $5 \times q$ ni $5q$ kabi yozamiz.

$1 \times q = q \times 1$
$1 \times q$ ni q kabi yozamiz.



5 Har bir ko‘ylakda 8 ta tugma bor. Turli sondagi ko‘ylaklarda nechta tugma bor?

Ko‘ylaklar soni	Tugmalar soni
1	$1 \times 8 = 8$
2	$2 \times 8 = 16$
5	$5 \times 8 = 40$
k	$k \times 8 = 8k$

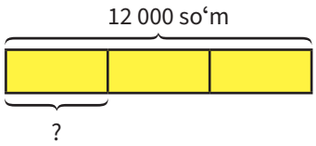
5q va ***8k*** lar ham algebraik ifodaga misol bo‘ladi.



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6 a) 12 000 so‘m uchta bolaga teng taqsimlandi. Har bir bola necha so‘mdan olgan?
b) p so‘m uchta bolaga teng taqsimlandi. Har bir bola necha so‘mdan olgan?

a)



$12\,000 \div 3 = \frac{12\,000}{3}$

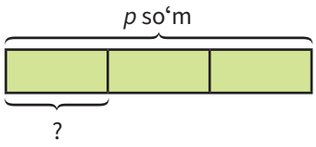
$= 4000$ so‘m

Har bir bola 4000 so‘mdan olgan.

Har bir bola 12 000 so‘mning $\frac{1}{3}$ qismini olgan.



b)



$p \div 3 = \frac{p}{3}$

Har bir bola $(\frac{p}{3})$ so‘mdan olgan.

7 Quyidagi miqdordagi pullar bir nechta bolaga teng taqsimlandi. Har bir bola qanchadan pul olgan?

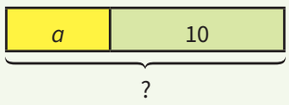
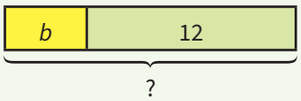
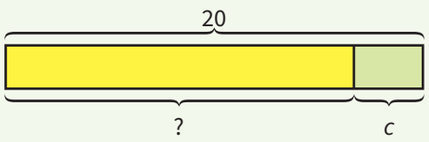
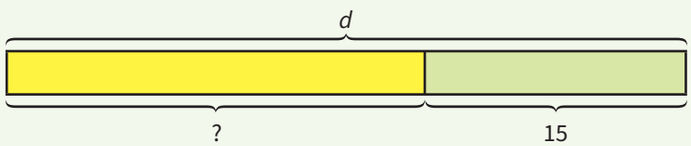
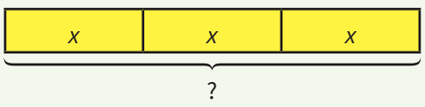
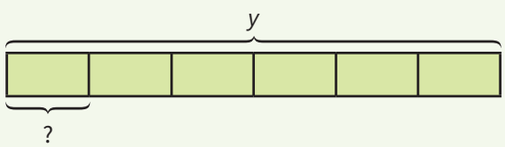
Umumiy pul miqdori	Bolalar soni	Har bir bola olgan pul miqdori
12 000	4	$12\,000 \div 4 = (\frac{12\,000}{4})$ $= 3000$ so‘m
y	2	$y \div 2 = (\frac{y}{2})$ so‘m
y	4	$y \div 4 = (\frac{y}{4})$ so‘m

Jadvaldagi ifodalarning qaysilari algebraik ifoda?



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8

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

Qiziqarli matematika

O‘rganing va bo‘lishing



Guruh bo‘lib ishlang.

Quyidagi holatlar uchun algebraik ifoda yozing. Algebraik ifodani tasvirlaydigan chizma-model chizing. Chizmani sinfdoshlaringizga ko‘rsating va izohlang.

Jumla	Algebraik ifoda
25 ga ***p*** ni qo‘shing.	
50 dan ***b*** ga ortiq.	
r dan 80 ni ayiring.	
32 dan ***s*** ga kam.	
t ta 5.	
z ni 200 ga bo‘ling.	

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Juftlikda ishlang



Sherigingiz bilan muhokama qiling.
Algebraik ifodalar juftligi bir xilmi?
Sababini sinfdagi boshqa juftlikka tushuntiring.

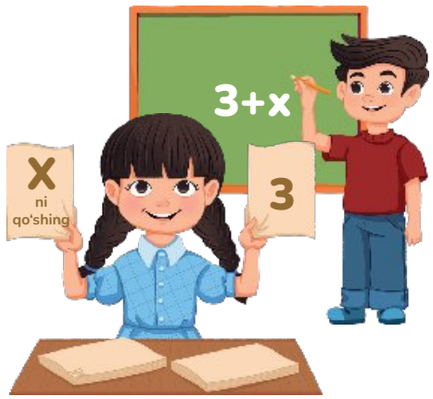
a) $5 + q$ va $q + 5$ b) $5q$ va $5 + q$ c) $5 - q$ va $q - 5$ d) $\frac{q}{5}$ va $5q$

Qiziqarli matematika

O‘ynang va o‘rganing



Guruhlarda o‘ynang.
Birida bajariladigan amal, ikkinchisida esa sonlar yozilgan ikki xil kartochka to‘plamlarini stol ustiga teskari qilib qo‘ying. Guruhning bir a’zosi har bir to‘plamdan bittadan kartochka tanlaydi va ko‘rsatadi. Guruhning boshqa a’zolari kartochkalarga mos algebraik ifodalarni yozadi. Kartochkalarni tanlash navbati guruhning keyingi a’zosiga o‘tadi.



Bajaring va o‘rganing



1 Algebraik ifoda hosil qiling.

Holat	Algebraik ifoda
a) x ni 10 ga ko‘paytiring	
b) q ga 6 ni qo‘shing	
c) p dan 8 ni ayiring	
d) 12 va h ning ko‘paytmasi	
e) k ni 7 ga bo‘ling	
f) 35 dan r ni ayiring	
g) u dan 9 ta ko‘p	
h) w dan 10 ta kam	

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Quyidagilarni qanday algebraik ifodalar bilan yozish mumkin?

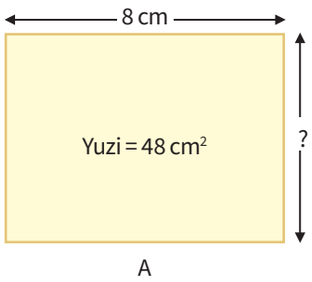
2 Pitsaning narxi 60 000 so‘m. Tort pitsadan x so‘m qimmat. Tort qancha turadi?

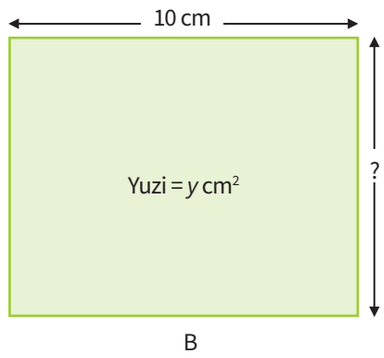
3 Har bir qutida 6 shisha ichimlik bor. Anvar y ta quti ichimlik sotib olgan bo‘lsa, u necha shisha ichimlik olgan?

4 Madina qalam sotib olish uchun p so‘m to‘ladi va 2000 so‘m qaytim oldi. Qalamning narxi qancha?

5 Sitorada n ta ruchka bor. Ruchkalar Sitora va yana 3 ta qizga teng taqsimlandi. Har bir qiz nechtadan ruchka oldi?

6 A va B to‘g‘ri to‘rtburchaklarning bo‘yini toping.





Shakl	Yuzi (cm^2)	Eni (cm)	Bo‘yi (cm)
A	48	8	48 ÷ 8 =
B	y	10	÷ =

Mashq daftariga o‘ting **3–8**

O‘zingizni tekshiring



a) Men noma’lum sonlarni harflar bilan ifodalashni bilaman.

b) Men algebraik ifodalarni yozishni bilaman.

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Algebraik ifodalarni soddalashtirish

Qarang va o‘rganing



1 Jamilada 6 quti qisqich bor. Davronda esa 3 quti qisqich bor. Har bir qutida y tadan qisqich bo‘lsa:

a) bolalarda jami nechta qisqich bor?

b) ular 4 quti qisqichni Ravshanga berdi. Bolalarda nechta qisqich qoldi?

a)

1-usul

$6 + 3 = 9$

Jamila va Davronda jami 9 quti qisqich bor.

$9 \times y = 9y$

Ularda $9y$ ta qisqich bor.



2-usul

$6 \times y = 6y$

Jamilada $6y$ ta qisqich bor.

$3 \times y = 3y$

Davronda $3y$ ta qisqich bor.

$6y + 3y = 9y$

Ularda jami $9y$ ta qisqich bor.

Biz $6y$ ga $3y$ ni qo‘sha olamiz.

$$\overbrace{y+y+y+y+y+y}^{6y} + \overbrace{y+y+y}^{3y} = 9y$$



b)



$9y - 4y = 5y$

Ularda $5y$ ta qisqich qoldi.

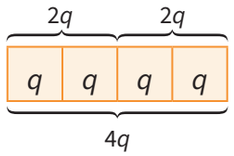
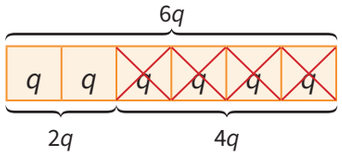
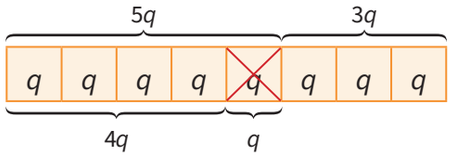
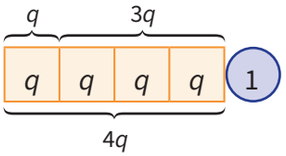
Dastlab Jamila va Davronda $9y$ ta qisqich bor edi. Ular $4 \times y = 4y$ ta qisqichni Ravshanga berdi. Biz $9y$ dan $4y$ ni ayira olamiz.

$$\underbrace{\overbrace{y+y+y+y+y+y+y+y+y}^{9y}}_{5y}$$



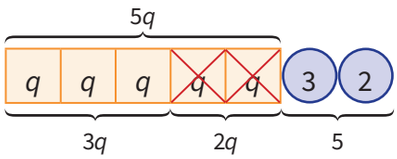
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2 Algebraik ifodalarni soddalashtiring.

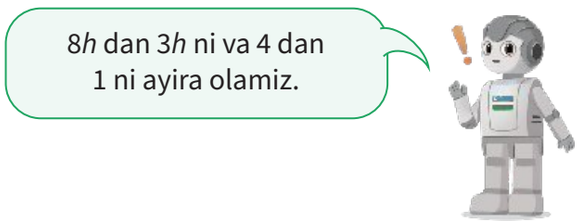
a) $2q + 2q = 4q$	
b) $6q - 4q = 2q$	
c) $5q - q + 3q = 4q + 3q$ $= 7q$	
d) $q + 3q + 1 = 4q + 1$	

3 Algebraik ifodalarni soddalashtiring.

a) $\mathbf{5q} + 3 - \mathbf{2q} + 2 = \mathbf{5q} - \mathbf{2q} + 3 + 2$
$= \mathbf{3q} + 5$



b) $\mathbf{8h} + 4 - \mathbf{3h} - 1 = \mathbf{8h} - \mathbf{3h} + 4 - 1$
$= \mathbf{5h} + 3$



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Qo‘lda bajariladigan mashq



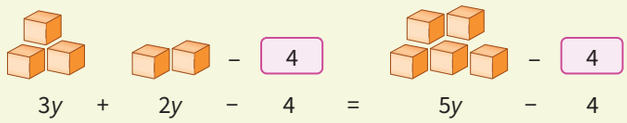
Guruh bo‘lib ishlang.
Algebraik ifodalarni tasvirlash uchun chizma-model chizing yoki kublardan, algebraik tugmachalardan foydalaning. So‘ng ifodalarni soddalashtiring.

a) $5y + y$
b) $y + 3y + 3$
c) $6y - 6y$
d) $4y - 7 - 2y$
e) $5y - 3y + 9 - 8$
f) $6y - y - 5 + 3y$

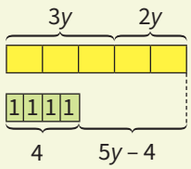
Namuna

$3y + 2y - 4$

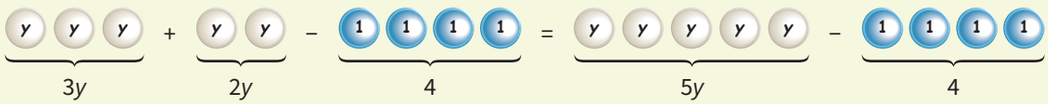
Har bir y ni ifodalash uchun kublardan foydalanish



Chizma-model chizish



Algebraik tugmachalardan foydalanish



Bajaring va o‘rganing



1 Tushirib qoldirilgan son yoki harfni toping.

a) $12q = 10q +$ ____
b) $4r =$ ____ $\times r$
c) $10s = 10 \times$ ____

2 Quyidagi algebraik ifodalarni soddalashtiring.

a) $f + f + f + f$
b) $k + k + k - k$
c) $p + p + p + 2p$
d) $8m + 11m$
e) $16t - 7t$
f) $4z - z + 13z$
g) $a + 6 + 10a$
h) $15r - 9 + 5r$
i) $12b - 4 - 10b + 3b$
j) $20p + 7 - 13p - 5$
k) $30 + h - 1 + 6h$
l) $y + 14 - y + 8 + y$

Mashq daftariga o‘ting **9–10**

O‘zingizni tekshiring



Men algebraik ifodalarni soddalashtirishni bilaman.

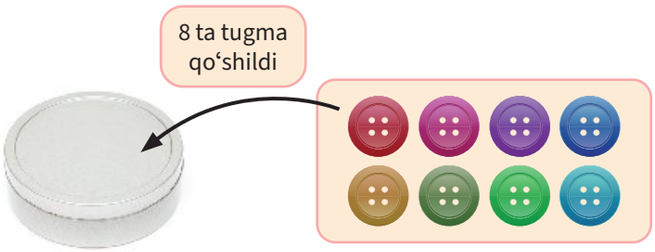
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Algebraik ifodalarning qiymatini topish

Qarang va o‘rganing



1 Halimaning idishida ***y*** ta tugma bor. U idishiga yana 8 ta tugma soldi. Uning tugmalari nechta bo‘ldi?



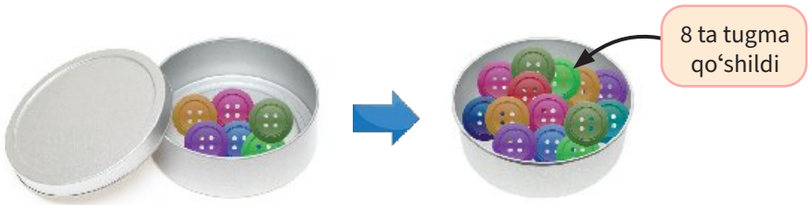
y ta tugma

Unda hammasi bo‘lib $(y + 8)$ ta tugma bo‘ldi.

Agar idishda dastlab 6 ta tugma bor bo‘lsa, $y = 6$.

$$y + 8 = \mathbf{6} + 8$$
$$= 14$$

U holda 14 ta tugma bo‘ladi.



6 ta tugma 14 ta tugma

Agar $y = 10$ bo‘lsa, Halimada nechta tugma bo‘ladi?



2 Qutida $(n - 4)$ dona olmali pirog bor. Agar:

a) $n = 6$ bo‘lsa, qutida nechta olmali pirog bor?

$$n - 4 = \mathbf{6} - 4$$
$$= 2$$

2 dona olmali pirog bor.

b) $n = 15$ bo‘lsa, qutida nechta olmali pirog bor?

$$n - 4 = \mathbf{15} - 4$$
$$= 11$$

11 dona olmali pirog bor.

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3 Jadvalda turli qopchalar soni keltirilgan. Har bir qopchada ***k*** tadan koptok bor. Hammasi bo‘lib nechta koptok bor?

Qopchalar soni	*k* bilan ifodalangan jami koptoklar soni	Agar *k* = 5 bo‘lsa, jami koptoklar soni
2	$2k$	$2 \times \mathbf{5} = 10$
5	$5k$	$5 \times \mathbf{5} = 25$
10	$10k$	$10 \times \mathbf{5} = 50$

$k = 5$
$2k = 2 \times k$
$= 2 \times 5$
$= 10$



4 Jadvalda bolalar soni keltirilgan. Ular orasida ***w*** ta pufak teng taqsimlangan. Har bir bolaga nechtadan pufak tegadi?

Bolalar soni	Har bir boladagi *w* bilan ifodalangan pufaklar soni	Agar *w* = 20 bo‘lsa, har bir boladagi pufaklar soni
2	$\frac{w}{2}$	$\frac{\mathbf{20}}{2} = 10$
5	$\frac{w}{5}$	$\frac{\mathbf{20}}{5} = 4$
10	$\frac{w}{10}$	$\frac{\mathbf{20}}{10} = 2$

$w = 20$
$\frac{w}{2} = \frac{20}{2}$
$= 10$



5 Agar $z = 8$ bo‘lsa, har bir algebraik ifodaning qiymatini toping.

a) $z + 2z = 3z$
$= 3 \times 8$
$= 24$

b) $5z + 2 - 3z = 5z - 3z + 2$
$= 2z + 2$
$= 2 \times 8 + 2$
$= 16 + 2$
$= 18$

c) $\frac{z + 34}{7} = \frac{8 + 34}{7}$
$= \frac{42}{7}$
$= 6$

d) $\frac{z - 2}{3} = \frac{8 - 2}{3}$
$= \frac{6}{3}$
$= 2$

e) $\frac{4 + 3z}{4} = \frac{4 + 3 \times 8}{4}$
$= \frac{4 + 24}{4}$
$= \frac{28}{4}$
$= 7$

f) $\frac{36 - 4z}{2} = \frac{36 - 4 \times 8}{2}$
$= \frac{36 - 32}{2}$
$= \frac{4}{2}$
$= 2$

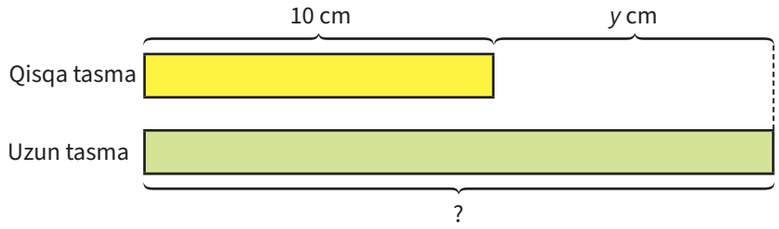
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6 Ikkita tasma uzunliklarining farqi y cm. Qisqa tasmaning uzunligi 10 cm.

a) Uzun tasma uzunligini y orqali ifodalang.

b) Agar $y = 8$ bo‘lsa, uzun tasma uzunligi necha cm?

a)



Uzun tasma uzunligi $(10 + y)$ cm.

b) Agar $y = 8$ bo‘lsa,

$10 + y = 10 + 8$

$= 18$

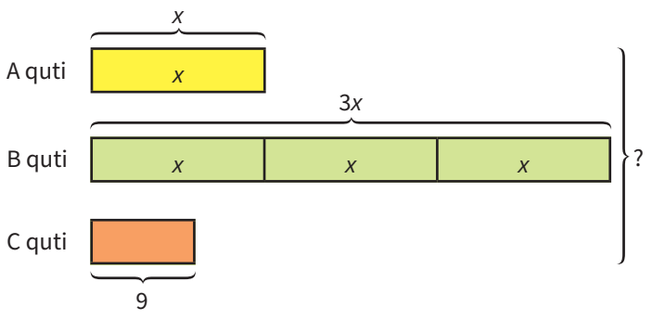
Uzun tasma 18 cm.

7 A qutida x dona, B qutida A qutidagiga qaraganda 3 marta ko‘p, C qutida 9 dona olma bor.

a) Uchta qutidagi olmalarning umumiy sonini x orqali ifodalang.

b) Agar A qutida 15 dona olma bo‘lsa, uchta qutidagi jami olmalar sonini toping.

a)



$x + 3x + 9 = 4x + 9$

Uchta qutidagi olmalarning umumiy soni: $4x + 9$.

b) Agar $x = 15$ bo‘lsa,

$4x + 9 = 4 \times 15 + 9$

$= 60 + 9$

$= 69$

Uchta qutida jami 69 dona olma bor.

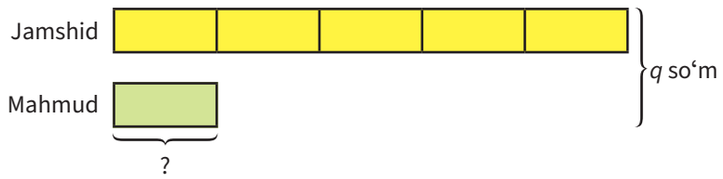
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8 Jamshidning puli Mahmudnikidan 5 marta ko‘p. Ularning jami puli q so‘m.

a) Mahmudning pulini q orqali ifodalang.

b) Agar $q = 78\,000$ so‘m bo‘lsa, Mahmudning qancha puli bor?

a)



6 bo‘lak = q so‘m

1 bo‘lak = $(\frac{q}{6})$ so‘m

Mahmudda $(\frac{q}{6})$ so‘m bor.

b) Agar $q = 78\,000$ bo‘lsa,

$(\frac{q}{6}) = (\frac{78\,000}{6})$

$= 13\,000$ so‘m

Mahmudda 13 000 so‘m bor.

9 Aziza, Komila va Barno bo‘ylarining o‘rta arifmetigi f cm ga teng. Azizaning bo‘yi 100 cm. Barno va Komilaning bo‘yi teng.

a) Barnoning bo‘yini f orqali ifodalang.

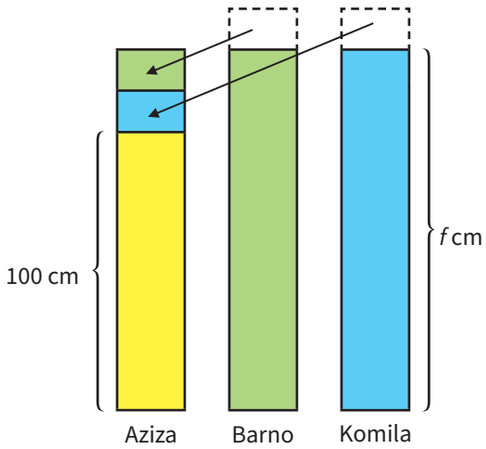
b) Agar $f = 140$ bo‘lsa, Komilaning bo‘yi necha cm?

a) Uchta qizning umumiy bo‘yi = $3 \times f$

$= 3f$ cm

Barno va Komilaning bo‘ylari yig‘indisi = $(3f - 100)$ cm

Barnoning bo‘yi $(\frac{3f - 100}{2})$ cm.



b) Komilaning bo‘yi = $(\frac{3f - 100}{2})$ cm

Agar $f = 140$ bo‘lsa,

$\frac{3f - 100}{2} = \frac{3 \times 140 - 100}{2}$

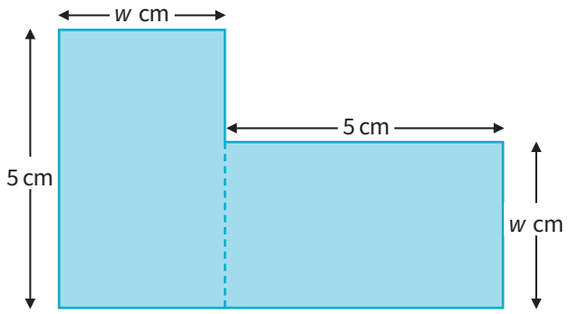
$= 160$

Komilaning bo‘yi 160 cm.

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10 Quyidagi shakl ikkita teng to‘g‘ri to‘rtburchakdan tashkil topgan. Har bir to‘g‘ri to‘rtburchakning o‘lchamlari: 5 cm va w cm.

a) Shaklning yuzini w orqali ifodalang.
b) Agar $w = 3$ bo‘lsa, shaklning yuzini toping.



a) Bitta to‘g‘ri to‘rtburchak yuzi $= 5 \times w$
$= 5w$ cm^2

Ikkita to‘g‘ri to‘rtburchak yuzi $= 5w + 5w$
$= 10w$ cm^2

b) Agar $w = 3$ bo‘lsa, shaklning yuzi
$10w = 10 \times 3$
$= 30$ cm^2

Shaklning yuzi 30 cm^2.

Juftlikda ishlang



Har bir algebraik ifodaning qiymatini sherigingiz bilan navbatma-navbat toping. Sherigingiz ishini tekshiring.

Algebraik ifoda	Harfning qiymati	Ifodaning qiymati
$30 - w$	$w = 8$	
$6k + 13$	$k = 7$	
$\frac{3x - 8}{4}$	$x = 40$	
$\frac{z + 18}{2}$	$z = 0$	

Bajaring va o‘rganing



1 Agar $m = 3$ bo‘lsa, har bir ifodaning qiymatini toping.

a) $8m$ b) $8m + 5$ c) $12 + 5m$
d) $40 - 3m$ e) $7m - 12$ f) $m - m$
g) $\frac{m}{3}$ h) $\frac{4m}{3}$ i) $5 \times 3m$

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2 Agar $y = 5$ bo‘lsa, har bir ifodaning qiymatini toping.

a) $6y + 2 + 3y$ b) $4y + 6 - y$ c) $5y + 3 + 2y - 3$

d) $(15 + y) \div 5 - 2$ e) $\frac{5y + 11}{6}$ f) $\frac{8y - 5}{7}$

3 Munira t yoshda. U opasidan 4 yosh kichik.

a) Opasining yoshini t orqali ifodalang.

b) Agar $t = 8$ bo‘lsa, 7 yildan so‘ng uning opasi necha yoshda bo‘ladi?

4 Anoraning x sahifali albomi bor. U har bir sahifaga 5 tadan stiker yopishtirganidan so‘ng unda 3 ta stikeri qoldi.

a) Anorada nechta stiker borligini x orqali ifodalang.

b) Agar $x = 7$ bo‘lsa, Anorada nechta stiker bor?

5 Ravshan $300q$ so‘mdan 8 ta ruchka sotib oldi va sotuvchiga 50 000 so‘m berdi.

a) U qancha qaytim olishini q orqali ifodalang.

b) Agar $q = 20$ bo‘lsa, u qancha qaytim olgan?

6 To‘g‘ri to‘rtburchakning bo‘yi enidan 4 marta uzun. To‘g‘ri to‘rtburchakning eni k cm.

a) To‘g‘ri to‘rtburchakning bo‘yini k orqali ifodalang.

b) Agar $k = 9$ bo‘lsa, to‘g‘ri to‘rtburchakning perimetrini toping.

7 To‘g‘ri to‘rtburchak shaklidagi konvertning yuzi p cm^2. Konvertning bo‘yi 12 cm.

a) Konvertning enini p orqali ifodalang.

b) Agar $p = 72$ bo‘lsa, konvertning enini toping.

8 Sitoraning $7x$ ta markasi bor. Jamilada $2x$ ta va Pokizada $4x$ ta marka bor.

a) Qizlardagi markalarning o‘rta arifmetigini x orqali ifodalang.

b) Agar $x = 6$ bo‘lsa, Sitoraning markalari soni Jamilanikidan nechta ortiq?

9 Xolasining yoshi Odilning yoshidan 5 marta katta. Odilning tog‘asi xolasidan 6 yosh katta. Odil m yoshda.

a) Tog‘asining yoshini m orqali ifodalang.

b) Odil 10 yoshda bo‘lsa, uning tog‘asi necha yoshda?

Mashq daftariga o‘ting **11–18**

O‘zingizni tekshiring



Men harflarning qiymati berilganda algebraik ifodaning qiymatini topishni bilaman.

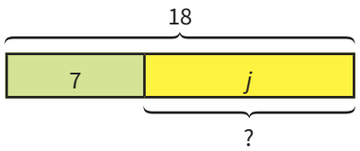
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Tenglamalarni yechish

Qarang va o‘rganing



1 Qutida 7 ta tanga bor. Ravshan yana j ta tanga qo‘shdi va tangalarning umumiy soni 18 ta bo‘ldi. Ravshan nechta tanga qo‘shgan?

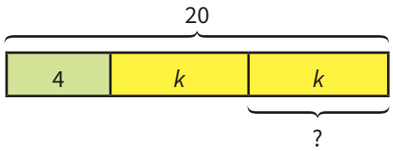


$7 + j = 18$

$j = 18 - 7$
$= 11$

Ravshan 11 ta tanga qo‘shgan.

2 Dastlab qutida k ta sariq tugma bor edi. Tanzila qutiga yana shuncha miqdorda sariq va 4 ta yashil tugma soldi. Shundan so‘ng qutida 20 ta tugma bo‘ldi. Dastlab qutida nechta tugma bo‘lgan?



$4 + 2k = 20$

$2k = 20 - 4$
$= 16$

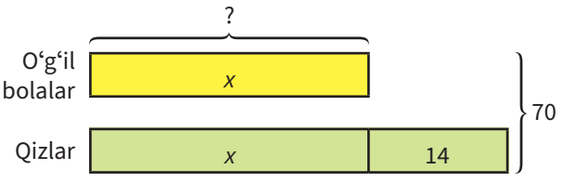
$k = \frac{16}{2}$
$= 8$

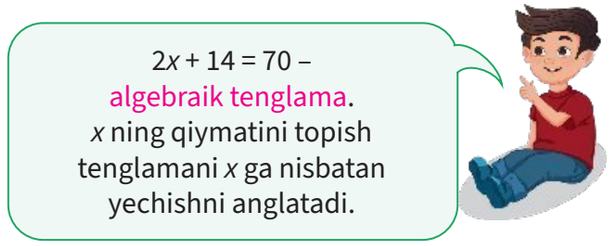
Dastlab qutida 8 ta tugma bo‘lgan.

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3 Tasviriy san'at to'garagiga 70 nafar o'quvchi qatnashadi. To'garakdagi qizlar soni o'g'il bolalar sonidan 14 taga ortiq. Tasviriy san'at to'garagiga necha nafar o'g'il bola qatnashadi?

O'g'il bolalar sonini x bilan belgilaylik.



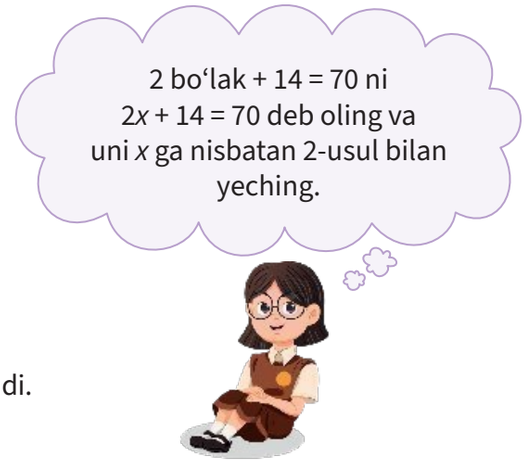


1 -usul

2 bo'lak + 14 = 70
2 bo'lak = 70 – 14
= 56
1 bo'lak = 56 ÷ 2
= 28

2 -usul

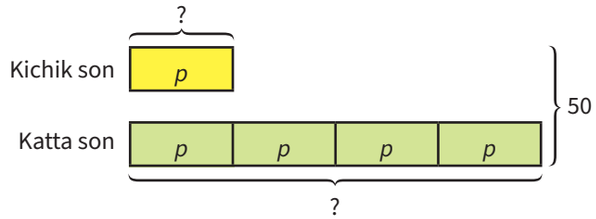
2*x* + 14 = 70
2*x* = 70 – 14
= 56
x = 56 ÷ 2
= 28



Tasviriy san'at to'garagida 28 nafar o'g'il bola qatnashadi.

4 Ikki sonning yig'indisi 50 ga teng. Bu sonlarning kattasi kichigidan 4 marta ortiq.

Bu ikki sonni toping. Kichigini p deb oling.



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

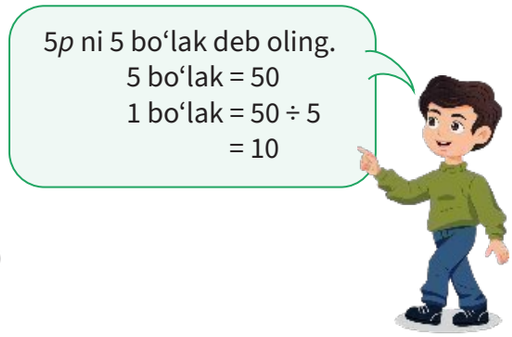
Kichik son 10 ga teng.

$4p = 4 \times 10$
$= 40$

yoki

$50 - 10 = 40$

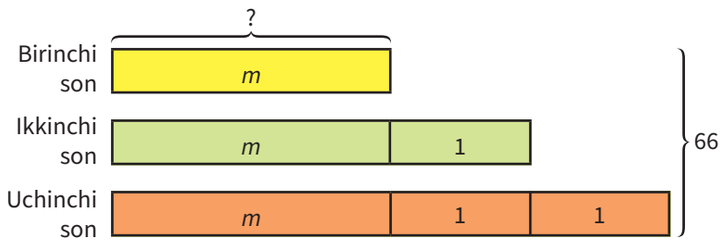
Katta son 40 ga teng.



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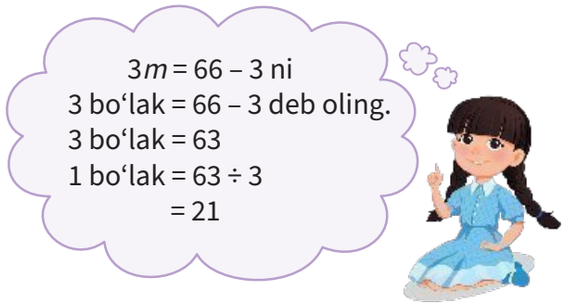
5 Uchta sonning yig‘indisi 66 ga teng. Ikkinchi son birinchisidan 1 ga ortiq. Agar uchinchi son ikkinchisidan 1 ga ortiq bo‘lsa, birinchi sonni toping.

Birinchi sonni m bilan belgilaylik.



$3m = 66 - 3$
$= 63$
$m = 63 \div 3$
$= 21$

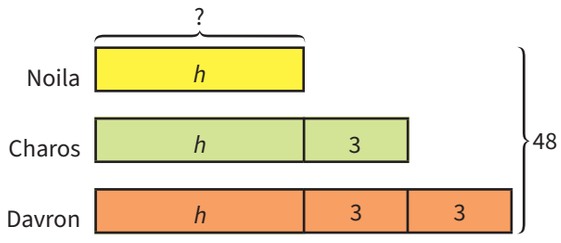
Birinchi son 21 ga teng.



Tekshirish

$21 + 22 + 23 = 66$

6 Davron Charosdan 3 yosh katta. Noila Charosdan 3 yosh kichik. Ularning yoshlari yig‘indisi 48 ga teng. Noilaning yoshini h bilan belgilang va toping.



$3h = 48 - 3 - 3 - 3$
$= 39$
$h = 39 \div 3$
$= 13$

Noila 13 yoshda.

Tekshirish

$3h + 9 = 3 \times 13 + 9$
$= 39 + 9$
$= 48$

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Qiziqarli matematika

O‘rganing va bo‘lishing



Guruh bo‘lib ishlang.

Matnli masalalarni tenglama tuzib yeching. Yechimingizni sinfdoshlaringiz bilan bo‘lishing.

1. Jahongirning puli Rashidnikidan ikki barobar ko‘p. Ikkalasining jami puli 30 000 so‘m. Har bir bolada qanchadan pul bor?

2. Kinoteatrda 60 nafar tomoshabin bor. Katta yoshlilar bolalardan 18 nafarga kam. Kinoteatrda necha nafar katta yoshli tomoshabin bor?

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Bajaring va o‘rganing



Matnli masalalarni yeching.

1. Shahloning vazni 40 kg. U Loladan ikki barobar og‘ir. Ikki qizning umumiy vaznini toping.

2. Jamila dushanba kuni *y* ta tort pishirdi. Seshanba kuni dushanbadagiga qaraganda 5 ta ko‘p tort pishirdi. Agar ikki kunda u 25 ta tort pishirgan bo‘lsa, dushanba kuni nechta tort pishirgan?

3. 100 ming so‘m pul Ali, Bobur, Kamolga bo‘lib berildi. Bobur Alidan ikki barobar ko‘p pul oldi. Kamol Boburdan 10 ming so‘m kam pul oldi. Har bir bola qanchadan pul olgan?

4. Robiyada bir nechta marka bor. Rustamda Robiyaga qaraganda ikki barobar ko‘p marka bor. Madinada Rustamnikidan ikki barobar ko‘p marka bor. Uchala bolada jami 210 ta marka bo‘lsa, Madinada nechta marka bor?

5. Jamshidning puli Alishernikidan 3 barobar ko‘p. Rahimning puli Alishernikidan 2400 so‘mga ortiq. Uchta bolada jami 27 400 so‘m pul bor. Har bir bolada qanchadan pul bor?

6. Uchta son berilgan bo‘lib, ularning ikkinchisi birinchisidan 2 taga ortiq. Uchinchi son ikkinchisidan 2 taga ortiq. Uchta sonning yig‘indisi 54 ga teng. Bu sonlar ichida eng kattasi nechaga teng?

7. Maryam xola 45 yoshda. Saida opa *p* yoshda. Maryam xolaning yoshi Saida opaning yoshidan 3 baravar katta. 6 yildan so‘ng Saida opa necha yoshda bo‘ladi?

Mashq daftariga o‘ting 19–28

O‘zingizni tekshiring



Men matnli masalalarni sodda tenglamalar yordamida yechishni bilaman.

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O‘ylab ko‘ring



a) Quyidagi sehrli kvadratda har bir qator, ustun va diagonaldagi sonlar yig‘indisi 15 ga teng. Sehrli kvadratda tushirib qoldirilgan sonlarni toping.

		6
	5	
4		2

Sehrli kvadrat

Katakchalarni to‘ldirishdan oldin qator, ustun va diagonallardagi sonlarda biror qonuniyatni ko‘ryapsizmi?



Sehrli kvadratda har bir qator, ustun yoki diagonaldagi sonlar yig‘indisi teng va har bir son faqat bir marta ishlatilgan.



b) Sehrli kvadratning markazidagi sonni ***x*** bilan belgilaylik.
Kataklardagi tushirib qoldirilgan harfli ifodalarni toping.

		$x + 1$
	x	
		$x - 3$

c) Har bir ifodaning qiymatini $x = 8$ uchun hisoblang.
Sehrli kvadrat hosil bo‘ldimi?

Mashq daftariga o‘ting **29–32**

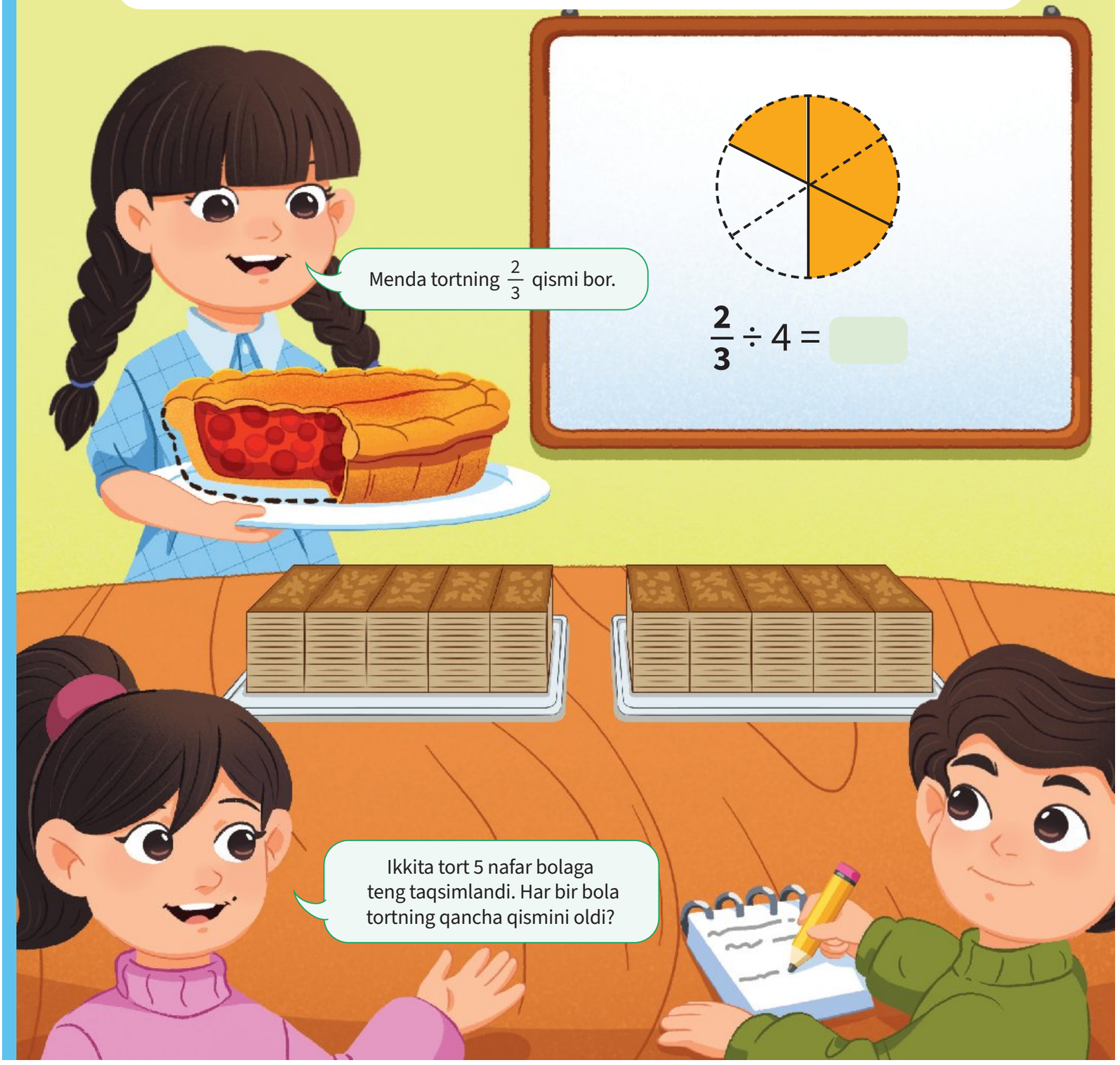
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2 Oddiy kasrlar

Muhokama qiling



Tortning $\frac{2}{3}$ qismi to‘rt nafar bolaga teng taqsimlandi. Har bir bolaga tortning qancha qismi tegdi?



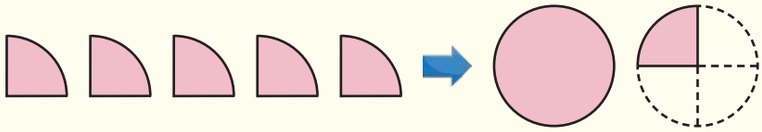
Eslang



Kasrlarni ko‘paytirish

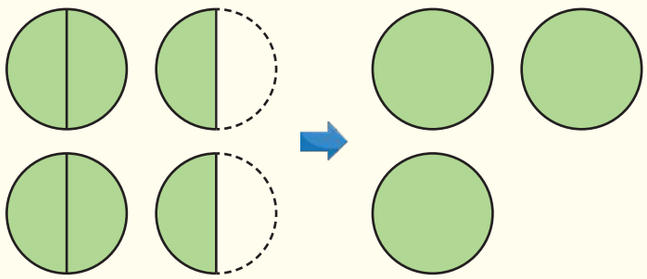
1 Ko‘paytmani toping: $\frac{1}{4} \times 5$.

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



2 Ko‘paytmani toping: $\frac{3}{2} \times 2$.

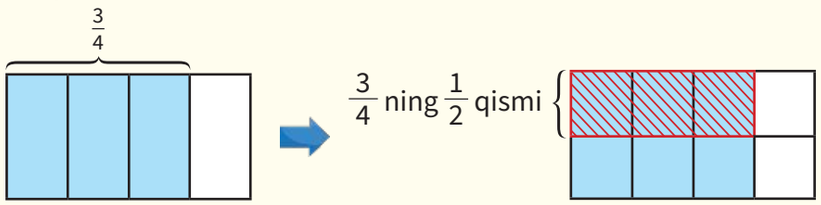
$$\frac{3}{2} \times 2 = \frac{6}{2}$$
$$= 3$$





3 $\frac{3}{4}$ ning $\frac{1}{2}$ qismi nechaga teng?

$$\frac{3}{4} \text{ ning } \frac{1}{2} \text{ qismi} = \frac{3}{4} \times \frac{1}{2}$$
$$= \frac{3}{8}$$



4 $\frac{1}{3}$ va $\frac{9}{8}$ ning ko‘paytmasini toping. Javobni qisqarmas kasr ko‘rinishida yozing.

1-usul

$$\frac{1}{3} \times \frac{9}{8} = \frac{1 \times 9}{3 \times 8}$$
$$= \frac{9}{24}$$
$$= \frac{3}{8}$$

2-usul

$$\frac{1}{\cancel{3}_{1}} \times \frac{\cancel{9}^{3}}{8} = \frac{3}{8}$$

5 $\frac{9}{4}$ va $\frac{8}{5}$ ning ko‘paytmasini toping. Javobni aralash kasr ko‘rinishida ifodalang.

$$\frac{9}{4} \times \frac{8}{5} = 3\frac{3}{5}$$

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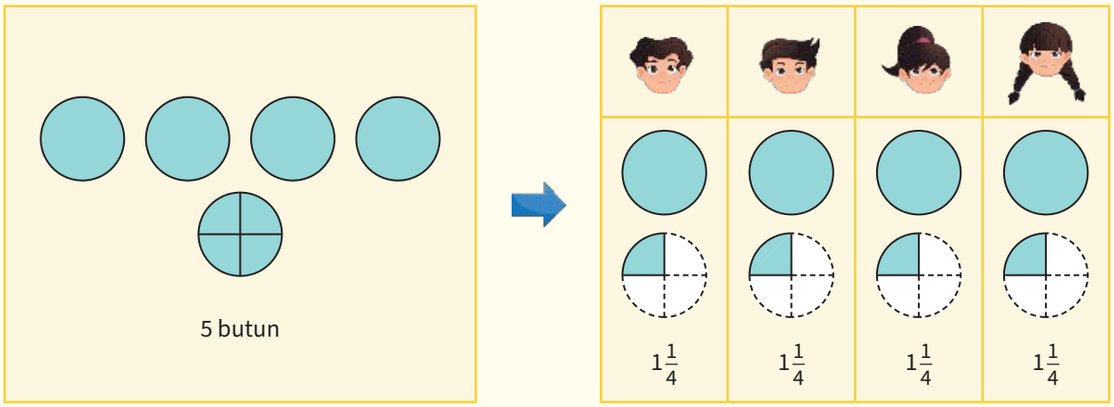
6 Shishada $1\frac{4}{5}\ \ell$ suv bor. Halim 8 ta shunday shishada suv sotib oldi. Halim hammasi bo‘lib necha litr suv sotib olgan?

$1\frac{4}{5} \times 8 = 14\frac{2}{5}$

Halim $14\frac{2}{5}\ \ell$ suv sotib olgan.

Natural sonlar bo‘linmasi kasr ko‘rinishida

5 ta tortni 4 nafar bolaga teng taqsimlang. Har bir bola qanchadan tort oladi?



1-usul

$5 \div 4 = \frac{5}{4}$

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

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

2-usul

$$\begin{array}{r|l} 5 & 4 \\ \hline -\ 4 & 1 \\ \hline 1 & \end{array}$$

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

Har bir bola $1\frac{1}{4}$ tadan tort oladi.

Mashq daftariga o‘ting **33–34**

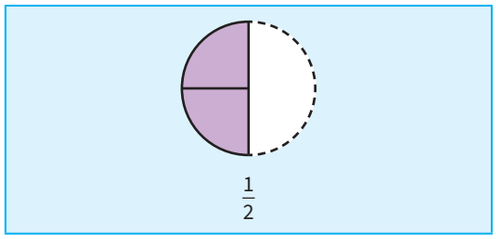
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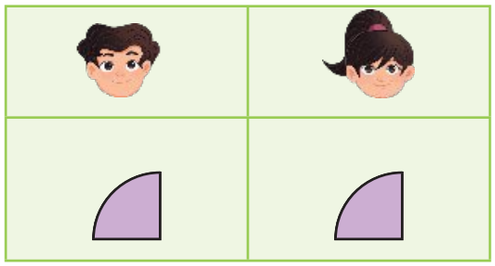
To‘g‘ri kasrni natural songa bo‘lish

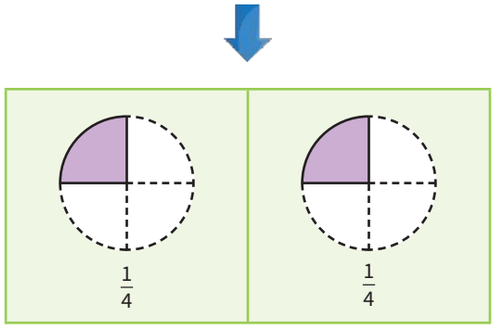
Qarang va o‘rganing



1 Pitsaning $\frac{1}{2}$ qismini ikki nafar bolaga teng taqsimlang. Har bir bolaga pitsaning qancha qismi to‘g‘ri keladi?







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

$= \frac{1}{4}$

Har bir bola pitsaning $\frac{1}{4}$ qismini oladi.

2 nafar bola pitsaning $\frac{1}{2}$ qismini teng bo‘lishadi.

Har bir bola $\frac{1}{2}$ ning $\frac{1}{2}$ qismiga ega bo‘ladi.



$\frac{1}{2}$ ning $\frac{1}{2}$ qismi $= \frac{1}{2} \times \frac{1}{2}$

$= \frac{1}{4}$

Har bir bola pitsaning $\frac{1}{4}$ qismini oladi.



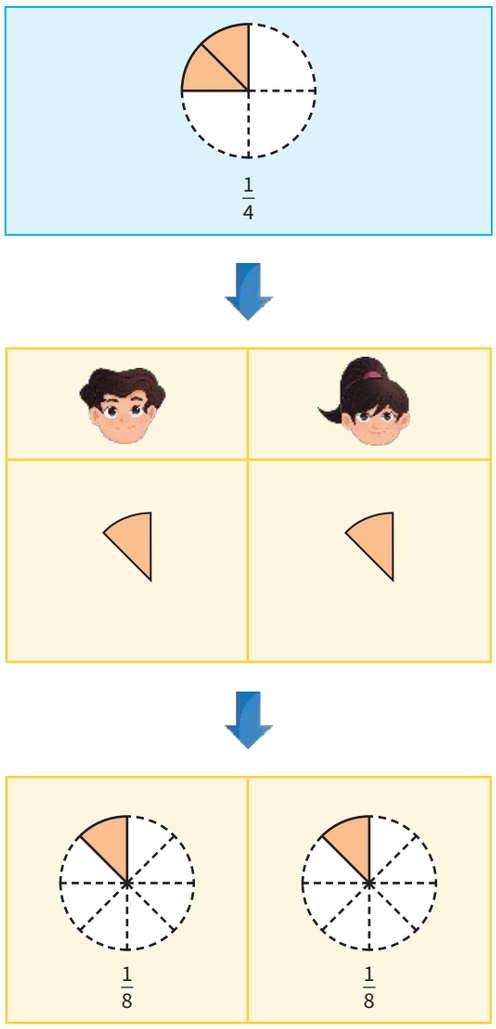
Yana bir misol

Pitsaning $\frac{1}{2}$ qismi 3 nafar bolaga teng taqsimlansa, har bir bola pitsaning qancha qismini oladi?



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2 Pitsaning $\frac{1}{4}$ qismini ikki nafar bolaga teng taqsimlang. Har bir bolaga pitsaning qancha qismi to‘g‘ri keladi?



2 nafar bola pitsaning $\frac{1}{4}$ qismini teng bo‘lishadi.

Har bir bola $\frac{1}{4}$ ning $\frac{1}{2}$ qismiga ega bo‘ladi.



$\frac{1}{4}$ ning $\frac{1}{2}$ qismi $= \frac{1}{4} \times \frac{1}{2}$

$= \frac{1}{8}$

Har bir bola pitsaning $\frac{1}{8}$ qismini oladi.



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

$= \frac{1}{8}$

Har bir bola pitsaning $\frac{1}{8}$ qismini oladi.

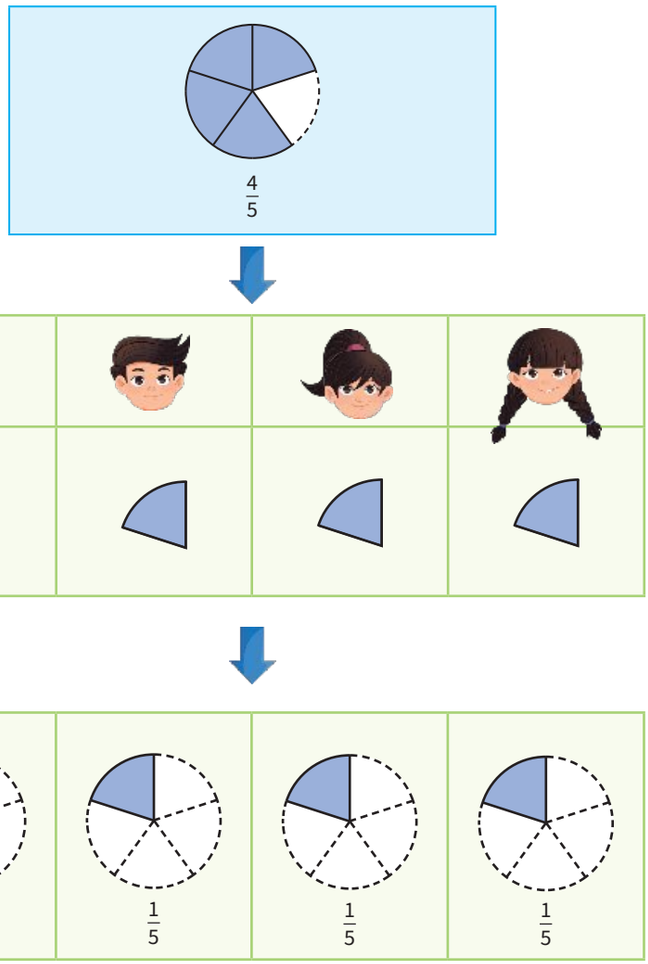
Yana bir misol

Pitsaning $\frac{1}{4}$ qismi 4 nafar bolaga teng taqsimlansa, har bir bola pitsaning qancha qismini oladi?



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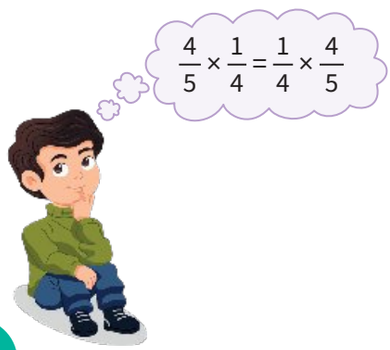
3 Pitsaning $\frac{4}{5}$ qismini to‘rt nafar bolaga teng taqsimlang. Har bir bolaga pitsaning qancha qismi to‘g‘ri keladi?



$\frac{4}{5} \div 4 = \frac{\cancel{4}^{1}}{5} \times \frac{1}{\cancel{4}_{1}}$

$= \frac{1}{5}$

Har bir bola pitsaning $\frac{1}{5}$ qismini oladi.



4 nafar bola pitsaning $\frac{4}{5}$ qismini teng bo‘lishadi.

Har bir bola pitsa $\frac{4}{5}$ qismining $\frac{1}{4}$ qismiga ega bo‘ladi.



$\frac{4}{5}$ ning $\frac{1}{4}$ qismi $= \frac{\cancel{4}^{1}}{5} \times \frac{1}{\cancel{4}_{1}}$

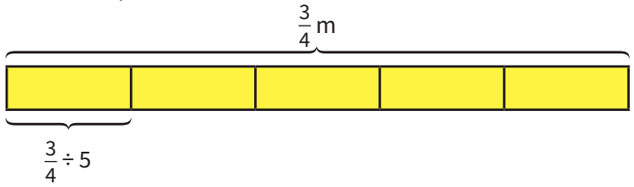
$= \frac{1}{5}$

Har bir bola pitsaning $\frac{1}{5}$ qismini oladi.



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4 Uzunligi $\frac{3}{4}$ m bo‘lgan sim teng 5 bo‘lakka bo‘lindi. Har bir bo‘lakning uzunligini toping.



$\frac{3}{4} \div 5 = \frac{3}{4} \times \frac{1}{5}$

$= \frac{3}{20}$

Har bir sim bo‘lagining uzunligi $\frac{3}{20}$ m.

“$\frac{3}{4} \div 5$” va “$\frac{3}{4}$ ning $\frac{1}{5}$ qismi” bir xil ma’noga ega.

$\frac{3}{4}$ ning $\frac{1}{5}$ qismi $= \frac{3}{4} \times \frac{1}{5}$

$= \frac{3}{20}$



Qo‘lda bajariladigan mashq





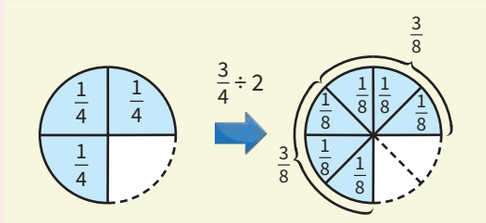
Guruh bo‘lib ishlang.

Quyidagilarni hisoblash uchun kasrli doira bo‘laklaridan foydalaning.

a) $\frac{1}{2} \div 4 =$ ____ b) $\frac{3}{5} \div 2 =$ ____ c) $\frac{2}{3} \div 3 =$ ____

Namuna

$\frac{3}{4} \div 2 = \frac{3}{8}$



Juftlikda ishlang



Ko‘paytiring. Nimani payqadingiz?

Bo‘lish	Ko‘paytirish
$\frac{3}{4} \div 4 = \frac{3}{16}$	$\frac{3}{4} \times \frac{1}{4} =$ ____
$\frac{5}{8} \div 2 = \frac{5}{16}$	$\frac{5}{8} \times \frac{1}{2} =$ ____
$\frac{2}{3} \div 4 = \frac{1}{6}$	$\frac{2}{3} \times \frac{1}{4} =$ ____

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Kasrni natural songa bo‘lish:

$\frac{3}{4} \div \mathbf{2} = \frac{3}{4} \times \frac{1}{\mathbf{2}} = \frac{3}{8}$

o‘z holida qoldiring — ÷ ni × bilan almashtiring — teskarisini yozing

AKT mashqi



To‘g‘ri kasrni natural songa bo‘lishni ko‘rsatish uchun **“Kasrni songa bo‘lish”** dasturidan foydalaning.

Bajaring va o‘rganing



1 Bo‘lishni bajaring va javobni qisqarmas kasr shaklida yozing.

a) $\frac{1}{3} \div 4$ b) $\frac{3}{5} \div 6$ c) $\frac{5}{9} \div 5$

d) $\frac{3}{8} \div 6$ e) $\frac{4}{7} \div 2$ f) $\frac{2}{3} \div 8$

2 $\frac{3}{5}\ \ell$ apelsin sharbati 3 ta stakanga teng taqsimlandi. Har bir stakanda qanchadan apelsin sharbati bor?

3 $\frac{9}{10}$ m tasma teng 6 bo‘lakka bo‘lindi. Har bir bo‘lakning uzunligini aniqlang.

4 $\frac{7}{8}$ kg yeryong‘oq 5 ta qutiga teng miqdorda qadoqlandi. Har bir qutida necha kilogramm yeryong‘oq bor?

Mashq daftariga o‘ting **35–40**

O‘zingizni tekshiring



Men to‘g‘ri kasrni natural songa bo‘lishni bilaman.

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Natural sonni to‘g‘ri kasrga bo‘lish

Qarang va o‘rganing

1 Butun doira to‘rtta chorakka bo‘lindi.



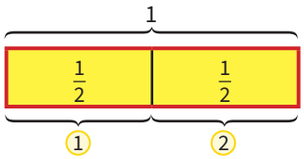
$1 \div \frac{1}{4} = 4$

1 butunda 4 ta chorak bor.

Bir butunda nechta chorak bor?



2 1 ta shokolad yarimtadan bo‘laklarga bo‘lindi.



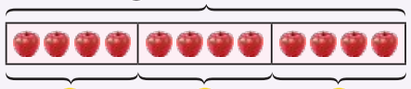
$1 \div \frac{1}{2} = 2$

Bir butunda 2 ta yarim bor.

1 butunda nechta yarim bor?



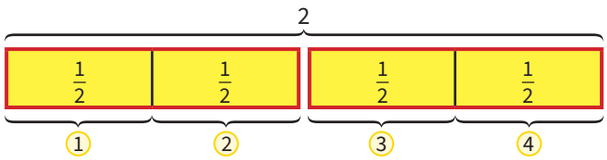
Eslang 12



$12 \div 4 = 3$
bu yerda 4 tadan 3 ta guruh bor



3 a) 2 ta shokolad yarimtadan bo‘laklarga bo‘lindi.



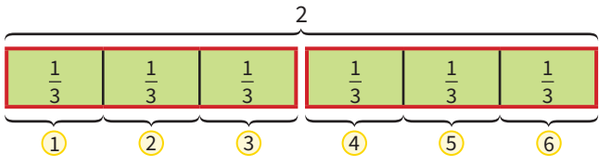
$2 \div \frac{1}{2} = 4$

2 ta butunda 4 ta yarim bor.

2 ta butunda nechta yarim bor?



b) 2 ta shokolad uchdan bir bo‘laklarga bo‘lindi.



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

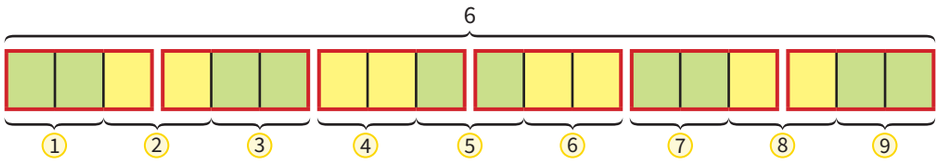
2 ta butunda 6 ta uchdan bir bor.

2 ta butunda uchdan birdan nechta bor?



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4 6 ni $\frac{2}{3}$ ga bo‘ling.





$6 \div \frac{2}{3} = 9$

6 ta butunda 9 ta uchdan ikki bor.

Qo‘lda bajariladigan mashq



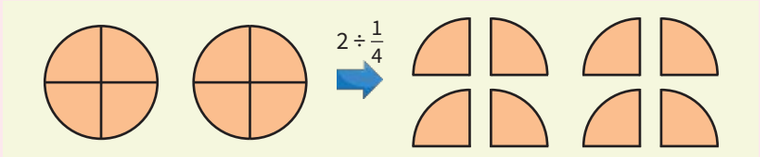


Guruh bo‘lib ishlang.
Quyidagilarni hisoblash uchun doiraning kasrli bo‘laklaridan foydalaning.

a) $4 \div \frac{1}{2} =$ b) $3 \div \frac{1}{3} =$ c) $4 \div \frac{2}{5} =$

Namuna

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



Juftlikda ishlang



Ko‘paytiring. Nimani payqadingiz?

Bo‘lish	Ko‘paytirish
$2 \div \frac{1}{5} = 10$	$2 \times \frac{5}{1} =$
$3 \div \frac{3}{4} = 4$	$\overset{1}{\cancel{3}} \times \frac{4}{\cancel{3}_{1}} =$
$4 \div \frac{2}{3} = 6$	$\overset{2}{\cancel{4}} \times \frac{3}{\cancel{2}_{1}} =$

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Natural sonni kasrga bo‘lish:

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

o‘z holida qoldiring | ÷ ni × bilan almashtiring | teskarisini yozing

AKT mashqi



Natural sonni to‘g‘ri kasrga ko‘rgazmali bo‘lish uchun **“Sonni kasrga bo‘lish”** dasturidan foydalaning.

Bajaring va o‘rganing



1 Bo‘lishni bajaring.

a) $6 \div \frac{1}{8}$ b) $10 \div \frac{1}{3}$ c) $10 \div \frac{2}{5}$

d) $12 \div \frac{3}{4}$ e) $4 \div \frac{3}{5}$ f) $5 \div \frac{3}{8}$

2 Butun shokolad bir nechta bolaga teng bo‘lib berildi. Har bir bola shokoladning $\frac{1}{7}$ qismini oldi. Shokolad nechta bolaga bo‘lingan?

3 12 ta pitsa bir nechta bolaga teng bo‘lindi. Har bir bolaga pitsaning $\frac{2}{3}$ qismi tegdi. Pitsa nechta bolaga bo‘lib berilgan?

4 5 m uzunlikdagi arqon har birining uzunligi $\frac{5}{8}$ m bo‘lgan teng bo‘laklarga bo‘lindi. Arqon necha bo‘lakka bo‘lingan?

5 Idishda 10 ℓ suv bor. Bu suv bilan hajmi $\frac{3}{4}\ell$ bo‘lgan stakanlardan nechtasini to‘ldirish mumkin?

Mashq daftariga o‘ting **41–48**

O‘zingizni tekshiring



Men natural sonni to‘g‘ri kasrga bo‘lishni bilaman.

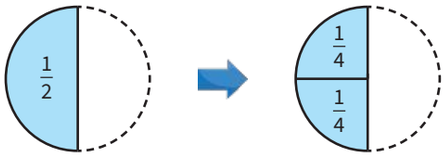
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To‘g‘ri kasrni to‘g‘ri kasrga bo‘lish

Qarang va o‘rganing

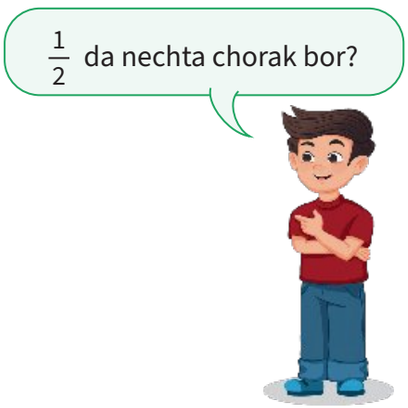


1 Tortning $\frac{1}{2}$ qismi choraklarga bo‘lindi.

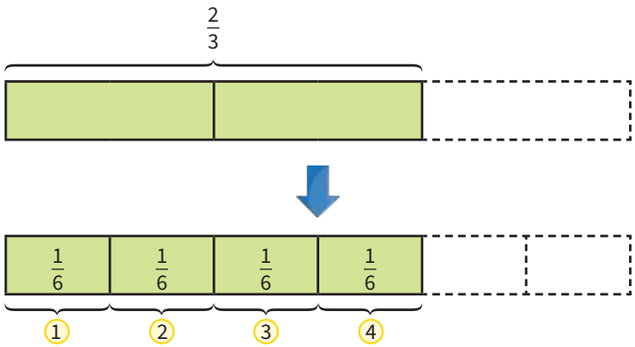


$\frac{1}{2} \div \frac{1}{4} = 2$

$\frac{1}{2}$ da 2 ta chorak bor.

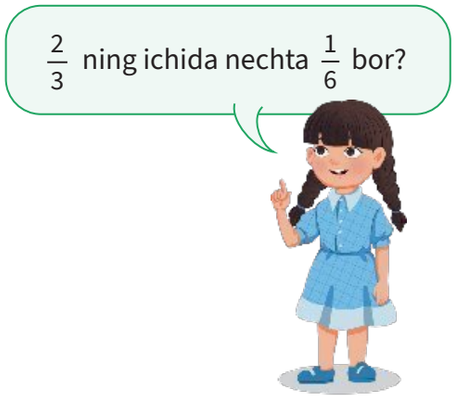


2 Layloda butun tortning $\frac{2}{3}$ qismi bor edi. Laylo uni butun tortning $\frac{1}{6}$ qismini tashkil etadigan bo‘laklarga bo‘ldi. Nechta bo‘lak hosil bo‘ldi?



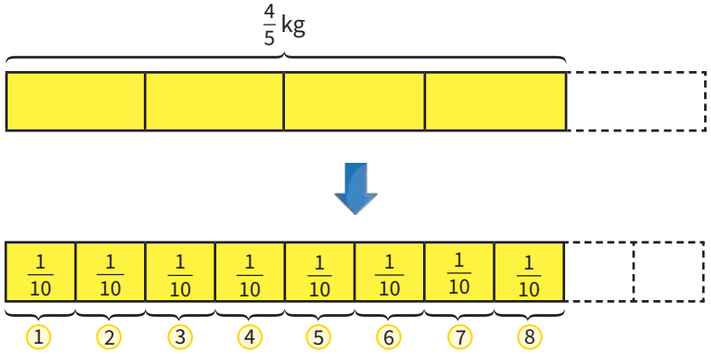
$\frac{2}{3} \div \frac{1}{6} = 4$

4 ta bo‘lak hosil bo‘ldi.



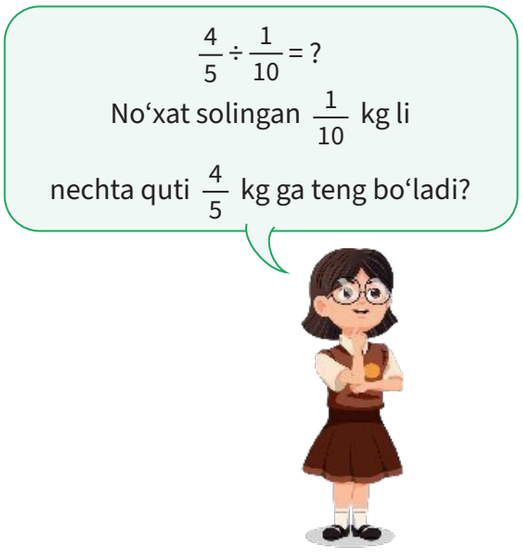
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3 Do‘konda $\frac{4}{5}$ kg yashil no‘xat bor. Sotuvchi no‘xatni $\frac{1}{10}$ kg li kichik qutilarga qadoqladi. U necha quti no‘xat qadoqlagan?

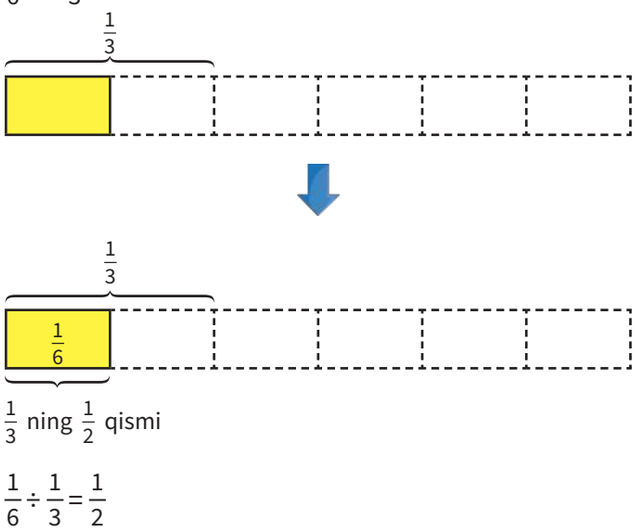


$\frac{4}{5} \div \frac{1}{10} = 8$

8 quti yashil no‘xat qadoqlagan.

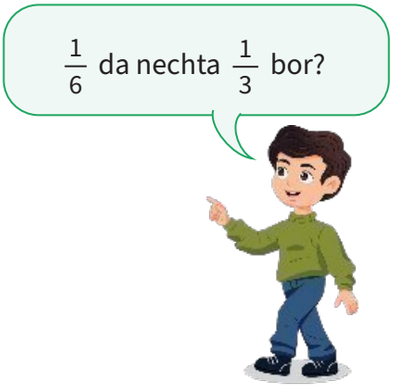


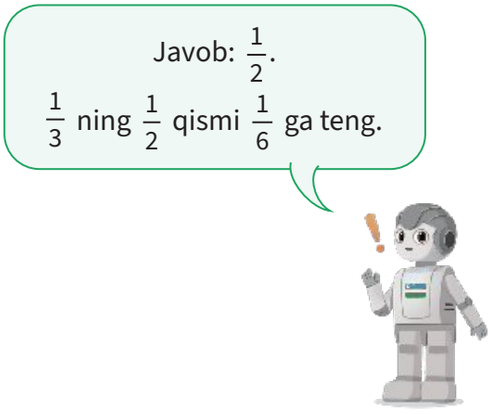
4 $\frac{1}{6}$ ni $\frac{1}{3}$ ga bo‘ling.



$\frac{1}{3}$ ning $\frac{1}{2}$ qismi

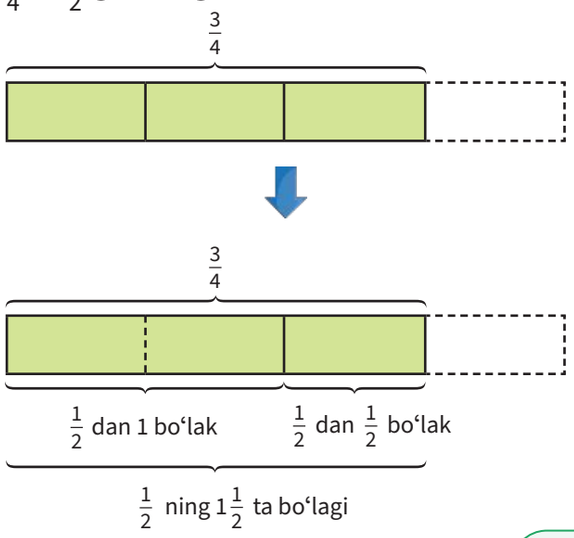
$\frac{1}{6} \div \frac{1}{3} = \frac{1}{2}$



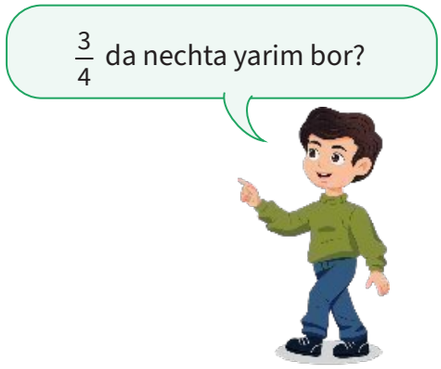


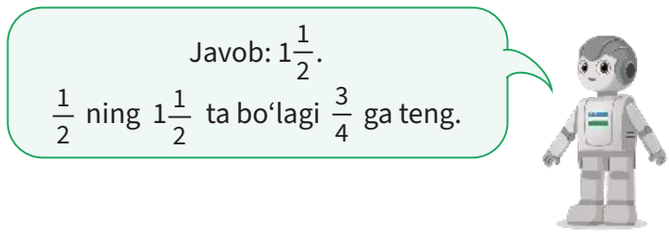
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5 $\frac{3}{4}$ ni $\frac{1}{2}$ ga bo‘ling.

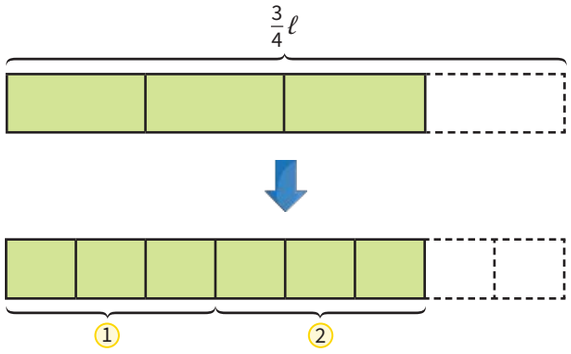


$\frac{3}{4} \div \frac{1}{2} = 1\frac{1}{2}$



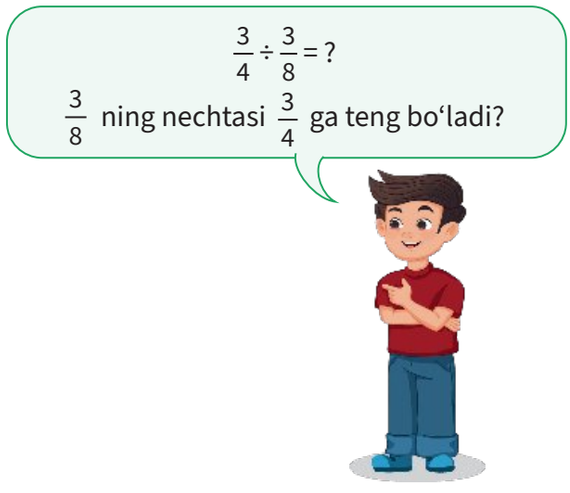


6 Idishda $\frac{3}{4}\ell$ suv bor edi. Sobir suvni hajmi $\frac{3}{8}\ell$ bo‘lgan stakanlarga to‘ldirib quydi. Sobir nechta stakanga suv quygan?



$\frac{3}{4} \div \frac{3}{8} = 2$

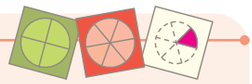
U 2 ta stakanga suv quygan.



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Qo‘lda bajariladigan mashq





Guruh bo‘lib ishlang.
Quyidagilarni hisoblash uchun kasrli doira bo‘laklaridan foydalaning.

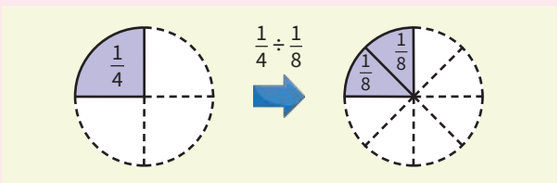
a) $\frac{1}{2} \div \frac{1}{6} =$ ____

b) $\frac{2}{5} \div \frac{1}{10} =$ ____

c) $\frac{2}{3} \div \frac{4}{9} =$ ____

Namuna

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



Juftlikda ishlang



Ko‘paytiring. Nimani payqadingiz?

Bo‘lish	Ko‘paytirish
$\frac{1}{2} \div \frac{1}{8} = 4$	$\frac{\cancel{1}^{1}}{\cancel{2}_{1}} \times \frac{\cancel{8}^{4}}{\cancel{1}} =$ ____
$\frac{5}{6} \div \frac{1}{3} = 2\frac{1}{2}$	$\frac{5}{\cancel{6}_{2}} \times \frac{\cancel{3}^{1}}{1} =$ ____
$\frac{3}{8} \div \frac{3}{4} = \frac{1}{2}$	$\frac{\cancel{3}^{1}}{\cancel{8}_{2}} \times \frac{\cancel{4}^{1}}{\cancel{3}_{1}} =$ ____

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Kasrni kasrga bo‘lish:

$\frac{4}{5} \div \frac{\mathbf{1}}{10} = \frac{4}{5} \times \frac{10}{\mathbf{1}} = 8$

- $\frac{4}{5}$: o‘z holida qoldiring
- $\div$: ÷ ni × bilan almashtiring
- $\frac{\mathbf{1}}{10}$: teskarisini yozing

AKT mashqi



To‘g‘ri kasrni to‘g‘ri kasrga bo‘lish uchun **“Kasrni kasrga bo‘lish”** dasturidan foydalaning.

Bajaring va o‘rganing



1 Bo‘lishni bajaring.

a) $\frac{5}{6} \div \frac{1}{3}$ b) $\frac{1}{2} \div \frac{1}{10}$ c) $\frac{3}{4} \div \frac{1}{4}$

d) $\frac{5}{12} \div \frac{2}{3}$ e) $\frac{2}{3} \div \frac{7}{12}$ f) $\frac{4}{15} \div \frac{4}{5}$

2 Musobaqada Ravshanga bir nechta boshqotirmani yechishi uchun $\frac{3}{4}$ soat vaqt berildi. Agar har bir boshqotirma uchun $\frac{1}{12}$ soat berilgan bo‘lsa, Ravshan nechta boshqotirma yechishi kerak?

3 Surayyoda $\frac{3}{4}$ piyola un bor. Agar bitta vafli tayyorlash uchun $\frac{1}{8}$ piyola un kerak bo‘lsa, Surayyo nechta vafli tayyorlay oladi?

4 Solihada $\frac{3}{5}$ kg bodroq bor edi. U bodroqni kichik paketlarga $\frac{3}{15}$ kg dan qadoqladi. Solihada necha paket bodroq bo‘ldi?

Mashq daftariga o‘ting **49–54**

O‘zingizni tekshiring



Men to‘g‘ri kasrni to‘g‘ri kasrga bo‘lishni bilaman.

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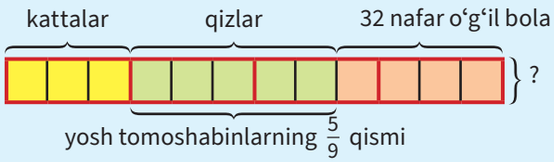
Matnli masalalar

Qarang va o‘rganing



1 Maktab konsert zalidagi tomoshabinlarning $\frac{1}{4}$ qismi – katta yoshlilar. Yosh tomoshabinlarning $\frac{5}{9}$ qismi – qizlar va qolgani – o‘g‘il bolalar. Agar konsert zalida 32 nafar o‘g‘il bola bo‘lsa, tomoshabinlarning umumiy sonini aniqlang.

1-usul



4 bo‘lak = 32

1 bo‘lak = 32 ÷ 4

= 8

12 bo‘lak = 12 × 8

= 96

Jami tomoshabinlar soni 96 ta.

2-usul

Yosh tomoshabinlar $= 1 - \frac{1}{4}$

$= \frac{3}{4}$

Ularning $\frac{5}{9}$ qismi $= \frac{\overset{1}{\cancel{3}}}{4} \times \frac{5}{\underset{3}{\cancel{9}}}$

$= \frac{5}{12}$

$\frac{5}{12}$ qismi – qizlar.

$\frac{3}{4} - \frac{5}{12} = \frac{1}{3}$

$\frac{1}{3}$ qismi – o‘g‘il bolalar.

$\frac{1}{3}$ qismi = 32

$\frac{3}{3}$ qismi = 32 × 3

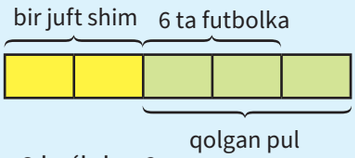
= 96

Jami tomoshabinlar soni 96 ta.

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2 Farrux pulining $\frac{2}{5}$ qismiga bir juft shim va qolgan pulining $\frac{2}{3}$ qismiga 6 ta futbolka sotib oldi. Agar u hamma puliga futbolka sotib olganida, nechta futbolka olardi?

1-usul



2 bo‘lak = 6

1 bo‘lak = 6 ÷ 2
= 3

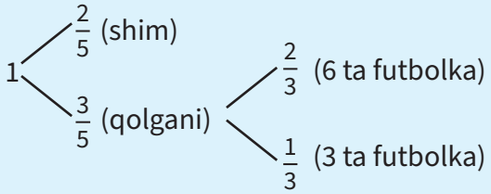
5 bo‘lak = 5 × 3
= 15

U 15 ta futbolka sotib olishi mumkin edi.

2-usul

$$\text{Qolgani} = 1 - \frac{2}{5}$$
$$= \frac{3}{5}$$

$$\text{Qolganining } \frac{2}{3} \text{ qismi} = \frac{\cancel{3}^{1}}{5} \times \frac{2}{\cancel{3}_{1}}$$
$$= \frac{2}{5}$$



Futbolkalarning $\frac{2}{5}$ qismi = 6

Futbolkalarning $\frac{1}{5}$ qismi = 6 ÷ 2
= 3

Futbolkalarning $\frac{5}{5}$ qismi = 5 × 3
= 15

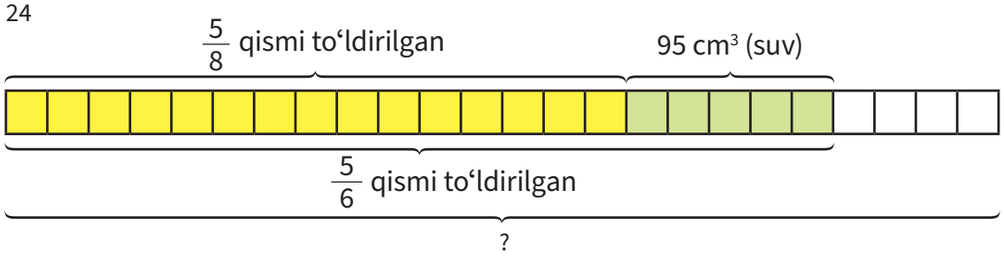
U 15 ta futbolka sotib olishi mumkin edi.

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3 Idishning $\frac{5}{8}$ qismi suv bilan to‘ldirilgan edi. Ravshan unga 95 cm^3 suv quyganidan so‘ng idishning $\frac{5}{6}$ qismi to‘ldi. Idishning hajmini toping.

$\frac{5}{6} - \frac{5}{8} = \frac{20}{24} - \frac{15}{24}$

$= \frac{5}{24}$



5 bo‘lak = 95 cm^3

1 bo‘lak = 95 ÷ 5

= 19 cm^3

24 bo‘lak = 24 × 19

= 456 cm^3

Idishning hajmi 456 cm^3.

4 12 m uzunlikdagi arqon har biri $\frac{3}{4}$ m li kichik bo‘laklarga bo‘lindi. Aziza shunday bo‘laklardan 3 tasini oldi. Jamshid esa 1 bo‘lak arqon oldi va uning $\frac{4}{5}$ qismini qutini bog‘lash uchun ishlatdi.

a) Nechta kichik bo‘lak hosil bo‘ldi?

b) Aziza necha metr arqon oldi?

c) Jamshid necha metr arqonni ishlatdi?

a) $12 \div \frac{3}{4} = 12^{4} \times \frac{4}{3_{1}}$

$= 16$

16 ta kichik bo‘lak hosil bo‘ldi.

b) $3 \times \frac{3}{4} = \frac{9}{4}$

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

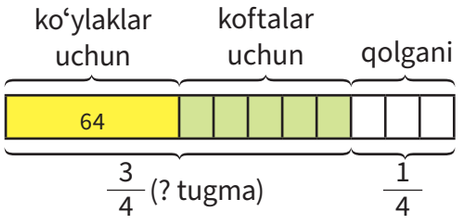
Aziza $2\frac{1}{4}$ m arqon oldi.

c) $\frac{4^{1}}{5} \times \frac{3}{4_{1}} = \frac{3}{5}$

Jamshid $\frac{3}{5}$ m arqon ishlatdi.

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5 Layloning bir nechta tugmasi bor edi. U 64 ta tugmani ko‘ylaklar va qolganining $\frac{5}{8}$ qismini koftalar uchun ishlatdi. Shundan so‘ng unda jami tugmalarning $\frac{1}{4}$ qismi qoldi. Laylo hammasi bo‘lib nechta tugma ishlatgan?



$\frac{1}{4}$ → 3 bo‘lak

$\frac{3}{4}$ → 3 × 3 = 9 bo‘lak

9 bo‘lak − 5 bo‘lak = 4 bo‘lak

4 bo‘lak = 64

1 bo‘lak = 64 ÷ 4
= 16

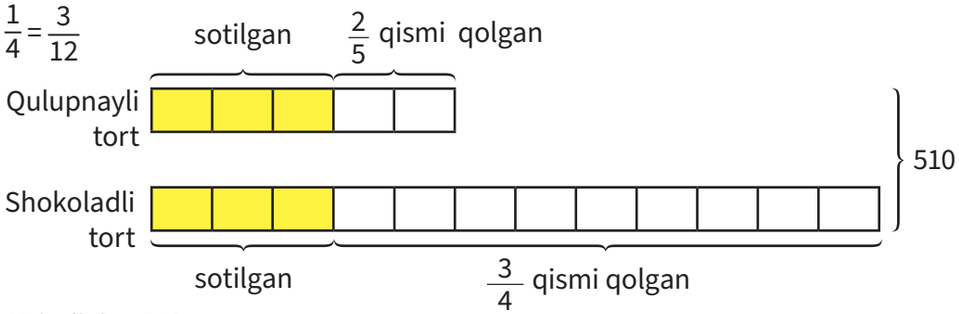
5 bo‘lak = 5 × 16
= 80

80 + 64 = 144

U hammasi bo‘lib 144 dona tugma ishlatgan.

6 Temur akada dastlab 510 ta qulupnayli va shokoladli tort bor edi. Ikki xil tortdan ham bir xil miqdorda sotganidan so‘ng qulupnayli tortning $\frac{2}{5}$ qismi va shokoladli tortning $\frac{3}{4}$ qismi qoldi. Nechta tort sotilmay qolgan?

$\frac{1}{4} = \frac{3}{12}$



17 bo‘lak = 510

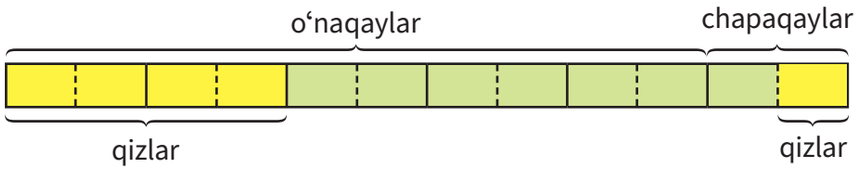
1 bo‘lak = 510 ÷ 17
= 30

11 bo‘lak = 11 × 30
= 330

330 dona tort sotilmay qolgan.

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7 Sinfdagi o‘quvchilarning $\frac{5}{6}$ qismi o‘naqaylar, qolgani esa chapaqaylar. O‘naqaylarning $\frac{2}{5}$ qismi va chapaqaylarning $\frac{1}{2}$ qismi – qizlar. Qizlar sinfdagi o‘quvchilarning qancha qismini tashkil qiladi?



$\frac{\cancel{5}^{1}}{\cancel{6}_{3}} \times \frac{\cancel{2}^{1}}{\cancel{5}_{1}} = \frac{1}{3}$

O‘quvchilarning $\frac{1}{3}$ qismi o‘naqay qizlar.

$1 - \frac{5}{6} = \frac{1}{6}$

O‘quvchilarning $\frac{1}{6}$ qismi chapaqaylar.

$\frac{1}{2} \times \frac{1}{6} = \frac{1}{12}$

O‘quvchilarning $\frac{1}{12}$ qismi chapaqay qizlar.

$\frac{1}{3} + \frac{1}{12} = \frac{4}{12} + \frac{1}{12}$

$= \frac{5}{12}$

Sinfdagi o‘quvchilarning $\frac{5}{12}$ qismi qizlar.

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Juftlikda ishlang



1 Quyidagilarni topish uchun juftlikda ishlang.

a) Tomoni $2\frac{4}{5}$ cm bo‘lgan kvadratning yuzini toping.

b) Qirrasi $1\frac{3}{5}$ m bo‘lgan kubning hajmini toping.

c) $\frac{1}{2}$ va $\frac{1}{3}$ ning yig‘indisidan ikki marta katta bo‘lgan kasrni toping.

d) Sonlar o‘qida $\frac{1}{2}$ va $\frac{1}{3}$ ning teng o‘rtasidagi kasrni toping.

2 Matnli masalalarni yechish uchun juftlikda ishlang. Masalalarning chizma-modelini chizib olishingiz mumkin.

a) Sitorada bir nechta nok bor edi. U noklarining $\frac{1}{6}$ qismini Halimaga va qolganining $\frac{4}{5}$ qismini Jamilaga berdi. Agar u Halimaga 18 dona nok bergan bo‘lsa, Jamilaga nechta nok bergan?

b) Hamid pulining $\frac{4}{9}$ qismiga bir nechta futbolka sotib oldi. Qolgan pulining $\frac{2}{5}$ qismiga sumka sotib oldi. Sumkaning narxi futbolkanikidan uch barobar qimmat. Hamid nechta futbolka sotib olgan?

c) 1-idishda $6\frac{1}{5}\ \ell$ suv bor. 2-idishda esa 1-idishdagidan $\frac{17}{20}\ \ell$ ko‘p suv bor. Ikkala idishdagi suv 3-idishga quyildi. 3-idishdagi suvning hajmini toping.

Qiziqarli matematika

O‘rganing va bo‘lishing



Guruh bo‘lib ishlang.
Matnli masalalarni yeching. Yechimingizni sinf bilan bo‘lishing.

1 Temur akaning to‘g‘ri to‘rtburchak shaklidagi yeri bor. Yerining $\frac{5}{6}$ qismiga turli xil mevali daraxtlar ekilgan. Har bir meva turi uchun yerning $\frac{5}{18}$ qismi ajratilgan.

a) Yer maydoniga necha xil mevali daraxt ekilgan?

b) Yer maydonining yuzi 72 m^2 bo‘lsa, har bir mevali daraxt uchun ajratilgan yerning yuzini toping.

2 Dilshodaning shisha idishli atiri bor. U har kuni bir xil miqdorda atir sepadi. Sakkizinchi kunning oxirida atirning $\frac{1}{3}$ qismi qoldi. O‘ninchi kunning oxirida esa 100 ml atir qoldi. Dastlab idishda qancha atir bo‘lgan?

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Bajaring va o‘rganing



Matnli masalalarni yeching.

1 Madina 4 ta pirogni bo‘laklarga bo‘ldi. Har bir bo‘lak bitta pirogning $\frac{1}{6}$ qismini tashkil qiladi. Madina jami pirogni nechta bo‘lakka bo‘ldi?

2 Sorada $\frac{5}{6}$ kg shakar bor. U shakarni bir nechta kichik paketga qadoqladi. Har bir paketga $\frac{3}{8}$ kg dan shakar to‘g‘ri keldi.

a) Shakar solingan paketlarning soni eng ko‘pi bilan nechta bo‘lishi mumkin?

b) Qadoqlanmay qolgan shakar miqdorini aniqlang.

3 Ravshanning onasi pitsa sotib oldi. U pitsaning $\frac{1}{4}$ qismini qo‘shnisiga berdi. Qolganini butun pitsaning $\frac{3}{20}$ qismini tashkil etadigan bo‘laklarga bo‘ldi. Unda nechta bo‘lak pitsa bo‘ldi?

4 Lola opa 42 kg un sotib oldi. Unning $\frac{3}{7}$ qismini ishlatdi va qolganini bir nechta kichik paketga $\frac{4}{5}$ kg dan qilib soldi. Lola opada necha paket un bor?

5 Zaldagi o‘quvchilarning $\frac{5}{8}$ qismi – o‘g‘il bolalar. O‘g‘il bolalarning $\frac{1}{10}$ qismi ko‘zoynak taqadi. 144 nafar o‘g‘il bola ko‘zoynak taqmaydi. Zalda necha nafar o‘quvchi bor?

6 Agar idishning $\frac{2}{5}$ qismi suv bilan to‘ldirilsa, uning massasi 520 g ni tashkil qiladi. Agar uning yarmi suv bilan to‘ldirilsa, massasi 600 g ni tashkil qiladi.

a) Suv bilan to‘la bo‘lgan idish massasini aniqlang.

b) Bo‘sh idish massasini aniqlang.

7 Farrux lotereyada ma’lum miqdorda pul yutib oldi. U pulining yarmini onasiga berdi. Qolganining to‘rtdan birini o‘zi uchun olib qo‘ydi va qolgan pulini 4 nafar jiyaniga teng taqsimlab berdi. Har bir jiyani 30 000 so‘mdan oldi.

a) Lotereyada Farrux qancha pul yutib oldi?

b) Farruxning puli bitta jiyanining pulidan qanchaga ortiq?

8 G‘afur 600 000 so‘m pulining $\frac{1}{5}$ qismini sarfladi va $\frac{3}{10}$ qismini o‘zi uchun olib qo‘ydi. Qolganini bir nechta xayriya tadbiriga ishlatdi. Har bir xayriya tadbiri uchun qolgan pulining $\frac{1}{6}$ qismini sarfladi.

a) G‘afur nechta xayriya tadbirida qatnashgan?

b) Har bir xayriya tadbiriga qancha pul sarflagan?

Mashq daftariga o‘ting **55–62**

O‘zingizni tekshiring



Kasrlar ustida to‘rt amal ishtirok etgan matnli masalalarni yechishni bilaman.

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O‘ylab ko‘ring



Zaldagi jami qizlar va o‘g‘il bolalar 151 nafar. O‘g‘il bolalarning $\frac{1}{3}$ qismi va qizlarning $\frac{1}{5}$ qismi ko‘zoynak taqadi. Ko‘zoynak taqadigan qizlar va o‘g‘il bolalarning umumiy soni 45 nafar. Zalda necha nafar o‘g‘il bola bor? Masala yechimini chizma-model yordamida tushuntiring.

Muammoli vaziyatni tasvirlash uchun chizma-model chizing.



Mashq daftariga o‘ting 63–66

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I TAKRORLASH Algebra va kasrlar

1 Quyidagilarni soddalashtiring.

a) $6p + 13 - 2p + 8p - 8$ b) $23k + 10 - (5k \times 3)$

2 $f = 6$ bo‘lganda quyidagilarning qiymatini toping.

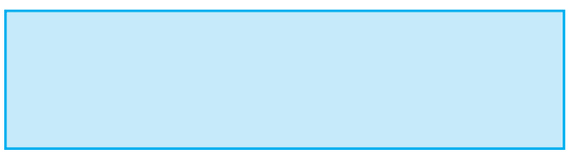
a) $5f - 9 + 3f$ b) $\frac{4f - 3}{7}$

3 Birinchi yashikda 6,5 kg, ikkinchi yashikda esa birinchi yashikdagidan q kg ga ko‘p olma bor. Ikkala yashikdagi olmalar massasining o‘rta arifmetigini toping. Javobingizni q orqali ifodalang.

4 Jamilada m so‘m bor. Sitorada esa Jamilanikidan ikki barobar ko‘p pul bor. Jamilaning puli Azizanikidan 9000 so‘mga ko‘p. Ularda hammasi bo‘lib qancha pul bor? Javobingizni m orqali ifodalang.

5 Jahongir har biri $7h$ so‘mdan 5 ta ruchka sotib oldi. U ruchkalar uchun 20 000 so‘mlik qog‘oz pul bilan to‘lov qildi. U qancha qaytim oladi? Javobingizni h orqali ifodalang.

6 To‘g‘ri to‘rtburchakning eni bo‘yidan 4 marta uzun.



a) To‘g‘ri to‘rtburchakning enini r orqali ifodalang.
b) To‘g‘ri to‘rtburchakning perimetrini r orqali ifodalang.
c) Agar $r = 6$ bo‘lsa, to‘g‘ri to‘rtburchakning yuzini toping.

7 50 ta kulchaning narxi z so‘m. Bitta kulchaning narxini z orqali ifodalang.

8 Lola opa x yoshda. Lola opa Shahlodan 3 marta katta. 10 yildan so‘ng Shahlo necha yoshda bo‘ladi? Javobingizni x orqali ifodalang.

9 Uchta sonning o‘rta arifmetigi c ga teng. Sonlardan biri $2c$ va ikkinchisi 9 ga teng. Uchinchi sonni c orqali ifodalang.

10 Boburning puli Anvarnikidan ikki marta ko‘p. Charosning puli Boburnikidan 1200 so‘mga ko‘p. Uchalasida jami 29 700 so‘m bor. Boburda qancha pul bor?

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11 Bo‘lishni bajaring.

a) $\frac{2}{5} \div 2$

b) $\frac{1}{3} \div 3$

c) $9 \div \frac{2}{3}$

d) $8 \div \frac{4}{5}$

e) $\frac{3}{5} \div \frac{1}{10}$

f) $\frac{5}{6} \div \frac{2}{3}$

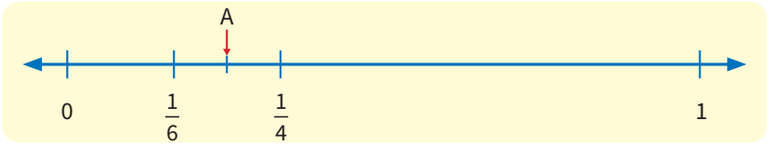
12 $\frac{9}{15}$ nechta beshdan birdan iborat?

13 To‘g‘ri to‘rtburchak shaklidagi kartonning yuzi $\frac{7}{8}$ m^2. Uning balandligi $\frac{1}{4}$ m bo‘lsa, uzunligini toping.

14 a) Sonning $\frac{4}{5}$ qismi 80 ga teng. Sonning o‘zini toping.

b) Sonning $\frac{1}{6}$ qismi 30 ga teng. O‘sha sonning $\frac{1}{5}$ qismini toping.

15 Quyidagi sonlar o‘qida *A* nuqta orqali $\frac{1}{6}$ va $\frac{1}{4}$ ning o‘rtasi tasvirlangan. *A* nuqta qanday kasrni ifodalaydi?



16 Idish $\frac{9}{10}$ ℓ suv bilan to‘ldirilgan. Doniyor suvning $\frac{1}{3}$ qismini ichdi va qolganini uchta stakanga teng taqsimladi.

a) Doniyor necha litr suv ichdi?

b) Har bir stakandagi suvning hajmini toping.

Javobingizni qisqarmas kasr shaklida yozing.

17 Gulnora opada dastlab $\frac{7}{10}$ *m* tasma bor edi. U tasmani 4 ta teng bo‘lakka bo‘ldi. Shunday bo‘laklardan ikkitasining uzunligi necha metr bo‘ladi?

18 Sotuvchi 24 kg unni $\frac{3}{8}$ kg dan qilib kichik paketlarga qadoqladi. U necha paket un qadoqladi?

19 Husanda dastlab pitsaning $\frac{9}{10}$ qismi bor edi. U pitsani bir necha teng bo‘laklarga bo‘lganda har bir bo‘lak butun pitsaning $\frac{3}{20}$ qismini tashkil qildi. Endi Husanda necha bo‘lak pitsa bor?

20 Fozil $\frac{7}{8}$ kg yeryong‘oq sotib oldi. U yeryong‘oqlarni $\frac{1}{10}$ kg dan qilib kichik paketlarga joyladi.

a) Unga nechta kichik paket kerak bo‘ldi?

b) Qadoqlanmay qolgan yeryong‘oqning massasini toping.

Mashq daftariga o‘ting 67–72

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3 Nisbatlar

Muhokama qiling



Madina 10 quti shokolad sotib olmoqchi. U necha quti shokoladni tekinga oladi?

Eslang



Nisbat tushunchasi

1 Sizda 3 ta olma va 7 ta apelsin bor.

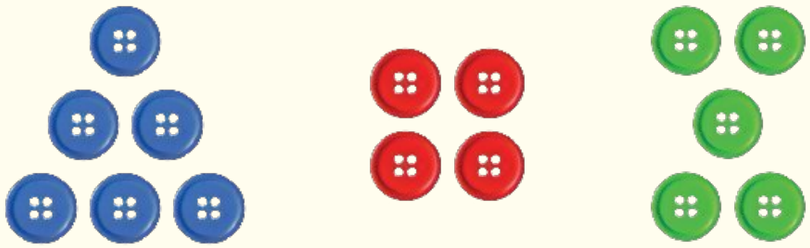


a) Olmalar sonining apelsinlar soniga nisbati 3 : 7 ga teng.

b) Apelsinlar sonining olmalar soniga nisbati 7 : 3 ga teng.

c) Olmalar sonining umumiy mevalar soniga nisbati 3 : 10 ga teng.

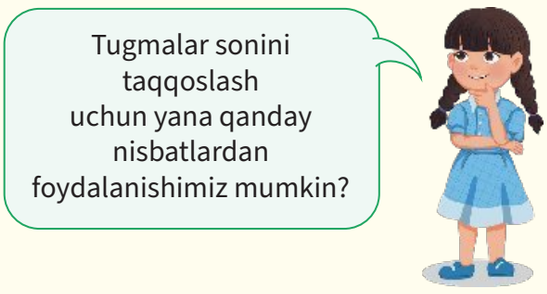
2 Layloda 6 ta ko‘k, 4 ta qizil va 5 ta yashil tugma bor.



a) Ko‘k, qizil va yashil tugmalar soni mos ravishda 6 : 4 : 5 nisbatda bo‘ladi.

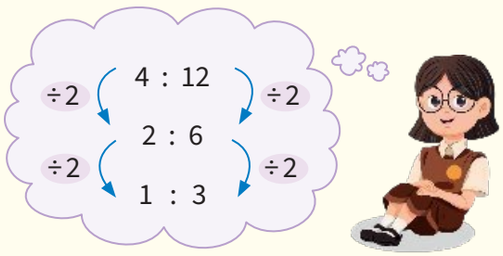
b) Yashil, qizil va jami tugmalar soni mos ravishda 5 : 4 : 15 nisbatda bo‘ladi.





3 Nisbatni qisqarmas ko‘rinishda yozing: 4 : 12.

4 : 12, 2 : 6 va 1 : 3 **teng kuchli nisbatlardir**.
1 : 3 nisbat 4 : 12 ning **qisqarmas ko‘rinishidir**.

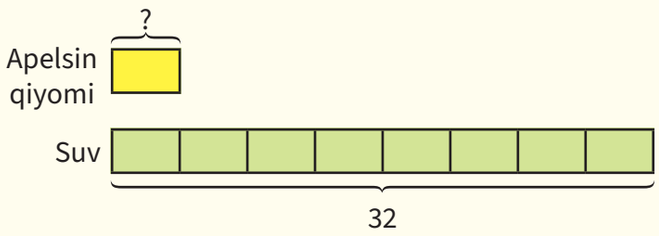


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4 Tamara opa ziyofat uchun ichimlik tayyorladi. U apelsin qiyomi va suvni 1 : 8 nisbatda qo‘shdi. Quyidagi jadvalda 1 : 8 ga teng kuchli nisbatlar tasvirlangan.

Apelsin qiyomi (piyolalar soni)	1	2	3		5	6
Suv (piyolalar soni)	8	16	24	32	40	

a) 32 piyola suvga necha piyola apelsin qiyomini aralashtirish zarur?



Apelsin qiyomi (piyolalar soni)		Suv miqdori (piyolalar soni)
4	:	32
÷ 4 ↓ 1	:	8 ÷ 4 ↓

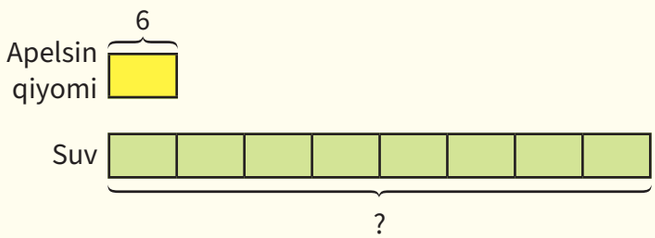
8 bo‘lak = 32

1 bo‘lak = 32 ÷ 8
= 4

32 piyola suvga 4 piyola apelsin qiyomini aralashtirish zarur.



b) 6 piyola apelsin qiyomiga qancha suv aralashtirish zarur?



Apelsin qiyomi (piyolalar soni)		Suv miqdori (piyolalar soni)
1	:	8
× 6 ↓ 6	:	48 × 6 ↓

1 bo‘lak = 6

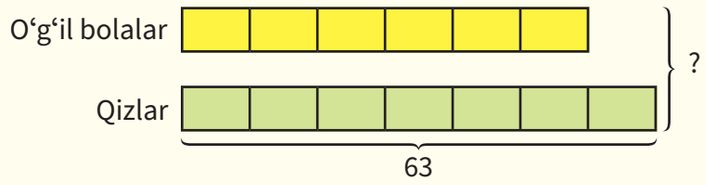
8 bo‘lak = 8 × 6
= 48

6 piyola apelsin qiyomiga 48 piyola suv aralashtirish zarur.



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5 Musobaqada qatnashgan o‘g‘il bolalar sonining qizlar soniga nisbati 6 : 7 ga teng. Agar musobaqada 63 nafar qiz qatnashgan bo‘lsa, musobaqadagi jami o‘quvchilar soni qancha?



7 bo‘lak = 63

1 bo‘lak = 63 ÷ 7
= 9

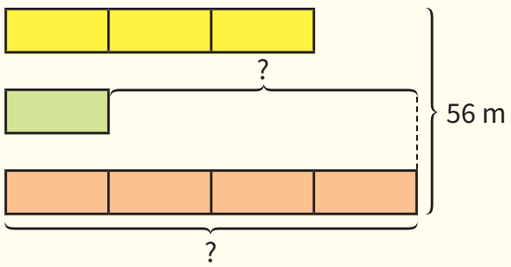
13 bo‘lak = 13 × 9
= 117

Musobaqada 117 nafar o‘quvchi qatnashgan.

6 56 m uzunlikdagi arqon 3 : 1 : 4 nisbatda uch bo‘lakka bo‘lindi.

a) Hosil bo‘lgan bo‘laklardan eng kattasining uzunligini aniqlang.

b) Eng uzun va eng qisqa bo‘lakning farqi qancha?



a) 8 bo‘lak = 56 m

1 bo‘lak = 56 ÷ 8
= 7 m

4 bo‘lak = 4 × 7
= 28 m

Eng katta bo‘lakning uzunligi 28 m.

b) 4 bo‘lak – 1 bo‘lak = 3 bo‘lak
3 bo‘lak = 3 × 7
= 21 m

Eng uzun va eng qisqa bo‘lakning farqi 21 m.

Mashq daftariga o‘ting 73–76

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Nisbat va kasr

Qarang va o‘rganing



1 A tasmaning uzunligi 3 m. B tasmaniki esa 8 m.

A tasma 

B tasma 

A tasma uzunligining B tasma uzunligiga nisbati **3 : 8** ga teng.

A tasma uzunligi B tasma uzunligining $\frac{3}{8}$ qismiga teng.

B tasma uzunligining A tasma uzunligiga nisbati **8 : 3** ga teng.

B tasma uzunligi A tasma uzunligining $\frac{8}{3}$ qismiga teng.

2 Jamilaning stikerlari soni Sitoradagi stikerlar sonining $\frac{1}{2}$ qismini tashkil qiladi.

Jamila 

Sitora 

Jamiladagi stikerlar sonining Sitoradagi stikerlar soniga nisbati **1 : 2**.

Sitoraning stikerlari soni Jamilanikidan ikki barobar ko‘p.



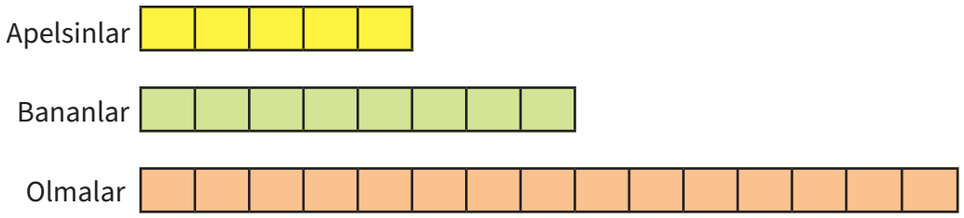
Chizma-modelga ko‘ra, $\frac{1}{2}$ va 1 : 2 yozuvlar bir xil ma’noni anglatadi.

1 : 2 nisbat hadlarining o‘rnini almashtirib, **2 : 1** nisbatga ega bo‘lamiz. Sitoradagi stikerlar sonining Jamiladagi stikerlar soniga nisbati **2 : 1** kabidir.



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3 Lola opada 5 dona apelsin, 8 dona banan va 15 dona olma bor.



a) Apelsinlar sonining bananlar soniga nisbati **5 : 8** kabidir.

Apelsinlar soni bananlar sonining $\frac{5}{8}$ qismini tashkil qiladi.



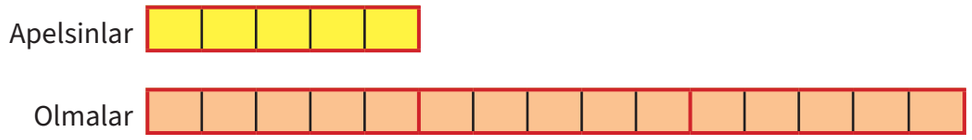
5 : 8 nisbat hadlarining o‘rnini almashtirsak, qanday nisbat hosil bo‘ladi?

Nisbat 8 : 5 kabi bo‘ladi. Bananlar soni apelsinlar sonining $\frac{8}{5}$ qismini tashkil qiladi.



b) Apelsinlar soni olmalar sonining $\frac{5}{15}$ yoki $\frac{1}{3}$ qismini tashkil qiladi.

Apelsinlar sonining olmalar soniga nisbatini qisqacha **1 : 3** kabi yozish mumkin.



Olmalar soni apelsinlar sonining $\frac{3}{1}$ qismini tashkil qiladi.

Olmalar apelsinlardan uch baravar ko‘p.



c) Bananlar sonining jami mevalar soniga nisbati $\frac{8}{28}$ yoki $\frac{2}{7}$ kabidir.

Apelsinlar sonining jami mevalar soniga nisbatini toping.



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4 Supermarketda rasmda ko‘rsatilgan uchta turli qadoqdagi kir yuvish kukuni bor.



A paket 2 kg **B paket 5 kg** **C paket 10 kg**

a) B paket massasi C paket massasining qanday qismini tashkil qiladi?

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

B paket massasi C paket massasining $\frac{1}{2}$ qismini tashkil qiladi.



b) C paket A paketdan necha marta og‘ir?

$$\frac{10}{2}=5$$

C paket A paketdan **5** marta og‘ir.

c) B va A paket massalarini solishtiring. Javobingizni nisbat va kasr ko‘rinishida ifodalang.

B paket massasi : A paket massasi
= 5 : 2

B paket massasining A paket massasiga nisbati **5 : 2** kabidir.

B paket massasi A paket massasining $\frac{5}{2}$ qismini tashkil qiladi.

d) A paket massasi bilan uchta paket jami massasini solishtiring. Javobni nisbat va kasr ko‘rinishida yozing.

A paket massasining uchta paket jami massasiga nisbati **2 : 17** kabidir.

A paket massasi uchta paket jami massasining $\frac{2}{17}$ qismini tashkil qiladi.

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5 Do‘konda noklar va olmalar ikkitadan qilib paketlarga qadoqlangan. Saida opa 4 paket olma va 6 paket nok sotib oldi.

Olmalar 

Noklar 

a) Saida opa sotib olgan olmalar sonining noklar soniga nisbatini aniqlang. Javobni qisqarmas nisbat ko‘rinishida yozing.

	Olmalar soni	:	Noklar soni
=	8	:	12
=	2	:	3

Saida opa sotib olgan olmalar sonining noklar soniga nisbati **2 : 3** ga teng.

b) Saida opa sotib olgan olmalar soni noklar sonining qanday qismini tashkil qiladi?

$$\frac{8}{12}=\frac{2}{3}$$

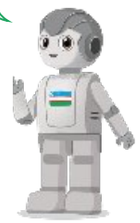
Saida opa sotib olgan olmalar soni noklar sonining $\mathbf{\frac{2}{3}}$ qismini tashkil qiladi.

6 Madinaning puli Soradagi pulning $\frac{3}{5}$ qismini tashkil qiladi.

Madina 

Sora 

Madinadagi pulning Soradagi pulga nisbati qanday?



a) Soradagi pulning Madinadagi pulga nisbatini toping.
Soradagi pulning Madinadagi pulga nisbati **5 : 3**.

b) Soradagi pulning ikkalasidagi jami pulga nisbatini kasr ko‘rinishida ifodalang.

Jami pul = 3 + 5
= 8 bo‘lak

Soraning puli ikkalasidagi jami pulning $\mathbf{\frac{5}{8}}$ qismini tashkil qiladi.

Madinadagi pulning ikkalasidagi jami pulga nisbatini toping.



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Qo‘lda bajariladigan mashq

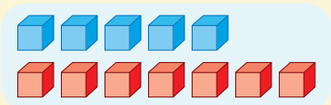


Guruh bo‘lib ishlang.
O‘qituvchi har bir guruhga xaltada ikki xil rangdagi kublarni beradi.

1 Guruhning har bir a’zosi xaltadan bir nechta kubni oladi. Kublarni ranglariga ko‘ra taqqoslang. Turli rangdagi kublar sonini nisbat va kasr ko‘rinishida ifodalang. Javobni qisqarmas kasr va nisbat ko‘rinishida yozing.

Namuna

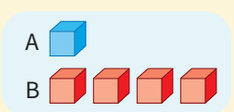
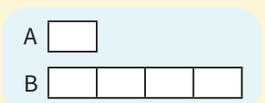
5 ta ko‘k va 7 ta qizil kub

Kublar	Kasr orqali	Nisbat orqali
	Ko‘k kublar soni qizil kublar sonining $\frac{5}{7}$ qismini tashkil qiladi.	Ko‘k kublar sonining qizil kublar soniga nisbati **5 : 7** ga teng.
	Qizil kublar soni ko‘k kublar sonining $\frac{7}{5}$ qismini tashkil qiladi.	Qizil kublar sonining ko‘k kublar soniga nisbati **7 : 5** ga teng.
	Ko‘k kublar soni jami kublar sonining $\frac{5}{12}$ qismini tashkil qiladi.	Ko‘k kublar sonining umumiy kublar soniga nisbati **5 : 12** ga teng.

2 Quyidagi kasrli munosabatlarni tasvirlash uchun kublardan foydalaning yoki chizma-model chizing. Munosabatlarni nisbat ko‘rinishida tasvirlang.

a) B ning $\frac{4}{5}$ qismi = A. A ning $\frac{5}{4}$ qismi = B. b) B ning $\frac{7}{2}$ qismi = A. A ning $\frac{2}{7}$ qismi = B.

Namuna

Kasrli munosabat	Nisbat	Kublar	Chizma-model
B ning $\frac{1}{4}$ qismi = A. A ning $\frac{4}{1}$ qismi = B.	A : B = 1 : 4 B : A = 4 : 1		

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Qiziqarli matematika

O‘rganing va bo‘lishing



Guruh bo‘lib ishlang.
Quyida 2 dona bananli keks tayyorlash retsepti berilgan.

Bananli keks (2 dona uchun)

- 3 piyola un
- 2 choyqoshiq pishiriq kukuni
- 2 choyqoshiq pishiriq sodasi
- 1 choyqoshiq tuz
- 6 dona banan qaylasi
- $1\frac{1}{2}$ piyola shakar
- 2 dona tuxum
- $\frac{2}{3}$ piyola eritilgan sariyog‘

Yuqoridagi retsept bo‘yicha berilgan sondagi kekslar uchun masalliqlardan qancha miqdorda kerak bo‘ladi?

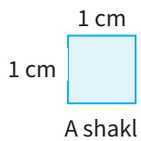
a) 1 dona uchun

b) 10 dona uchun

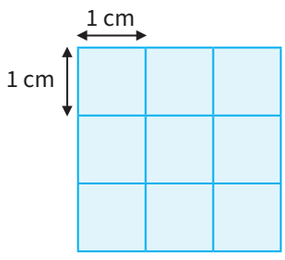
Juftlikda ishlang



Sherigingiz bilan muhokama qiling.
A shakl tomonining B shakl tomoniga nisbati 1 : 3 ga teng.
A shakl yuzining B shakl yuziga nisbati 1 : 3 ga teng.
Oxirgi tasdiq to‘g‘rimi? Javobingizni izohlang.



A shakl



B shakl

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Bajaring va o‘rganing



1 A tasma uzunligining B tasma uzunligiga nisbati 4 : 5 ga teng.

A tasma

B tasma

a) A tasma uzunligi B tasma uzunligining qancha qismini tashkil qiladi?

b) B tasma uzunligi A tasma uzunligining qancha qismini tashkil qiladi?

2 Jahongir va Alisherning jamg‘armalari miqdori nisbati 8 : 9 ga teng.

Jahongirning jamg‘armasi

Alisherning jamg‘armasi

a) Jahongirning jamg‘armasi Alishernikining qancha qismini tashkil qiladi?

b) Alisherning jamg‘armasi Jahongirnikining qancha qismini tashkil qiladi?

c) Alisherning jamg‘armasi ikkalasidagi jami jamg‘armaning qancha qismini tashkil qiladi?

d) Jahongirning jamg‘armasi ikkalasidagi jami jamg‘armaning qancha qismini tashkil qiladi?

3 X ko‘zadagi suvning hajmi Y ko‘zadagi suv hajmining $\frac{11}{12}$ qismini tashkil qiladi.

a) Y ko‘zadagi suv hajmining X ko‘zadagi suv hajmiga nisbati qanday?

b) X ko‘zadagi suv hajmi ikkala ko‘zadagi jami suv hajmining qancha qismini tashkil qiladi?

c) Jami suv hajmining X ko‘zadagi suv hajmiga nisbati qanday?

d) Y ko‘zadagi suv ikkala ko‘zadagi jami suvning qancha qismini tashkil qiladi?

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4 Tushirib qoldirilgan nisbatni toping.

Tasdiq	Nisbat
a) O‘g‘il bolalar soni qizlar sonining $\frac{1}{2}$ qismini tashkil qiladi.	o‘g‘il bolalar soni : qizlar soni = ☐ : ☐ qizlar soni : o‘g‘il bolalar soni = ☐ : ☐
b) Boburning massasi Sanjar massasining $\frac{2}{3}$ qismini tashkil qiladi.	Boburning massasi : Sanjarning massasi = ☐ : ☐ Sanjarning massasi : Boburning massasi = ☐ : ☐
c) Javlondagi stikerlar soni Farruxdagi stikerlar sonining $\frac{7}{8}$ qismini tashkil qiladi.	Javlondagi stikerlar soni : Farruxdagi stikerlar soni = ☐ : ☐ Javlondagi stikerlar soni : stikerlarning jami soni = ☐ : ☐

5 Konsert zalidagi har 2 nafar o‘g‘il bolaga 3 nafar qiz bola to‘g‘ri keldi.

a) Konsertdagi o‘g‘il bolalar sonining qizlar soniga nisbati qanday?

b) Konsertdagi qizlar jami tomoshabinlarning qancha qismini tashkil qildi?

Mashq daftariga o‘ting 77–80

O‘zingizni tekshiring



Men ikki miqdorning nisbatiga ko‘ra bir miqdorni ikkinchisining qismi sifatida va aksincha ifodalashni bilaman.

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Matnli masalalar

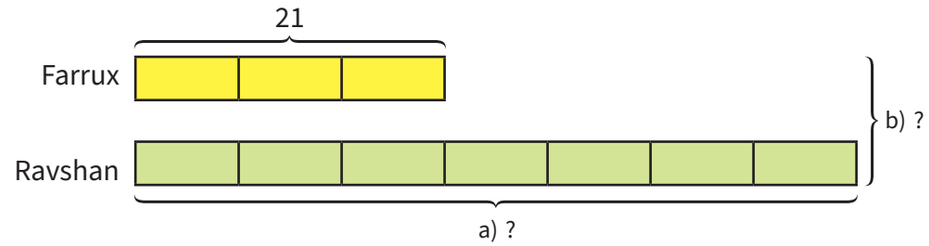
Qarang va o‘rganing



1 Farruxda 21 dona shar bor. Uning sharlari soni Ravshandagi sharlar sonining $\frac{3}{7}$ qismini tashkil qiladi.

a) Ravshanda nechta shar bor?

b) Har ikkalasida jami nechta shar bor?



a) 3 bo‘lak = 21

1 bo‘lak = 21 ÷ 3

= 7

7 bo‘lak = 7 × 7

= 49

Ravshanda 49 ta shar bor.

b)

1-usul

10 bo‘lak = 10 × 7

= 70

2-usul

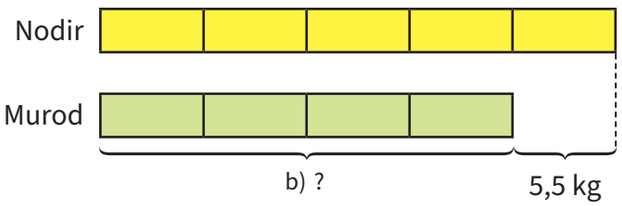
21 + 49 = 70

Ularda jami 70 ta shar bor.

2 Nodirning massasi Murod massasining $\frac{5}{4}$ qismini tashkil qiladi. Nodir Muroddan 5,5 kg og‘ir.

a) Nodir va Murodning massalari nisbati qanday?

b) Murodning massasini toping.



a) Nodir va Murodning massalari nisbati 5 : 4.

b) 1 bo‘lak = 5,5 kg

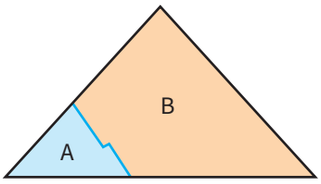
4 bo‘lak = 4 × 5,5

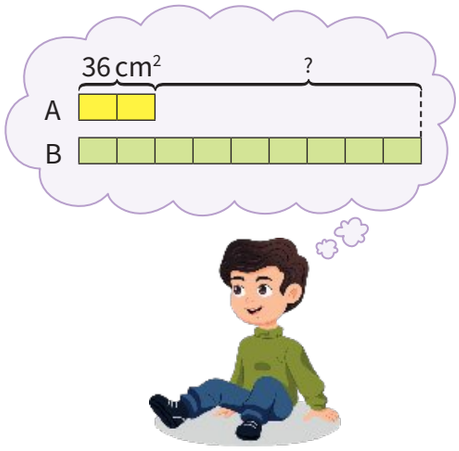
= 22 kg

Murodning massasi 22 kg.

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3 Quyidagi uchburchakda A shakl yuzi B shakl yuzining $\frac{2}{9}$ qismini tashkil qiladi. Agar A shakl yuzi 36 cm^2 bo‘lsa, A va B shakl yuzi orasidagi farqni toping.





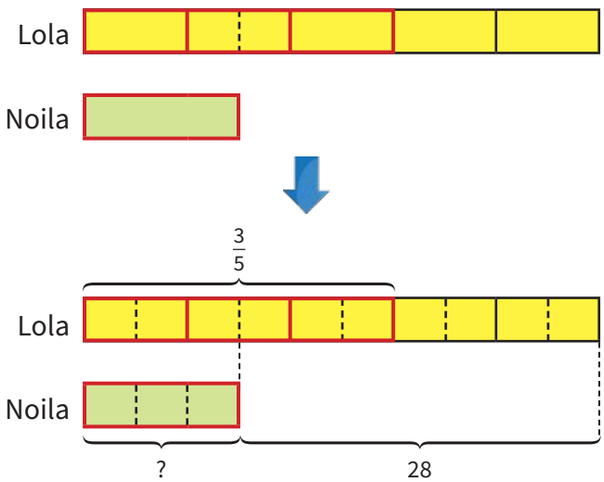
2 bo‘lak = 36 cm^2
1 bo‘lak = 36 ÷ 2
= 18 cm^2

9 bo‘lak – 2 bo‘lak = 7 bo‘lak
7 bo‘lak = 7 × 18
= 126 cm^2

A va B shakllar yuzi orasidagi farq 126 cm^2.

4 Loladagi stikerlarning $\frac{3}{5}$ qismi Noiladagi stikerlarning ikki baravariga teng. Noilaning stikerlari soni Lolanikidan 28 taga kam.

a) Loladagi stikerlar sonining Noiladagi stikerlar soniga nisbatini toping.
b) Noilada nechta stiker bor?



a) Loladagi stikerlar sonining Noiladagi stikerlar soniga nisbati 10 : 3 ga teng.

b) 7 bo‘lak = 28
1 bo‘lak = 28 ÷ 7
= 4

3 bo‘lak = 3 × 4
= 12

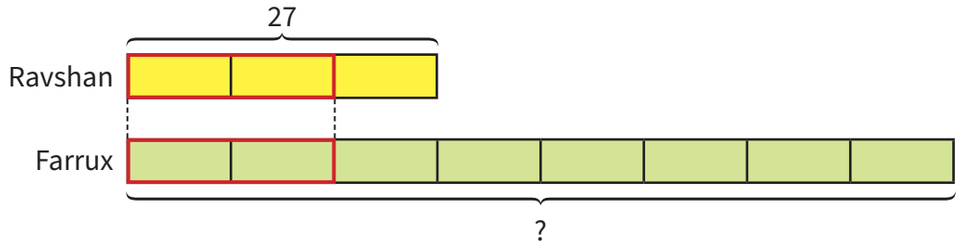
Noilada 12 ta stiker bor.

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5 Ravshandagi markalarning $\frac{2}{3}$ qismi Farruxdagi markalarning $\frac{1}{4}$ qismiga teng. Ravshanda 27 ta marka bor.

a) Ravshan va Farruxdagi markalar sonining nisbatini toping.

b) Farruxda nechta marka bor?



a) Ravshan va Farruxdagi markalar sonining nisbati 3 : 8 ga teng.

b) 3 bo‘lak = 27

1 bo‘lak = 27 ÷ 3

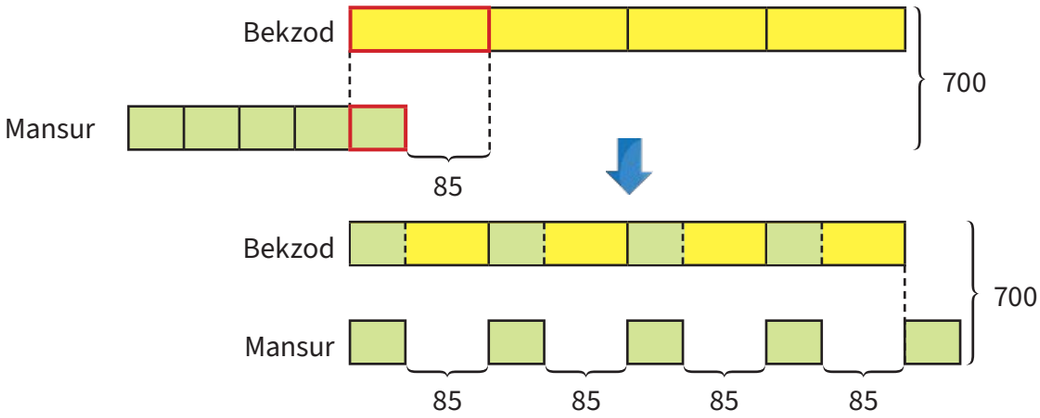
= 9

8 bo‘lak = 8 × 9

= 72

Farruxda 72 ta marka bor.

6 Bekzod va Mansurda jami 700 ta yong‘oq bor. Bekzoddagi yong‘oqlarning $\frac{1}{4}$ qismi Mansurdagi yong‘oqlarning $\frac{1}{5}$ qismidan 85 taga ortiq. Bekzodning yong‘oqlari Mansurnikidan nechtaga ortiq?



85 × 4 = 340

9 ta yashil bo‘lak = 700 – 340

= 360

1 ta yashil bo‘lak = 360 ÷ 9

= 40

1-usul

340 + (40 × 4) = 500

Bekzodda 500 ta yong‘oq bor.

40 × 5 = 200 yoki 700 − 500 = 200

Mansurda 200 ta yong‘oq bor.

500 − 200 = 300

2-usul

340 − 40 = 300

Bekzoddagi yong‘oqlar Mansurnikidan 300 taga ortiq.

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Bajaring va o‘rganing



Matnli masalalarni yeching.

1 Kompyuter to‘garagidagi qizlar soni o‘g‘il bolalar sonining $\frac{7}{9}$ qismini tashkil qiladi. To‘garakdagi qizlar soni 42 ta.

a) Qizlar sonining o‘g‘il bolalar soniga nisbatini toping.
b) To‘garakda necha nafar o‘g‘il bola bor?

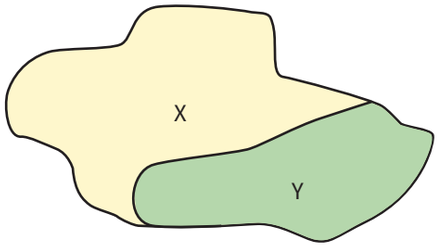
2 Alisherning bo‘yi Samandar bo‘yining $\frac{7}{6}$ qismini tashkil qiladi. Alisherning bo‘yi 140 cm.

a) Alisher va Samandarning bo‘ylari nisbati qanday?
b) Samandarning bo‘yi necha cm?

3 Lazizdagi yashil pufaklar soni qizil pufaklar sonining $\frac{4}{9}$ qismini tashkil qiladi. Undagi qizil pufaklar soni yashillaridan 35 taga ortiq.

a) Qizil pufaklar sonining yashil pufaklar soniga nisbatini toping.
b) Lazizda hammasi bo‘lib nechta pufak bor?

4 Quyidagi shaklda X soha yuzi Y soha yuzining $\frac{7}{4}$ qismini tashkil qiladi. Agar X soha yuzi 56 cm^2 bo‘lsa, X va Y soha yuzi orasidagi farqni toping.



5 Ma’rifatdagi pulning $\frac{1}{2}$ qismi Jamiladagi pulning $\frac{3}{4}$ qismiga teng. Jamilaning puli 64 000 so‘m.

a) Ma’rifat va Jamiladagi pulning nisbatini toping.
b) Ma’rifatning puli qancha?

6 Ma’ruf va Javlonning teng miqdorda puli bor edi. Ularning jami puli dastlab 30 000 so‘m edi. Ular birgalikda 8 000 so‘m sarfladi. Ma’rufda qolgan pulning $\frac{2}{3}$ qismi Javlonda qolgan pulning $\frac{4}{5}$ qismiga teng.

a) Ma’ruf va Javlonda qolgan pullarning nisbatini toping.
b) Ma’ruf qancha pul sarflagan?

Mashq daftariga o‘ting 81–86

O‘zingizni tekshiring



Nisbat va kasr qatnashgan matnli masalalarni yechishni bilaman.

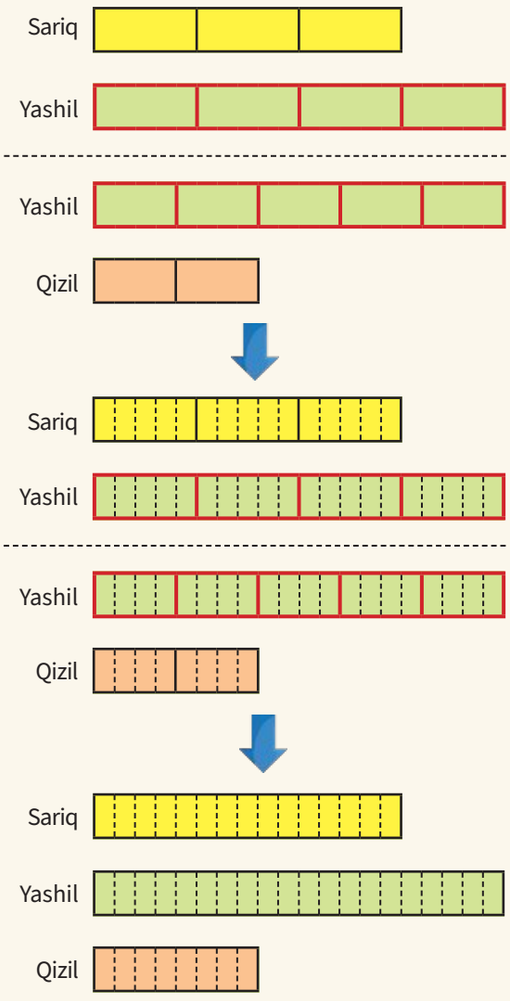
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Uch miqdor nisbati

Qarang va o‘rganing



1 Sariq va yashil bezak toshlari sonining nisbati 3 : 4 ga teng. Yashil va qizil bezak toshlari sonining nisbati esa 5 : 2 ga teng. Sariq, yashil va qizil bezak toshlari sonining nisbatini aniqlang.



Yashil bezak toshlari soni ikkita 3 : 4 va 5 : 2 nisbatlarda mos ravishda 4 va 5 bo‘laklar orqali tasvirlangan.

Taqqoslash uchun yashil bezak toshlari sonini har ikkala nisbatda ham bir xil bo‘lakchalar orqali tasvirlaymiz.

4 va 5 ning dastlabki umumiy karralisi = 20.

	sariq toshlar soni	:	yashil toshlar soni
=	3 (×5)	:	4 (×5)
=	15	:	20

	yashil toshlar soni	:	qizil toshlar soni
=	5 (×4)	:	2 (×4)
=	20	:	8

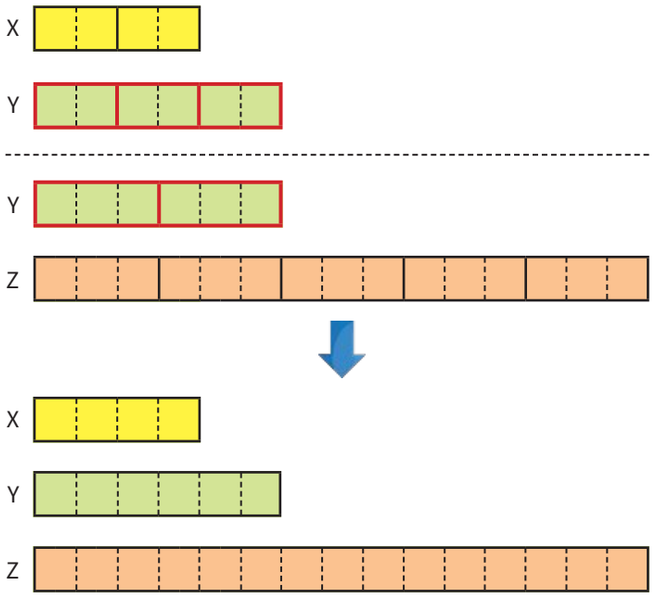
	sariq toshlar soni	:	yashil toshlar soni	:	qizil toshlar soni
=	15	:	20	:	8

Sariq, yashil va qizil bezak toshlari sonining nisbati 15 : 20 : 8 ga teng.

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2 X : Y = 2 : **3** va Y : Z = **2** : 5. X : Y : Z nisbatni toping.

2 va 3 ning dastlabki umumiy karralisi = 6.



$$= \begin{matrix} X & : & Y \\ 2 & : & 3 \\ 4 & : & 6 \end{matrix} \quad (\times 2,\ \times 2)$$

$$= \begin{matrix} Y & : & Z \\ 2 & : & 5 \\ 6 & : & 15 \end{matrix} \quad (\times 3,\ \times 3)$$

$$= \begin{matrix} X & : & Y & : & Z \\ 4 & : & 6 & : & 15 \end{matrix}$$

Y ikkala nisbatda ham bir xil bo‘laklar orqali tasvirlangani sababli X : Y : Z = 4 : 6 : 15.

3 Tasviriy san’at ko‘rgazmasidagi katta yoshlilar sonining o‘g‘il bolalar soniga nisbati 3 : 2.

Ko‘rgazmadagi o‘g‘il bolalar soni qizlar sonining $\frac{1}{4}$ qismiga teng. O‘g‘il bolalar soni 30 nafarga teng.

a) Ko‘rgazmadagi katta yoshlilar, o‘g‘il bolalar va qizlar sonining nisbatini aniqlang.

b) Ko‘rgazma qatnashchilarining jami sonini toping.

a) 1 va 2 ning dastlabki umumiy karralisi = 2.

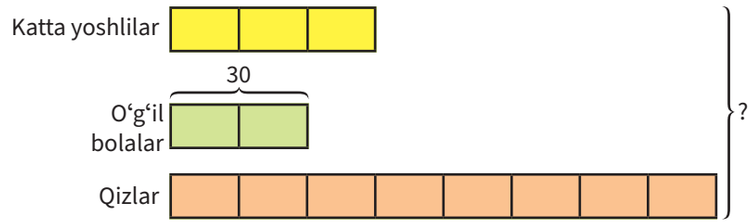
katta yoshlilar soni	:	o‘g‘il bolalar soni
3	:	2

$$= \begin{matrix} \text{o‘g‘il bolalar soni} & : & \text{qizlar soni} \\ 1 & : & 4 \\ 2 & : & 8 \end{matrix} \quad (\times 2,\ \times 2)$$



O‘g‘il bolalar soni ikkala nisbatda ham bir xil bo‘laklar bilan tasvirlangani sababli ko‘rgazmadagi katta yoshlilar, o‘g‘il bolalar va qizlar sonining nisbati 3 : 2 : 8 ga teng bo‘ladi.

b)



2 bo‘lak = 30

1 bo‘lak = 30 : 2 = 15

13 bo‘lak = 13 × 15 = 195

Tasviriy san’at ko‘rgazmasi qatnashchilarining jami soni 195 nafar.

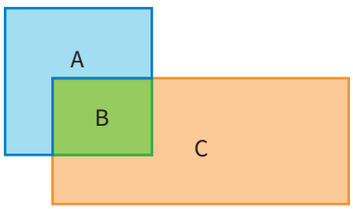
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4 Quyidagi shaklda A soha yuzining B soha yuziga nisbati 5 : 3. B soha yuzining C soha yuziga nisbati 2 : 9 ga teng. A : B : C ni toping.

2 va 3 ning dastlabki umumiy karralisi = 6.

	A ning yuzi	:	B ning yuzi
=	5 (×2)	:	3 (×2)
=	10	:	6

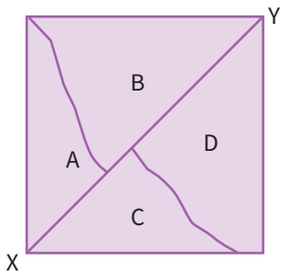
	B ning yuzi	:	C ning yuzi
=	2 (×3)	:	9 (×3)
=	6	:	27



B sohaning yuzi ikkala nisbatda ham bir xil bo‘laklar orqali tasvirlangani sababli A, B va C soha yuzining nisbati 10 : 6 : 27 ga teng bo‘ladi.

5 Kvadrat quyida ko‘rsatilganidek to‘rtta sohaga bo‘lingan. X va Y nuqtalar to‘g‘ri chiziq orqali tutashtirilgan. A soha yuzining B soha yuziga nisbati 1 : 2. A soha yuzining C soha yuziga nisbati 6 : 7.

a) A, B va C sohalar yuzining nisbatini toping.
b) A soha yuzining D soha yuziga nisbatini toping.



a) 1 va 6 ning dastlabki umumiy karralisi = 6

	A soha yuzi	:	B soha yuzi
=	1 (×6)	:	2 (×6)
=	6	:	12

	A soha yuzi	:	C soha yuzi
=	6	:	7

A sohaning yuzi ikkala nisbatda ham bir xil bo‘laklar orqali tasvirlangani sababli A, B va C soha yuzining nisbati 6 : 12 : 7.

b) A yuzi + B yuzi = C yuzi + D yuzi

6 bo‘lak + 12 bo‘lak = 7 bo‘lak + D yuzi

D yuzi = 18 bo‘lak – 7 bo‘lak
= 11 bo‘lak

A soha yuzining D soha yuziga nisbati 6 : 11.

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Qiziqarli matematika

O‘rganing va bo‘lishing



Guruh bo‘lib ishlang.
X : Y = 1 : 2 va Y : Z = 4 : 3.
X : Y : Z nisbatni toping.
O‘z usulingizni boshqa guruh bilan bo‘lishing.

X 

Y 

Z 

	X	:	Y
=	1	:	2

	Y	:	Z
=	4	:	3

	X	:	Y	:	Z
=		:		:	

2 va 4 ning dastlabki umumiy karralisi nechaga teng?



Bajaring va o‘rganing



1 A : B : C ni toping.

a) A : B = 3 : 1
B : C = 2 : 5

b) A : B = 5 : 7
A : C = 2 : 3

2 A ning qiymati B ning qiymatidan 5 marta ortiq. C ning qiymati B qiymatining $\frac{1}{2}$ qismiga teng. A : B : C ni toping.

3 Uchburchakning tomonlari 3 : 5 : 7 nisbatda. Uchburchakning eng uzun va eng qisqa tomonlari ayirmasi 24 cm. Uchburchakning perimetrini toping.

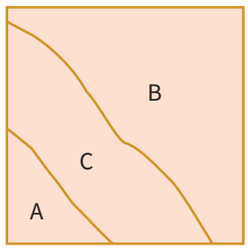
4 Mahalla tadbiridagi erkaklar sonining ayollar soniga nisbati 3 : 4. Ayollar soni bolalar sonining $\frac{3}{5}$ qismini tashkil qiladi. Kattalar soni 126 nafar.

a) Tadbirdagi erkaklar, ayollar va bolalar sonining nisbatini toping.
b) Tadbirda necha nafar bola qatnashgan?

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5 Kvadrat quyida ko‘rsatilganidek uch sohaga bo‘lingan. A sohaning yuzi B soha yuzining $\frac{1}{5}$ qismini tashkil qiladi. B soha yuzining C soha yuziga nisbati 7 : 4.

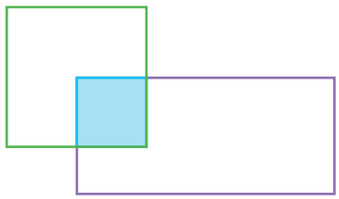
A , B va C soha yuzlari nisbatini toping.



6 Kvadrat va to‘g‘ri to‘rtburchak rasmda ko‘rsatilganidek ustma-ust qilib joylashtirilgan. Kvadratning $\frac{1}{4}$ qismi, to‘g‘ri to‘rtburchakning esa $\frac{2}{11}$ qismi bo‘yalgan.

a) Kvadratning bo‘yalmagan qismi, bo‘yalgan qismi va to‘g‘ri to‘rtburchakning bo‘yalmagan qismi yuzining nisbatini toping.

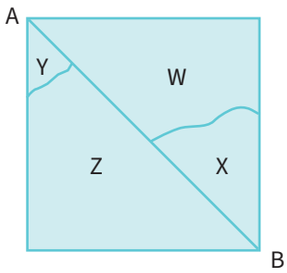
b) Agar bo‘yalgan qismning yuzi 36 cm^2 bo‘lsa, shaklning yuzini toping.



7 Kvadrat quyida ko‘rsatilganidek to‘rt sohaga bo‘lingan. A va B nuqtalar kesma orqali tutashtirilgan. W soha yuzining X soha yuziga nisbati 2 : 1. W soha yuzining Z soha yuziga nisbati 3 : 4. X sohaning yuzi 24 cm^2.

a) W, X va Y sohalar yuzi nisbatini toping.

b) Kvadratning yuzini toping.



8 Anora va Barno bir nechta stikerlarni 3 : 1 nisbatda bo‘lishishdi. Anoradagi stikerlar Charosdagi stikerlarning $\frac{2}{3}$ qismini tashkil qiladi. Charosning stikerlari soni Barnonikidan 21 taga ortiq.

a) Anora, Barno va Charosdagi stikerlar soni nisbatini toping.

b) Qizlarda jami nechta stiker bor?

Mashq daftariga o‘ting 87–94

O‘zingizni tekshiring



Men uch miqdorning nisbati qatnashgan matnli masalalarni yechishni bilaman.

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O‘zgaruvchan nisbatlar

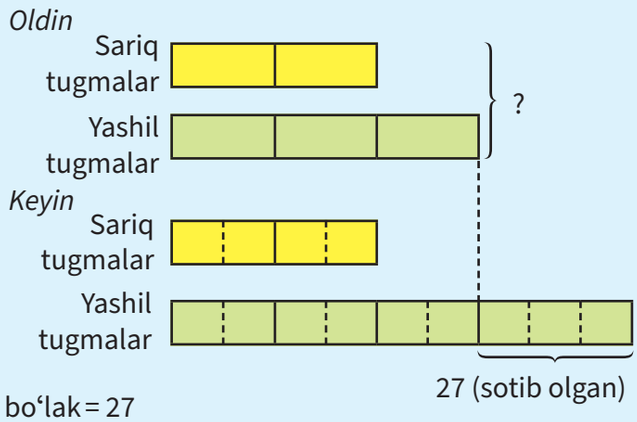
Qarang va o‘rganing



Yagona o‘zgarmas miqdor

1 Maryamdagi sariq tugmalar sonining yashil tugmalar soniga nisbati 2 : 3 edi. U yana 27 ta yashil tugma sotib oldi. Shundan so‘ng undagi sariq tugmalar sonining yashil tugmalar soniga nisbati 4 : 9 bo‘ldi. Dastlab unda nechta tugma bo‘lgan?

1-usul



3 bo‘lak = 27

1 bo‘lak = 27 ÷ 3

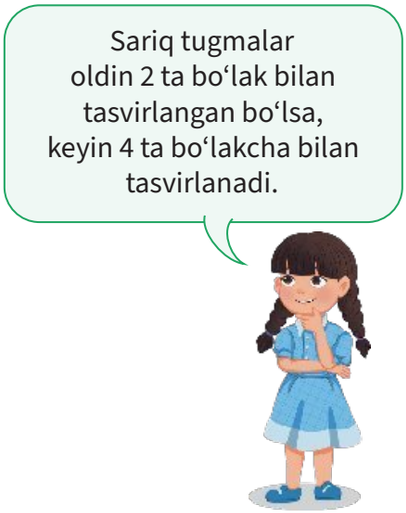
= 9

10 bo‘lak = 10 × 9

= 90

Maryamda dastlab 90 ta tugma bo‘lgan.





2-usul

	sariq tugmalar soni	:	yashil tugmalar soni
Oldin	2 (×2)	:	3 (×2)
	4	:	6
Keyin	4	:	9

9 bo‘lak − 6 bo‘lak = 3 bo‘lak

3 bo‘lak = 27

1 bo‘lak = 27 ÷ 3

= 9

10 bo‘lak = 10 × 9

= 90

Maryamda dastlab 90 ta tugma bo‘lgan.

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2 Dastlab Farrux va Ravshandagi stikerlar sonining nisbati 5 : 3 edi. Farrux 39 ta stikerini Madinaga berganidan so‘ng Farrux va Ravshandagi stikerlar sonining nisbati 7 : 12 bo‘ldi.

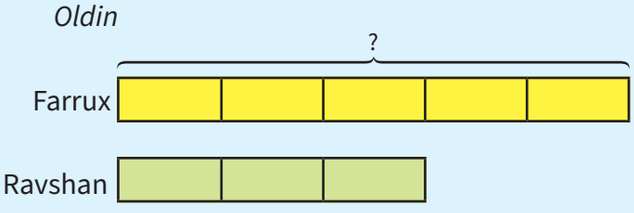
a) Farruxda dastlab nechta stiker bo‘lgan?

b) Hozir Farruxdagi stikerlar sonining ikkala boladagi jami stikerlar soniga nisbati qanday?

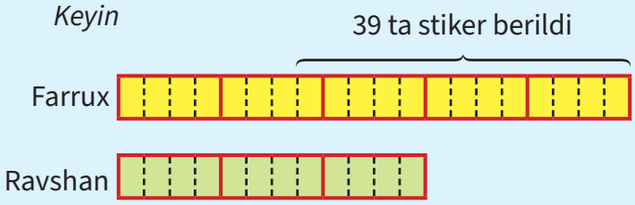
a)

1-usul

Oldin



Keyin



13 bo‘lak = 39

1 bo‘lak = 39 ÷ 13

= 3

20 bo‘lak = 20 × 3

= 60

Farruxda dastlab 60 ta stiker bo‘lgan.

Ravshandagi stikerlar soni o‘zgarmas bo‘lib qoladi. Ikkala nisbatda ham Ravshanning stikerlari sonini bir xil bo‘laklar orqali tasvirlaymiz. 3 bo‘lakning har birini teng 4 ga bo‘lib, 12 ta bo‘lakcha hosil qilamiz.



2-usul

	Farruxdagi stikerlar soni	:	Ravshandagi stikerlar soni
Oldin	5 (×4)	:	3 (×4)
	20	:	12
Keyin	7	:	12

20 bo‘lak − 7 bo‘lak = 13 bo‘lak

13 bo‘lak = 39

1 bo‘lak = 39 ÷ 13

= 3

20 bo‘lak = 20 × 3

= 60

Farruxda dastlab 60 ta stiker bo‘lgan.

b) 7 + 12 = 19

Ikkalasidagi jami stikerlar birliklari soni 19 ta. Demak, hozir Farruxdagi va ikkala boladagi jami stikerlar sonining nisbati 7 : 19 ga teng bo‘ladi.

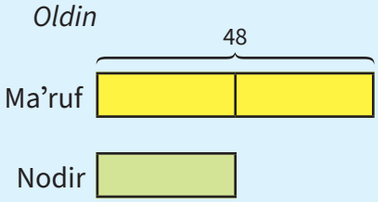
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O‘zgarmas yig‘indi

1 Ma’ruf va Nodirdagi sharlar sonining nisbati 2 : 1 edi. Ma’rufdagi sharlarning soni 48 ta. U nechta sharini Nodirga bersa, Ma’ruf va Nodirning sharlari nisbati 1 : 5 bo‘ladi?

1-usul

Oldin

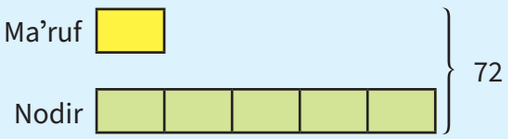


2 bo‘lak = 48
1 bo‘lak = 48 ÷ 2
= 24

3 bo‘lak = 3 × 24
= 72

Dastlab Nodir va Ma’rufda jami 72 ta shar bo‘lgan.

Keyin

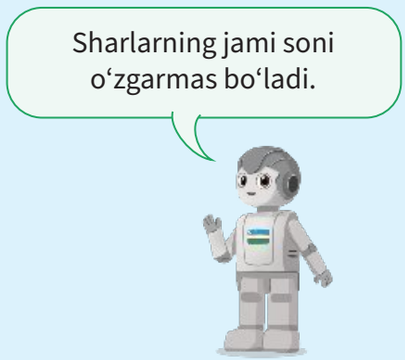


6 bo‘lak = 72
1 bo‘lak = 72 ÷ 6
= 12

Ma’rufda 12 ta shar qoldi.

48 – 12 = 36

Ma’ruf Nodirga 36 ta shar berishi kerak.



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2-usul

	Ma’rufdagi sharlar soni	:	Nodirdagi sharlar soni	:	jami sharlar soni
Oldin	2	:	1	:	3
Keyin	1	:	5	:	6



	Ma’rufdagi sharlar soni	:	Nodirdagi sharlar soni	:	jami sharlar soni
Oldin	2 (×2)	:	1 (×2)	:	3 (×2)
	4	:	2	:	6
Keyin	1	:	5	:	6

Sharlarning jami soni o‘zgarmagani sababli Ma’ruf Nodirga shar berishidan oldin va keyin umumiy bo‘laklar sonini bir xil qilib qo‘ying.



Ma’rufning sharlari sonini ifodalovchi bo‘laklar 4 tadan 1 taga kamayadi.

4 bo‘lak − 1 bo‘lak = 3 bo‘lak.

Demak, Ma’ruf Nodirga berishi kerak bo‘lgan sharlarning soni 3 bo‘lak orqali tasvirlanadi.

4 bo‘lak = 48
1 bo‘lak = 48 ÷ 4
= 12

3 bo‘lak = 3 × 12
= 36

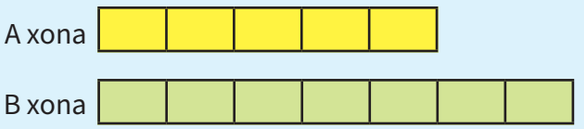
Ma’ruf Nodirga 36 ta shar berishi kerak.

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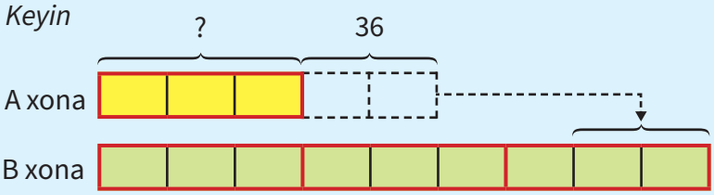
2 A xonadagi o‘quvchilar sonining B xonadagi o‘quvchilar soniga nisbati 5 : 7 edi. A xonadan 36 nafar o‘quvchi B xonaga o‘tdi. Shundan so‘ng A xonadagi o‘quvchilar sonining B xonadagi o‘quvchilar soniga nisbati 1 : 3 bo‘ldi. A xonada nechta o‘quvchi qoldi?

1-usul

Oldin



Keyin



2 bo‘lak = 36
1 bo‘lak = 36 ÷ 2
= 18

3 bo‘lak = 3 × 18
= 54

A xonada 54 nafar o‘quvchi qoldi.

2-usul

	A xonadagi o‘quvchilar soni	:	B xonadagi o‘quvchilar soni	:	o‘quvchilarning umumiy soni
Oldin	5	:	7	:	12
Keyin	1 (×3) → 3	:	3 (×3) → 9	:	4 (×3) → 12

O‘quvchilarning umumiy soni o‘zgarishsiz qolgani sababli umumiy birliklar sonini bir xil qilib qo‘ying.



5 bo‘lak – 3 bo‘lak = 2 bo‘lak.

2 bo‘lak orqali A xonadan B xonaga o‘tgan o‘quvchilar soni tasvirlanyapti.

2 bo‘lak = 36
1 bo‘lak = 36 ÷ 2
= 18

3 bo‘lak = 3 × 18
= 54

A xonada 54 nafar o‘quvchi qoldi.

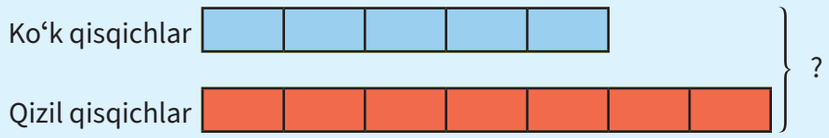
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O‘zgarmas ayirma

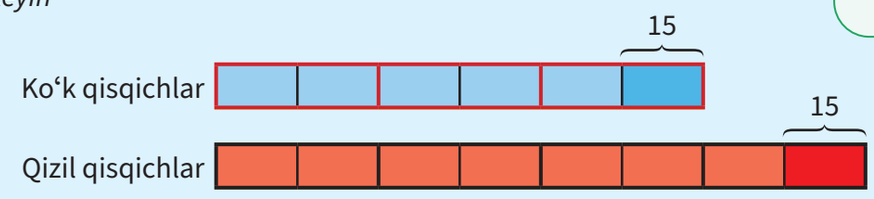
1 Jahongirdagi ko‘k va qizil qisqichlar sonining nisbati 5 : 7 edi. U 15 ta ko‘k va 15 ta qizil qisqich sotib oldi. Shundan so‘ng ko‘k va qizil qisqichlar sonining nisbati 3 : 4 bo‘ldi. Dastlab unda nechta qisqich bo‘lgan?

1-usul

Oldin



Keyin





1 bo‘lak = 15

12 bo‘lak = 12 × 15
= 180

Jahongirda dastlab 180 ta qisqich bo‘lgan.

2-usul

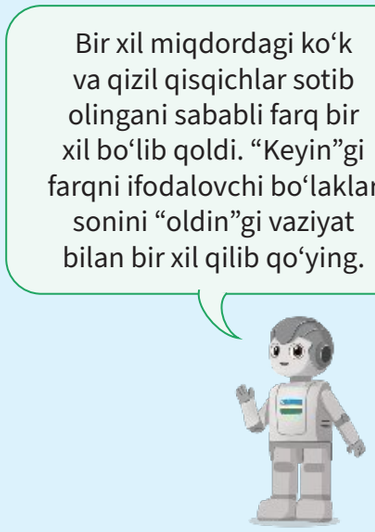
	ko‘k qisqichlar soni	:	qizil qisqichlar soni	ayirmasi
Oldin	5	:	7	2
Keyin	3 (×2) → 6	:	4 (×2) → 8	1 (×2) → 2

Ko‘k va qizil qisqichlar sonining har biri 1 bo‘lakka ortadi.

1 bo‘lak = 15

12 bo‘lak = 12 × 15
= 180

Jahongirda dastlab 180 ta qisqich bo‘lgan.

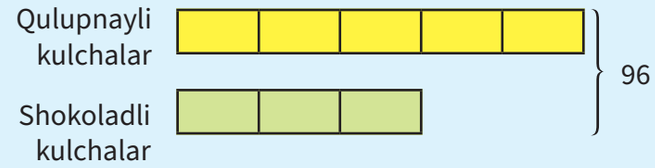


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2 Qandolatchida jami 96 ta qulupnayli va shokoladli shirin kulchalar bor edi. Qulupnayli kulchalar sonining shokoladli kulchalar soniga nisbati 5 : 3 edi. Har bir turdagi kulchalardan bir xil miqdorda sotilganidan so‘ng qulupnayli kulchalar sonining shokoladli kulchalar soniga nisbati 5 : 2 bo‘ldi. Hammasi bo‘lib qancha shirin kulcha sotilgan?

1-usul

Oldin

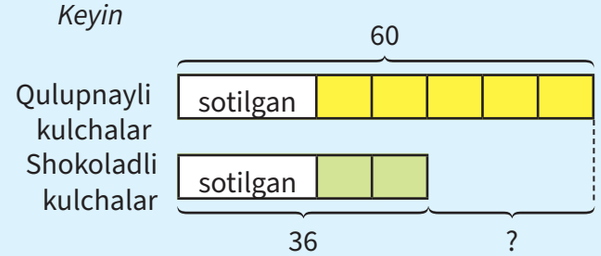


8 bo‘lak = 96
1 bo‘lak = 96 ÷ 8
= 12

5 bo‘lak = 5 × 12
= 60 (qulupnayli)

3 bo‘lak = 3 × 12
= 36 (shokoladli)

Keyin



3 bo‘lak = 60 – 36
= 24

1 bo‘lak = 24 ÷ 3
= 8

7 bo‘lak = 7 × 8
= 56 (qolgan)

96 – 56 = 40 (sotilgan)

Hammasi bo‘lib 40 ta shirin kulcha sotilgan.

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2-usul

	qulupnayli kulchalar soni	:	shokoladli kulchalar soni	ayirmasi
Oldin	5	:	3	2
Keyin	5	:	2	3

Kulchaning har bir turi teng miqdorda sotilgani sababli farq o‘zgarishsiz qoldi. Farqni ifodalovchi bo‘laklarni bir xil qilamiz.



2 va 3 ning dastlabki umumiy karralisini toping.



	qulupnayli kulchalar sonli	:	shokoladli kulchalar sonli	ayirmasi
Oldin	15 ← 5 (×3)	:	9 ← 3 (×3)	6 ← 2 (×3)
Keyin	10 ← 5 (×2)	:	4 ← 2 (×2)	6 ← 3 (×2)

15 bo‘lak + 9 bo‘lak = 24 bo‘lak.
24 bo‘lak orqali kulchalarning dastlabki soni ifodalanmoqda.

24 bo‘lak = 96
1 bo‘lak = 96 ÷ 24
= 4

Qulupnayli va shokoladli kulchalarning har biri 5 bo‘lakdan sotilgan.



5 bo‘lak + 5 bo‘lak = 10 bo‘lak
10 bo‘lak = 10 × 4
= 40

Hammasi bo‘lib 40 ta shirin kulcha sotilgan.

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Qiziqarli matematika

O‘rganing va bo‘lishing



Guruh bo‘lib ishlang.
Quyidagi matnli masalalarni yeching.
Yechimingizni sinf bilan bo‘lishing.

Ko‘rsatma. Bu matnli masalalar quyidagi yondashuvlar bilan yechiladi:

- Bitta o‘zgarmas miqdor.
- O‘zgarmas yig‘indi.
- O‘zgarmas ayirma.

1. Gulnora opada hammasi bo‘lib 250 dona murabboli va pishloqli kulcha bor edi. Murabboli kulchalar sonining pishloqli kulchalar soniga nisbati 3 : 2 edi. Bir xil miqdordagi murabboli va pishloqli kulchalar sotilganidan so‘ng murabboli kulchalar sonining pishloqli kulchalar soniga nisbati 3 : 1 bo‘ldi. Gulnora opa nechta murabboli kulcha sotgan?

2. Ravshan va Farruxdagi sharlar sonining nisbati 1 : 2 edi. Ravshan 2 ta sharni Sardorga berganidan so‘ng Ravshandagi sharlar sonining Farruxdagi sharlar soniga nisbati 3 : 7 bo‘ldi. Farruxda dastlab nechta shar bo‘lgan?

3. A sinfdagi o‘quvchilar sonining B sinfdagi o‘quvchilar soniga nisbati dastlab 5 : 1 edi. A sinfdan B sinfga 24 nafar o‘quvchi o‘tkazilganidan so‘ng A sinfdagi o‘quvchilar sonining B sinfdagi o‘quvchilar soniga nisbati 1 : 2 bo‘ldi. B sinfda necha nafar o‘quvchi bo‘ldi?

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Bajaring va o‘rganing



Matnli masalalarni yeching.

1. Sanobar opadagi qora tugmalar sonining oq tugmalar soniga nisbati 7 : 5 edi. Sanobar opa 39 ta qora tugmani yo‘qotib qo‘ydi. Shundan so‘ng qora tugmalar sonining oq tugmalar soniga nisbati 3 : 4 ga teng bo‘lib qoldi. Sanobar opada dastlab nechta tugma bo‘lgan?

2. Sitora va Jamilaning jami 160 ta markasi bor edi. Sitoradagi markalar sonining Jamiladagi markalar soniga nisbati 3 : 5 edi. Jamila o‘zining bir nechta markasini Sitoraga berganidan so‘ng Sitoradagi markalar sonining Jamiladagi markalar soniga nisbati 3 : 2 bo‘ldi. Jamila Sitoraga nechta marka berdi?

3. Savatdagi yashil olmalar sonining qizil olmalar soniga nisbati 2 : 3 edi. Savatga 48 ta yangi qizil olma solindi. Shundan so‘ng yashil olmalar sonining qizil olmalar soniga nisbati 4 : 9 ni tashkil qildi. Savatda dastlab nechta olma bor edi?

4. Dastlab Boburda 16 000 so‘m, Javlonda esa 24 000 so‘m bor edi. Har bir bola teng miqdorda pul sarfladi. Shundan so‘ng Boburda qolgan pul miqdorining Javlonda qolgan pul miqdoriga nisbati 3 : 5 bo‘ldi. Har bir bola qanchadan pul sarflagan?

5. A zaldagi o‘quvchilar sonining B zaldagi o‘quvchilar soniga nisbati dastlab 5 : 8 edi. Har bir zaldan 18 nafardan o‘quvchi chiqib ketgach, A zalda qolgan o‘quvchilar sonining B zalda qolgan o‘quvchilar soniga nisbati 3 : 5 ga teng bo‘ldi. B zalda necha nafar o‘quvchi qoldi?

6. Lobardagi pechenyelar sonining Usmondagi pechenyelar soniga nisbati 1 : 2 edi. Usmon Lobarga 8 ta pechenye berganidan so‘ng Lobardagi pechenyelar sonining Usmondagi pechenyelar soniga nisbati 3 : 2 bo‘ldi. Lobarda dastlab nechta pechenye bor edi? Bu masalada qaysi miqdor o‘zgarmas ekanini va masalani qanday yechganingizni tushuntiring.

7. Qutidagi qizil tugmalar sonining ko‘k tugmalar soniga nisbati 1 : 2 edi. Sayyora opa tugmalarning har ikki rangidan 8 tadan olib, ko‘ylakka qadadi. Shundan so‘ng qutidagi ko‘k tugmalar qizil tugmalarning $\frac{3}{7}$ qismiga teng bo‘ldi. Dastlab qutida nechta tugma bo‘lgan?

Mashq daftariga o‘ting **95–106**

O‘zingizni tekshiring



a) O‘zgaruvchan nisbatli masalalarning turini qanday aniqlashni bilaman.

b) O‘zgaruvchan nisbatlar qatnashgan masalalarni qanday yechishni bilaman.

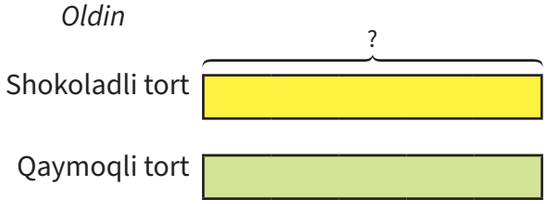
75 MATEMATICS SCHOOLBOOK G6 P1 UZB 220x290 176PG.indd 81 26/08/24 13:15

O‘ylab ko‘ring

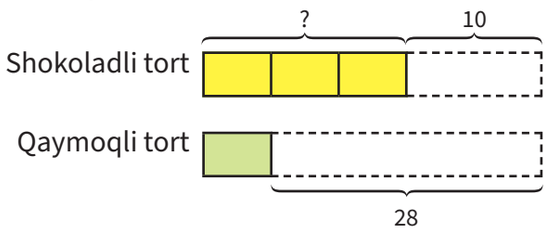


Mehri bir xil miqdordagi shokoladli va qaymoqli tortlarni pishirdi. U qo‘shnisiga 10 dona shokoladli va 28 dona qaymoqli tort bergandan so‘ng shokoladli tortlar sonining qaymoqli tortlar soniga nisbati 3 : 1 bo‘ldi. U jami nechta shokoladli tort pishirgan?

Oldin



Keyin



Mashq daftariga o‘ting **107–110**

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4 Foizlar

Muhokama qiling



Bolalar foizlarni o‘rganmoqda.

Bu qizil toshchalarni bankaga tashlasam, bankadagi qizil toshchalarning foizi oshadimi yoki kamayadimi?

Qaysi o‘simlik kechagidan ko‘ra ko‘proq o‘sgan?

A o‘simlik
Kecha: 15 cm
Bugun: 18 cm

Bu yerda 4 dona sariq kub bor. Ular qutidagi kublar sonining 40% ini tashkil qilsa, qutidagi barcha kublarning soni qancha?

Kublar

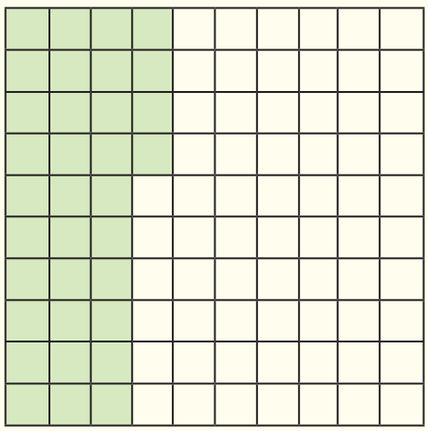
B o‘simlik
Kecha: 10 cm
Bugun: 13 cm

Eslang



Foizning ma’nosi

1 Kvadrat 100 ta teng katakchaga bo‘lingan va ularning 34 tasi bo‘yalgan. Kvadratning necha foizi bo‘yalgan?



% – foizning belgisi.
1 butun 100% ga teng.



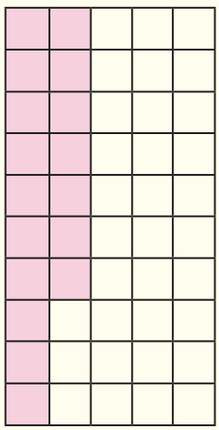
100 dan 34 $= \frac{34}{100}$

$\frac{34}{100} = 34\%$

Yuzdan 34 va **34 foiz**
bir xil ma’noga ega.
34% – yuzdan 34 degani.



2 To‘g‘ri to‘rtburchak 50 ta teng katakka bo‘lingan va ularning 17 tasi bo‘yalgan. To‘g‘ri to‘rtburchakning necha foizi bo‘yalgan?



1-usul

$\frac{17}{50} = \frac{34}{100}$

$= 34\%$

2-usul

$\frac{17}{50} \times 100\% = 34\%$

×2

$\frac{17}{50} = \frac{34}{100}$

×2

To‘g‘ri to‘rtburchakning
34 foizi bo‘yalgan.



3 a) 16% ni oddiy kasr ko‘rinishida yozing.
b) 45% ni o‘nli kasr ko‘rinishida yozing.

a) $16\% = \frac{16}{100}$

$= \frac{4}{25}$

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

$= 0{,}45$

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4 a) 500 ml 800 ml ning necha foizini tashkil qiladi?

$$\frac{500}{800} \times 100\% = \frac{5}{8} \times 100\%$$
$$= 62{,}5\%$$

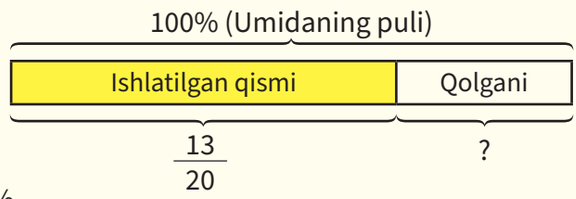
b) 700 m 2 km ning necha foizini tashkil qiladi?

$$2 \text{ km} = 2 \times 1000$$
$$= 2000 \text{ m}$$

$$\frac{700}{2000} \times 100\% = \frac{7}{20} \times 100\%$$
$$= 35\%$$

5 Umida pulining $\frac{13}{20}$ qismini tushlik uchun ishlatdi.

a) Umida pulining necha foizini ishlatdi?
b) Umidada pulining necha foizi qoldi?



a) $\frac{13}{20} \times 100\% = 65\%$

Umida pulining 65% ini ishlatdi.

b)

1-usul

$100\% - 65\% = 35\%$

2-usul

$\frac{20}{20} - \frac{13}{20} = \frac{7}{20}$

$\frac{7}{20} \times 100\% = 35\%$

Umidada pulining 35% i qoldi.

6 Tortning qo‘shimcha qiymat solig‘i (QQS)siz narxi 150 000 so‘m. Agar QQS tort narxining 12% ini tashkil qilsa, tortning QQS bilan narxi qancha?



$150\,000 \times \frac{12}{100} = 18\,000$ (so‘m)

$150\,000 + 18\,000 = 168\,000$

Tortning narxi QQS bilan birga 168 000 so‘mga teng.

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7 Yulduz opa 2000 AQSH dollarini bank omonatiga qo‘ydi. Agar omonat foizi yiliga 6% bo‘lsa, bir yildan keyin Yulduz opaning bankdagi puli qancha bo‘ladi?

$2000 \times \frac{6}{100} = 120$

$2000 + 120 = 2120$

Yulduz opaning bankdagi puli bir yildan so‘ng 2120 AQSH dollari bo‘ladi.

8 Sumkaning narxi 120 000 so‘m. Agar sotuvchi sumkani 15% chegirma bilan sotsa, sumkaning yangi narxi qancha bo‘ladi?

1-usul

$120\,000 \times \frac{15}{100} = 18\,000$

$120\,000 - 18\,000 = 102\,000$

2-usul

$100\% - 15\% = 85\%$

$120\,000 \times \frac{85}{100} = 102\,000$



Sumkaning chegirmadan keyingi narxi 102 000 so‘mga teng.

9 Olim aka 10 000 AQSH dollari mablag‘ini A bankka qo‘ygan. A bank omonat foizi – yiliga 6%. Akmal aka esa mablag‘ini B va C banklarga 5000 dollardan, yiliga 8% omonat foizi bilan qo‘ygan.

a) Akmal akaning 1 yildan so‘ng oladigan omonat foizi miqdorini toping.

b) Bir yildan so‘ng omonatchilarning qay biri ko‘proq omonat foizi oladi?

a) 5000 ning 8% i $= 5000 \times \frac{8}{100}$ (B bank)

$= 400$

5000 ning 8 foizi = 400 (C bank)

$400 + 400 = 800$

Demak, Akmal aka 1 yildan so‘ng omonat foizi sifatida 800 AQSH dollari pul oladi.

b) 10 000 ning 6 foizi $= 10\,000 \times \frac{6}{100}$ (A bank)

$= 600$

Demak, Olim aka 1 yildan so‘ng omonat foizi sifatida 600 AQSH dollari pul oladi. Bir yildan so‘ng Akmal aka Olim akadan ko‘proq omonat foizi oladi.

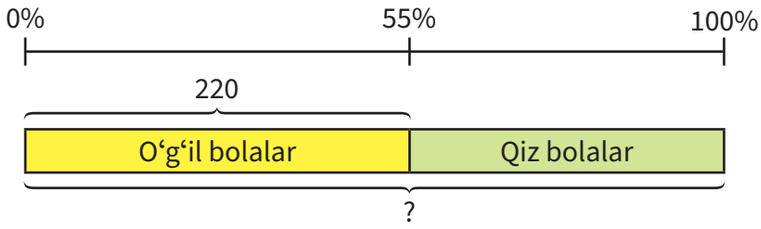
Mashq daftariga o‘ting **111–114**

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Foizi va qismiga ko‘ra sonning o‘zini topish

Qarang va o‘rganing

1 Maktabda 6-sinf o‘quvchilarining 220 tasi o‘g‘il bola va ular barcha 6-sinf o‘quvchilarining 55% ini tashkil qiladi. 6-sinf o‘quvchilarining umumiy sonini toping.



6-sinf o‘quvchilarining 55% i = 220

6-sinf o‘quvchilarining 1% i = 220 ÷ 55
= 4

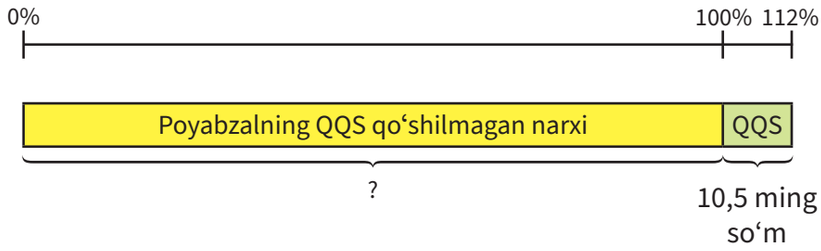
6-sinf o‘quvchilarining 100% i = 4 × 100
= 400

55% → 220
1% → 220 ÷ 55 = 4
100% → 4 × 100 = 400



6-sinf o‘quvchilarining umumiy soni 400 nafarga teng.

2 Jasurbek poyabzal uchun 10,5 ming so‘m QQS sifatida to‘ladi. Agar QQS umumiy narxning 12% ini tashkil qilsa, poyabzalning QQS qo‘shilishidan oldingi narxi qancha?



12% → 10,5 ming so‘m

1% → 10,5 ÷ 12 = 0,875 ming so‘m

100% → 0,875 × 100 = 87,5 ming so‘m

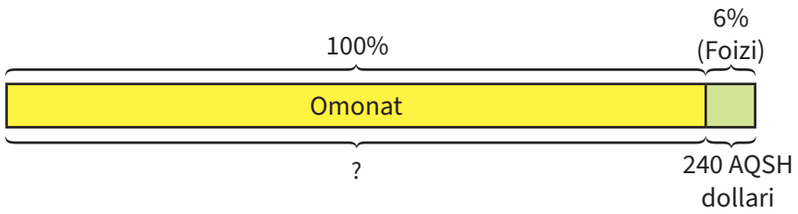
QQS dastlabki narxning 12% iga teng.
QQS = 10,5 ming so‘m.



Demak, poyabzalning dastlabki narxi 87,5 ming so‘mga teng bo‘lgan.

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3 Ahmad aka bankka omonatga qo‘ygan puli uchun birinchi yil 240 AQSH dollari oldi. Agar omonat foizi yiliga 6% bo‘lsa, Ahmad aka bankka qancha pul qo‘ygan?



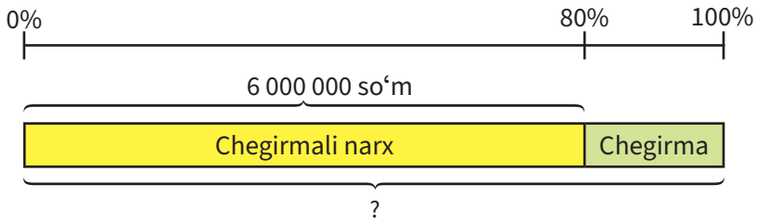
6% → 240

1% → 240 ÷ 6 = 40

100% → 40 × 100 = 4000

Ahmad aka bank omonatiga 4000 AQSH dollari pul qo‘ygan.

4 Do‘konda kompyuterlar 20% chegirma bilan sotilmoqda. Zulfiya kompyuterni chegirma bilan 6 000 000 so‘mga sotib olgan bo‘lsa, uning chegirmadan oldingi narxini toping.



100% − 20% = 80%

80% → 6 000 000 so‘m

1% → 6 000 000 ÷ 80 = 75 000

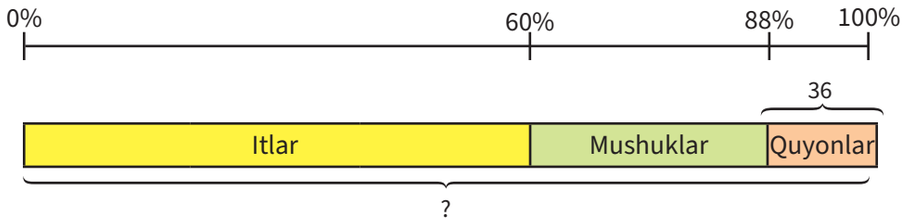
100% → 75 000 × 100 = 7 500 000 so‘m

Kompyuterning chegirmadan oldingi narxi 7 500 000 so‘m bo‘lgan.



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5 Uy hayvonlari ko‘rgazmasidagi jonivorlarning $\frac{3}{5}$ qismi – itlar, 28 foizi – mushuklar, qolgani – quyonlar. Agar quyonlar soni 36 ta bo‘lsa, jami nechta uy hayvoni ko‘rgazmaga qo‘yilgan?



$\frac{3}{5} = \frac{60}{100}$

$= 60\%$

Itlar soni uy hayvonlari sonining 60% iga teng.

100% – 60% – 28% = 12%

Uy hayvonlarining 12% i quyonlar bo‘lgan.

12% → 36

1% → 36 ÷ 12 = 3

100% → 3 × 100 = 300

Jami 300 ta uy hayvoni ko‘rgazmaga qo‘yilgan.

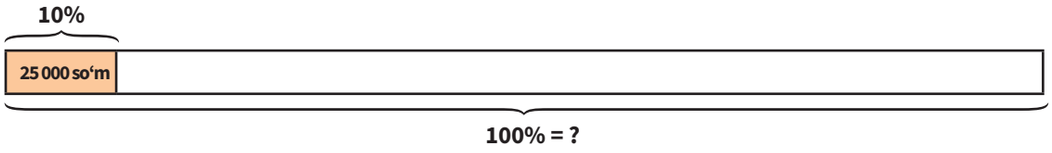
Qiziqarli matematika

O‘rganing va bo‘lishing



Matnli masalalarni juftlikda yeching.

1 Olimjon o‘tgan oyda ota-onasi bergan puldan 25 000 so‘m tejadi. Bu unga berilgan pulning 10% iga teng bo‘lsa, Olimjon olgan jami pulni toping.



2 Kinoteatrda o‘rindiqlarning 86 foizi band edi. Agar band o‘rindiqlarning soni 172 ta bo‘lsa, kinoteatrda nechta o‘rindiq bor?

3 Konsertga kelgan tomoshabinlarning $\frac{1}{2}$ qismi – katta yoshlilar, 23% i – o‘g‘il bola, 81 nafari esa qizlar. Tomoshabinlarning umumiy sonini toping.

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Bajaring va o‘rganing



Matnli masalalarni yeching.

1. Agar sonning 25 foizi 120 ga teng bo‘lsa, bu sonni toping.

2. Shahloda 10 ta qizil ro‘molcha bor. Bu undagi jami ro‘molchalarning 5% ini tashkil qilsa, jami ro‘molchalar sonini toping.

3. Nargiza opa pulining 28 foiziga hamyon sotib oldi va unda 28 800 so‘m pul qoldi.
   a) Nargiza opaning xariddan oldin qancha puli bo‘lgan?
   b) Hamyonning narxi necha so‘m?

4. Sardor 14 km yugurganidan so‘ng musobaqa masofasining 35 foizini bosib o‘tdi.
   a) Sardor qancha masofaga yugurishi kerak edi?
   b) Belgilangan masofani bosib o‘tish uchun u yana necha kilometr yugurishi kerak?

5. Rustam aka kitob sotib olganida 12% QQS to‘ladi. Agar QQS 3600 so‘m bo‘lsa, kitobning QQSsiz narxi necha so‘m?

6. Saodat opa 30% chegirma bilan 1 050 000 so‘mga televizor sotib olgan bo‘lsa, televizorning chegirmasiz narxini toping.

7. Yulduz opa bankka qo‘ygan mablag‘i uchun 1 yilda 2000 AQSH dollari omonat foizi oldi. Agar yillik omonat foizi 8% bo‘lsa, Yulduz opa yilning boshida omonatga qancha mablag‘ qo‘ygan?

8. Aziza xola pullarining $\frac{1}{5}$ qismini Sardorga, 35 foizini esa Madinaga bergach, o‘zida 22 500 so‘m pul qoldi. Aziza xolada necha so‘m pul bo‘lgan?

9. Bir qutichada toshchalar bor. Ularning 42 foizi ko‘k, 26 foizi qizil, qolgani esa yashil rangda. Agar ko‘k toshchalarning soni yashil toshchalarning sonidan 150 ta ko‘p bo‘lsa, qutichadagi toshchalarning umumiy sonini toping.

Mashq daftariga o‘ting **115–122**

O‘zingizni tekshiring



Men sonning qismi yoki foiziga ko‘ra sonning o‘zini topa olaman.

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O‘sish foizi va kamayish foizini topish

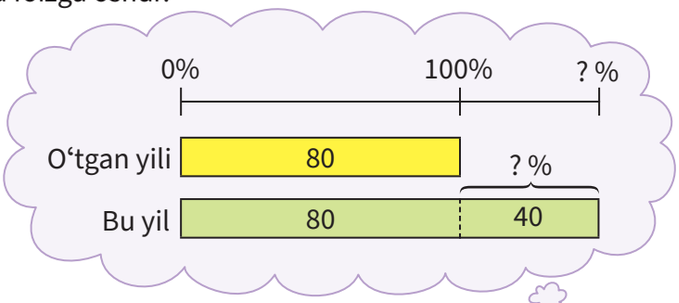
Qarang va o‘rganing



1 “Delfin” suzish klubiga o‘tgan yili 80 nafar odam a’zo bo‘lgan, bu yil unga yana 40 nafar a’zo qo‘shildi. “Delfin” klubi a’zolarining soni necha foizga oshdi?

$\frac{40}{80} \times 100\% = 50\%$

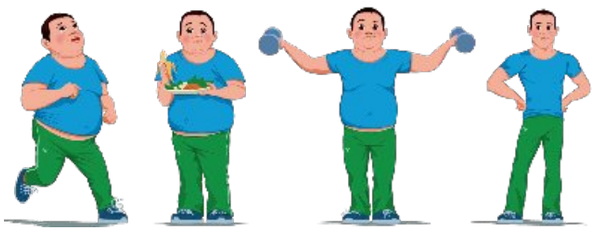
Demak, suzuvchilarning soni 50% ga oshdi.



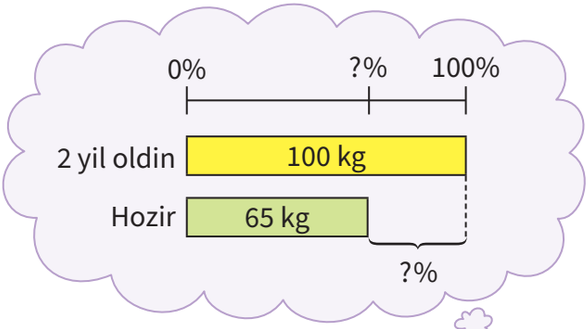


O‘sish foizi = $\frac{\text{o‘sish miqdori}}{\text{dastlabki miqdor}}$ × 100%

2 Ikki yil oldin Sanjar akaning vazni 100 kg edi, hozir esa 65 kg. Sanjar akaning vazni necha foizga kamayganini toping.



100 kg 65 kg





$100 - 65 = 35$

$\frac{35}{100} \times 100\% = 35\%$

Demak, Sanjar akaning vazni 35% ga kamaygan.

Kamayish foizi = $\frac{\text{kamayish miqdori}}{\text{dastlabki miqdor}}$ × 100%

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3 Zavod yanvar oyida 1374 ta, fevral oyida esa 1825 ta shisha idish ishlab chiqargan. Shisha idish ishlab chiqarish fevral oyida yanvar oyiga qaraganda necha foizga oshgan? Javobni o‘ndan birlar xonasigacha yaxlitlang.

$1825 - 1374 = 451$

$\frac{451}{1374} \times 100\% \approx 32{,}82\%$

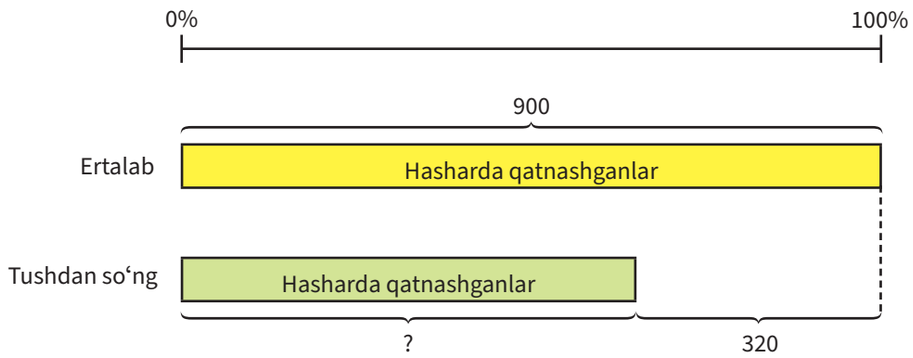
$= 32{,}8\%$ (o‘ndan birlar xonasigacha yaxlitlangan)

Shisha idish ishlab chiqarish fevral oyida yanvar oyiga qaraganda taqriban 32,8% ga oshgan.

4 Ertalab hasharda 900 kishi bor edi. Tushdan so‘ng esa hasharda ertalabkidan 320 kishi kam qatnashdi.

a) Tushdan so‘ng hasharda necha kishi qatnashdi?

b) Ertalab hasharga qatnashganlar soni tushdan so‘ng necha foizga kamaydi? Javobni o‘ndan birlar xonasigacha yaxlitlang.



a) $900 - 320 = 580$

Tushdan so‘ng hasharda 580 kishi qatnashdi.

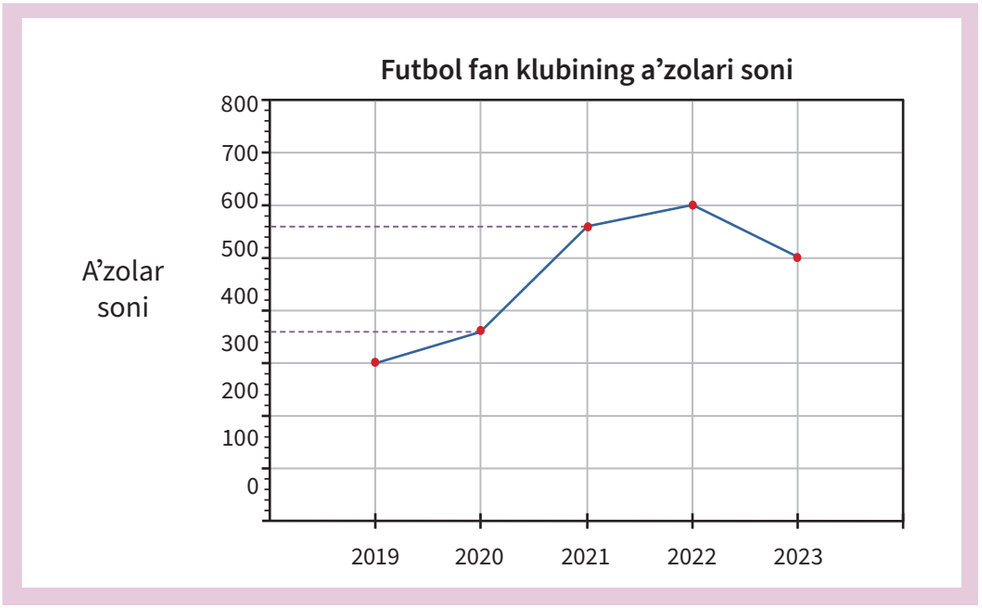
b) $\frac{320}{900} \times 100\% \approx 35{,}56\%$

$= 35{,}6\%$ (o‘ndan birlar xonasigacha yaxlitlangan)

Hasharga qatnashganlarning soni tushdan so‘ng taqriban 35,6% ga kamaygan.

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5 Quyidagi chiziqli grafikda futbol fan klubining 2019–2023-yillardagi a’zolari soni berilgan.



a) Qaysi ikki yil orasida klub a’zolari sonining eng ko‘p o‘sishi kuzatildi? O‘sish necha foizni tashkil etdi? Javobni o‘ndan birlar xonasigacha yaxlitlang.

b) 2022-yildan 2023-yilgacha klub a’zolari soni necha foizga kamaydi? Javobni yuzdan birlar xonasigacha yaxlitlang.

a) Klub a’zolari sonining eng katta o‘sishi 2020–2021-yillarda bo‘lgan.

Klub a’zolari sonining o‘sishi $= 560 - 360$
$= 200$

Klub a’zolari sonining o‘sish foizi $= \frac{200}{360} \times 100\%$
$\approx 55{,}56\%$
$= 55{,}6\%$ (o‘ndan birlar xonasigacha yaxlitlangan)

Klub a’zolarining soni 2020–2021-yillarda taxminan 55,6% ga o‘sgan.

b) $600 - 500 = 100$

Klub a’zolari sonining kamayish foizi $= \frac{100}{600} \times 100\%$
$\approx 16{,}667\%$
$= 16{,}67\%$ (yuzdan birlar xonasigacha yaxlitlangan)

2022–2023-yillarda klub a’zolari soni taxminan 16,67% ga kamaygan.

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6 Quyidagi jadvalda Akmal aka dushanba kuni sotishi kerak bo‘lgan mevalar soni berilgan. Noklarning soni berilmagan.

Meva nomi	Soni
Olma	165
Shaftoli	208
Olxo‘ri	84
Nok	?

a) Agar olmalar jami mevalar sonining 33% ini tashkil qilsa, noklarning soni nechta?

b) Xaridor mevalarning har biridan 30 dona sotib olsa, har bir mevaning soni bir xil foizga kamayadi. Bu fikr to‘g‘rimi yoki noto‘g‘ri? Nega? Tushuntiring.

a) 33% → 165

1% → 165 ÷ 33 = 5

100% → 5 × 100 = 500

500 – 165 – 208 – 84 = 43

Noklarning soni 43 ta bo‘lgan.

b)

$$\text{Olmalar sonining kamayish foizi} = \frac{30}{\mathbf{165}} \times 100\% \approx 18{,}18\%$$

$$\text{Shaftolilar sonining kamayish foizi} = \frac{30}{\mathbf{208}} \times 100\% \approx 14{,}42\%$$

$$\text{Olxo‘rilar sonining kamayish foizi} = \frac{30}{\mathbf{84}} \times 100\% \approx 35{,}71\%$$

$$\text{Noklar sonining kamayish foizi} = \frac{30}{\mathbf{43}} \times 100\% \approx 69{,}77\%$$

Berilgan fikr noto‘g‘ri. Har bir mevaning soni 30 taga kamaysa, ularning dastlabki soni har xil bo‘lgani uchun kamayish foizi ham turlicha bo‘ladi.

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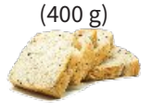
Juftlikda ishlang



Miqdorlar o‘zgarishiga doir hayotiy misollar keltiring. Foiz o‘zgarishi qanday hisoblanganini tushuntiring.

Turmushda matematika

Gazeta ba’zi oziq-ovqat mahsulotlari narxining o‘zgarishi haqida quyidagi xabarni chop etdi.

Ba’zi narxlarning keskin oshishi	Laym (1 kg) 	Ismaloq (1 kg) 	Nok (1 kg) 	“Alanga” guruchi (5 kg) 
Yanvar 2023	19 500 so‘m	28 700 so‘m	9300 so‘m	12 540 so‘m
May 2023	21 800 so‘m	31 300 so‘m	10 100 so‘m	13 060 so‘m
O‘sish foizi	**11,79**	**9,06**	**8,6**	**4,15**
Ba’zi narxlarning keskin tushishi	Pomidor (1 kg) 	Qisqichbaqa (1 kg) 	Baliq (1 kg) 	Vitaminlar bilan boyitilgan non (400 g) 
Yanvar 2023	28 800 so‘m	22 930 so‘m	29 510 so‘m	8 800 so‘m
May 2023	17 200 so‘m	18 040 so‘m	23 820 so‘m	8 600 so‘m
Kamayish foizi	**40,28**	**21,33**	**19,28**	**2,27**

Qiziqarli matematika

O‘ynang va o‘rganing



Guruhlarga bo‘linib o‘ynang.
10 yoqli toshni ikki marta ketma-ket tashlang. Tosh yog‘ida tushgan sonlarning o‘zgarishi (o‘sishi yoki kamayishi)ni aniqlang. Bu o‘zgarishni birinchi tushgan songa nisbatan foizda ifodalang.

Namuna



1-son 2-son

$8 - 6 = 2$

Kamayish foizi $= \frac{2}{8} \times 100\%$

$= 25\%$

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Bajaring va o‘rganing

Matnli masalalarni yeching.

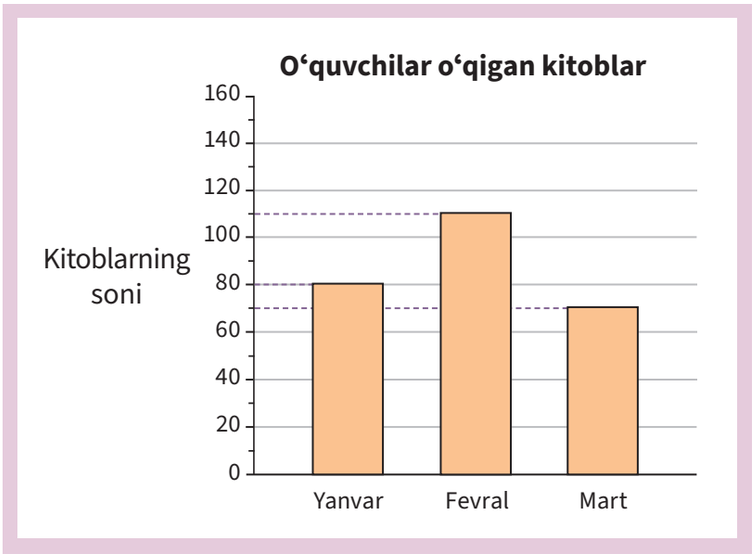
1. Do‘konda yanvarda 350 ta, fevralda esa 200 ta kitob sotilgan. Sotuv necha foizga kamaygan? Javobni o‘ndan birlar xonasigacha yaxlitlang.

2. Rashid amakining seshanba kungi daromadi 80 000 so‘m bo‘lgan. Chorshanba kuni esa uning daromadi 98 000 so‘mni tashkil qildi. Rashid amakining kunlik daromadi necha foizga oshgan?

3. Soliha viktorinada 25 ball yig‘di. Agar u qo‘shimcha savol uchun yana 12 ball olgan bo‘lsa, uning ballari necha foizga o‘sgan?

4. Kitobning narxi 16 000 so‘m edi. Chegirmadan keyin uning narxi 13 500 so‘mga tushdi. Kitobning narxi necha foizga kamaygan?

5. Quyidagi grafikda 6-sinf o‘quvchilari 3 oy davomida o‘qigan kitoblari soni ko‘rsatilgan.



a) Fevral oyida o‘qilgan kitoblar soni yanvar oyiga nisbatan necha foizga oshgan?
b) Mart oyida o‘qilgan kitoblar soni yanvar oyiga nisbatan necha foizga kamaygan?

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6 Olma va nok solingan savatdagi mevalarning 40 foizi olma edi. Olmalarning yarmi sotildi.

a) Olmalar sotilganidan so‘ng savatdagi noklarning foizi kamaydimi, oshdimi yoki o‘zgarmasdan qoldimi?

b) Savatda qolgan mevalarning necha foizi nok?

7 Quyidagi jadvalda do‘kondagi jami muzqaymoqlarning turi va soni berilgan. Lekin, qulupnayli muzqaymoqning soni **berilmagan**.

Muzqaymoq turi	Muzqaymoq soni
Bananli	28
Shokoladli	71
Qulupnayli	?
Yalpizli	69

a) Agar do‘kondagi muzqaymoqlarning 40% i qulupnayli bo‘lsa, do‘konda nechta muzqaymoq bor?

b) Do‘kondagi muzqaymoqlardan bir nechtasi sotildi. Lekin bananli muzqaymoqlardan birorta ham sotilmadi. Bananli muzqaymoqlar sonining do‘konda qolgan jami muzqaymoqlar soniga nisbatan foizi oshdimi, kamaydimi yoki o‘zgarmasdan qoldimi? Javobingizni tushuntiring.

Mashq daftariga o‘ting **123–126**

O‘zingizni tekshiring



Men o‘sish va kamayish foizini aniqlay olaman.

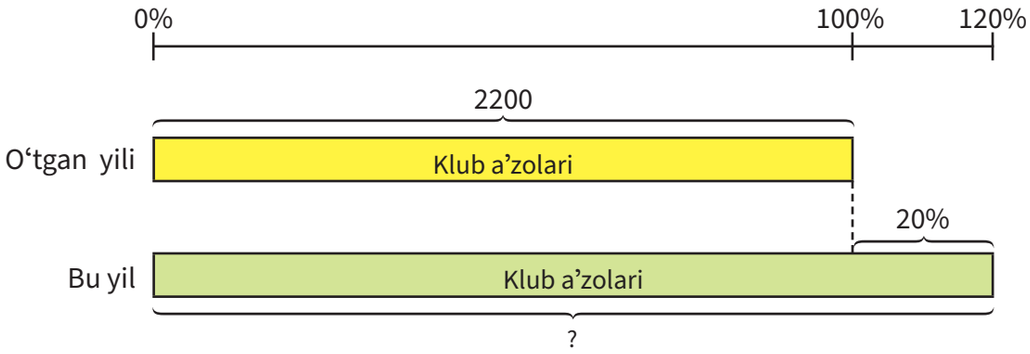
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Matnli masalalar

Qarang va o‘rganing



1 O‘tgan yili salomatlik klubiga 2200 nafar kishi a’zo bo‘lgan. Agar a’zolar soni bu yil 20% ga oshgan bo‘lsa, klub a’zolarining umumiy sonini toping.



1-usul

$100\% \rightarrow 2200$

$1\% \rightarrow \frac{2200}{100}$

$120\% \rightarrow \frac{\cancel{2200}^{22}}{\cancel{100}_{1}} \times 120 = 2640$

2-usul

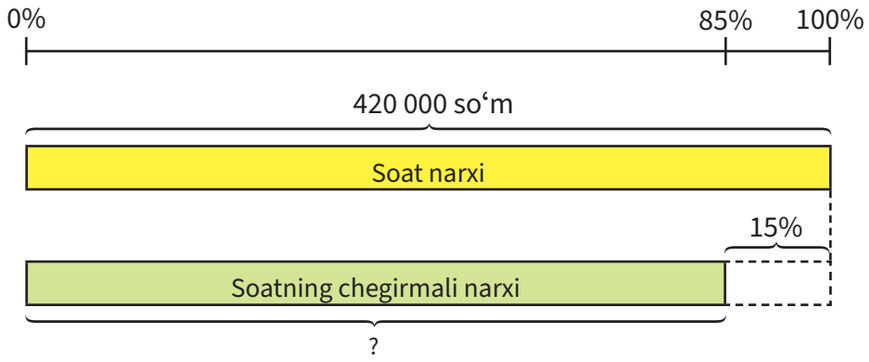
$\overset{22}{\cancel{2200}} \times \frac{20}{\cancel{100}_{1}} = 440$

$2200 + 440 = 2640$

Bu yil salomatlik klubi a’zolarining soni 2640 nafar bo‘lgan.

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2 420 000 so‘mlik soat 15% chegirma bilan sotilsa, uning narxi qancha bo‘ladi?



1-usul

100% − 15% = 85%

100% → 420 000 so‘m

1% → 420 000 ÷ 100 = 4200 so‘m

85% → 4200 × 85 = 357 000 so‘m

2-usul

Chegirma = 420 000 ning 15 foizi

$$= 420\,000 \times \frac{15}{100}$$

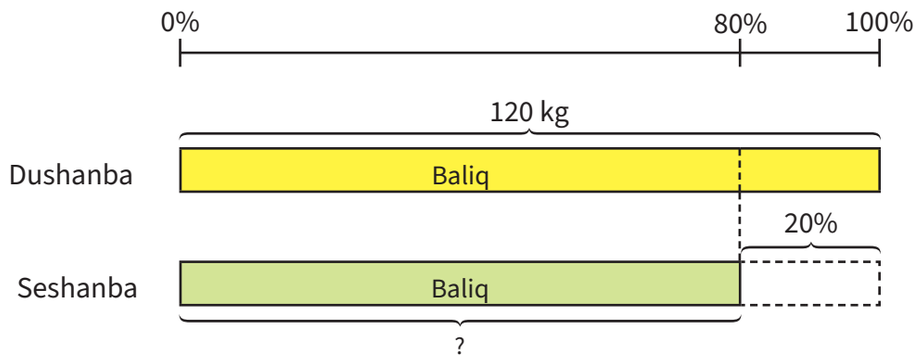
= 63 000

420 000 − 63 000 = 357 000

Soatning chegirmali narxi 357 000 so‘m.

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3 Bozorga dushanba kuni 120 kg, seshanba kuni esa dushanbadagidan 20% kamroq baliq olib kelindi. Seshanba kuni qancha baliq olib kelingan?



1-usul

100% → 120

1% → 120 ÷ 100 = 1,2

80% → 1,2 × 80 = 96

2-usul

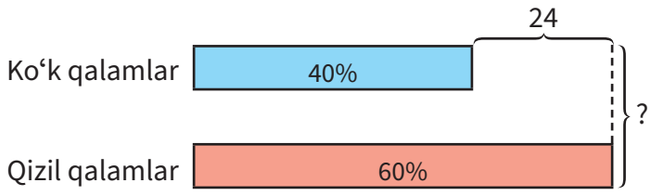
Kamayish foizi = 20%

$120 \times \frac{20}{100} = 24$

120 − 24 = 96

Seshanba kuni bozorga 96 kg baliq olib kelingan.

4 Qalamdondagi qalamlarning 40 foizi ko‘k, qolgani esa qizil rangda. Agar qizil qalamlar ko‘k qalamlardan 24 ta ko‘p bo‘lsa, qalamdonda jami qancha qalam bor?



60% − 40% = 20%

20% → 24

1% → $\frac{24}{20}$

100% → $\frac{24}{20} \times 100 = 120$

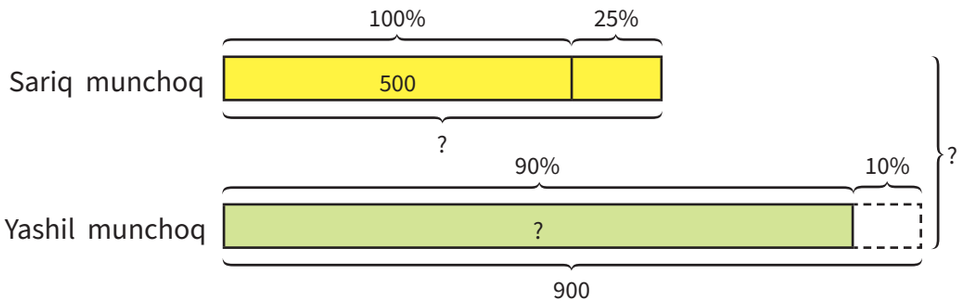
Qalamdonda jami 120 ta qalam bor.

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5 Shahlo opada dastlab 500 ta sariq va 900 ta yashil munchoq bor edi. Shahlo opa yana bir nechta sariq munchoq sotib oldi va sariq munchoqlarning soni 25% ga oshdi. Shahlo opa dugonasiga yashil munchoqlardan bir nechtasini berdi va yashil munchoqlarning soni 10% ga kamaydi.

a) Shahlo opada jami nechta munchoq qoldi?

b) Shahlo opada qolgan jami munchoqlarning soni necha foizga oshgani yoki kamayganini aniqlang.



a) 100% → 500 (sariq munchoqlar)

1% → 500 ÷ 100 = 5

125% → 5 × 125 = 625

100% → 900 (yashil munchoqlar)

1% → 900 ÷ 100 = 9

90% → 9 × 90 = 810

625 + 810 = 1435

Shahlo opada jami 1435 ta munchoq qolgan.

b) 500 + 900 = 1400

Shahlo opada dastlab 1400 dona munchoq bo‘lgan.

1435 – 1400 = 35

Munchoqlarning umumiy soni 35 taga oshgan.

$\frac{35}{1400} \times 100\% = 2{,}5\%$

Munchoqlarning umumiy soni 2,5% ga oshgan.

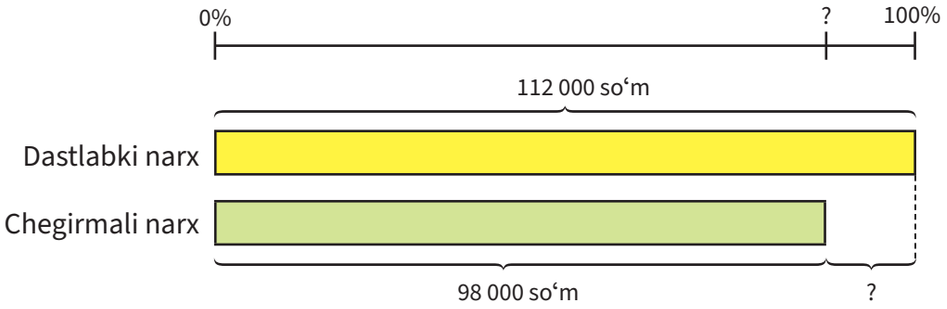
75 MATEMATICS SCHOOLBOOK G6 P1 UZB 220x290 176PG.indd 101 26/08/24 13:15

6 Narimon 112 000 so‘mlik poyabzalni chegirma bilan 98 000 so‘mga sotib oldi.

a) Narimon necha so‘m chegirmaga ega bo‘ldi?

b) Ushbu poyabzal uchun necha foiz chegirma berilgan edi?





a) 112 000 – 98 000 = 14 000 so‘m

Narimon 14 000 so‘m chegirmaga ega bo‘lgan.

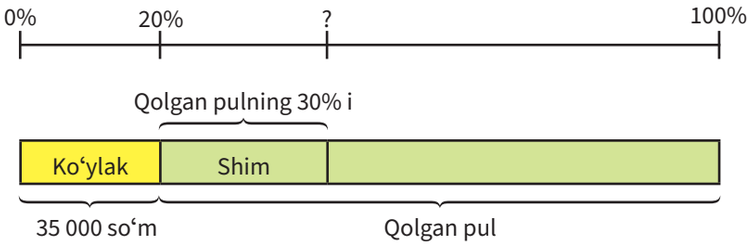
b) $\frac{14\,000}{112\,000} \times 100\% = 12{,}5\%$

Poyabzal 12,5% chegirma bilan sotilgan.

7 Umid pulining 20 foiziga ko‘ylak, qolgan pulining 30 foiziga shim sotib oldi. Agar Umid ko‘ylakni 35 000 so‘mga sotib olgan bo‘lsa:

a) shim sotib olish uchun dastlabki pulining necha foizini ishlatgan?

b) shim sotib olish uchun qancha pul sarflangan?



a) 100% – 20% = 80% (qoldi)

Qolgan pulning 30% i = $\frac{\cancel{80}^{4}}{} \times \frac{30}{\cancel{100}_{5}}$

= 24%

Umid pulining 24% ini shimga ishlatgan.

b) 20% → 35 000 so‘m

1% → $\frac{35\,000}{20}$

24% → $\frac{35\,000}{20} \times 24 = 42\,000$ so‘m

Qolgan pulning 30% i dastlabki pulning 24% iga teng.



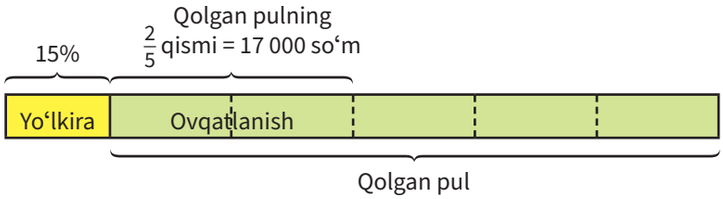
Umid shim sotib olish uchun 42 000 so‘m sarflagan.

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8 Laylo pulining 15 foizini yo‘lkiraga, qolgan pulining $\frac{2}{5}$ qismini, ya’ni 17 000 so‘mni ovqatlanishga ishlatdi.

a) Laylo dastlabki pulining necha foizini ovqatlanishga ishlatdi?

b) Layloda dastlab qancha pul bor edi?



a) $100\% - 15\% = 85\%$

$\frac{2}{5} \times 85\% = 34\%$

Laylo pulining 34 foizini ovqatlanishga ishlatgan.

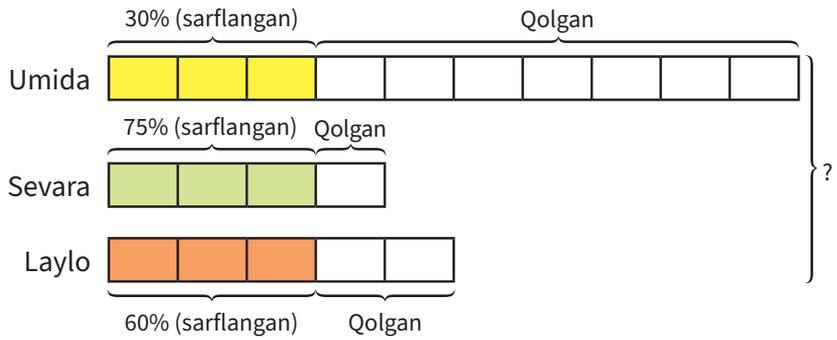
b) $34\% \rightarrow 17\,000$ so‘m

$1\% \rightarrow 17\,000 \div 34 = 500$ so‘m

$100\% \rightarrow 500 \times 100 = 50\,000$ so‘m

Layloda dastlab 50 000 so‘m pul bor edi.

9 Umida, Sevara va Laylo bir xil miqdorda pul ishlatdi. Umida pulining 30 foizini, Sevara 75 foizini, Laylo esa 60 foizini sarfladi. Agar ularda jami 30 000 so‘m qolgan bo‘lsa, qizlarda dastlab jami qancha pul bo‘lgan?



10 bo‘lak = 30 000 so‘m

1 bo‘lak = 30 000 ÷ 10

= 3000 so‘m

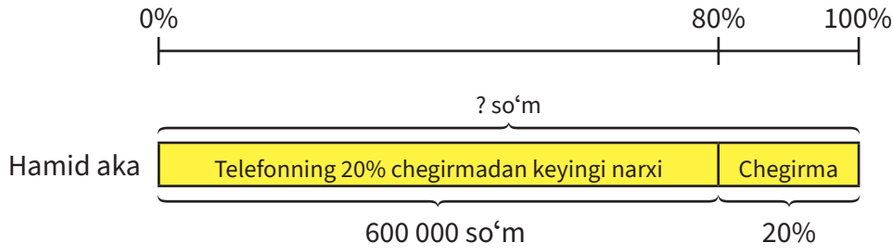
19 bo‘lak = 3000 × 19

= 57 000 so‘m

Ularda dastlab jami 57 000 so‘m bo‘lgan.

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10 Hamid aka do‘kondan 20% chegirma bilan 600 000 so‘mga telefon sotib oldi. Do‘kondan xuddi shunday telefonni Tohir aka 630 000 so‘mga sotib olgan bo‘lsa, Tohir akaga necha foiz chegirma berilgan?



100% − 20% = 80%

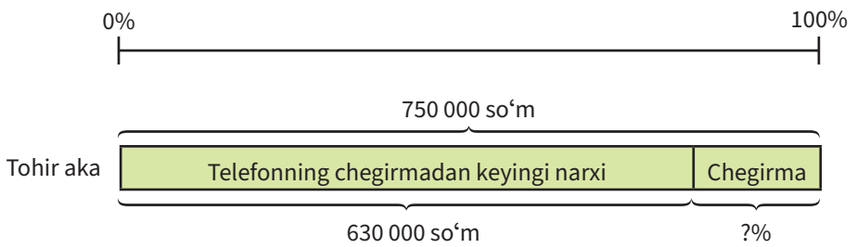
80% → 600 000

1% → $\frac{600\,000}{80}$

80% → 600 000 so‘m
20% → 600 000 ÷ 4 = 150 000 so‘m
100% → 150 000 × 5 = 750 000 so‘m



100% → $\frac{600\,000}{80}$ × 100 = 750 000 so‘m (telefonning dastlabki narxi)



750 000 − 630 000 = 120 0000

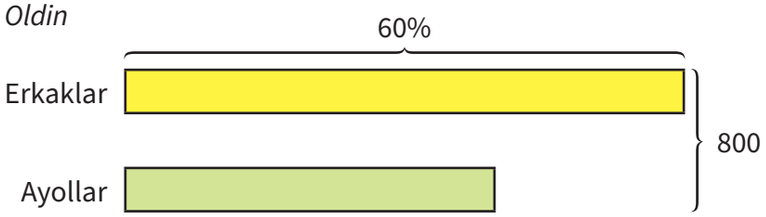
$\frac{120\,000}{750\,000}$ × 100% = 16%

Tohir akaga 16% chegirma berilgan.

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11 Salomatlik klubining dastlab 800 nafar a'zosi bor edi. Ularning 60% i erkaklar edi. Yana 200 kishi klubga a'zo bo'ldi. Agar yangi a'zolarning 150 nafari erkak bo'lsa, klub a'zolarining necha foizi erkaklardan iborat bo'ldi?

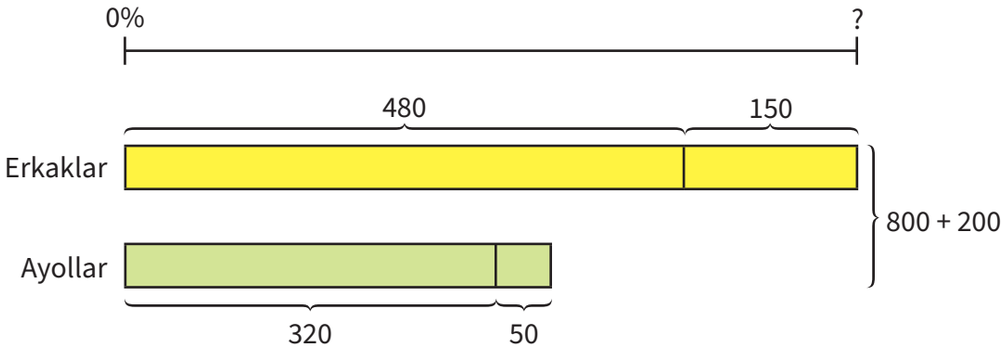
Oldin



$800 \times \frac{60}{100} = 480$

Dastlab klubning 480 a'zosi erkak bo'lgan.

Keyin



$150 + 480 = 630$

Klubga yangi a'zolar qo'shilganidan so'ng erkaklarning soni 630 nafar bo'ldi.

$800 + 200 = 1000$

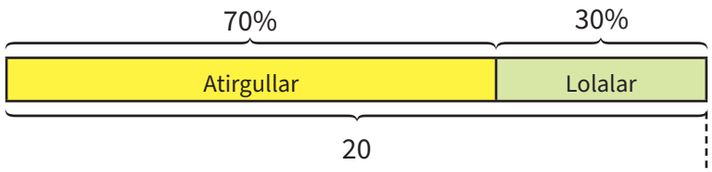
$$\frac{630}{1000} \times 100\% = \frac{63}{100} \times 100\%$$
$$= 63\%$$

Klub a'zolarining 63% i erkaklardan iborat bo'ldi.

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12 Sarvinoz opada 20 ta gul bor edi. Gullarning 70% i atirgul, qolganlari esa lola edi. Sarvinoz opa qo‘shnisiga bir nechta atirgul berganidan so‘ng atirgullarning ulushi 60% gacha kamaydi. Sarvinoz opa qo‘shnisiga nechta atirgul bergan?

Oldin

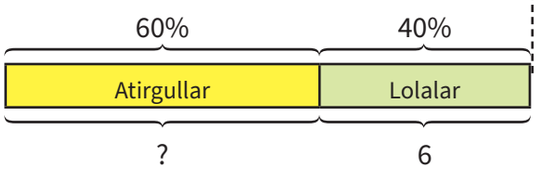


$20 \times \frac{70}{100} = 14$ (atirgullar)

$20 - 14 = 6$ (lolalar)

Sarvinoz opada 14 ta atirgul va 6 ta lola bor edi.

Keyin



100% – 60% = 40% (lolalar)

40% → 6

20% → 6 ÷ 2 = 3

60% → 3 × 3 = 9

Sarvinoz opada 9 ta atirgul qolgan.

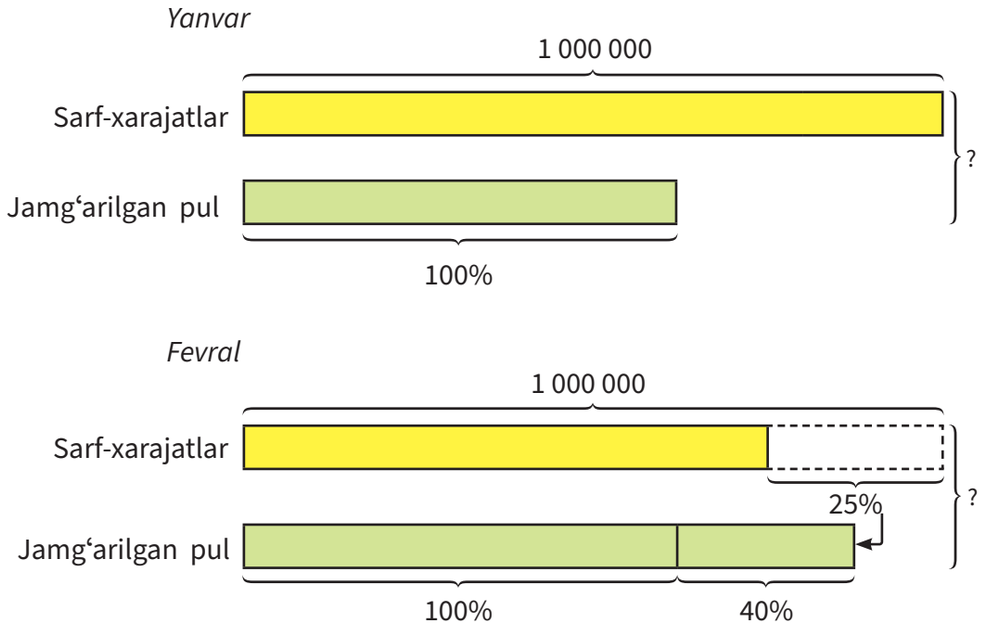
14 – 9 = 5

Sarvinoz opa qo‘shnisiga 5 dona atirgul bergan.



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13 Yanvarda Olimjon aka oylik maoshining 1 000 000 so‘mini sarfladi va qolganini jamg‘arib qo‘ydi. Fevralda u sarf-xarajatlarini 25% ga kamaytirib, jamg‘armasini 40% ga oshirdi. Olimjon akaning oylik maoshi qancha?



$1\,000\,000 \times \frac{25}{100} = 250\,000$ (xarajatlarning kamaygani)

40% → 250 000 so‘m (jamg‘arilgan pul)

1% → $\frac{250\,000}{40}$

100% → $\frac{250\,000}{40} \times 100 = 625\,000$

Olimjon aka yanvarda 625 000 so‘m jamg‘argan.

$1\,000\,000 + 625\,000 = 1\,625\,000$

Uning oylik maoshi 1 625 000 so‘mga teng.

Olimjon aka yanvar oyida jamg‘argan pulning 100 foizi 625 000 so‘mga teng.



Tekshirish

Yanvar

1 625 000 — sarflandi 1 000 000 so‘m
1 625 000 — jamg‘arildi 625 000 so‘m

Fevral

1 625 000 — sarflandi 750 000 so‘m
1 625 000 — jamg‘arildi 875 000 so‘m

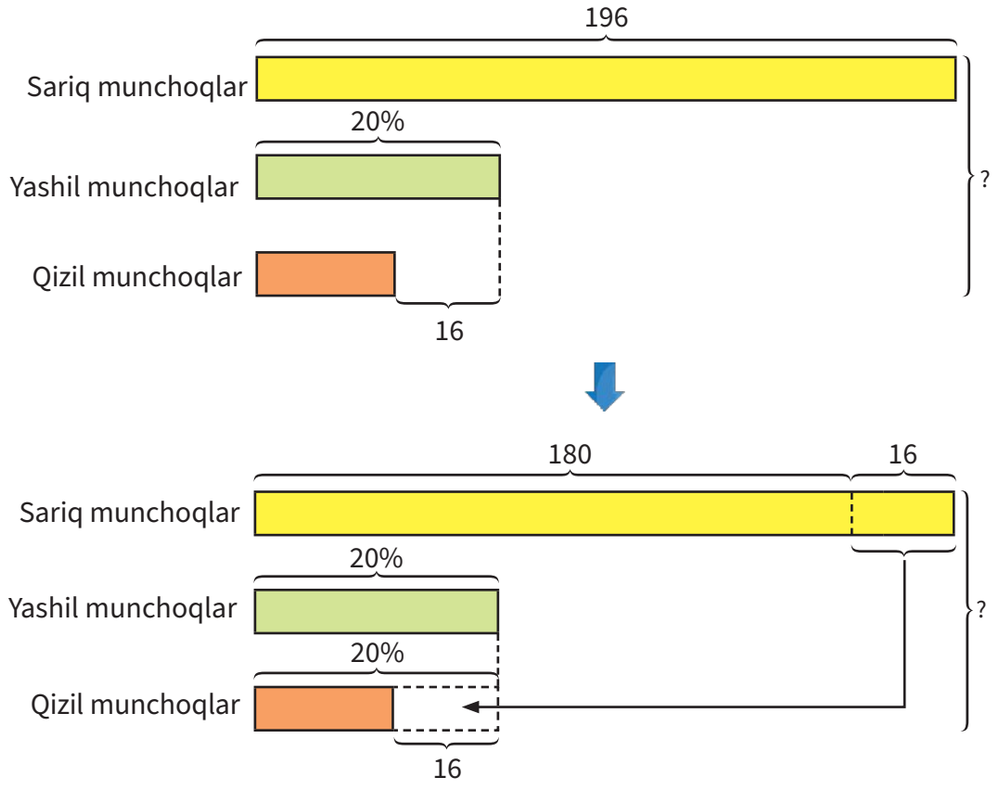
$875\,000 - 625\,000 = 250\,000$

$\frac{250\,000}{625\,000} \times 100\% = 40\%$

Olimjon aka fevralda 40% ko‘p pul jamg‘argan.

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14 Qutida qizil, yashil va sariq munchoqlar bor edi. Ularning 196 tasi sariq, 20% i esa yashil rangda edi. Agar qizil munchoqlarning soni yashil munchoqlardan 16 ta kam bo‘lsa, qutida jami nechta munchoq bor edi?



Qizil munchoqlar → 20%

Sariq munchoqlar → 196 – 16 = 180

100% – (20% + 20%) = 60%

Yashil va qizil munchoqlar

60% → 180

1% → 180 ÷ 60 = 3

100% → 3 × 100 = 300

Demak, qutida 300 ta munchoq bor edi.

Foiz ulushini 20% qilish uchun qizil munchoqlar sonini 16 taga oshirib, umumiy munchoqlar sonini bir xil qoldirish uchun sariq munchoqlar sonini 16 taga kamaytiramiz.



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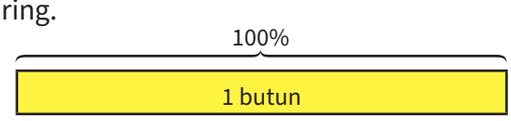
Qiziqarli matematika

O‘rganing va bo‘lishing



Guruh bo‘lib ishlang.

1 Chizma-modeldan foydalanib a)–d) bandlarni muhokama qiling. Qaysi bandlarning javobi bir xil? Javobingizni tushuntiring.



a) 100 foizning 50 foizi =

b) 50 foizning 50 foizi =

c) 1 butunning $\frac{1}{2}$ qismi =

d) $\frac{1}{2}$ ning $\frac{1}{2}$ qismi =

2 Quyidagilarning qay biri to‘g‘ri yoki noto‘g‘ri ekanini muhokama qiling.

a) 50 foizning 25 foizi = 25 foizning 50 foizi

b) $\frac{1}{4}$ ning $\frac{1}{2}$ qismi = $\frac{1}{4}$ ning $\frac{1}{4}$ qismi

3 Quyidagi matnli masaladan foydalanib “foizdan foiz hisoblash”ning “qismning qismini topish”ga o‘xshash jihatlarini muhokama qiling va tushuntiring. Masalani yechishda chizma-modeldan foydalaning.
Jasur pulining 20% ini ko‘ylakka, qolgan pulining 50 % ini esa kepkaga sarfladi. U pulining necha foizini kepkaga sarflagan?

4 O‘sish yoki kamayish foizini topish uchun quyidagi masalaning chizma-modelini oldingi va keyingi holatlarini alohida-alohida tasvirlang.
O‘tgan yili gazetalarda xayriya tadbiri haqida 2650 ta e’lon berilgan edi. Bu yil bunday tadbirlar haqida 20% ko‘proq e’lon berilgan bo‘lsa, e’lonlar sonini toping.

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Bajaring va o‘rganing



Matnli masalalarni yeching.

1 Komronbek tennis raketkasini 10% chegirma bilan 72,9 ming so‘mga sotib oldi. Tennis raketkasining chegirmasiz narxini toping.

2 Mart oyida Samandar akaning oylik maoshi 3 600 000 so‘m edi. Aprel oyida u mart oyiga nisbatan 18% ko‘p maosh olgan bo‘lsa, aprel oyida Samandar akaning oylik maoshi qancha bo‘ldi?

3 2024-yilda xususiy maktabga qabul qilingan o‘quvchilar soni 2023-yildagiga nisbatan 13% kam bo‘ldi. 2024-yilda xususiy maktabga 522 nafar o‘quvchi qabul qilingan bo‘lsa, 2023-yilda necha nafar o‘quvchi qabul qilingan?

4 Un solingan idishga 500 kg un qo‘shilganidan so‘ng uning massasi 16 foizga oshdi. Dastlab idishda necha kilogramm un bor edi?

5 Maftunada 400 ta marka bor. Ularning 160 tasi hayvonlarga, qolganlarining 75% i esa o‘simliklarga oid bo‘lsa, jami markalarning necha foizi o‘simliklarga oid?

6 Otabek kitobning 20 foizini dushanba kuni, qolganining $\frac{1}{4}$ qismini esa seshanba kuni o‘qiganidan so‘ng kitobning yana 180 beti o‘qilmay qoldi. Kitob jami nechta betli?

7 Anvar amaki oyligining 1 300 000 so‘mini sarfladi. Qolgan pulning $\frac{2}{3}$ qismini saqlab qo‘ydi. Shunda Anvar amakida oylik maoshining 16 foizi qoldi. Anvar amakining maoshi qancha?

8 Qutida 80 ta tugma bor edi. Ularning 25 foizi qizil, qolgan tugmalarning 60 foizi esa yashil rangda. Ko‘k tugmalar soni 12 ta. Qolgan tugmalar esa oq rangda.

a) Qutida jami nechta qizil va yashil tugma bor edi?

b) Oq tugmalar soni nechta?

9 Farida opa mart oyida 4 200 000 so‘mlik maoshining 24% ini jamg‘arib qo‘ygan edi. Aprel oyida Farida opaning oylik maoshi 12% ga oshdi. Maoshining jamg‘arib qo‘yiladigan foizi esa o‘zgarmadi. Aprel oyida Farida opa jamg‘argan puli mart oyiga qaraganda qanchaga ko‘paygan?

10 Davronda 25 ta yong‘oq bor edi. Rustam Davronga 30 ta yong‘oq berganida uning yong‘oqlari soni 20 foizga kamaydi. Ularda jami nechta yong‘oq bor?

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11 Aksiya davomida quyidagi chegirmalar berildi.



a) Ali do‘kondan ko‘k va sariq futbolka sotib oldi. Ularning dastlabki narxi mos ravishda 120 000 so‘m va 80 000 so‘m bo‘lsa, futbolkalarning chegirmadan keyingi umumiy narxini toping.

b) Rashid ikkita futbolkani 225 000 so‘mga xarid qildi. Agar u ko‘k futbolka uchun 45 000 so‘m ko‘p pul to‘lagan bo‘lsa, sariq futbolkaning chegirmasiz narxini toping.

12 Kamolada dastlab 60 ta qalam bor edi. Ularning 60 foizi qizil, qolgani esa ko‘k edi. Kamola dugonasiga bir nechta qizil qalam berganidan so‘ng qizil qalamlar soni 40 foizgacha kamaygan bo‘lsa, unda nechta qizil qalam qolganini toping.

13 Lobar opa har doim maoshining 18 foizini jamg‘aradi. Uning maoshi 25% ga oshganida 225 000 so‘m ko‘p jamg‘ara boshladi. Lobar opaning yangi maoshi qancha?

14 1-idishda 60 ℓ va 2-idishda 40 ℓ meva sharbati bor edi.
Bobur 1-idishdagi sharbatdan qanchadir qismini sotdi va sharbat miqdori 15% ga kamaydi. 2-idishga qanchadir sharbat quydi va sharbatning miqdori 40% ga oshdi. Sharbat umumiy miqdorining o‘zgarish foizi qanday bo‘ldi? Javobingizni tushuntiring.

Mashq daftariga o‘ting **127–138**

O‘zingizni tekshiring



Foiz bilan bog‘liq matnli masalalarni yechishni bilaman.

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O‘ylab ko‘ring

Konsert zalida 420 ta o‘rindiq bor. Hozir o‘rindiqlarning 20% i A bo‘limda, qolganlari B bo‘limda. Tashkilotchi A bo‘limdagi o‘rindiqlar sonini 30% gacha oshirmoqchi. Agar B bo‘limdagi o‘rindiqlar soni o‘zgarishsiz qolsa, A bo‘limga nechta o‘rindiq qo‘shilishi kerak?

A bo‘limdagi o‘rindiqlarning soni 10% dan 30% gacha oshganida B bo‘limdagi o‘rindiqlar soni 70% gacha kamayadi. Biroq B bo‘limdagi o‘rindiqlar soni o‘zgarmaydi.



Mashq daftariga o‘ting **139–142**

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II TAKRORLASH Nisbat va foiz

1 Yetishmayotgan sonni toping.

a) 12 : 4 = ☐ : 1

b) 15 : 21 = 5 : ☐

c) 2 : 4 : 5 = ☐ : 16 : ☐

d) 14 : ☐ : ☐ = 2 : 8 : 3

e) 18 : 24 = 21 : ☐

f) ☐ : 9 : 27 = 4 : 6 : ☐

2 Yetishmayotgan sonni toping.

a) A : B = 1 : 2 va B : C = 3 : 4

A : B : C = ☐ : ☐ : ☐

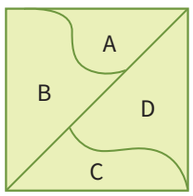
b) F : G = 9 : 4 va G : E = 2 : 3

E : F : G = ☐ : ☐ : ☐

3 a) Bekzodning vazni Sobir vaznining $\frac{2}{3}$ qismiga teng bo‘lsa, Bekzod vaznining Sobirning vazniga nisbati qanday?

b) Xolidaning qalamlari soni Azizaning qalamlari sonining $\frac{4}{5}$ qismiga teng. Azizaning qalamlari sonining Xolidaning qalamlari soniga nisbatini toping.

4 Rasmda A, B, C va D maydonlarga bo‘lingan kvadrat ko‘rsatilgan.
A maydonning B maydonga nisbati 2 : 5 ga teng.
B maydonning C maydonga nisbati 2 : 1 ga teng.
D maydon 45 cm^2 ga teng.



a) A : B : C nisbatni toping.
b) Kvadratning yuzini toping.

5 Fermada qo‘ylar va echkilar bor edi. Echkilarning soni qo‘ylar sonining $\frac{2}{5}$ qismiga teng.

a) Fermadagi hayvonlar sonining qo‘ylar soniga nisbatini toping.
b) Agar echkilar soni qo‘ylar sonidan 18 ta kam bo‘lsa, fermadagi hayvonlarning umumiy sonini toping.

6 A arqon uzunligining B arqon uzunligiga nisbati 2 : 3 ga teng. C arqon uzunligining A arqon uzunligiga nisbati 7 : 4 ga teng. Agar eng uzun arqon 56 m bo‘lsa, uchta arqonning umumiy uzunligini toping.

7 Sarvar aka vaznining $\frac{4}{5}$ qismi Lola vaznining 2 baravariga teng.

a) Lolaning vazni Sarvar aka vaznining qancha qismini tashkil qiladi?
b) Agar ularning vazni 36 kg ga farq qilsa, Sarvar akaning vaznini toping.

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8 Sevara va Zahro bir nechta qalamlarni 4 : 5 nisbatda bo‘lishib oldi. Zahro qalamlarining yarmini Sevaraga berdi. Agar Zahroning qalamlari soni Sevaranikidan 32 taga kam bo‘lsa, qalamlarning umumiy sonini toping.

9 Anora va Bonu pullarini 4 : 7 nisbatda bo‘lishib oldi. Zarifa aya Anoraga 8000 so‘m va Bonuga 5000 so‘m berdi. Natijada ikkala qiz ham teng miqdordagi pulga ega bo‘ldi. Dastlab Anorada qancha pul bor edi?

10 Rustam, Po‘lat va Muhammad bir nechta daftarni 2 : 3 : 4 nisbatda bo‘lishib oldi. Rustam daftarlaridan $\frac{1}{4}$ qismini Muhammadga berdi. Agar Muhammadning daftarlari soni Po‘latnikidan 15 taga ko‘paygan bo‘lsa, Muhammadning jami daftarlari sonini toping.

11 a) 20 foizi 75 ga teng sonni toping.
b) 45 foizi 360 ga teng sonni toping.

12 Lola opadagi tugmalarning 15% i qizil, qolgan 510 tasi esa sariq bo‘lsa, tugmalarning umumiy sonini toping.

13 Idishning 35% i suv bilan to‘ldirilgan edi. Bobur yana 280 cm^3 suv quyganidan so‘ng idishning $\frac{3}{4}$ qismi to‘lgan bo‘lsa, uning sig‘imini toping.

14 2023-yilda Maftunaning oylik maoshi 3 000 000 so‘m edi. 2024-yilda uning oylik maoshi 15% ga oshgach, qancha bo‘lgan?

15 Anvar aka mahsulot uchun mahsulot dastlabki narxining 12% iga teng QQS to‘ladi. Agar QQS miqdori 72 000 so‘m bo‘lsa, mahsulotning QQS bilan birgalikdagi narxini aniqlang.

16 Bu yil xususiy maktabda 750 nafar o‘quvchi bor edi. Bu ko‘rsatkich o‘tgan yilgidan 250 nafarga kam bo‘lsa, o‘quvchilar soni necha foizga kamayganini toping.

17 Nargiza opada dastlab 4 : 5 : 10 nisbatda ko‘k, qizil va yashil tugmalar bor edi. So‘ng u bir nechta ko‘k tugma sotib oldi va bir nechta qizil tugmani dugonasiga berib yubordi. Natijada ko‘k tugmalar soni 50% ga oshib, qizil tugmalar soni 60% ga kamaydi va umumiy tugmalar soni 216 tani tashkil etdi. Nargiza opada dastlab qancha tugma bo‘lgan?

18 Xadicha opada 800 ta munchoq bor edi. Ulardan 240 tasi qizil va qolganining 60% i ko‘k bo‘lsa, jami munchoqlarning necha foizi ko‘k rangda?

19 Akbardagi marmar toshchalarning 40% i Ulug‘bekdagi marmar toshchalarning 25% iga teng. Akbardagi toshchalar soni 20 ta bo‘lsa, Ulug‘bekdagi toshchalar sonini toping.

20 O‘yin maydonchasidagi 60 nafar o‘quvchining 30% i o‘g‘il bola edi. 10 nafar o‘g‘il bola uyiga ketsa, qolgan o‘quvchilarning necha foizi o‘g‘il bola bo‘ladi?

Mashq daftariga o‘ting **143–150**

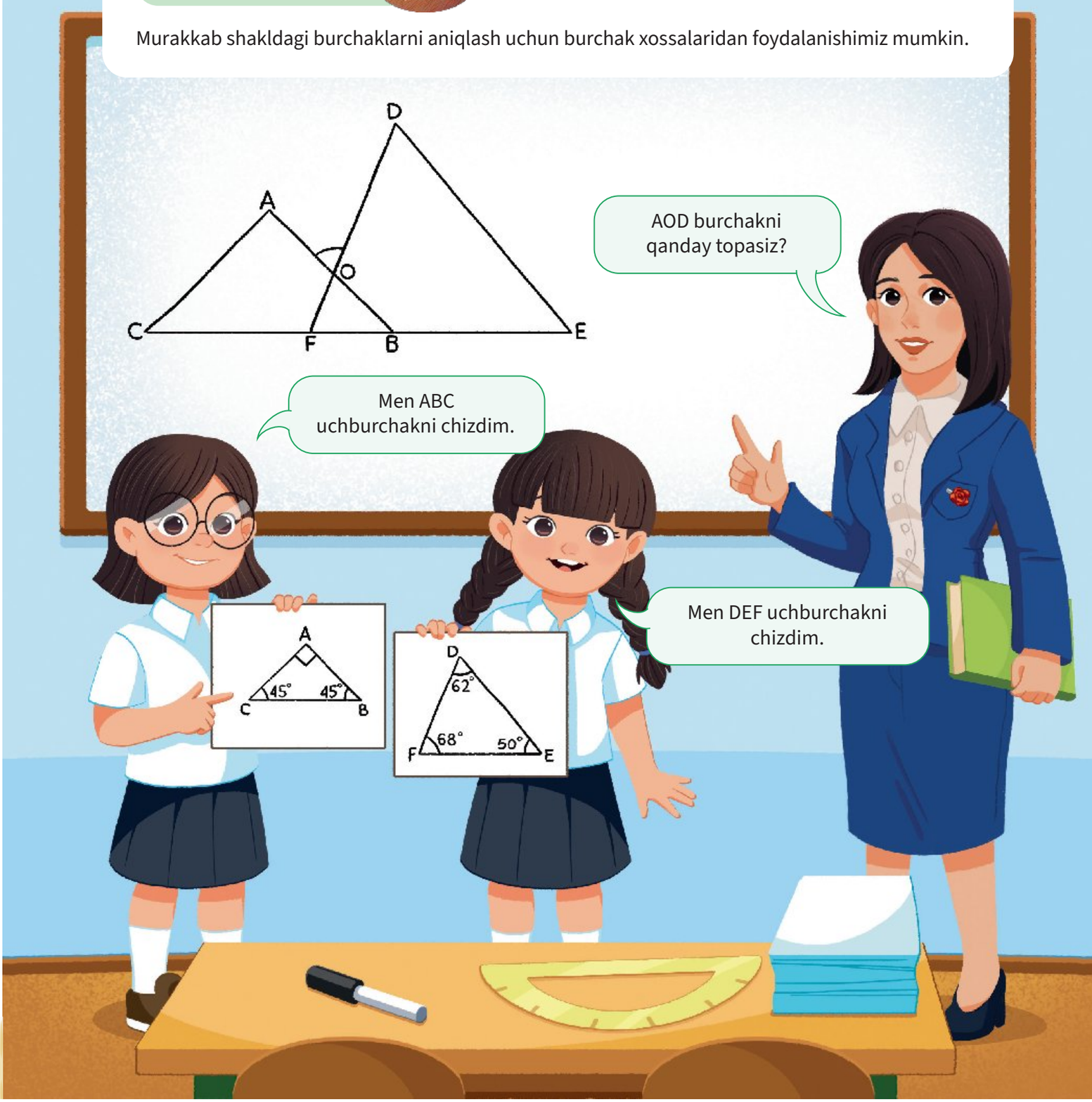
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5 Geometrik shakllardagi burchaklar

Muhokama qiling



Murakkab shakldagi burchaklarni aniqlash uchun burchak xossalaridan foydalanishimiz mumkin.

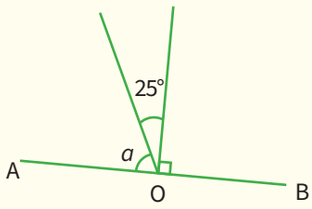


Eslang



Noma’lum burchaklarni topish

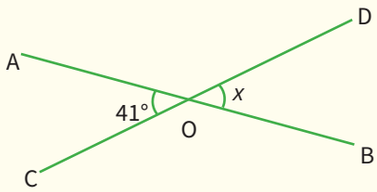
1 a) AOB – to‘g‘ri chiziq. $\angle a$ ni toping.



$\angle a = 180° - 25° - 90°$
$= 65°$

To‘g‘ri chiziqdagi burchaklar yig‘indisi 180° ga teng.

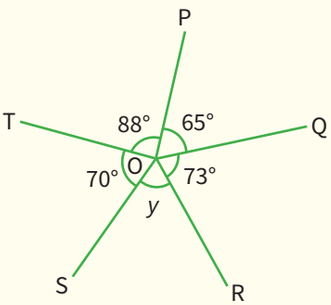
b) AOB va COD – to‘g‘ri chiziqlar. $\angle x$ ni toping.



$\angle x = 41°$

Vertikal burchaklar teng.

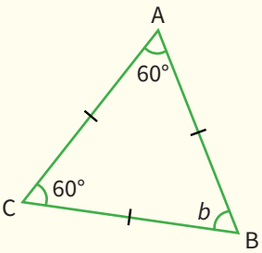
c) $\angle y$ ni toping.



$\angle y = 360° - 70° - 88° - 65° - 73°$
$= 64°$

Nuqta atrofidagi burchaklar yig‘indisi 360° ga teng.

2 a) ABC – teng tomonli uchburchak. $\angle b$ ni toping.



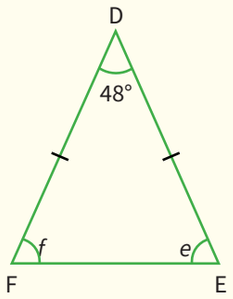
$\angle b = 60°$

Uchburchakning ichki burchaklari yig‘indisi 180° ga teng.

Teng tomonli uchburchakning 3 ta teng tomoni va 3 ta teng burchagi bor. Har bir burchagi 60° ga teng.

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b) DEF – teng yonli uchburchak. $\angle FDE = 48°$ va $\angle e = \angle f$. $\angle e$ ni toping.

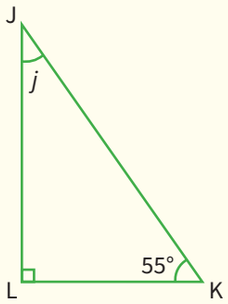


$\angle e + \angle f = 180° - 48°$
$= 132°$

$\angle e = \angle f$
$\angle e = 132° \div 2$
$= 66°$

Teng yonli uchburchakning 2 ta teng tomoni va 2 ta teng burchagi bor. Uning teng tomonlari qarshisidagi burchaklari teng.

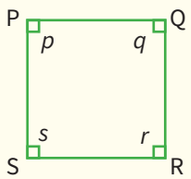
c) JKL – to‘g‘ri burchakli uchburchak va $\angle JKL = 55°$. $\angle j$ ni toping.



$\angle j = 90° - 55°$
$= 35°$

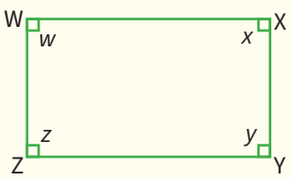
To‘g‘ri burchakli uchburchak bitta to‘g‘ri burchakka ega. Uning qolgan 2 burchagining yig‘indisi 90° ga teng.

3 a) PQRS – kvadrat.
$\angle p$, $\angle q$, $\angle r$ va $\angle s$ ni toping.



$\angle p = \angle q = \angle r = \angle s = 90°$

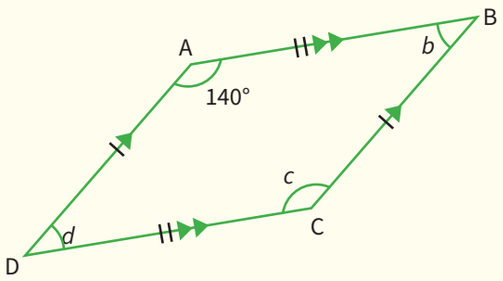
b) WXYZ – to‘g‘ri to‘rtburchak.
$\angle w$, $\angle x$, $\angle y$ va $\angle z$ ni toping.



$\angle w = \angle x = \angle y = \angle z = 90°$

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c) ABCD – parallelogramm va $\angle DAB = 140°$. $\angle b$, $\angle c$ va $\angle d$ ni toping.



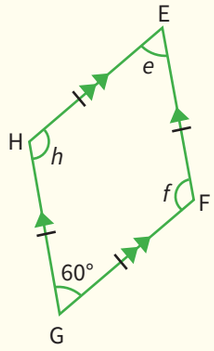
$\angle b = 180° - 140°$
$= 40°$

$\angle c = 140°$

$\angle d = \angle b$
$= 40°$

Parallelogrammning:
a) ixtiyoriy tomoniga yopishgan burchaklari yig‘indisi 180° ga teng;
b) qarama-qarshi burchaklari teng.

d) EFGH – romb va $\angle FGH = 60°$. $\angle e$, $\angle f$ va $\angle h$ burchaklarni toping.



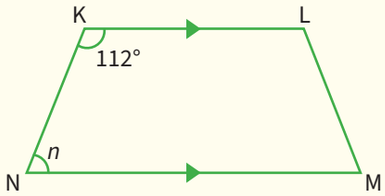
$\angle e = 60°$

$\angle f = 180° - 60°$
$= 120°$

$\angle h = \angle f$
$= 120°$

Rombning:
a) ixtiyoriy tomoniga yopishgan burchaklari yig‘indisi 180° ga teng;
b) qarama-qarshi burchaklari teng.

e) KLMN – trapetsiya va $\angle NKL = 112°$. $\angle n$ ni toping.



$\angle n = 180° - 112°$
$= 68°$

Trapetsiyaning har bir yon tomoniga yopishgan burchaklari yig‘indisi 180° ga teng.

Mashq daftariga o‘ting **151–154**

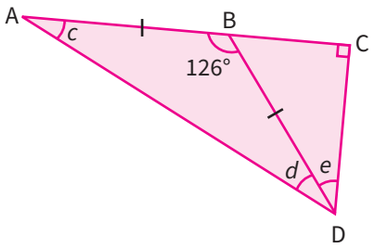
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Geometrik shakllardagi noma’lum burchaklarni topish

Qarang va o‘rganing



1 Quyidagi rasmda ABD teng yonli uchburchak va ACD to‘g‘ri burchakli uchburchak tasvirlangan. $\angle c$, $\angle d$ va $\angle e$ ni toping.



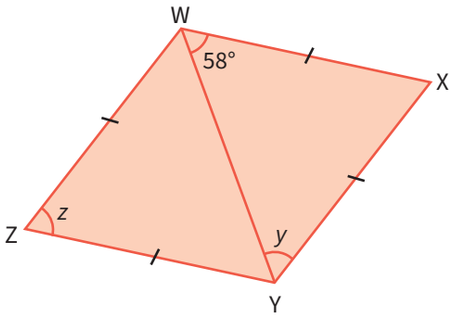
$\angle c + \angle d = 180° - 126°$
$= 54°$

$\angle c = \angle d$
$= 54° \div 2$
$= 27°$

$\angle d = 27°$

$\angle e = 180° - 27° - 27° - 90°$
$= 36°$

2 WXYZ rombda $\angle YWX = 58°$ bo‘lsa, $\angle y$ va $\angle z$ larni toping.

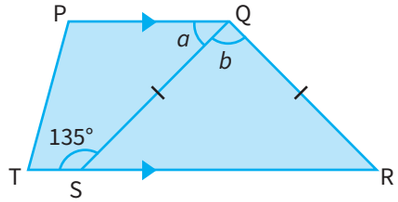


$\angle y = 58°$

$\angle z = \angle WXY$

$\angle z = 180° - 58° - 58°$
$= 64°$

3 PQRT – trapetsiya va RST – to‘g‘ri chiziq . QRS esa teng yonli uchburchak. Agar QR = QS, $\angle QST = 135°$ bo‘lsa, $\angle a$ va $\angle b$ ni toping.



$\angle a = 180° - 135°$
$= 45°$

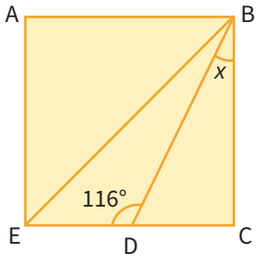
$\angle QSR = 180° - 135°$
$= 45°$

$\angle QSR = \angle QRS$

$\angle b = 180° - 45° - 45°$
$= 90°$

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4 ABCE kvadratda BD va BE – to‘g‘ri chiziqlar, ∠BDE = 116°. ∠x ni toping.



∠BDC = 180° – 116°
= 64°

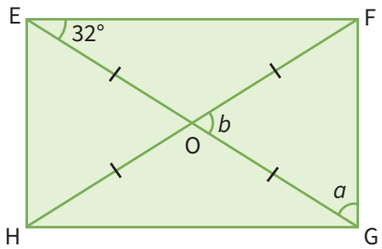
∠x = 180° – 90° – 64°
= 26°

To‘g‘ri chiziqdagi burchaklar yig‘indisi 180° ga teng.

Uchburchakning ichki burchaklari yig‘indisi 180° ga teng.



5 EFGH – to‘g‘ri to‘rtburchak va EO = FO = GO = HO. FGO – teng yonli uchburchak. ∠GEF = 32°. ∠a va ∠b ni toping.



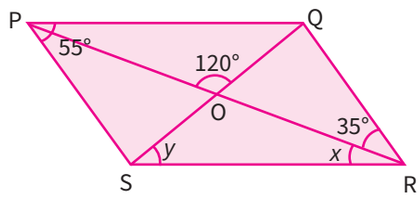
∠a = 180° – 90° – 32°
= 58°

∠b = 180° – 58° – 58°
= 64°

Siz ∠b ni boshqa yo‘l bilan topa olasizmi?



6 PQRS – parallelogramm. PR va QS – to‘g‘ri chiziqlar. Agar ∠SPQ = 55°, ∠QRO = 35° va ∠QOP = 120° bo‘lsa, ∠x va ∠y ni toping.



∠QRS = 55°

Parallelogrammning qarama-qarshi burchaklari teng.

∠x = 55° – 35°
= 20°



∠SOR = 120°

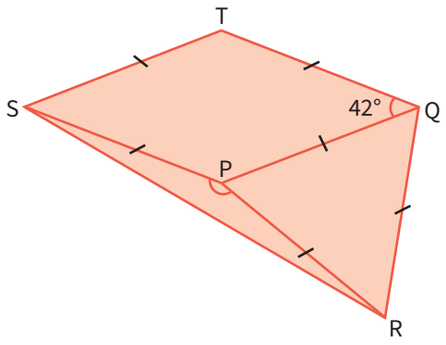
Vertikal burchaklar teng.

∠y = 180° – 120° – 20°
= 40°



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7 PQR – teng tomonli uchburchak va STQP – romb. RS esa to‘g‘ri chiziq. ∠TQP = 42°. ∠SPR ni toping.



∠QPS = 180° − 42°
= 138°

∠RPQ = 60°

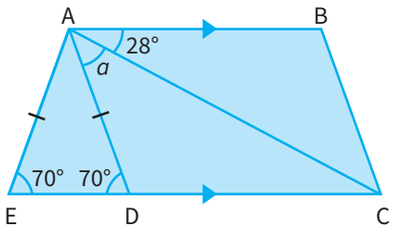
Rombning ixtiyoriy tomoniga yopishgan burchaklari yig‘indisi 180° ga teng.

∠SPR = 360° − 138° − 60°
= 162°

Nuqta atrofidagi burchaklar yig‘indisi 360° ga teng.



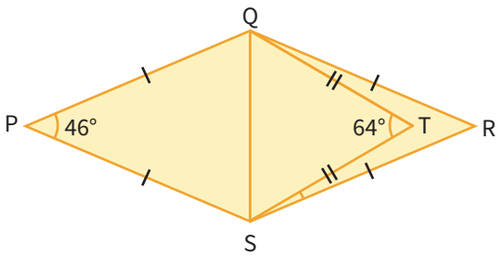
8 ABCE trapetsiyada AB || EC. ADE teng yonli uchburchakda AD = AE, CDE esa to‘g‘ri chiziq. Agar ∠AED = ∠ADE = 70° va ∠CAB = 28° bo‘lsa, ∠*a* ni toping.



∠EAD = 180° − 70° − 70°
= 40°

∠*a* = 180° − 70° − 40° − 28°
= 42°

9 PQRS – romb, QTS – teng yonli uchburchak. Agar QT = ST, ∠SPQ = 46° va ∠QTS = 64° bo‘lsa, ∠RST ni toping.



∠QRS = 46°

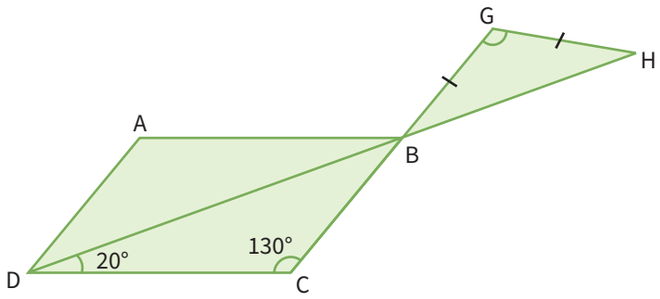
∠RSQ = (180° − 46°) ÷ 2
= 67°

∠TSQ = (180° − 64°) ÷ 2
= 58°

∠RST = 67° − 58°
= 9°

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10 Quyidagi rasmda ABCD parallelogramm va GHB teng yonli uchburchak tasvirlangan. Bunda GB = GH. DBH va CBG to‘g‘ri chiziqlar. ∠BCD = 130° va ∠CDB = 20°. ∠BGH ni toping.

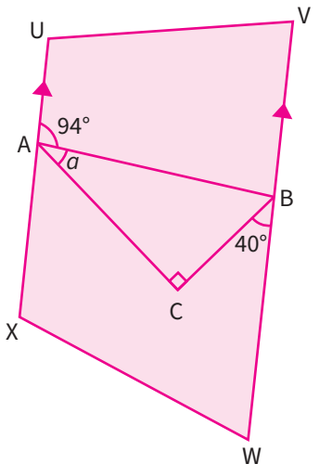


∠DBC = 180° − 130° − 20°
= 30°

∠HBG = 30°

∠BGH = 180° − 30° − 30°
= 120°

11 Rasmda UVWX trapetsiya ichiga chizilgan ABC to‘g‘ri burchakli uchburchak tasvirlangan. Agar ∠BAU = 94° va ∠CBW = 40° bo‘lsa, ∠*a* ni toping.



∠VBA = 180° − 94°
= 86°

∠ABC = 180° − 86° − 40°
= 54°

∠*a* = 180° − 90° − 54°
= 36°

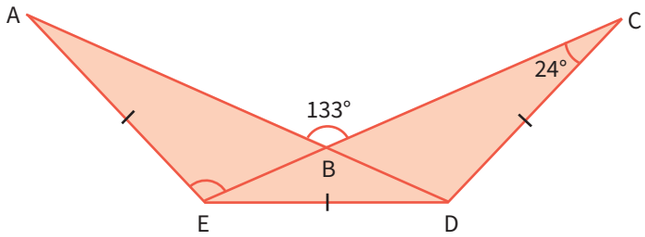
75 MATEMATICS SCHOOLBOOK G6 P1 UZB 220x290 176PG.indd 122 26/08/24 13:15

Juftlikda ishlang

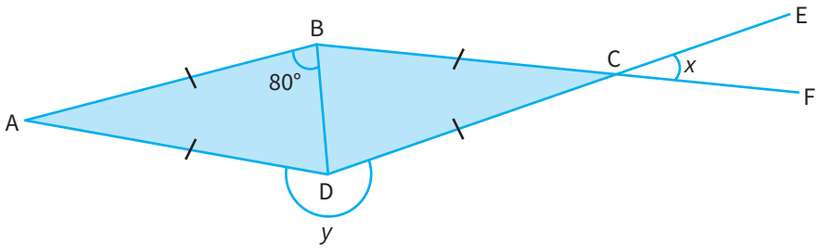


Sherigingizga noma'lum burchaklarni qanday topishingizni tushuntiring.

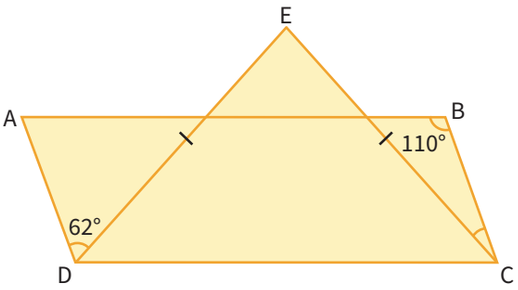
1 Quyidagi rasmda ABD va CBE to'g'ri chiziqlar tasvirlangan. Agar AE = ED = DC, ∠ABC = 133° va ∠DCB = 24° bo'lsa, ∠AEB ni toping.



2 Quyidagi rasmda ABCD romb, BCF va DCE to'g'ri chiziqlar tasvirlangan. ∠ABD = 80° bo'lsa, ∠*x* va ∠*y* ni toping.



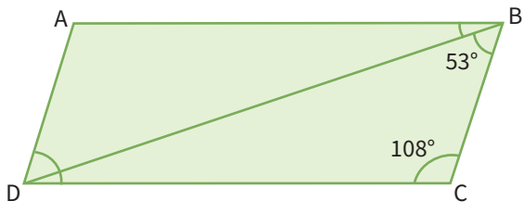
3 Quyidagi rasmda ABCD parallelogramm va DEC teng yonli uchburchak tasvirlangan. Agar CE = DE, ∠EDA = 62° va ∠ABC = 110° bo'lsa, ∠BCE ni toping.



Bajaring va o'rganing

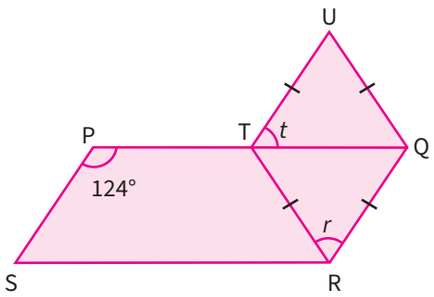


1 ABCD parallelogrammda ∠DBC = 53° va ∠BCD = 108° bo'lsa, ∠ABD va ∠CDA larni toping.

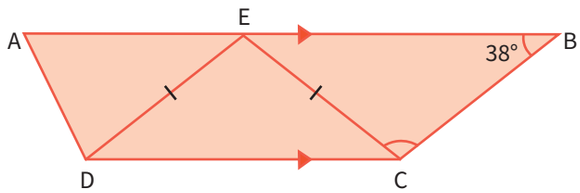


75 MATEMATICS SCHOOLBOOK G6 P1 UZB 220x290 176PG.indd 123 26/08/24 13:15

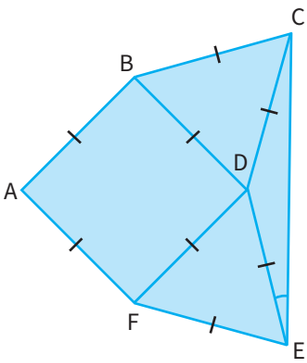
2 PQRS – parallelogramm, TUQR esa romb, ∠SPT = 124°. ∠t va ∠r ni toping.



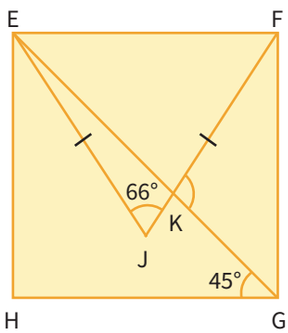
3 ABCD – trapetsiya, EBCD – parallelogramm, CDE esa teng yonli uchburchak. Bunda ED = EC, ∠EBC = 38°. ∠BCE ni toping.



4 Quyidagi rasmda ABDF – kvadrat, BCD va DEF teng tomonli uchburchaklar tasvirlangan. ∠CED ni toping.

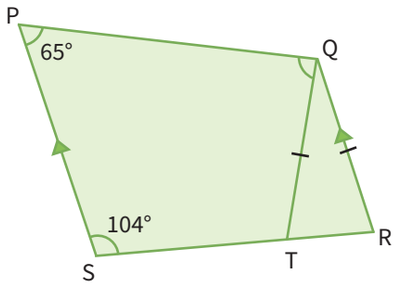


5 Quyidagi rasmda EFGH kvadrat, EFJ teng yonli uchburchak tasvirlangan. Agar EJ = FJ, ∠FJE = 66° va ∠EGH = 45° bo‘lsa, ∠GKF ni toping.

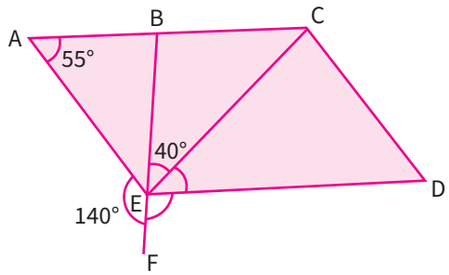


75 MATEMATICS SCHOOLBOOK G6 P1 UZB 220x290 176PG.indd 124 26/08/24 13:15

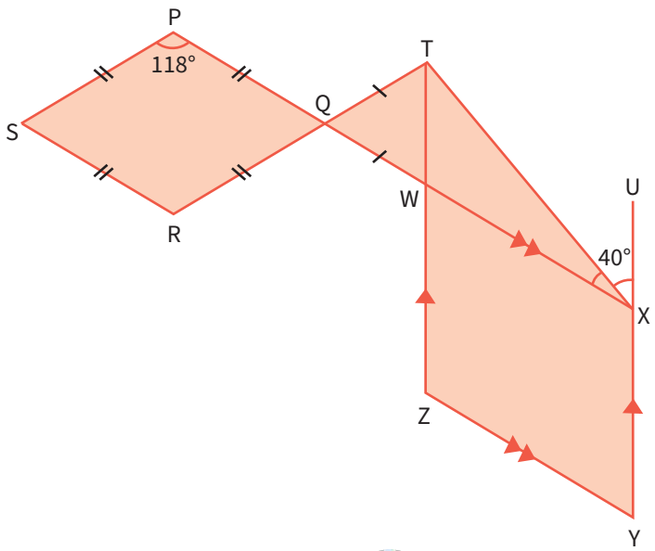
6 Quyidagi rasmda PQRS trapetsiya, QRT teng yonli uchburchak tasvirlangan. Agar QT = QR, ∠SPQ = 65°, ∠TSP = 104° bo‘lsa, ∠PQT ni toping.



7 Quyidagi rasmda ACDE parallelogramm, ABC va BEF to‘g‘ri chiziqlar tasvirlangan. Agar ∠EAB = 55°, ∠CEB = 40° va ∠AEF = 140° bo‘lsa, ∠DEC va ∠FED larni toping.



8 Quyidagi rasmda PQRS romb va WXYZ parallelogramm tasvirlangan. QTW – teng yonli uchburchak va QT = QW. PWX, TQR, TWZ va UXY – to‘g‘ri chiziqlar. ∠SPQ = 118° va ∠UXT = 40° bo‘lsa, ∠TXW ni toping.



O‘zingizni tekshiring



Mashq daftariga o‘ting **155–166**

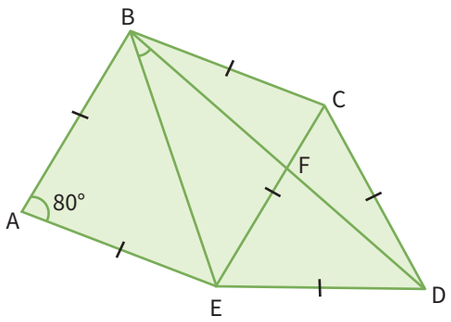
Geometrik shakllardagi noma’lum burchaklarni qanday topishni bilaman.

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O‘ylab ko‘ring



Quyidagi rasmda ABCE romb va CDE teng tomonli uchburchak tasvirlangan. Agar ∠EAB = 80° bo‘lsa, ∠EBD ni toping.



Mashq daftariga o‘ting 167–168

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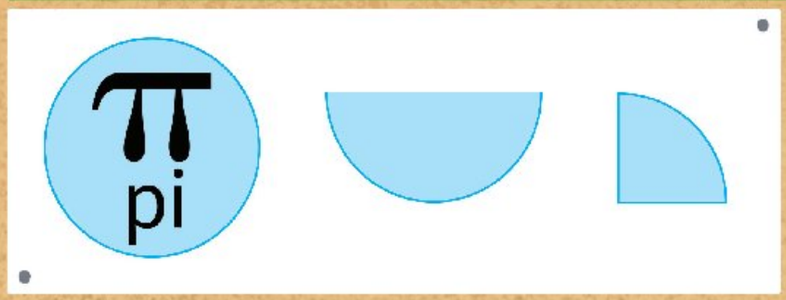
6 Doira va aylana

Muhokama qiling



Doira haqida nimalarni bilasiz?

PI kuni butun dunyoda 14-martda nishonlanadi.

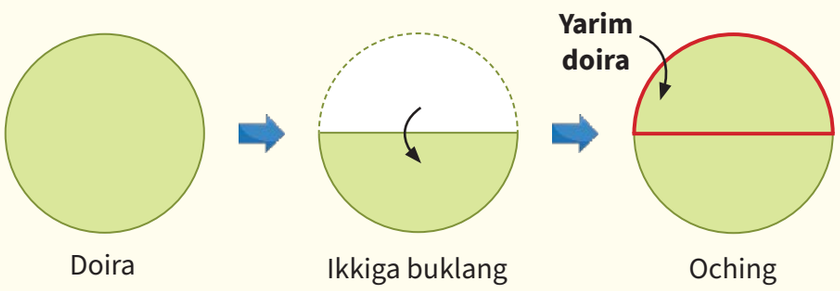


Eslang



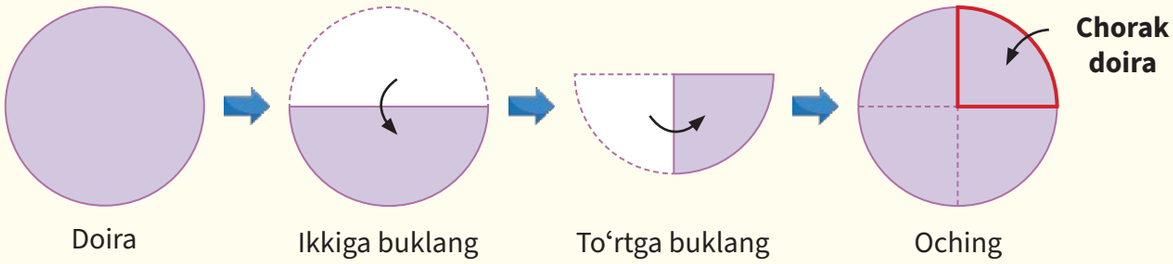
Yarim doira va chorak doira

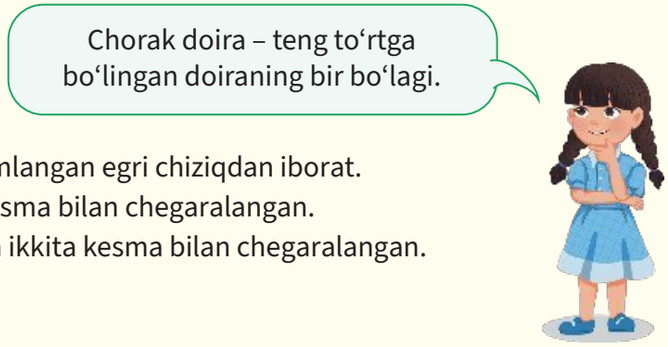
1 Qog‘ozga doira chizing va uni qirqib oling. Doirani rasmda ko‘rsatilganidek ikkita teng bo‘lakka buklang.
Har bir bo‘lak doiraning **yarmiga** teng bo‘ladi va **yarim doira** deb ataladi.





2 Qog‘ozga doira chizing va uni qirqib oling. Doirani rasmda ko‘rsatilganidek to‘rtta teng bo‘lakka buklang. Har bir bo‘lak doiraning **chorak qismiga** teng bo‘ladi va **chorak doira** deb nomlanadi.





3 a) Doiraning chegarasi **aylana** deb nomlangan egri chiziqdan iborat.
b) Yarim doira **yarim aylana** yoyi va kesma bilan chegaralangan.
c) Chorak doira **chorak aylana yoyi** va ikkita kesma bilan chegaralangan.



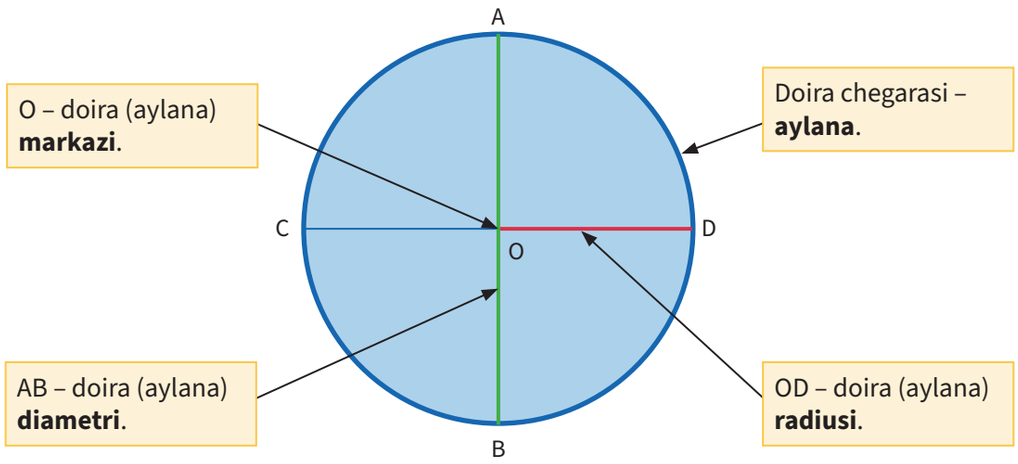
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Doira va aylana elementlari

Qarang va o‘rganing



1 Quyida doira va aylana elementlari ko‘rsatilgan.



a) Doiraning perimetri aylana yoyi uzunligiga teng bo‘ladi.

b) Aylana markazidan o‘tadigan va aylanadagi ikkita nuqtani tutashtiruvchi kesma **diametr** deb ataladi.

c) Aylananing ixtiyoriy nuqtasini uning markazi bilan tutashtiruvchi kesma **radius** deb ataladi.

d) Doiraning markazi, radiusi va diametri mos ravishda uning aylanasining markazi, radiusi va diametri bo‘ladi.

CD kesma doiraning diametri bo‘la oladimi? Nima uchun?



Yuqoridagi rasmda tasvirlangan doiraning boshqa radiuslarini ham ayta olasizmi?



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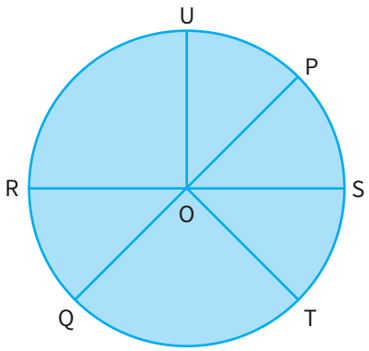
Juftlikda ishlang

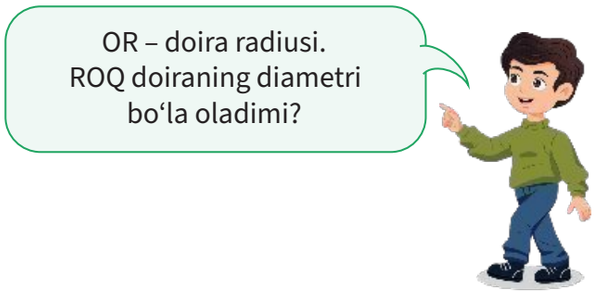


a) O – doiraning markazi. Quyidagi doira diametri va radiuslarini yozing.

b) Quyidagi atamalar yordamida doirani tavsiflang.

markaz	diametr	radius	aylana





Qiziqarli matematika

Doirani quyidagicha chizing:

1-bosqich

Ipning bir uchini sanchiladigan ignaga, ikkinchi uchini qalamga bog‘lang.

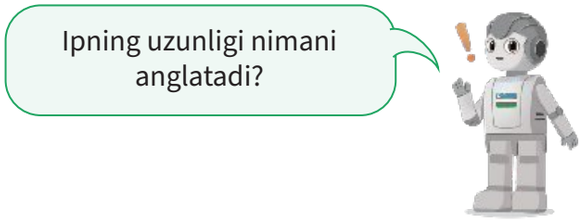


Eslatma: igna o‘tkir. Ipni ignaga bog‘lashda ehtiyot bo‘ling.

2-bosqich

Ignaning uchli qismini qog‘ozga sanching va bosh qismini bosib turing.
Ipni tarang tortgan holda qalamni ignaning atrofida aylantirib doira chizing.





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Qo‘lda bajariladigan mashq



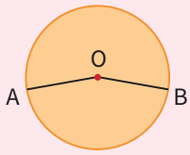
Juftlikda ishlang.

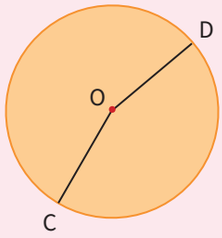
Quyidagilarni bajarish uchun o‘qituvchingiz bergan ikkita doiradan foydalaning.

1 Chizg‘ich yordamida har bir doira markazini uning aylanasidagi bir nechta nuqta bilan tutashtiring. Nuqtalarni belgilang va kesmalarni o‘lchang. Markaz va aylananing istalgan nuqtasi orasidagi masofa har doim bir xilmi?

Namuna

O nuqta – doira markazi.





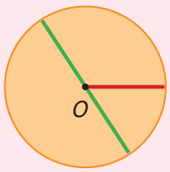
Doiraning barcha radiuslari _____ uzunlikka ega.

2 Doiraning diametri va radiusini chizing.

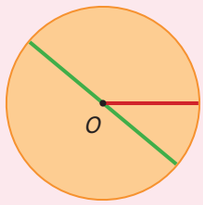
a) Har bir radius va diametrning uzunligini o‘lchang va yozing.

Namuna

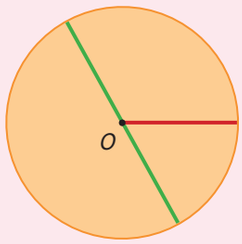
1-doira



2-doira



3-doira



	Radiusning uzunligi	Diametrning uzunligi
1-doira		
2-doira		
3-doira		

b) Doiraning diametri va uning radiusi o‘rtasida qanday bog‘liqlik bor?

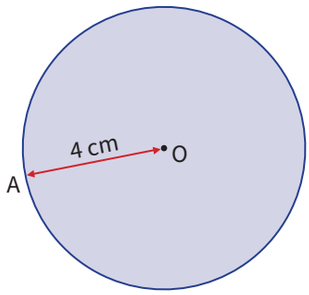
Doira diametri uning radiusidan _____ .

Doira radiusi diametrining _____ teng.

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2 O nuqta – doiraning markazi. Doiraning diametri yoki radiusini toping.

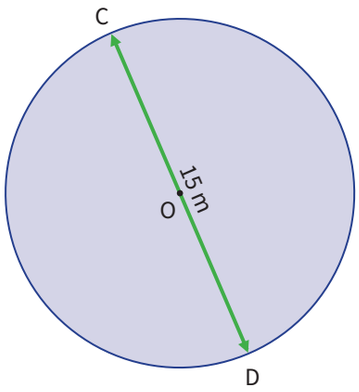
a)



Diametr = 2 × radius

Radius = 4 cm
Diametr = 2 × 4
= 8 cm

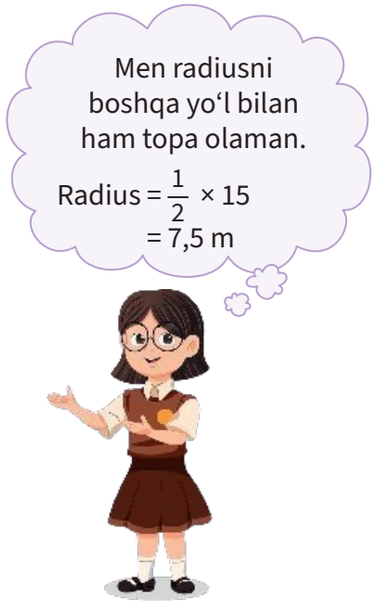
b)



Radius = diametr ÷ 2

Radius = $\frac{1}{2}$ × diametr

Diametr = 15 m
Radius = 15 ÷ 2
= 7,5 m

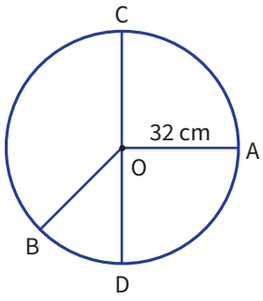


Juftlikda ishlang



Sherigingiz bilan muhokama qiling.

a) O nuqta – aylananing markazi. OB va CD uzunliklarini toping.

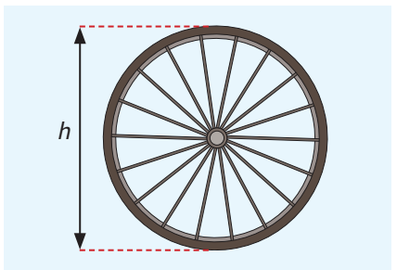


OA = 32 cm

OB = _____ cm

CD = _____ cm

b) G‘ildirakning diametri va radiusi uzunligini toping.



h = 60 cm

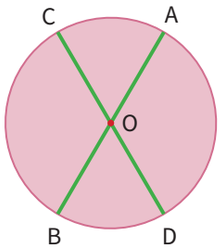
Diametr = _____ cm

Radius = _____ cm

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Bajaring va o‘rganing

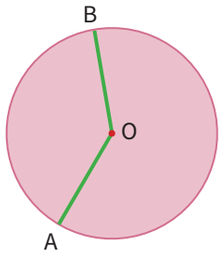
1 a) O – nuqta doira markazi,
AB va CD – diametrlar.



AB = 18 cm

CD = _____ cm

b) O nuqta – doira markazi,
OA va OB – radiuslar.

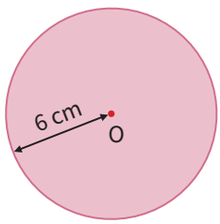


OA = 7 cm

OB = _____ cm

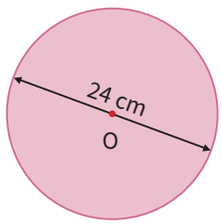
2 Agar O nuqta doiraning markazi bo‘lsa, uning radiusi yoki diametrini toping.

a)



Diametr = _____ cm

b)



Radius = _____ cm

3 Jadvalda yetishmayotgan sonlarni aniqlang.

Doira	Radius	Diametr
W	13 cm	_____ cm
X	_____ cm	13 cm
Y	_____ cm	38 cm
Z	22 cm	_____ cm

Mashq daftariga o‘ting **169–170**

O‘zingizni tekshiring

a) Men doiraning elementlarini aniqlashni bilaman.

b) Doiraning diametri uning radiusidan ikki marta uzun ekanini bilaman.

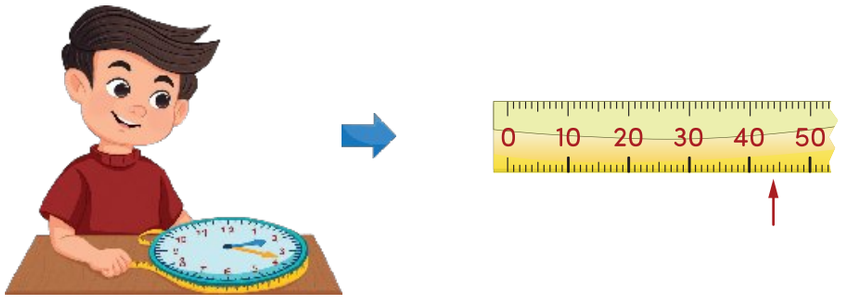
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Aylananing uzunligi

Qarang va o‘rganing

Aylananing uzunligi va π soni

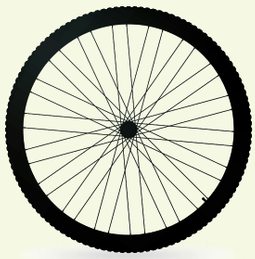
1 Akmal soat atrofini o‘lchov tasmasi bilan o‘lchayapti.



Soatning aylanasi uzunligi 44 cm ga teng.

Turmushda matematika

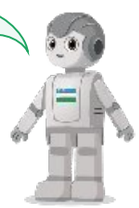
a) Quyidagi qaysi jismning aylanasi uzunligi eng katta?
b) Hayotda yana qanday doira shaklidagi narsalarni ko‘rgansiz?


velosiped g‘ildiragi


rul


tanga

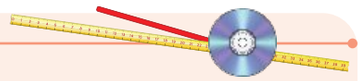
Doiraning radiusi yoki diametri kattalashgani sari uning aylanasi uzunligi ham kattalashadi. Bu fikr to‘g‘rimi yoki noto‘g‘ri?



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Qo‘lda bajariladigan mashq





Guruh bo‘lib ishlang.

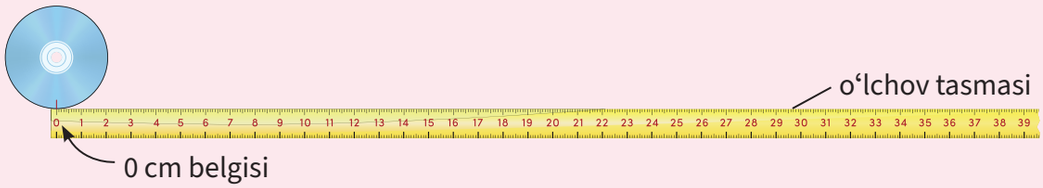
Har bir guruh sinfga doira shaklidagi ikkita narsa olib kelsin (masalan, CD disk yoki qog‘oz likopcha).

1 CD disk (yoki qog‘oz likopcha) kabi doira shaklidagi narsalarning aylanasini o‘lchang.

Misol

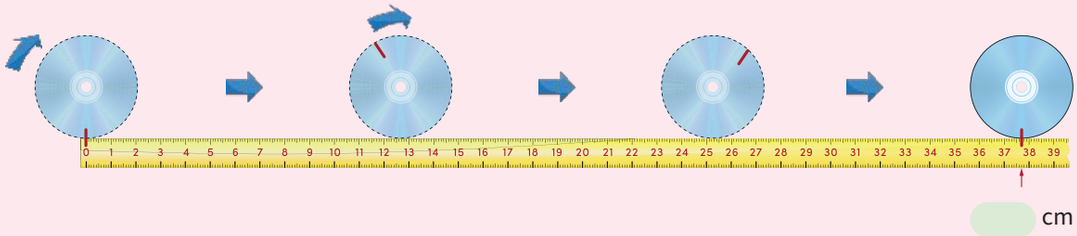
1-qadam

Disk aylanasi ustida bitta nuqta belgilang va uni o‘lchov tasmasidagi 0 cm ustiga rasmdagidek qo‘ying.



2-qadam

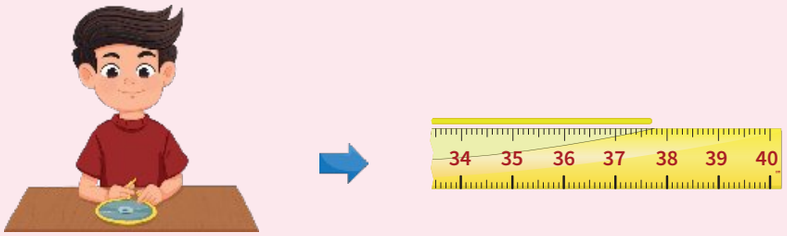
Diskni tasma bo‘ylab aylanadagi belgilangan nuqta tasmadagi biror songa mos kelgunicha aylantiring. Tasmadagi uzunlik ko‘rsatkichini yozib oling.



cm

3-qadam

Disk atrofini ip bilan o‘rang. So‘ng chizg‘ich yordamida ipning uzunligini o‘lchang. Uzunlik ko‘rsatkichini yozib oling.



Disk 1 marta to‘liq aylanganida bosib o‘tilgan masofa	cm
Disk aylanasining uzunligi	cm

Sizning guruhingiz natijalardan qanday xulosaga keldi?

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2 Aylana uzunligi va diametri o‘rtasidagi bog‘liqlikni tadqiq qiling.

1-qadam

3 ta doira shaklidagi jismning aylanasi uzunliklarini ip va o‘lchov tasmasi bilan o‘lchang. O‘lchov natijalarini yozib boring.

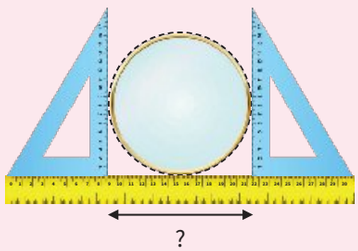
Namuna



2-qadam

Doira shaklidagi jismni ikkita uchburchakli chizg‘ich orasiga ko‘rsatilganidek qo‘ying va diametrini o‘lchang. O‘lchov natijasini yozib oling.

Namuna



3-qadam

Aylana uzunligini diametrga bo‘ling. Javobingizni yuzdan birlar xonasigacha yaxlitlang.

Doira	Aylanasi uzunligi	Diametri	Aylanasi uzunligi ÷ diametri
A			
B			
C			

Aylana uzunligining diametrga nisbati haqida qanday xulosaga keldingiz?

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2 a) Har qanday aylana uchun **aylana uzunligi ÷ diametr**ning qiymati taqriban 3,14 ga teng. Ushbu qiymat yunoncha π harfi bilan ifodalanadi.

Aylana uzunligi ÷ diametr = π



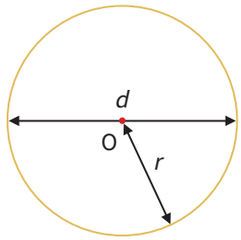
π harfi pi deb o‘qiladi. π – aylana uzunligining uning diametriga nisbatiga teng.

Odatda π soni taqriban 3,14 yoki $\frac{22}{7}$ ga teng deb olinadi.



b) Aylana uzunligini d – diametr yoki r – radius orqali topish mumkin.

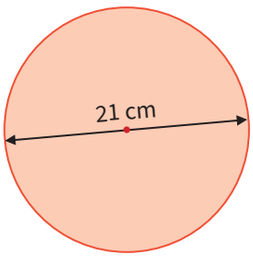
Aylana uzunligi = π × diametr
= πd



Aylana diametri uning radiusidan 2 marta uzun.

Aylana uzunligi = π × 2 × radius
= $2\pi r$

3 Doira diametri 21 cm bo‘lsa, uning aylanasi uzunligini toping ($\pi = \frac{22}{7}$ deb oling).

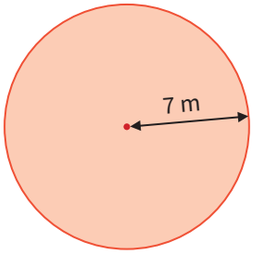


Aylanasi uzunligi $= \pi d$

$= \frac{22}{\cancel{7}_1} \times \cancel{21}^3$

$= 66$ cm

4 Doira radiusi 7 m bo‘lsa, uning aylanasi uzunligini toping ($\pi = \frac{22}{7}$ deb oling).



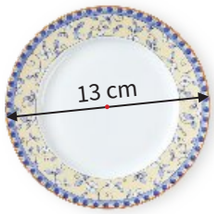
Aylanasi uzunligi $= 2\pi r$

$= 2 \times \frac{22}{\cancel{7}_1} \times \cancel{7}_1$

$= 44$ m

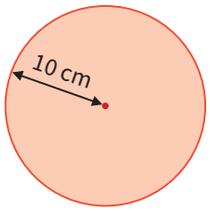
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5 Doira shaklidagi idishning diametri 13 cm bo‘lsa, uning aylanasi uzunligini toping ($\pi = 3{,}14$).



Aylanasi uzunligi = πd
= $3{,}14 \times 13$
= 40,82 cm

6 Radiusi 10 cm bo‘lgan doiraning aylanasi uzunligini toping. Javobni yuzdan birlar xonasigacha yaxlitlang.



Aylanasi uzunligi = $2\pi r$
= 62,83 cm (yuzdan birlar xonasigacha yaxlitlangan)

Juftlikda ishlang



Kalkulyatorda π qiymatidan foydalanish uchun [π] tugmasini bosing.



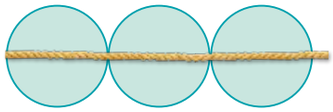
1-qadam

Bitta qog‘oz likopchaning aylana uzunligini ip bilan o‘lchang.

2-qadam

3 ta qog‘oz likopchani yonma-yon joylashtiring.

1-qadamda aniqlangan uzunlikdagi ipni 3 ta qog‘oz idish diametrlari bo‘ylab joylashtiring.



a) Doira diametriga nisbatan ip taqriban qanday uzunlikka ega?
b) π va diametrga nisbatan doira aylanasining uzunligi haqida nima deya olasiz?

Qiziqarli matematika

O‘rganing va bo‘lishing



1. Kalkulyatordagi [π] tugmasini, keyin esa [=] tugmasini bosing.
2. 22 ni 7 ga bo‘ling. Javobni o‘nli kasr ko‘rinishida yozing.
3. π soni tarixi haqidagi ma’lumotlarni internetdan toping va o‘qib chiqing. Ma’lumotlarni sinfdoshlaringiz bilan bo‘lishing.

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Bajaring va o‘rganing

1 Quyidagi jismlarning aylanasi uzunligini toping ($\pi = 3{,}14$).

a) radius = 40 cm

b) diametr = 20,5 cm



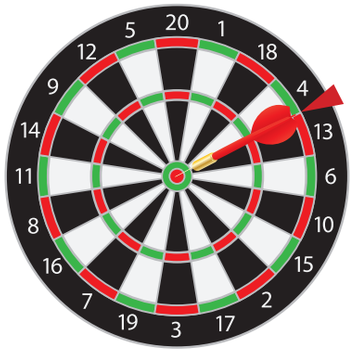


2 Quyidagi jismlarning aylanasi uzunligini toping ($\pi = \frac{22}{7}$).

a) diametr = 35 cm

b) radius = 21 cm

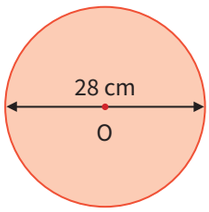


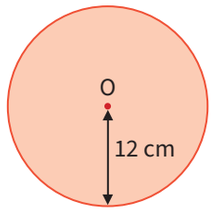


3 O nuqta – doiraning markazi. Doira aylanasining uzunligini toping.

a) $\pi = \frac{22}{7}$.

b) $\pi = 3{,}14$.





Mashq daftariga o‘ting **171–176**

O‘zingizni tekshiring

Men aylana uzunligini topishni bilaman.

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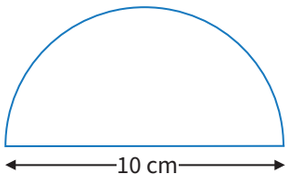
Yarim va chorak doira perimetri

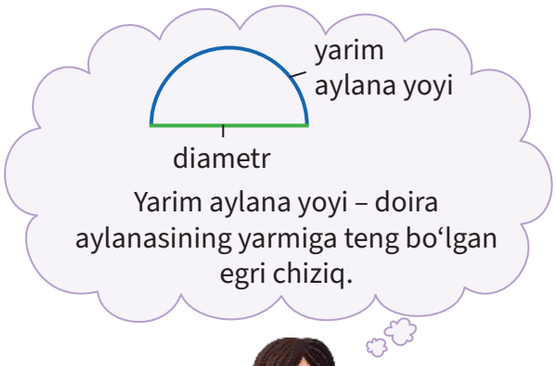
Qarang va o‘rganing



1 Doira diametri 10 cm. Quyidagi shakllarni o‘rab turgan chiziq uzunligi, ya’ni uning perimetrini toping ($\pi = 3{,}14$).

a) Yarim doira



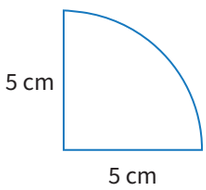


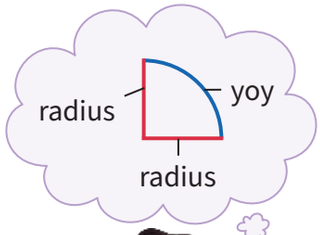


$$\text{Yarim aylana yoyi uzunligi} = \frac{1}{2} \times \pi d$$
$$= \frac{1}{2} \times 3{,}14 \times 10$$
$$= 15{,}7 \text{ cm}$$

$$\text{Yarim aylana perimetri} = \text{yarim aylana yoyi uzunligi} + \text{diametr}$$
$$= 15{,}7 + 10$$
$$= 25{,}7 \text{ cm}$$

b) chorak doira aylanasi





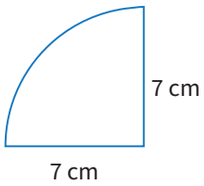


$$\text{Yoy uzunligi} = \frac{1}{4} \times \pi d$$
$$= \frac{1}{4} \times 3{,}14 \times 10$$
$$= 7{,}85 \text{ cm}$$

$$\text{Chorak aylananing perimetri} = \text{yoy uzunligi} + \text{radius} + \text{radius}$$
$$= 7{,}85 + 5 + 5$$
$$= 7{,}85 + 10$$
$$= 17{,}85 \text{ cm}$$

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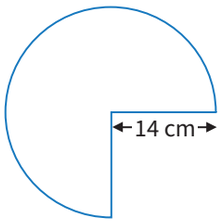
2 Doira aylanasi radiusi 7 cm. Chorak doira aylanasining perimetrini toping ($\pi = \frac{22}{7}$).



$$\text{Yoy uzunligi} = \frac{1}{4} \times \pi d$$
$$= \frac{1}{4} \times 2\pi r$$
$$= \frac{1}{\cancel{4}_{\cancel{2}_1}} \times \cancel{2}^{1} \times \frac{\cancel{22}^{11}}{\cancel{7}_{1}} \times \cancel{7}^{1}$$
$$= 11 \text{ cm}$$

$$\text{Chorak doira aylanasining perimetri} = 11 + 7 + 7$$
$$= 11 + 14$$
$$= 25 \text{ cm}$$

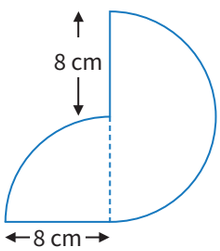
3 Rasmda aylananing $\frac{3}{4}$ qismi ko‘rsatilgan. Shaklning perimetrini toping ($\pi = \frac{22}{7}$).



$$\text{Yoy uzunligi} = \frac{3}{4} \times 2\pi r$$
$$= \frac{3}{\cancel{4}_{\cancel{2}_1}} \times \cancel{2}^{1} \times \frac{\cancel{22}^{11}}{\cancel{7}_{1}} \times \cancel{14}^{2}$$
$$= 66 \text{ cm}$$

$$\text{Shaklning perimetri} = 66 + 14 + 14$$
$$= 94 \text{ cm}$$

4 Shakl 8 cm radiusli yarim doira va chorak doiradan iborat. Shaklning perimetrini toping. Javobni yuzdan birlar xonasigacha yaxlitlang ($\pi = 3{,}14$).



$$\text{Doira aylanasining } \frac{3}{4} \text{ qismi} = \frac{3}{4} \times 2\pi r$$
$$= \frac{3}{\cancel{4}_{1}} \times 2 \times \pi \times \cancel{8}^{2}$$
$$= 12\pi$$

$$\text{Shakl perimetri} = 12\pi + 8 + 8$$
$$= 53{,}70 \text{ cm} \quad \text{(yuzdan birlar xonasigacha yaxlitlangan)}$$

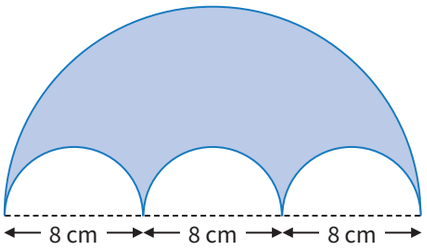
Siz aylananing $\frac{3}{4}$ qismini ko‘ryapsizmi?





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5 Shakl katta yarim aylana va 3 ta bir xil kichik yarim aylana bilan chegaralangan. Bo‘yalgan shaklning perimetrini toping ($\pi = 3{,}14$).



1 ta kichik aylana uzunligining yarmi $= \frac{1}{2} \times \pi d$

$= \frac{1}{2} \times 3{,}14 \times 8$

$= 12{,}56$ cm

3 ta kichik aylana uzunligining yarmi $= 3 \times 12{,}56$

$= 37{,}68$ cm

Katta aylana diametri $= 3 \times 8$

$= 24$ cm

Katta aylana uzunligining yarmi $= \frac{1}{2} \times \pi d$

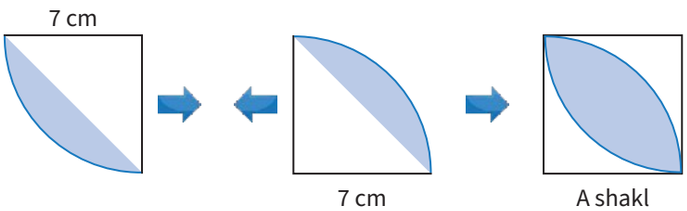
$= \frac{1}{2} \times 3{,}14 \times 24$

$= 37{,}68$ cm

Bo‘yalgan shaklning perimetri $= 37{,}68 + 37{,}68$

$= 75{,}36$ cm

6 Ikkita bir xil chorak doira birlashib, A shaklni hosil qilgan. A shaklning bo‘yalgan qismi perimetrini toping ($\pi = \frac{22}{7}$).



Aylana uzunligining choragi $= \frac{1}{4} \times 2\pi r$

$= \frac{1}{\cancel{4}_{\cancel{2}_1}} \times \cancel{2}^{1} \times \frac{\cancel{22}^{11}}{\cancel{7}_{1}} \times \cancel{7}_{1}$

$= 11$ cm

Bo‘yalgan qismning perimetri $= 2 \times 11$

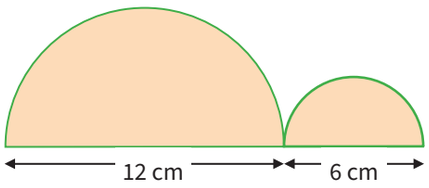
$= 22$ cm

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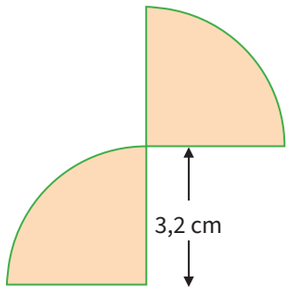
Juftlikda ishlang

Shakllarning perimetrini toping. Javobingizni yuzdan birlar xonasigacha yaxlitlang.

a) Shakl ikkita yarim doiradan iborat.



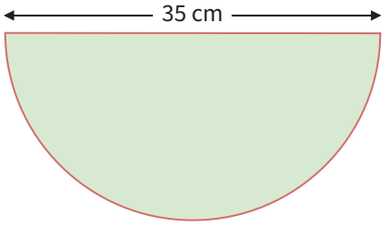
b) Shakl ikkita bir xil chorak doiradan iborat.



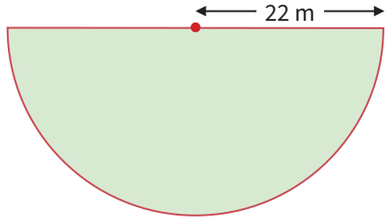
Bajaring va o‘rganing

1 Yarim doira perimetrini toping.

a) Diametr = 35 cm,
$\pi = \frac{22}{7}$.

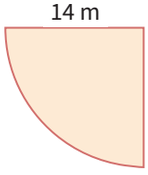


b) Radius = 22 m,
$\pi = 3{,}14$.

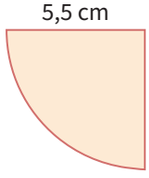


2 Chorak doira perimetrini toping.

a) Radius = 14 m,
$\pi = \frac{22}{7}$.



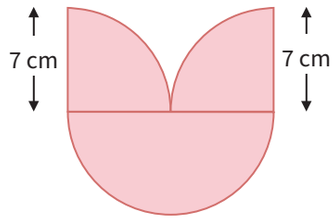
b) Radius = 5,5 cm,
$\pi = 3{,}14$.
Javobni yuzdan birlar xonasigacha yaxlitlang.

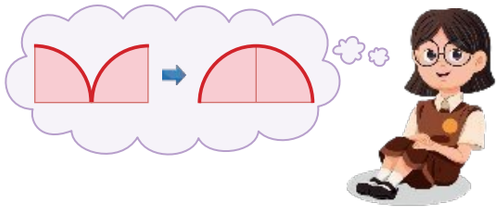


75 MATEMATICS SCHOOLBOOK G6 P1 UZB 220x290 176PG.indd 143 26/08/24 13:15

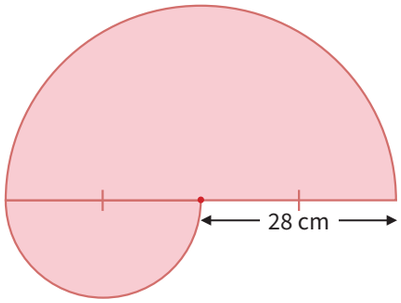
3 Chorak va (yoki) yarim doiradan tuzilgan va bo‘yalgan quyidagi shakllarning perimetrini toping ($\pi = \frac{22}{7}$).

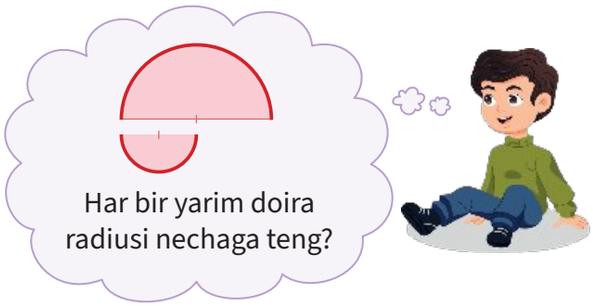
a)



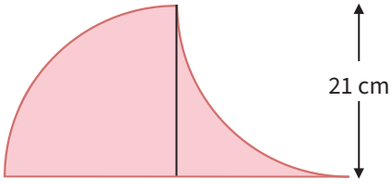


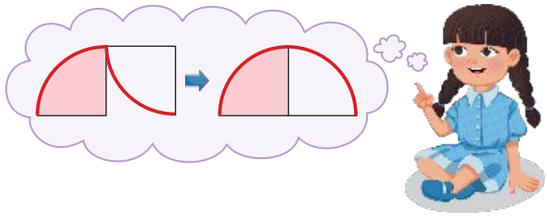
b)



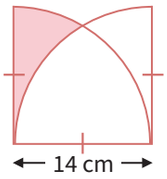


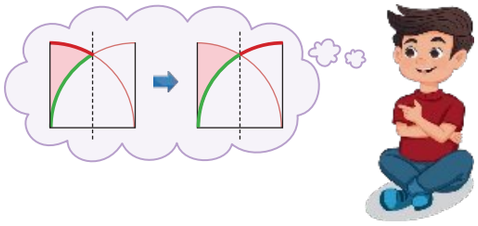
c)





d)





Mashq daftariga o‘ting **177–182**

O‘zingizni tekshiring



a) Men yarim doira perimetrini topishni bilaman.

b) Men chorak doira perimetrini topishni bilaman.

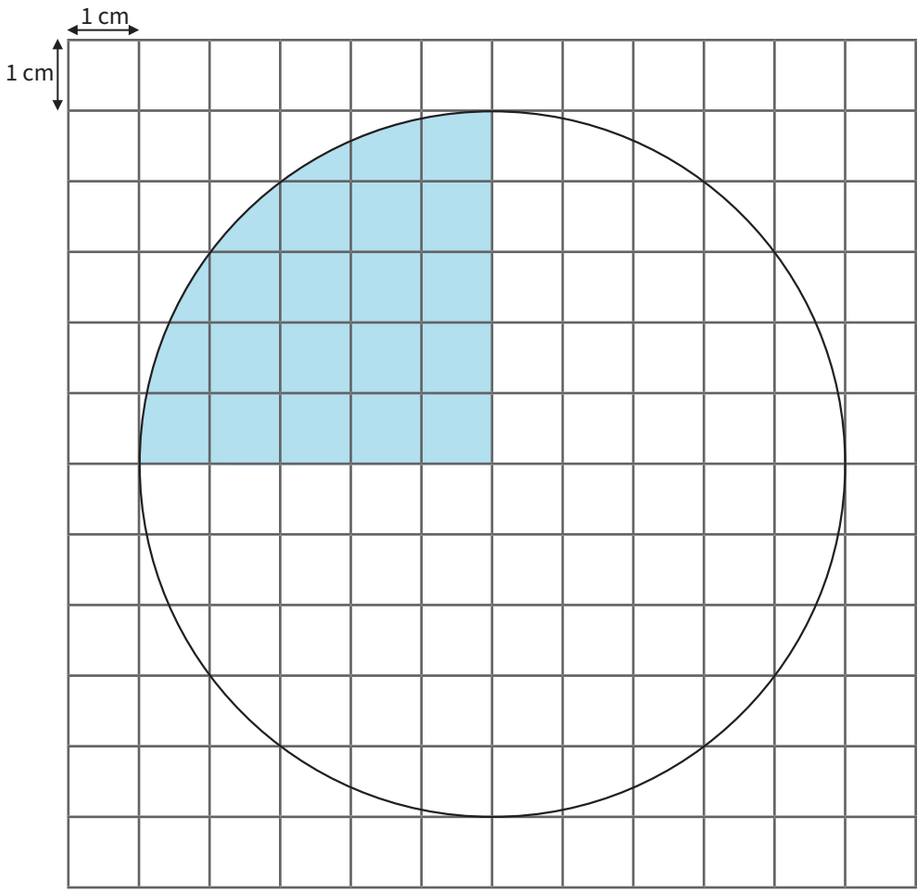
75 MATEMATICS SCHOOLBOOK G6 P1 UZB 220x290 176PG.indd 144 26/08/24 13:16

Doiraning yuzi

Juftlikda ishlang



Quyidagi bo‘yalgan chorak doiraning yuzini har biringiz alohida-alohida hisoblang. So‘ng diametri 10 cm bo‘lgan doira yuzini taqribiy hisoblash uchun chorak doiraning taqribiy yuzidan foydalaning. Sherigingiz ishini tekshiring.



Rasmdagi bo‘yalgan kataklar sonini hisoblang.

Chorak doiraning taqribiy yuzi	cm^2
Doiraning taqribiy yuzi	cm^2



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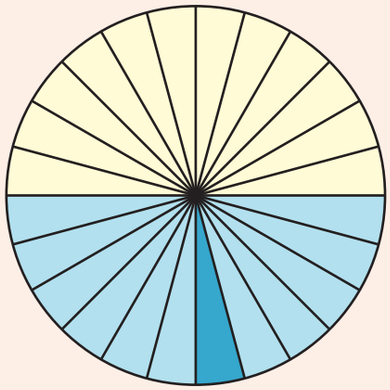
Qo‘lda bajariladigan mashq



Guruh bo‘lib ishlang.

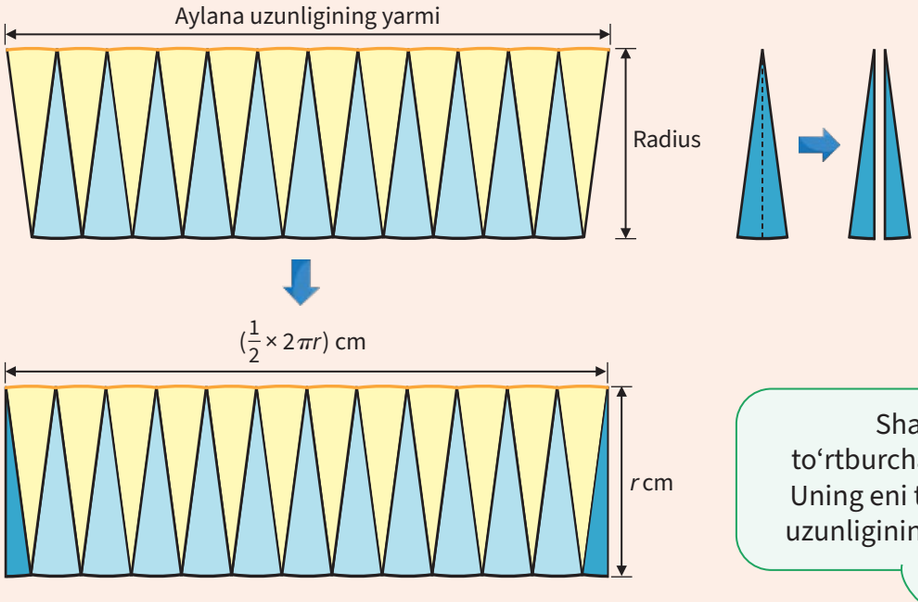
1 Radiusi r cm ga teng doira yuzini chamalab hisoblash uchun quyidagi usuldan foydalaning.

1-qadam O‘qituvchingiz bergan doirani 24 ta teng bo‘lakka bo‘ling.





2-qadam Quyida ko‘rsatilganidek 23 bo‘lakni bir qatorga tering. Oxirgi bo‘lakni esa rasmda ko‘rsatilganidek teng ikkiga bo‘ling va qatorning boshi va oxiriga bittadan qo‘ying.





Doiraning yuzi ≈ to‘g‘ri to‘rtburchakning yuzi

$= \text{eni} \times \text{bo‘yi}$

$= \frac{1}{2} \times \text{aylana uzunligi} \times \text{radius}$

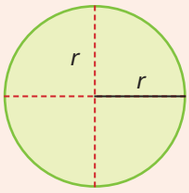
$= \frac{1}{2} \times 2 \times \pi \times \text{radius} \times \text{radius}$

$= \pi \times \text{radius} \times \text{radius}$

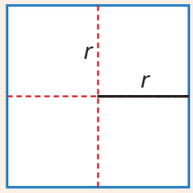
Doira yuzi = πr^2

75 MATEMATICS SCHOOLBOOK G6 P1 UZB 220x290 176PG.indd 146 26/08/24 13:16

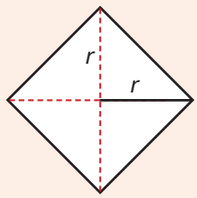
2 Quyida ko‘rsatilganidek, radiusi r cm bo‘lgan doira yuzi va kvadratlar yuzi o‘rtasidagi bog‘liqlikni o‘rganing. O‘qituvchingiz bergan kvadratlar va doiradan foydalaning.



Doira
1-shakl



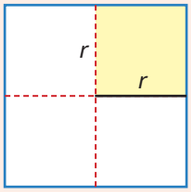
Katta kvadrat
2-shakl



Kichkina kvadrat
3-shakl

1-qadam

2-shaklning yuzini toping.



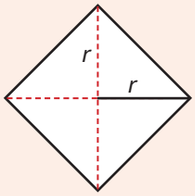
Katta kvadrat $\frac{1}{4}$ qismining yuzi = ____

= ____ cm^2

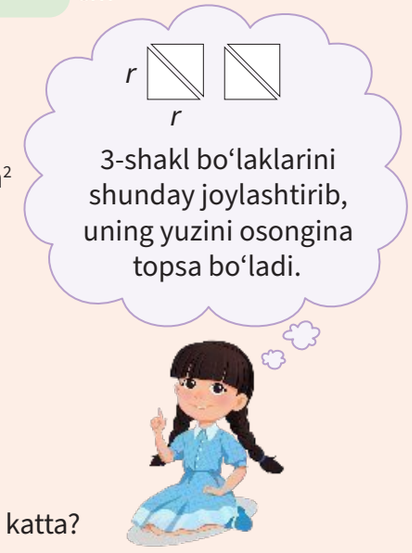
Katta kvadratning yuzi = ____ cm^2

2-qadam

3-shaklning yuzini toping.

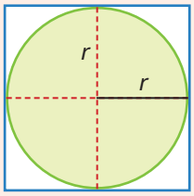


Kichik kvadratning yuzi = ____ cm^2



3-qadam

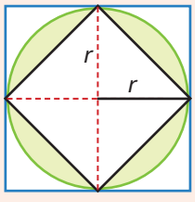
Quyida ko‘rsatilganidek doirani katta kvadrat ustiga qo‘ying.



Doiraning yuzi $4r^2$ cm^2 dan kichikmi yoki katta?

4-qadam

Quyida ko‘rsatilganidek kichik kvadratni doiraga qo‘ying.



Doira yuzi $2r^2$ cm^2 dan kichikmi yoki katta?

Doira yuzi ≈ ____ cm^2

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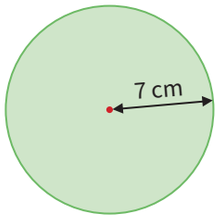
Qarang va o‘rganing



1 Doira radiusi 7 cm ga teng.

a) Doiraning yuzini π orqali ifodalang.

b) Agar $\pi = \frac{22}{7}$ bo‘lsa, doiraning yuzini hisoblang.



a) Doira yuzi= πr^2

$= \pi \times 7 \times 7$

$= 49\pi$ cm^2

b) Doira yuzi = πr^2

$= \frac{22}{\cancel{7}_{1}} \times \cancel{7}^{1} \times 7$

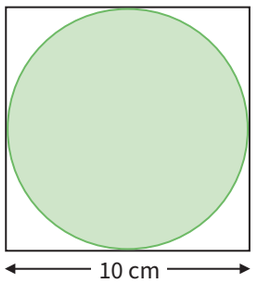
$= 154$ cm^2

2 Rasmda doira tomoni 10 cm ga teng kvadrat qog‘oz ustiga joylashtirilgan. Doira yuzini toping ($\pi = 3{,}14$).

Diametr = 10 cm

Radius = $10 \div 2$
= 5 cm

Doira yuzi = πr^2
= $\pi \times 5 \times 5$
= $3{,}14 \times 5 \times 5$
= 78,5 cm^2

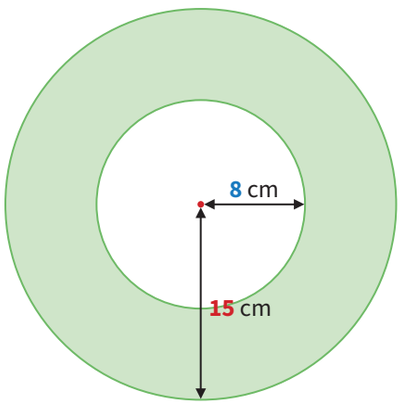


3 Katta doira radiusi 15 cm, kichik doiraning radiusi esa 8 cm. Bo‘yalgan shaklning yuzini toping ($\pi = 3{,}14$).

Katta doiraning yuzi = πr^2
= $\pi \times 15 \times 15$
= $3{,}14 \times 15 \times 15$
= 706,5 cm^2

Kichik doiraning yuzi = πr^2
= $\pi \times 8 \times 8$
= $3{,}14 \times 8 \times 8$
= 200,96 cm^2

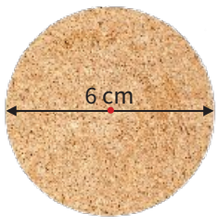
Bo‘yalgan shaklning yuzi = 706,5 – 200,96
= 505,54 cm^2



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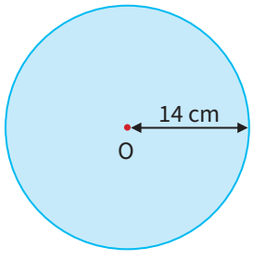
Bajaring va o‘rganing

1 Diametri 6 cm bo‘lgan bo‘yalgan doiraning yuzini toping ($\pi = \frac{22}{7}$).

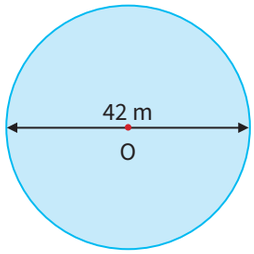


2 O nuqta – doira markazi. Doiraning yuzini toping ($\pi = \frac{22}{7}$) .

a)

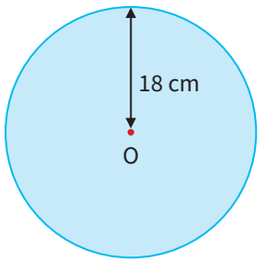


b)

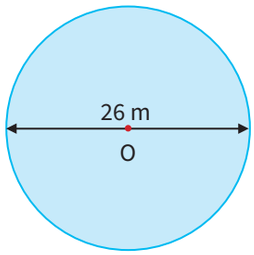


3 O nuqta – doira markazi. Doiraning yuzini toping ($\pi = 3{,}14$).

a)

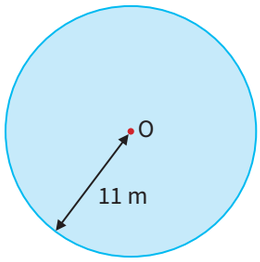


b)

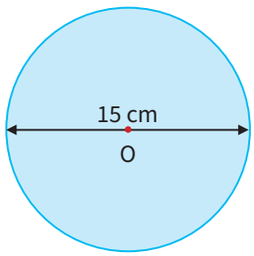


4 O nuqta – doira markazi. Doiraning yuzini toping ($\pi = 3{,}14$).
Javobingizni yuzdan birlar xonasigacha yaxlitlang.

a)



b)



Mashq daftariga o‘ting **183–184**

O‘zingizni tekshiring

Men doira yuzini topishni bilaman.

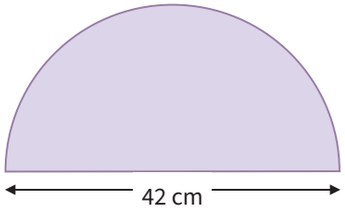
75 MATEMATICS SCHOOLBOOK G6 P1 UZB 220x290 176PG.indd 149 26/08/24 13:16

Yarim va chorak doira yuzi

Qarang va o‘rganing



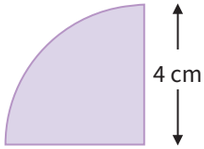
1 Yarim doira yuzini toping ($\pi = \frac{22}{7}$).



$$\text{Radius} = \text{diametr} \div 2$$
$$= 42 \div 2$$
$$= 21 \text{ cm}$$

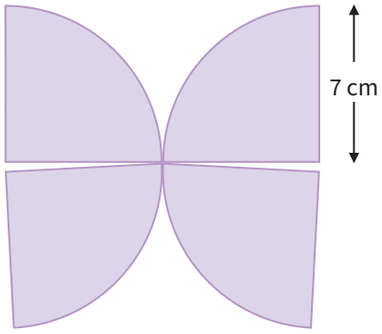
$$\text{Yarim doira yuzi} = \frac{1}{2} \times \pi r^2$$
$$= \frac{1}{\cancel{2}_1} \times \frac{\cancel{22}^{11}}{\cancel{7}_1} \times \cancel{21}^{3} \times 21$$
$$= 693 \text{ cm}^2$$

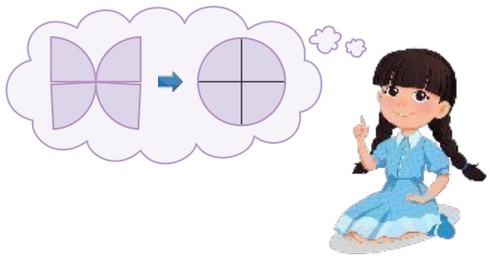
2 Chorak doiraning yuzini toping ($\pi = 3{,}14$).



$$\text{Chorak doiraning yuzi} = \frac{1}{4} \times \pi r^2$$
$$= \frac{1}{4} \times 3{,}14 \times 4 \times 4$$
$$= 12{,}56 \text{ cm}^2$$

3 Shakl rasmda ko‘rsatilganidek 4 ta bir xil chorak doiradan iborat. Shaklning yuzini toping ($\pi = \frac{22}{7}$).

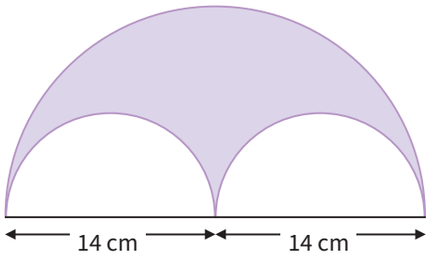




$$\text{Shaklning yuzi} = \text{doiraning yuzi}$$
$$= \pi r^2$$
$$= \frac{22}{\cancel{7}_1} \times \cancel{7}^{1} \times 7$$
$$= 154 \text{ cm}^2$$

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4 Rasmda 3 ta yarim doira tasvirlangan. Bo‘yalgan sohaning yuzini toping ($\pi = \frac{22}{7}$).



Katta yarim doira yuzi $= \frac{1}{2} \times \pi r^2$

$= \frac{1}{\cancel{2}_1} \times \frac{\cancel{22}^{11}}{\cancel{7}_1} \times \cancel{14}^{2} \times 14$

$= 308 \text{ cm}^2$

2 ta kichik yarim doira yuzi $= 2 \times \frac{1}{2} \times \pi r^2$

$= \cancel{2}_1 \times \frac{1}{\cancel{2}_1} \times \frac{22}{\cancel{7}_1} \times \cancel{7}^{1} \times 7$

$= 154 \text{ cm}^2$

Bo‘yalgan sohaning yuzi $= 308 - 154$

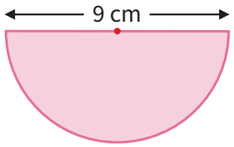
$= 154 \text{ cm}^2$

Juftlikda ishlang

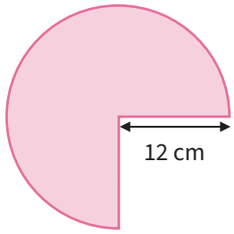


Sherigingiz bilan ishlang. Shakllarning yuzini toping.

a)



b)



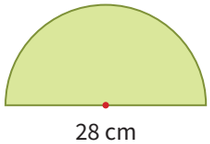
Bajaring va o‘rganing



1 Yarim doiralar yuzini toping.

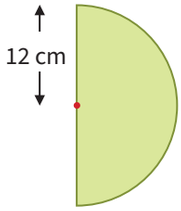
a) Diametr = 28 cm,

$\pi = \frac{22}{7}$.



b) Radius = 12 cm,

$\pi = 3{,}14$.



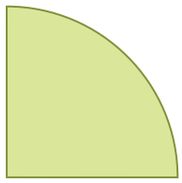
75 MATEMATICS SCHOOLBOOK G6 P1 UZB 220x290 176PG.indd 151 26/08/24 13:16

2 Chorak doiraning yuzini toping.

a) Radius = 35 cm, $\pi = \frac{22}{7}$.

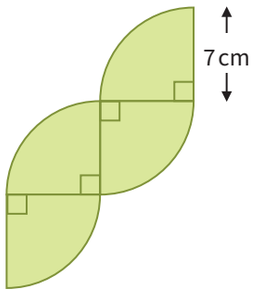


b) Radius = 22 cm, $\pi = 3{,}14$.

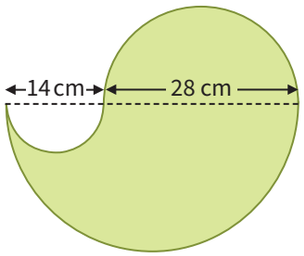


3 Bo‘yalgan shaklning yuzini toping ($\pi = \frac{22}{7}$).

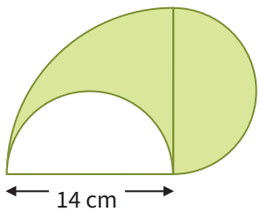
a) Radius = 7 cm.



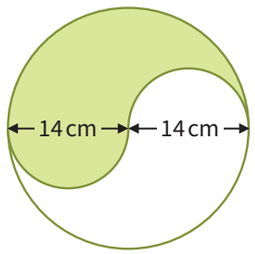
b) Kichik doira diametri = 14 cm, katta doira diametri = 28 cm.



c) Diametr = 14 cm.



d) Doiraning diametri = 28 cm.



Mashq daftariga o‘ting **185–186**

O‘zingizni tekshiring



a) Men yarim doira yuzini topishni bilaman.

b) Men chorak doira yuzini topishni bilaman.

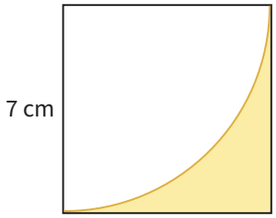
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Murakkab shakllarning yuzi va perimetri

Qarang va o‘rganing



1 Rasmdagi kvadrat ichiga chorak doira joylangan. Bo‘yalgan sohaning yuzini toping ($\pi = \frac{22}{7}$).

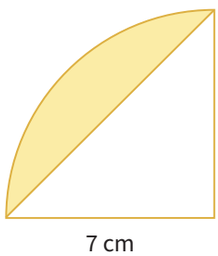


$$\text{Kvadrat yuzi} = 7 \times 7$$
$$= 49 \text{ cm}^2$$

$$\text{Chorak doira yuzi} = \frac{1}{4} \times \pi r^2$$
$$= \frac{1}{\cancel{4}_{2}} \times \frac{\cancel{22}^{11}}{\cancel{7}_{1}} \times \cancel{7}^{1} \times 7$$
$$= \frac{77}{2} \text{ cm}^2$$

$$\text{Bo‘yalgan sohaning yuzi} = 49 - \frac{77}{2}$$
$$= \frac{98}{2} - \frac{77}{2}$$
$$= \frac{21}{2}$$
$$= 10\frac{1}{2} \text{ cm}^2$$

2 Rasmda chorak doira tasvirlangan. Bo‘yalgan sohaning yuzini toping ($\pi = \frac{22}{7}$).



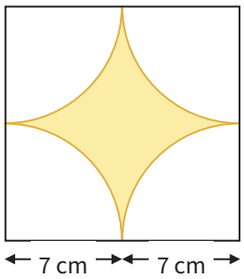
$$\text{Chorak doiraning yuzi} = \frac{1}{4} \times \pi r^2$$
$$= \frac{1}{\cancel{4}_{2}} \times \frac{\cancel{22}^{11}}{\cancel{7}_{1}} \times \cancel{7}^{1} \times 7$$
$$= \frac{77}{2} \text{ cm}^2$$

$$\text{Uchburchak yuzi} = \frac{1}{2} \times 7 \times 7$$
$$= \frac{49}{2} \text{ cm}^2$$

$$\text{Bo‘yalgan sohaning yuzi} = \frac{77}{2} - \frac{49}{2}$$
$$= \frac{28}{2}$$
$$= 14 \text{ cm}^2$$

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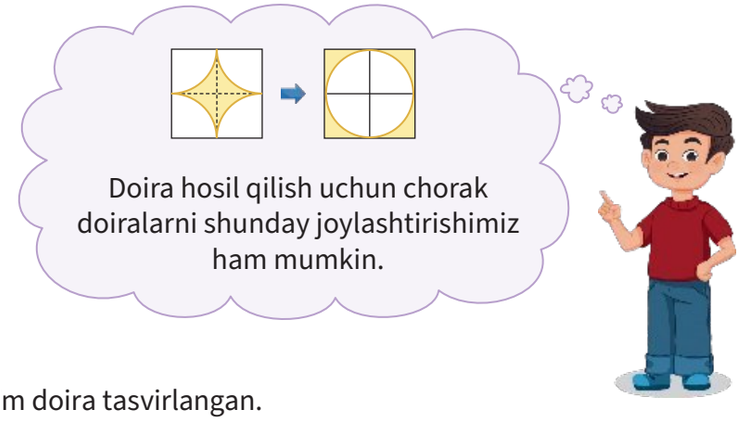
3 Rasmdagi kvadrat ichiga 4 ta chorak doira joylangan. Bo‘yalgan sohaning yuzini toping $(\pi = \frac{22}{7})$.



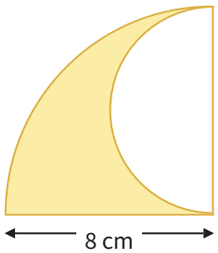
Kvadrat yuzi $= 14 \times 14$
$= 196 \text{ cm}^2$

Doira yuzi (4 ta chorak doira) $= \pi r^2$
$= \frac{22}{\cancel{7}_1} \times \cancel{7}^{1} \times 7$
$= 154 \text{ cm}^2$

Bo‘yalgan qismning yuzi $= 196 - 154$
$= 42 \text{ cm}^2$



4 Rasmda chorak doira va yarim doira tasvirlangan.
Bo‘yalgan soha perimetrini π orqali ifodalang.



Katta doira aylana uzunligining to‘rtdan bir qismi $= \frac{1}{4} \times 2\pi r$
$= \frac{1}{\cancel{4}_1} \times 2 \times \pi \times \cancel{8}^{2}$
$= 4\pi \text{ cm}$

Kichik doira aylanasining yarmi $= \frac{1}{2} \times \pi d$
$= \frac{1}{\cancel{2}_1} \times \pi \times \cancel{8}^{4}$
$= 4\pi \text{ cm}$

Bo‘yalgan soha perimetri $= 4\pi + 4\pi + 8$
$= (8\pi + 8) \text{ cm}$

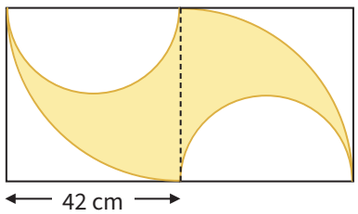
75 MATEMATICS SCHOOLBOOK G6 P1 UZB 220x290 176PG.indd 154 26/08/24 13:16

5 Rasmdagi har bir kvadrat ichiga chorak va yarim doira chizilgan.

a) Bo‘yalgan soha perimetrini toping.

b) Bo‘yalgan soha yuzini toping.

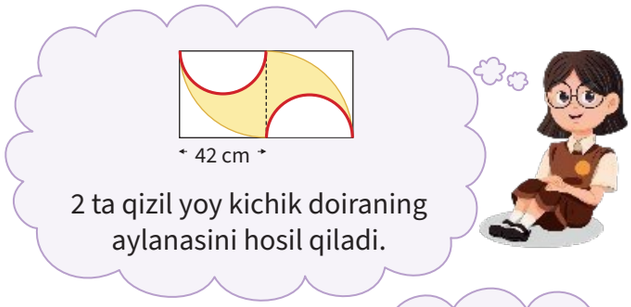
$(\pi = \frac{22}{7})$



a) Kichik aylana uzunligi $= \pi d$

$= \frac{22}{\cancel{7}_{1}} \times \cancel{42}^{6}$

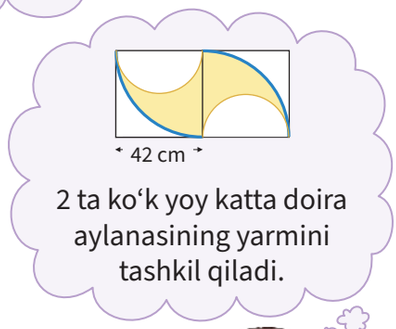
$= 132$ cm



Katta doira aylanasining yarmi $= \frac{1}{2} \times 2\pi r$

$= \frac{1}{\cancel{2}_{1}} \times \cancel{2}^{1} \times \frac{22}{\cancel{7}^{1}} \times \cancel{42}^{6}$

$= 132$ cm



Bo‘yalgan soha perimetri $= 132 + 132$

$= 264$ cm

b)

1-usul

Katta doira choragining yuzi $= \frac{1}{4} \times \pi r^2$

$= \frac{1}{\cancel{4}_{\cancel{2}_{1}}} \times \frac{\cancel{22}^{11}}{\cancel{7}_{1}} \times \cancel{42}^{6} \times \cancel{42}^{21}$

$= 1386$ cm^2

Bo‘yalmagan kichik doira yarimining yuzi $= \frac{1}{2} \times \pi r^2$

$= \frac{1}{\cancel{2}_{1}} \times \frac{\cancel{22}^{11}}{\cancel{7}_{1}} \times \cancel{21}^{3} \times 21$

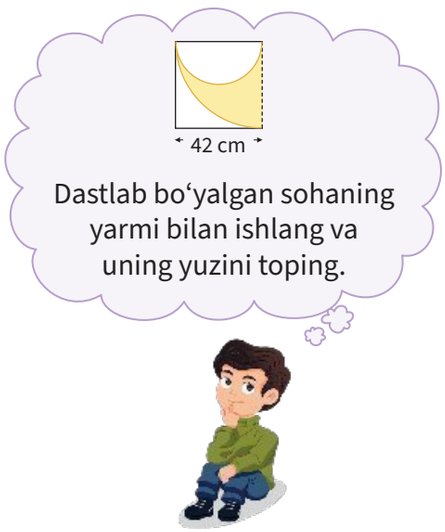
$= 693$ cm^2

Bo‘yalgan soha yarmining yuzi $= 1386 - 693$

$= 693$ cm^2

Bo‘yalgan soha yuzi $= 693 \times 2$

$= 1386$ cm^2



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2-usul

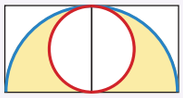
Bo‘yalgan sohaning yuzi = katta yarim doira yuzi − kichik doira yuzi

$$= \frac{1}{\cancel{2}_{1}} \times \frac{\cancel{22}^{11}}{\cancel{7}_{1}} \times \cancel{42}^{6} \times 42 - \frac{22}{\cancel{7}_{1}} \times \cancel{21}^{3} \times 21$$

$$= 2772 - 1386$$

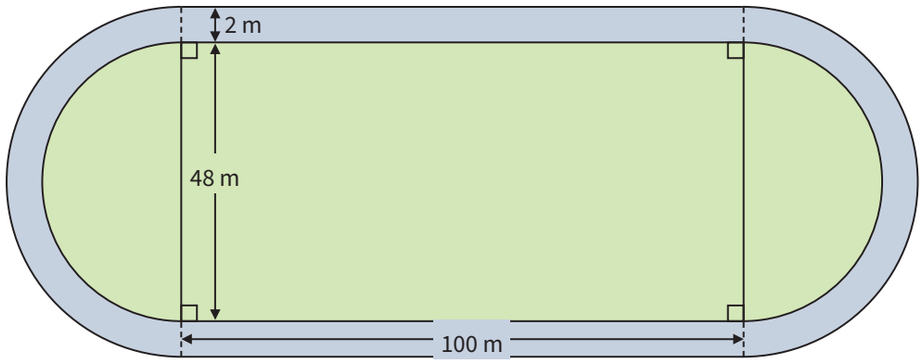
$$= 1386 \text{ cm}^2$$

Kvadratlarni rasmda ko‘rsatilganidek joylashtiring.





6 Rasmda kengligi 2 m bo‘lgan yugurish yo‘lagi bilan o‘ralgan maydon tasvirlangan. Yugurish yo‘lagi yuzini toping ($\pi = 3{,}14$).



Katta doira diametri = 48 + 2 + 2
= 52 m

Katta doira radiusi = 52 ÷ 2
= 26 m

Katta doira yuzi = πr^2
= 3,14 × 26 × 26
= 2122,64 m^2

Ikkita yarim doira bitta butun doirani hosil qiladi.



Kichik doira yuzi = πr^2
= 3,14 × 24 × 24
= 1808,64 m^2

Yo‘lak to‘g‘ri to‘rtburchakli qismlarining jami yuzi = 2 × 100 × 2
= 400 m^2

Yo‘lakning yoy qismlarining jami yuzi = 2122,64 – 1808,64
= 314 m^2

Yugurish yo‘lagining yuzi = 400 + 314
= 714 m^2

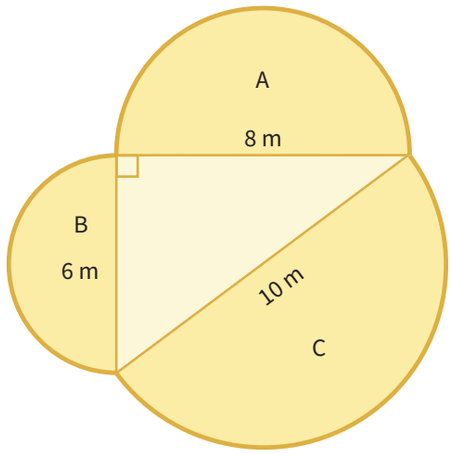
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7 Quyidagi rasmda 3 ta yarim doira va to‘g‘ri burchakli uchburchakdan iborat bo‘lgan o‘yin maydoni ko‘rsatilgan. Uchburchak tomonlari 8 m, 6 m va 10 m ga teng ($\pi = 3{,}1415$).

a) O‘yin maydonining yuzini toping.

b) O‘yin maydonining perimetrini toping.

Javoblarni yuzdan birlar xonasigacha yaxlitlang.



a) A yarim doiraning yuzi $= \frac{1}{2} \times \pi r^2$

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

$= 8\pi \text{ m}^2$

B yarim doiraning yuzi $= \frac{1}{2} \times \pi r^2$

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

$= \frac{9\pi}{2} \text{ m}^2$

C yarim doiraning yuzi $= \frac{1}{2} \times \pi r^2$

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

$= \frac{25\pi}{2} \text{ m}^2$

Uchburchakning yuzi $= \frac{1}{2} \times$ asosi $\times$ balandlik

$= \frac{1}{2} \times 6 \times 8$

$= 24 \text{ m}^2$

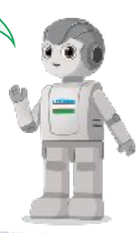
O‘yin maydoni yuzi $= 8\pi + \frac{9\pi}{2} + \frac{25\pi}{2} + 24$

$= 102{,}54 \text{ m}^2$ (yuzdan birlar xonasigacha yaxlitlangan)

b) O‘yin maydonining perimetri = A ning yoy uzunligi + B ning yoy uzunligi + C ning yoy uzunligi

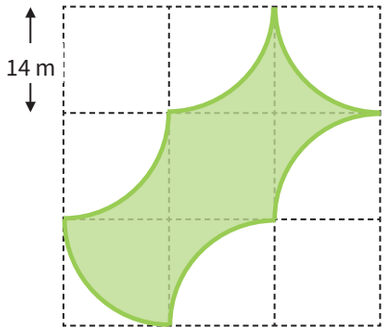
$= (\frac{1}{2} \times \pi \times 8) + (\frac{1}{2} \times \pi \times 6) + (\frac{1}{2} \times \pi \times 10)$

= 37,70 m (yuzdan birlar xonasigacha yaxlitlangan)



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8 Rasmda bog‘ shakli ko‘rsatilgan. Bog‘ning yuzi va perimetrini toping ($\pi = \frac{22}{7}$).



Chorak doiraning yuzi $= \frac{1}{4} \times \pi r^2$

$= \frac{1}{\cancel{4}_{\cancel{2}_1}} \times \frac{\cancel{22}^{11}}{\cancel{7}_1} \times \cancel{14}^{2} \times \cancel{14}^{7}$

$= 154 \text{ m}^2$



Kichik kvadratdagi bo‘yalgan sohaning yuzi $= (14 \times 14) - 154$

$= 196 - 154$

$= 42 \text{ m}^2$



Bog‘ning yuzi $= 196 + (5 \times 42) + 154$

$= 560 \text{ m}^2$

Doira aylanasi uzunligining to‘rtdan biri $= \frac{1}{4} \times 2\pi r$

$= \frac{1}{\cancel{4}_{\cancel{2}_1}} \times \cancel{2}^{1} \times \frac{\cancel{22}^{11}}{\cancel{7}_1} \times \cancel{14}^{2}$

$= 22 \text{ m}$

Bog‘ning perimetri $= 6 \times 22$

$= 132 \text{ m}$

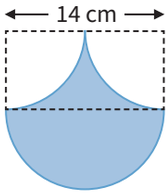
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Bajaring va o‘rganing

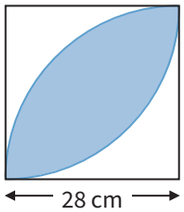


1 Rasmdagi bo‘yalgan sohaning yuzi va perimetrini toping ($\pi = \frac{22}{7}$).

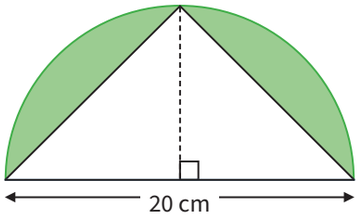
a)



b)



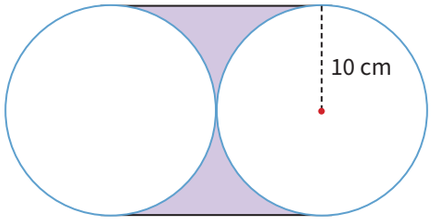
2 Rasmdagi yarim doira ichiga uchburchak chizilgan. Uchburchak asosi 20 cm ga teng. Bo‘yalgan soha yuzini toping ($\pi = 3{,}14$).



3 Rasmda bir-biriga urinuvchi ikkita bir xil doira tasvirlangan. Doiralarning radiusi 10 cm ga teng.

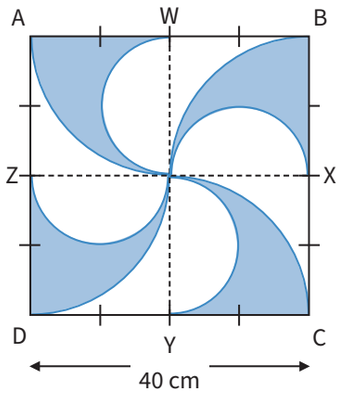
a) Bo‘yalgan soha perimetrini toping.

b) Bo‘yalgan soha yuzini toping ($\pi = 3{,}14$).

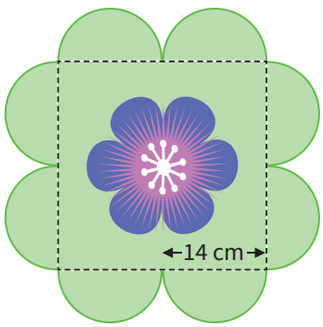


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4 ABCD – kvadrat. Uning ichiga yarim va chorak aylanalar chizilgan. AW = WB = BX = XC. Bo‘yalgan sohaning yuzini toping ($\pi = 3{,}14$).



5 Quyidagi rasmda ro‘molcha tasvirlangan. Ro‘molchaning har bir tomoni ikkita bir xil yarim doiradan iborat. Ro‘molchaning yuzini toping ($\pi = \frac{22}{7}$).



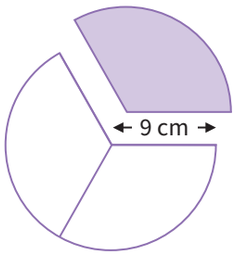
75 MATEMATICS SCHOOLBOOK G6 P1 UZB 220x290 176PG.indd 160 26/08/24 13:16

6 Radiusi 9 cm bo‘lgan doira 3 ta teng qismga bo‘lingan. Ulardan biri kesib olingan va bo‘yalgan.

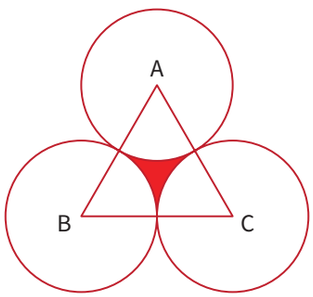
a) Bo‘yalgan qism perimetrini toping.

b) Bo‘yalgan qism yuzini toping.

Javobni yuzdan birlar xonasigacha yaxlitlang.



7 Rasmda markazlari A, B , C nuqtalarda va radiusi 14 cm bo‘lgan 3 ta ta bir xil doira tasvirlangan. Bo‘yalgan soha perimetrini toping. Javobingizni tushuntiring ($\pi = \frac{22}{7}$).



ABC uchburchakning turini aniqlang.



Mashq daftariga o‘ting **187–194**

O‘zingizni tekshiring



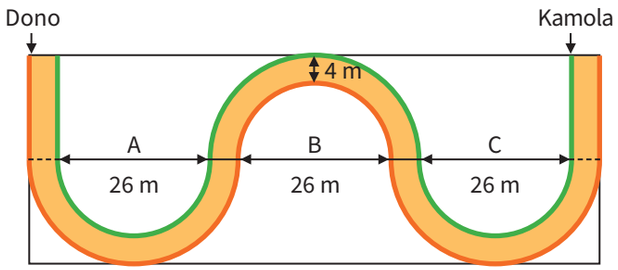
Kvadrat, to‘g‘ri to‘rtburchak, uchburchak, yarim aylana va chorak aylanalardan tuzilgan murakkab shakllarning yuzi va perimetrini topa olaman.

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O‘ylab ko‘ring



Rasmda kengligi 4 m bo‘lgan yo‘l tasvirlangan va u bir xil kichik yarim doiralardan iborat. Rasmdagi A, B va C masofalar 26 m ni tashkil qiladi. Dono va Kamola yo‘lning qarama-qarshi tomonlaridan yurishni boshladi. Dono yo‘lning qizil chetidan, Kamola esa yo‘lning yashil chetidan yurdi. Dono va Kamola yurgan masofalarning farqini toping. Javobingizni π orqali ifodalang.



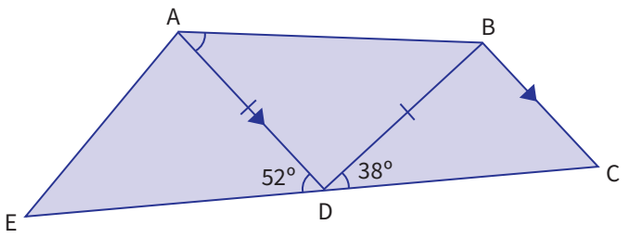
Mashq daftariga o‘ting **195–198**

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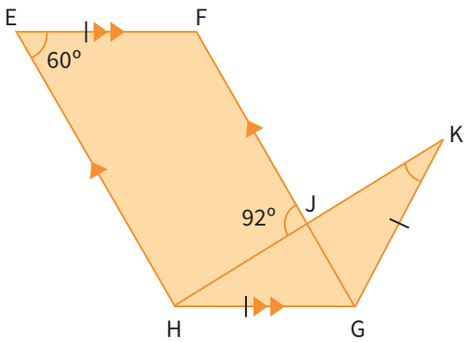
III TAKRORLASH

Geometrik shakllardagi burchaklar va doira

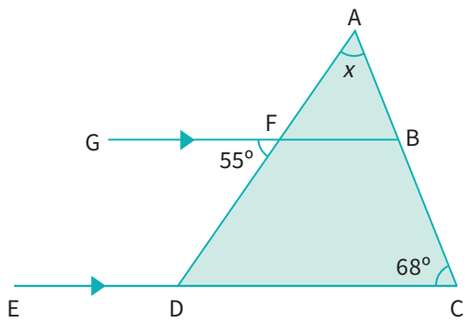
1 Quyidagi rasmda ABCD – trapetsiya, ADE esa uchburchak. EDC – to‘g‘ri chiziq va AD = BD. ∠ADE = 52° va ∠CDB = 38°. ∠DAB ni toping.



2 Rasmda EFGH parallelogramm va GHK teng yonli uchburchak tasvirlangan. ∠HEF = 60° va ∠FJH = 92°. ∠HKG ni toping.

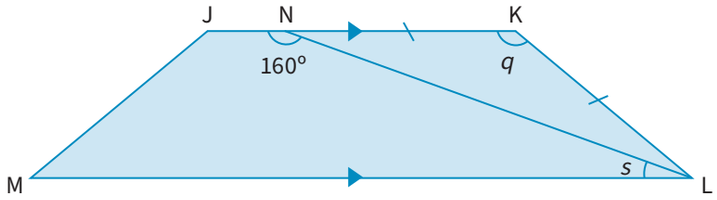


3 Rasmda ACD uchburchak tasvirlangan. ∠GFD = 55° va ∠ACD = 68°. ∠*x* ni toping.

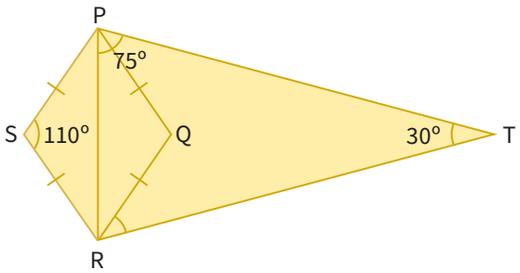


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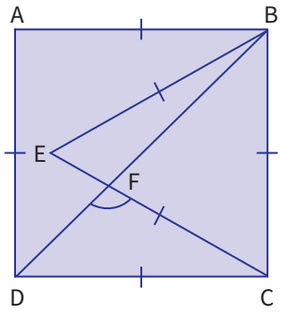
4 Quyidagi rasmda JKLM trapetsiya va LNK teng yonli uchburchak tasvirlangan. ∠JNL = 160°. ∠q va ∠s ni toping.



5 Rasmda PQRS romb va PTR uchburchak tasvirlangan. ∠RPT = 75°, ∠RSP = 110° va ∠PTR = 30°. ∠TRQ ni toping.



6 Quyidagi rasmda ABCD kvadrat, BCE muntazam uchburchak tasvirlangan. Agar BD kvadrat diagonali bo‘lsa, ∠DFC ni toping.

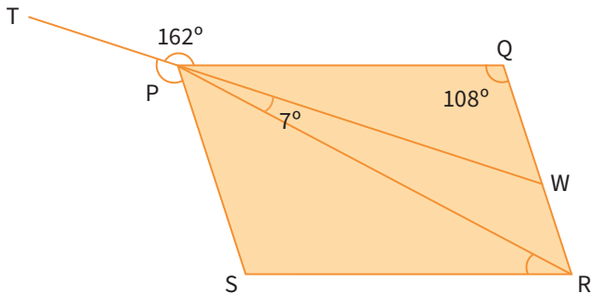


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7 Quyidagi rasmda PQRS parallelogramm, TPW to‘g‘ri chiziq tasvirlangan. Agar ∠PQR = 108°, ∠RPW = 7° va ∠QPT = 162° bo‘lsa:

a) ∠SPT ni toping.

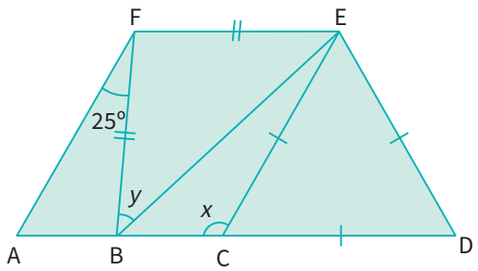
b) ∠PRS ni toping.



8 ACEF – parallelogramm, CDE – muntazam uchburchak va BEF – teng yonli uchburchak. BF = EF. ABCD – to‘g‘ri chiziq. ∠BFA = 25°.

a) ∠*x* ni toping.

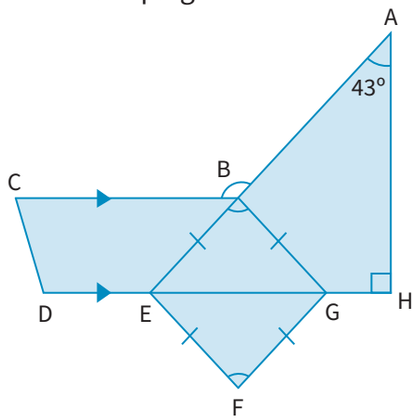
b) ∠*y* ni toping.



9 Quyidagi rasmda AEH to‘g‘ri burchakli uchburchak, BEFG romb va BCDG trapetsiya tasvirlangan. ∠HAE = 43°.

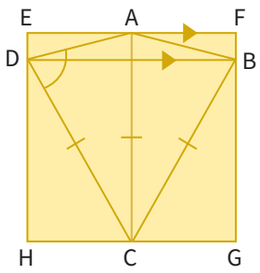
a) ∠EFG ni toping.

b) ∠CBA ni toping.



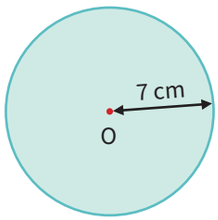
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10 Quyidagi rasmda EFGH kvadrat tasvirlangan. Agar DC = AC = BC va DB || EF bo‘lsa, ∠CDA ni toping.

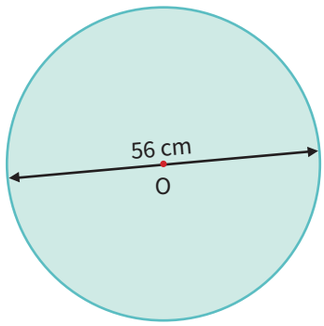


11 O – doira markazi. Doira aylanasi uzunligi va yuzini toping ($\pi = \frac{22}{7}$).

a)

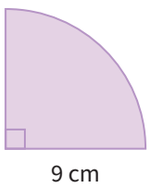


b)

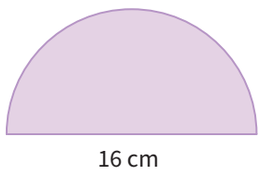


12 Chorak doira va yarim doira perimetri hamda yuzini toping ($\pi = 3{,}14$). Javobni yuzdan birlar xonasigacha yaxlitlang.

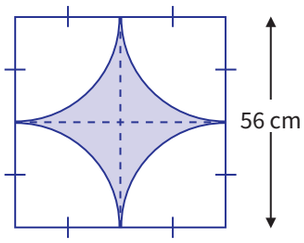
a)



b)

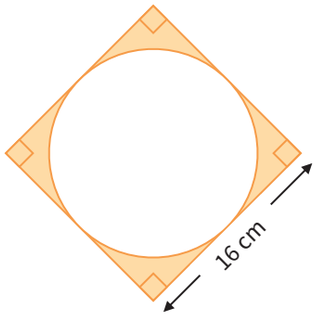


13 Rasmdagi bo‘yalgan soha yuzini toping ($\pi = \frac{22}{7}$).

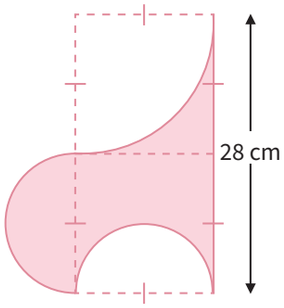


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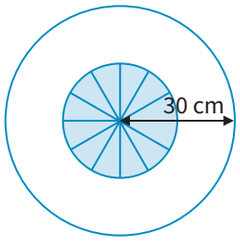
14 Rasmdagi bo‘yalgan soha yuzini toping ($\pi = 3{,}14$).



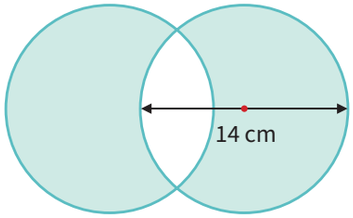
15 Bo‘yalgan soha perimetrini toping ($\pi = \frac{22}{7}$).



16 G‘ildirakning radiusi 30 cm ga teng bo‘lsa, u 20 marta to‘liq aylanganda qancha masofani bosib o‘tadi? Javobni metrda ifodalang ($\pi = 3{,}14$).

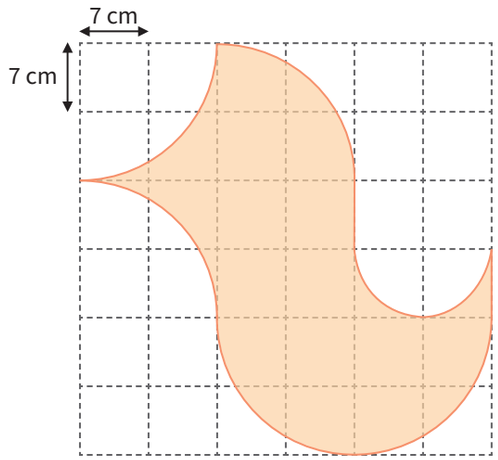


17 Rasmda kesishuvchi ikkita bir xil doira tasvirlangan. Har bir doiraning diametri 14 cm. Bo‘yalmagan sohaning yuzi esa 30 cm^2 ga teng. Bo‘yalgan soha yuzini toping ($\pi = \frac{22}{7}$).

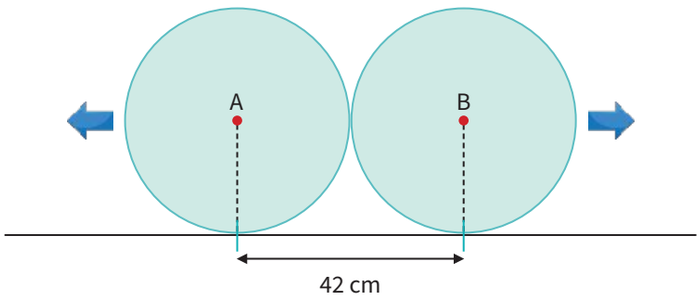


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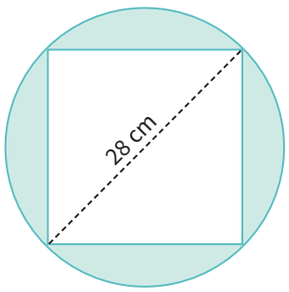
18 Rasmda chorak doira va yarim doira tasvirlangan. Bo‘yalgan soha yuzini toping ($\pi = \frac{22}{7}$).



19 Rasmda ikkita bir xil bir-biriga urinuvchi g‘ildirak tasvirlangan. A va B nuqtalar – g‘ildiraklarning markazi. Markazlari orasidagi masofa 42 cm ga teng. Agar 2 ta g‘ildirak qarama-qarshi tomonga ikki marta to‘liq aylansa, A va B markazlar orasidagi masofa qancha bo‘ladi? ($\pi = \frac{22}{7}$).



20 Rasmda aylanaga ichki chizilgan kvadrat tasvirlangan. Doira diametri 28 cm. Bo‘yalgan soha yuzini toping ($\pi = \frac{22}{7}$).



Mashq daftariga o‘ting 199–226

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