

2.4. YUZANI QANDAY O'LCHAYMIZ?

Yuza bu – sirtning qanday o'lchamga egaligini ko'rsatuvchi kattalik. Yuzaning XBSdagi birligi – metr kvadrat (m^2). Yuzaning boshqa birliklariga millimetr kvadrat (mm^2), santimetr kvadrat (cm^2) va kilometr kvadrat (km^2)lar misol bo'ladi. Bir metr kvadrat ($1 m^2$) – tomoni 1 m bo'lgan kvadratning yuzi. Maktabingiz yoki mamlakatingiz qancha maydonni egallaganini bilasizmi? Bu katta hududlar uchun qanday birliklar ishlatiladi?

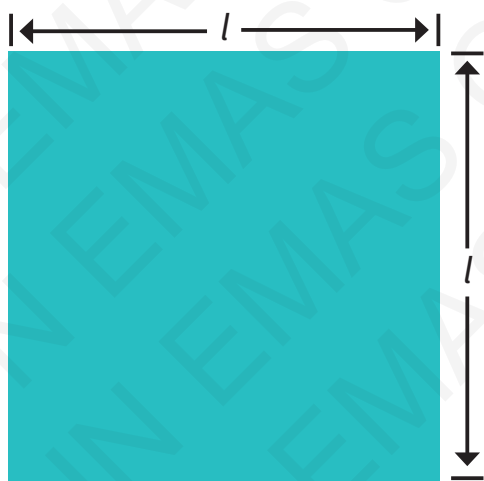


Bilimingizni sinab ko'ring

$1 m^2 = 10\,000 cm^2 = 1\,000\,000 mm^2$
Nima uchun bunday ekanligini izohlang.

SODDA GEOMETRIK SHAKLGA EGA BO'LGAN JISMNING YUZINI QANDAY TOPAMIZ?

2.17-rasmda sodda geometrik shakllarga misollar keltirilgan. Har bir sodda geometrik shaklning yuzini (S) ma'lum bir formula yordamida hisoblash mumkin.



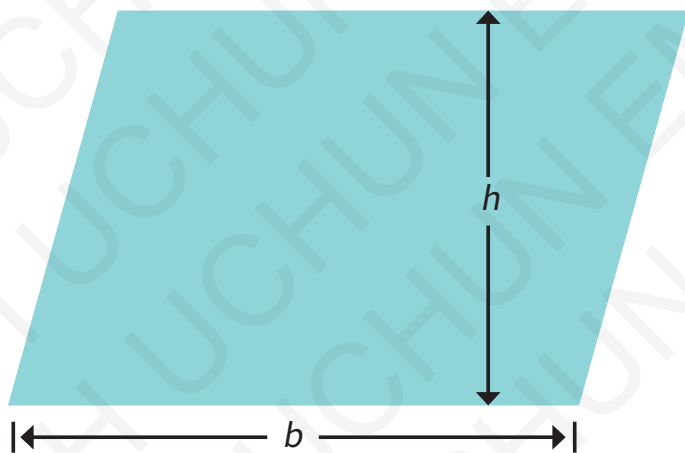
$$S = l \times l$$

▲ Kvadrat



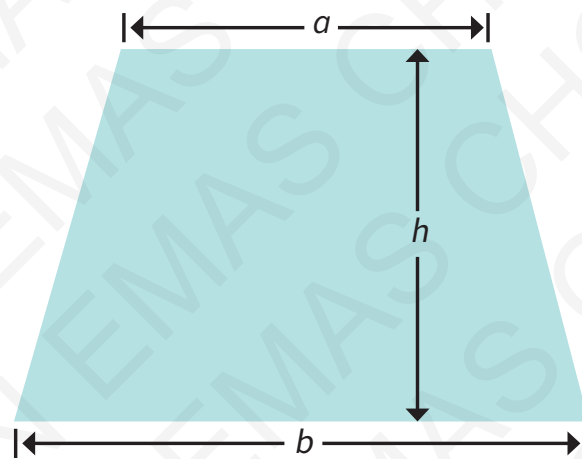
$$S = l \times b$$

▲ To'g'ri to'rtburchak



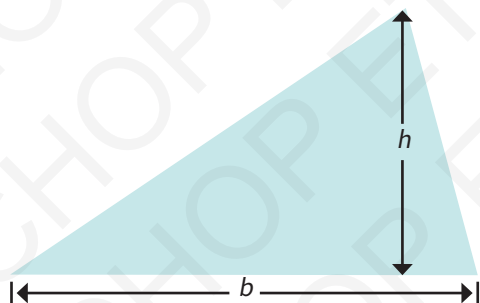
$$S = b \times h$$

▲ Parallelogramm



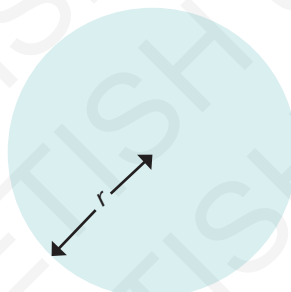
$$S = \frac{1}{2} \times (a + b) \times h$$

▲ Trapetsiya



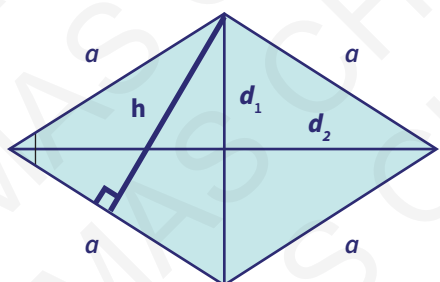
$$S = \frac{1}{2} b \times h$$

▲ Uchburchak



$$S = \pi r^2$$

▲ Doira



$$S = a \cdot h.$$

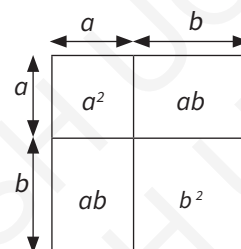
Bunda S – rombning yuzi, a – romb tomonining uzunligi, h – rombning balandligi, d_1 va d_2 – romb diagonallarining uzunligi.

◀ Romb



Ilmiy ma'lumot

Tomoni $a + b$ uzunlikka ega bo'lgan kvadratning yuzi $a^2 + 2ab + b^2$ ga teng.



2.18-rasm.

Binomial kvadrat.

2.17-rasm. Ba'zi sodda geometrik shaklga ega bo'lgan jismlarning yuzini hisoblash formulalari.

MURAKKAB GEOMETRIK SHAKLGA EGA BO'LGAN JISMNING YUZI QANDAY TOPILADI?

Murakkab geometrik shaklga ega bo'lgan jismning yuzini birlik kvadratlarga ega bo'lgan sohalar yordamida aniqlashimiz mumkin. Buning uchun biz quyidagi ketma-ketlikda ish ko'ramiz:

1

Murakkab geometrik shaklga ega bo'lgan jismning yuzini kichik birlik kvadratlarga bo'lib chiqing.

2

Yuzasi to'la bo'yalgan birlik kvadratlar sonini sanab chiqing. To'liq bo'yalmagan birlik kvadratning hech bo'lmaganda yarmi bo'yalgan bo'lsa, uni ham bitta deb hisoblang.

3

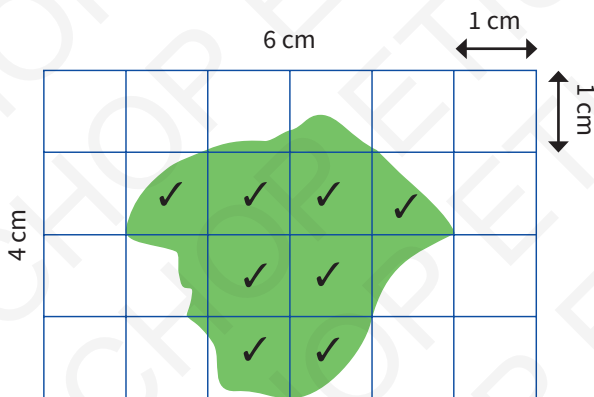
Shundan keyin yuzani taqribiy hisoblash uchun bo'yalgan birlik kvadratlar sonini bir birlik kvadratning yuziga ko'paytirish kerak bo'ladi.

2.19-rasmdagi namunaga qarang.

Bo'yalgan birlik kvadratlar soni 8 ta.

Bir birlik kvadratning yuzi $1 \text{ cm} \times 1 \text{ cm} = 1 \text{ cm}^2$ bo'ladi.

Murakkab geometrik shaklga ega bo'lgan jismning taqribiy yuzi – $S = 8 \times 1 \text{ cm}^2 = 8 \text{ cm}^2$.

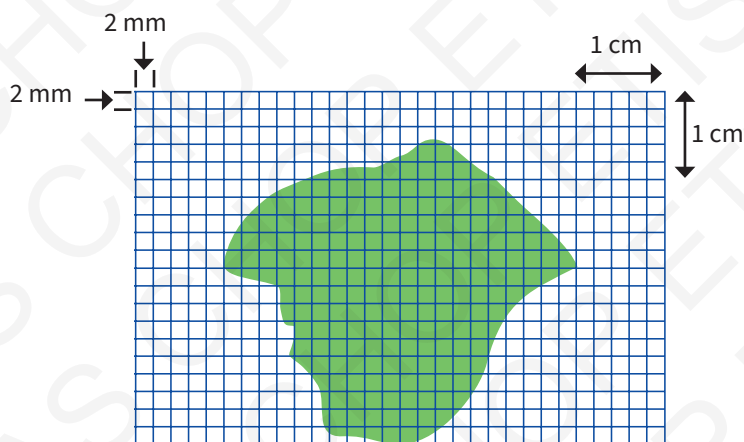


2.19-rasm. Murakkab geometrik shaklga ega bo'lgan jismning yuzini baholash uchun yuzasi 1 cm^2 ga teng bo'lgan birlik kvadratlardan foydalanish.



Bilimingizni sinab ko'ring

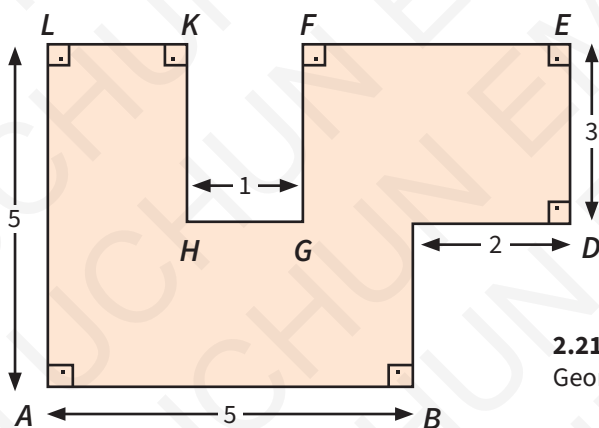
2.19-rasmdagi murakkab geometrik shaklga ega bo'lgan shakl 2.20-rasmda ko'rsatilganidek kichikroq birlik kvadratlarga bo'lindi. Uning yuzini baholang. Ushbu holda shaklning yuzini baholash kattaroq birlik kvadratlardan foydalanishga nisbatan aniqroq chiqadimi?



2.20-rasm. Murakkab geometrik shaklga ega bo'lgan jism yuzini baholash uchun yuzasi 4 mm^2 ga teng bo'lgan birlik kvadratlardan foydalanish.

2.21-rasmdagi shaklning yuzini aniqlash.

Shaklning yuzini aniqlash uchun uni qo'shimcha chiziqlar yordamida kichik to'g'ri to'rtburchaklarga ajrating. Kichik to'g'ri to'rtburchaklar tomonlarining uzunligini aniqlab, bo'laklarning yuzlarini toping. Ularning yig'indisi shaklning to'la yuziga teng bo'ladi.



2.21-rasm. Geometrik shakl.

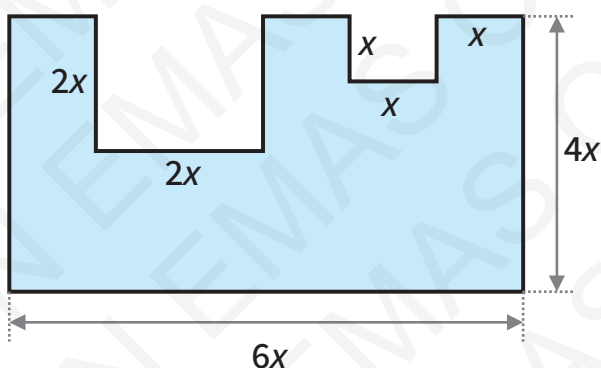


Muhim xulosalar

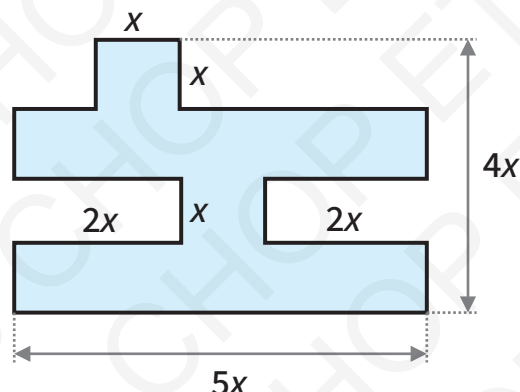
- Yuza bu – sirtning qanday o'lchamga ega ekanini ko'rsatuvchi kattalik.
- Yuzaning XBSdagi birligi – metr kvadrat (m^2).
- Sodda geometrik shaklga ega bo'lgan jismning yuzini ma'lum formula yordamida hisoblash mumkin.
- Murakkab geometrik shaklga ega bo'lgan jismning yuzini kamida yarmi bo'yalgan birlik kvadratlar sonini hisoblash orqali baholash mumkin.
- Ko'pburchakning yuzini sodda geometrik shakllarga bo'lish usuli bilan hisoblash mumkin.

? Savol va topshiriqlar

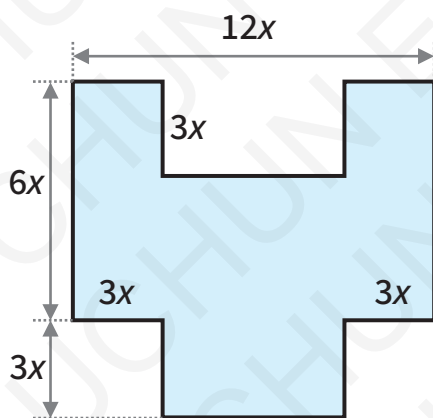
1. Yuza ham fizik kattalikmi?
2. 5 cm^2 ni millimetr kvadratlarda ifodalang.
3. 1254 mm^2 ni metr kvadratlarda ifodalang.
4. Quyidagi shakllarning yuzalarini aniqlang. Ularda $x = 1 \text{ cm}$ deb oling.



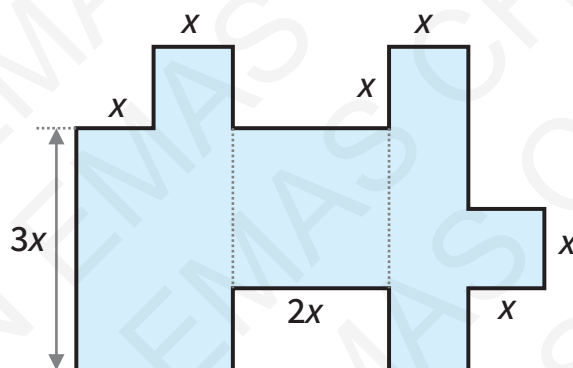
2.22-a rasm.



2.22-b rasm.



2.22-d rasm.



2.22-e rasm.

5. Hovli sathiga marmar plitalar yotqizildi. Agar bitta plitaning yuzi 600 cm^2 bo'lsa, uzunligi 20 m, eni 15 m bo'lgan hovlini qoplash uchun nechta plita kerak bo'ladi?
6. Hajmiy jismlarning sirtini qanday aniqlash mumkinligi haqida o'ylab ko'ring.