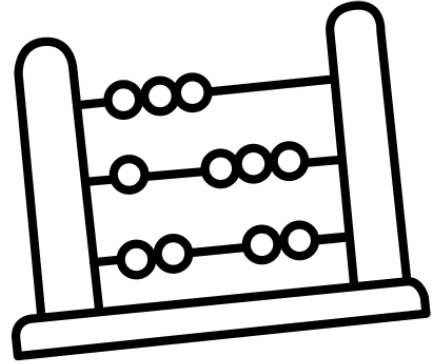


Sifooyinka prism- yada

Maths

Cutub: Wareeg, bed, iyo mug

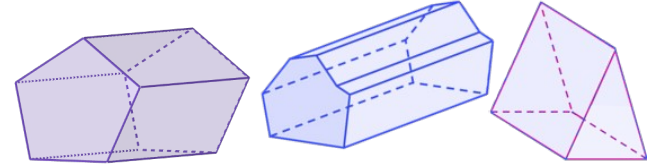


Natiijo

Waxaan qirayaa in dhammaan prism-yadu leeyihiin laba weji polygonal oo isku mid ah oo isbarbar socda (saldhigyo) oo leh wejiyo isbarbar yaal oo ku xira geesaha u dhigma ee saldhigyada.

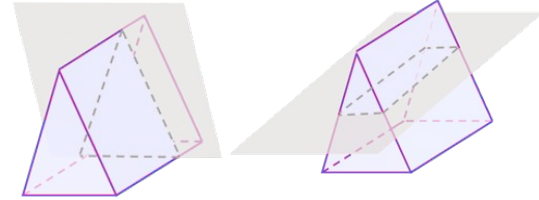
Erayada muhiimka ah

Prism waa polyhedron leh saldhig polygon ah iyo weji ka soo horjeeda oo isbarbar socda oo isku mid ah. Geesaha u dhigma ee labada polygon waxaa ku xira isbarbar yaal.



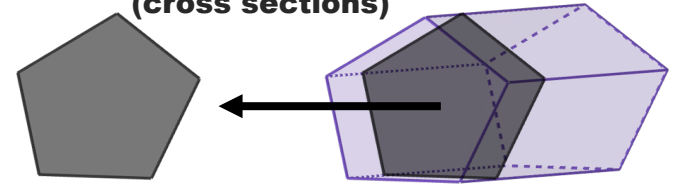
prism-yada

Goosashada isdhaafka waa weji 2D oo laga sameeyay gooyn toos ah oo dhex mara diyaarad kasta oo shay 3D ah.



**goosashada isdhaafka
(cross sections)**

Goosashada isdhaafka ee prism oo laga sameeyay isbarbar socda saldhiga waxay noqon doontaa mid isku mid ah saldhiga.



Erayada muhiimka ah

Wejiyadu waa dusha 2D ee fidsan ee qaab 3D ah.

Laba xariiq ayaa isbarbar socda haddii ay yihiin xariiqyo toosan oo had iyo jeer isku masaafo (aan eber ahayn) u kala fog.

Haddii hal qaab uu si sax ah ugu habboonaado dusha mid kale iyadoo la isticmaalayo wareeg, milicsi, ama turjumaad, markaas qaababku waa isku mid (congruent).

Uniform macneheedu waa aan isbeddelin. Prism-vadu waxay leevihiin qoosasho isdhaaf oo uniform, taas oo macneheedu vahay in goosashada isdhaafka (oo laga gooyay isbarbar socda saldhiga) ay si joogto ah ugu sii ahaato cabbir iyo qaab isku mid ah.

Sifooyinka prism-yada

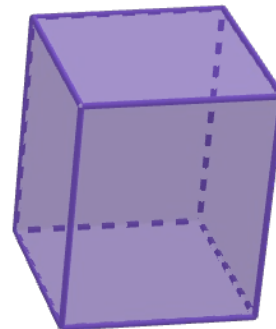
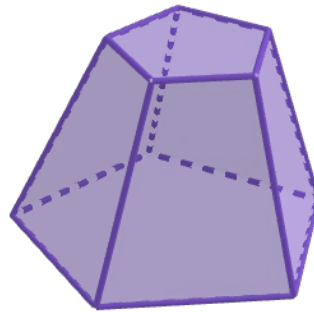
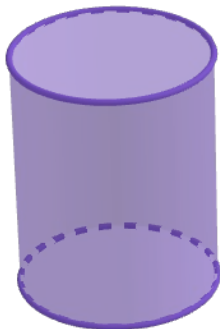
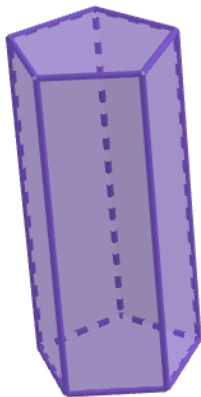
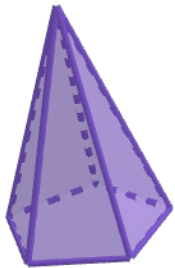


Qeexida prism



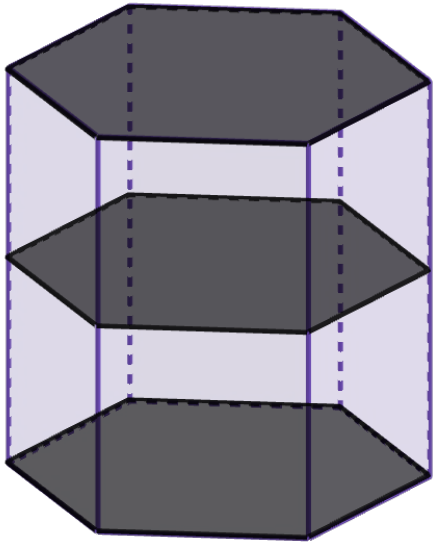
Kala saarista prism-yada

Kee ka mid ah qaababkan 3D ayaad u malaynaysaa inuu yahay prism?



Waa maxay sifooyinka ka dhigaya b iyo e inay yihiin prism-yo, halka kuwa kalena aysan ahayn?

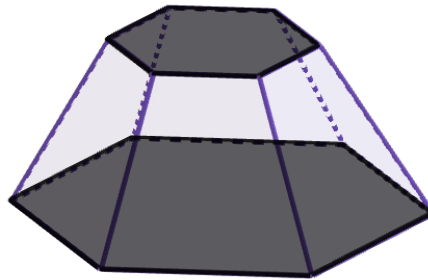
Si qaab 3D uu u noqdo prism, goosasho isdhaaf oo kasta oo laga qaado isbarbar socda saldhiga waa inay noqotaa: isku mid, qaab 2D uniform ah oo la mid ah goosasho isdhaaf kasta oo kale oo laga qaaday isbarbar socda kan hore.



Jawaabaha:

geeso badan (polygon) xagga hoose.

Geeso badan (polygon) ee ku yaal dusha sare ee qaabkan 3D ayaa aad uga yar



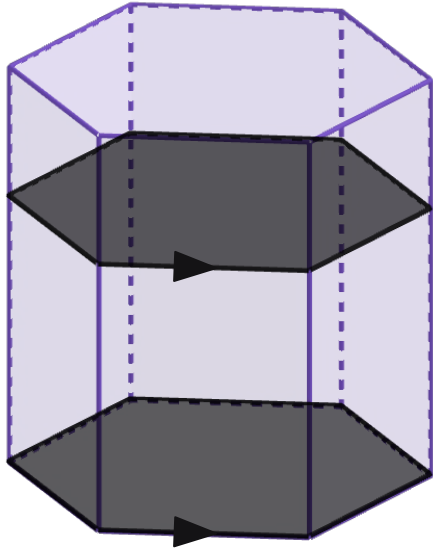
Maadaama qaababkan iskutallaabta ah ee barbar socda aysan is-ekeynin, ma aha prism.

tusaale-darro ah oo prism ah

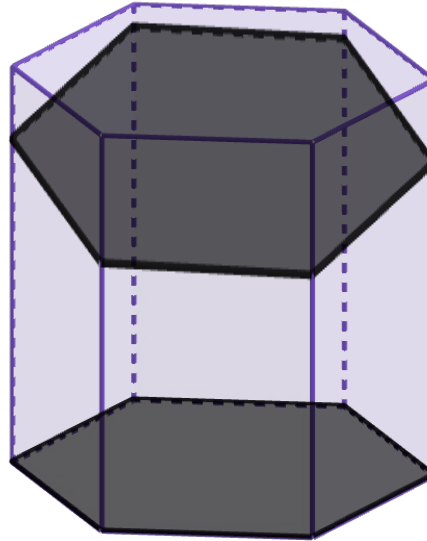
tusaale prism

Waa inay is-ekeysiiyaan oo kaliya qaybaha iskutallaabta ee barbar socda salka.

Laba qaybood oo iskutallaab ah oo aan barbar socon uma baahna inay is-ekeysiiyaan.

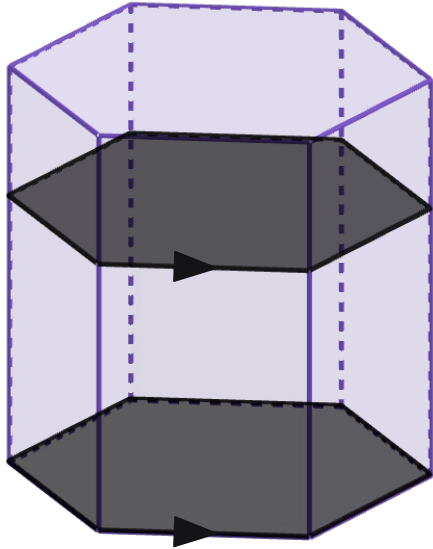


**Qaybaha
iskutallaabta ee
barbar socda
salka waa is-
ekeysyi.**

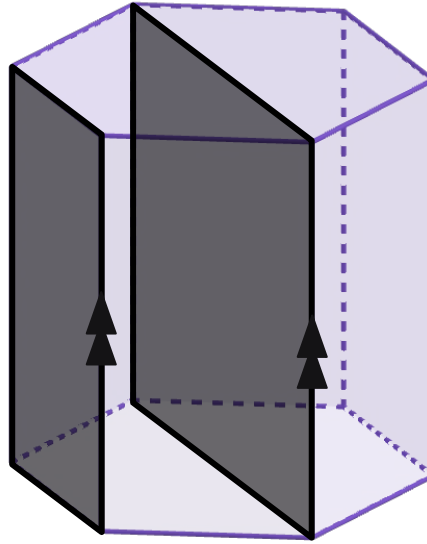


Laba-geesoodkan
(hexagons) ma aha kuwo
is-ekeysyi ah sababtoo ah
ma aha kuwo barbar
socda.

Ogsoonow in kaliya qaybaha iskutallaabta ee barbar socda salka ee hal jiho laga qaaday ay tahay inay is-ekeysiiyaan.

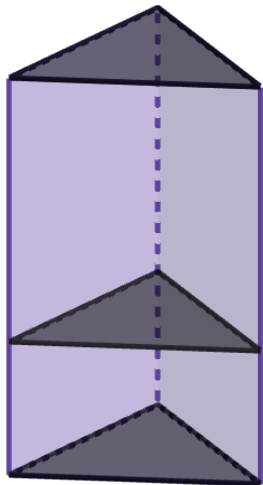


Qaybaha iskutallaabta ee barbar socda salka waa is-ekeysii.

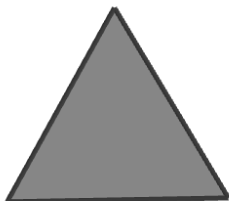


Qaybaha iskutallaabta ee jihooyinka kale uma baahna inay is-ekeysiiyaan si ay u noqdaan prism.

Qaababka iskutallaabta ee 2D waa inay ahaadaan geeso badan (polygon).



Prism-kani wuxuu leeyahay saddex-xaglo siman (equilateral triangles) oo ah geeso badan (polygon) iskutallaabtiisa.

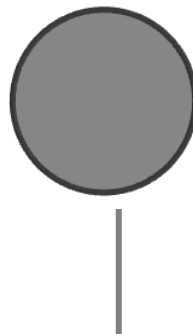


Jawaabaha:

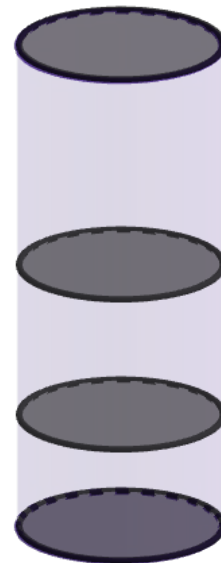
tusaale prism ah

tusaale-darro ah oo prism ah

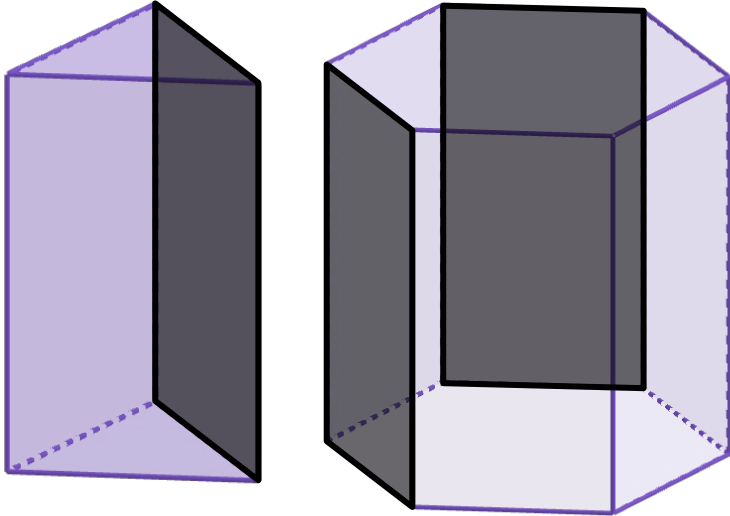
Dhululubadani waxay leedahay goobo is-ekeysii ah oo ah qaabkeeda iskutallaabta.



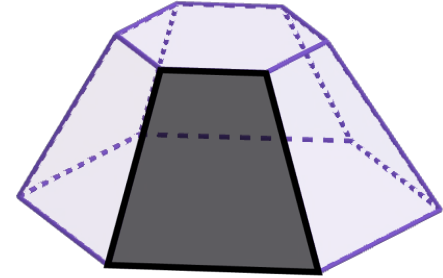
goobo (circles) ma aha geeso badan (polygons)



Dhammaan wejiyada kale ee aan iskutallaabta ahayn ee prism-ka waa inay ahaadaan barbarroole (parallelograms).
Prismyada toosan, wejigaan oo dhami waa leydi (rectangles).

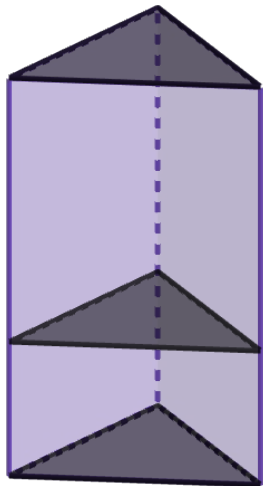


Wejigaan oo dhami waa leydi (rectangles).

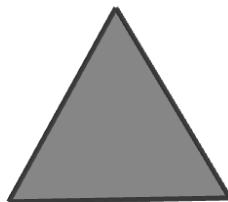


Wejigaan waa trapezia, ma aha parallelograms.

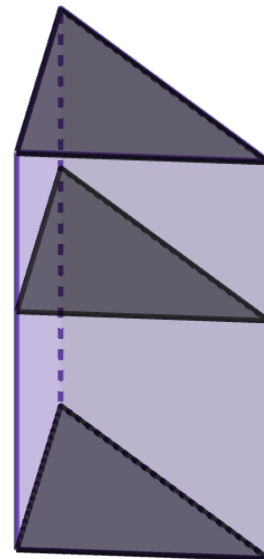
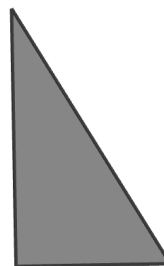
Sidaas darteed, shaygan ma aha prism.



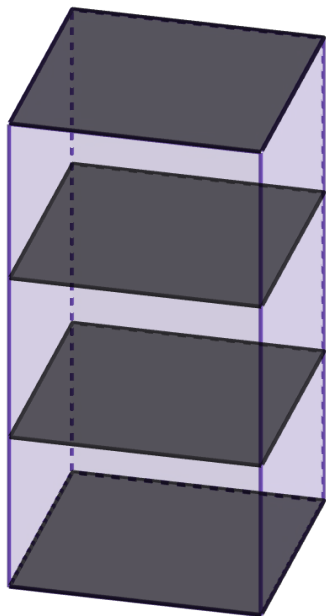
Mararka qaarkood prism-ku wuxuu yeelan karaa polygons joogto ah, sida saddexagalka siman (equilateral triangle).



Mararka qaarkoodna, prism-ku wuxuu yeelan karaa polygons aan joogto ahayn, sida saddexagalka scalene.



Si loo ahaado prism, qaybta iskutallaabtu waa inay isku mid tahay dhammaan dhererka qaabka. Kuma filna in la barbar dhigo labada weji ee darafyada ka soo horjeeda.

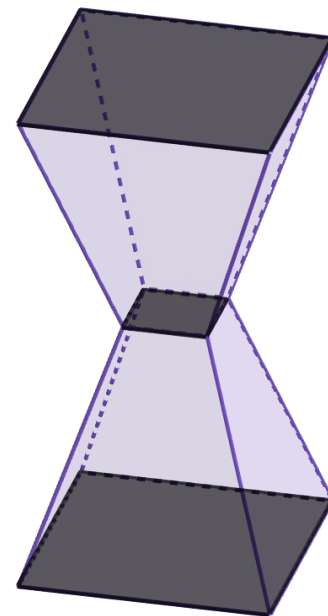


Prism-kan wuxuu leeyahay qayb iskutallaab ah oo isku mid ah. Leydiyada (rectangles) waa isku mid (congruent) dhammaan.

Shaygan wuxuu leeyahay leydi (rectangles) isku mid ah (congruent) oo ku yaal xagga sare iyo xagga hoose ee qaabka.

Hase yeeshee, leydiga (rectangle) qaybta iskutallaabta ee xarunta ayaa aad uga yar.

Sidaas darteed, kani ma aha prism.



Qaabkan 3D waa prism.

Afartan qaab ee 2D ayaa loo adeegsaday in lagu garto in qaabku yahay prism.

Ereyadaan iyo weedhahan kee baa run u ah in lagu qeexo afartan qaab ee 2D?

a

b

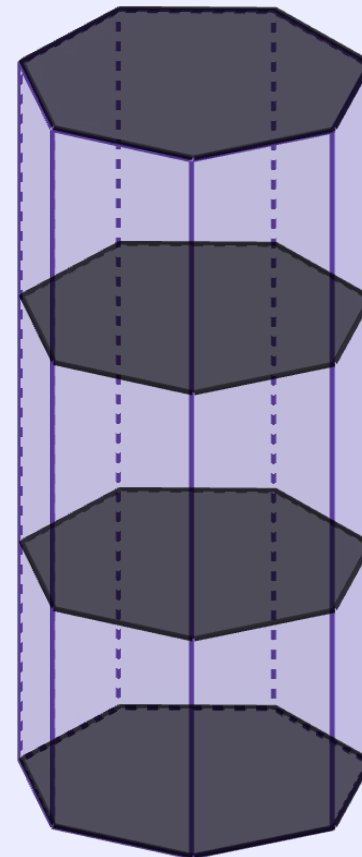
c



d

e

f



Jawaabaha:

Isra



Qaabkan 3D ma aha murabba' (prism), sababtoo ah qaybaha iskutallaabta (cross sections) dhammaantood isku mid (congruent) ma aha!

Sheegashooyinkan kee baa si fiican u qeexaya sababta Isra u khaldan tahay?



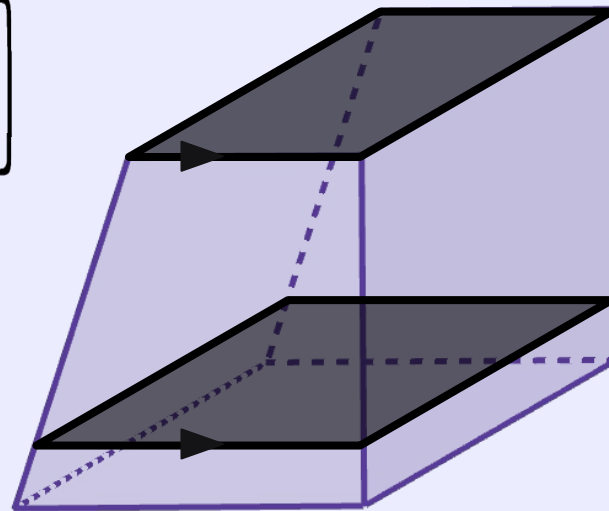
Qaybaha iskutallaabta (cross sections) is barbar socda (parallel) ma aha.



Qaybaha iskutallaabta (cross sections) looma qaadin jihada saxda ah.



Qaybaha iskutallaabta (cross sections) waa inay ku yaalliin wejiyada (faces) qaabka 3D.



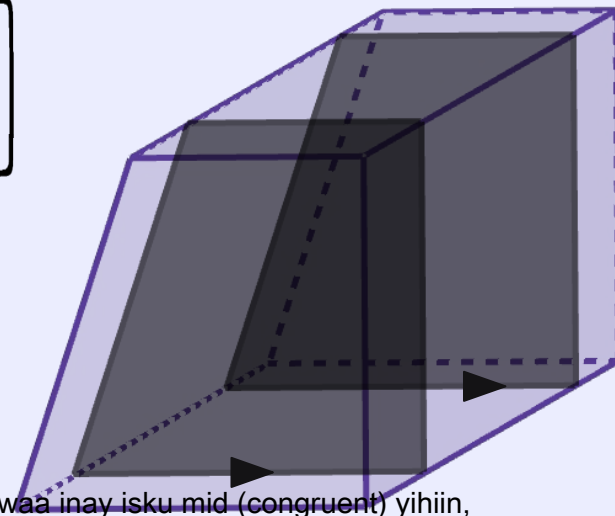
Isra



Qaabkan 3D ma aha murabba' (prism), sababtoo ah qaybaha iskutallaabta (cross sections) dhammaantood isku mid (congruent) ma aha!



Qaybaha iskutallaabta (cross sections) looma qaadin jihada saxda ah.

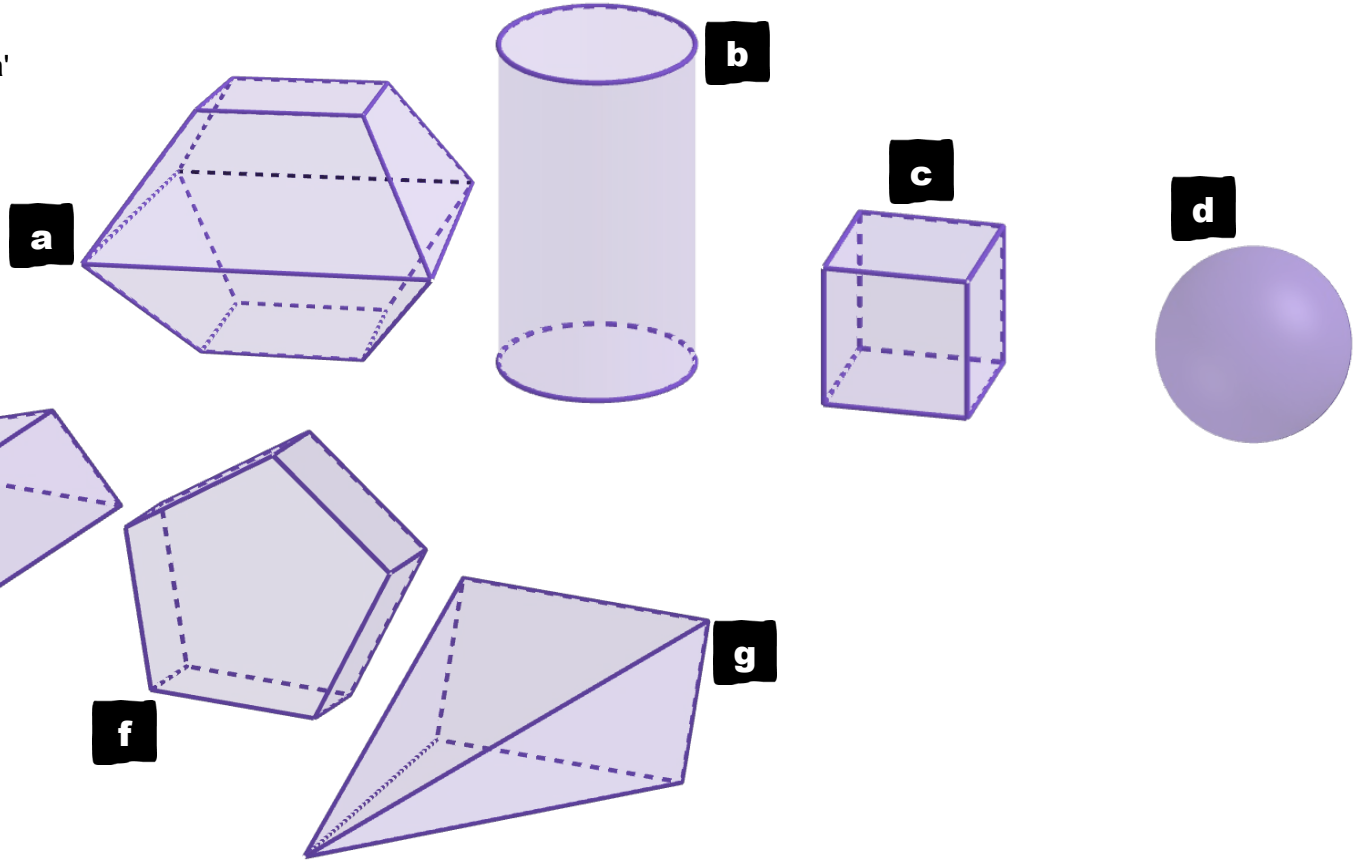


Qaybaha iskutallaabta (cross sections) ee is barbar socda (parallel) ee murabba' (prism) waa inay isku mid (congruent) yihiin, laakiin kaliya hal jihada qaabka.

Haddii laba qaybood oo iskutallaab ah oo is barbar socda (parallel) aysan isku mid (congruent) ahayn, qaabku wali wuxuu noqon doonaa murabba' (prism) haddii dhammaan qaybaha iskutallaabta ee geesoolayaasha (polygonal) ay isku mid (congruent) yihiin jihada kale.

Qaybaha iskutallaabta (cross sections) waxay ku yaalliin meel kasta oo qaabka 3D ah, ma aha oo kaliya wejiyada (faces).

1) Kuwaas kee baa u dhigma
astaamaha (properties) murabba'
(prism)?



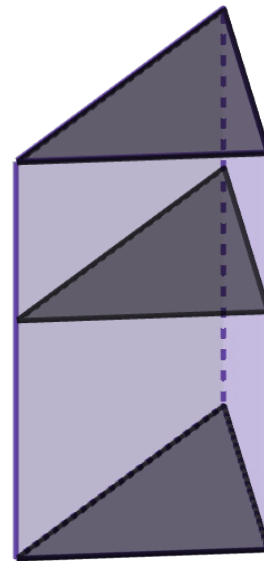
2) Ku buuxi jumladaha erayada maqan si aad u sharaxdo waxa murabba' (prism) yahay.

Murabba' (prism) waa shay ah.

Dhammaan qaybihiisa iskutallaabta (cross sections) ee 2D waa inay ahaadaan .

Ugu yaraan hal jihada, dhammaan qaybaha iskutallaabta (cross sections) waa inay

is barbar socdaan (parallel) midba midka kale.



2D

wareeg (circular)

isbar-barocod (parallel)

isku mid ah (congruent)

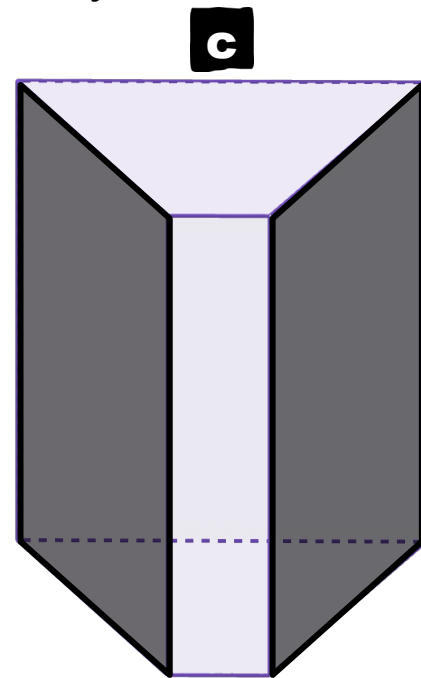
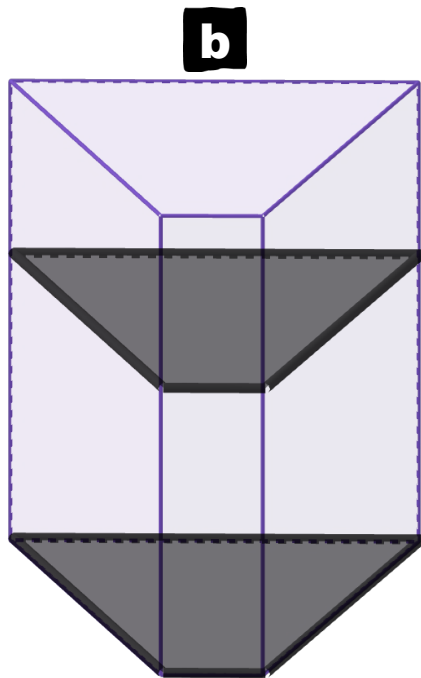
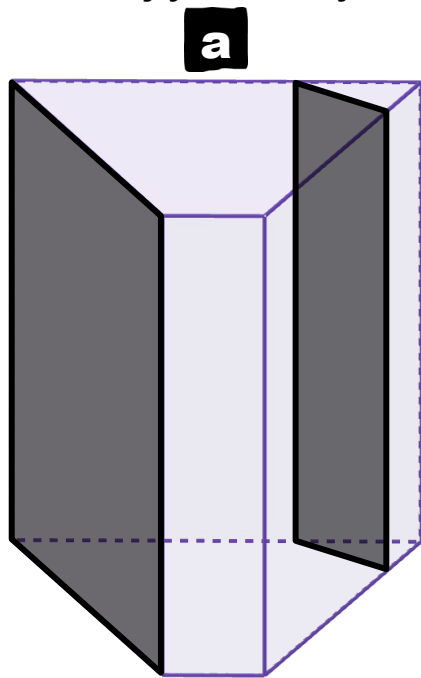
3D

geeso badan (polygons)

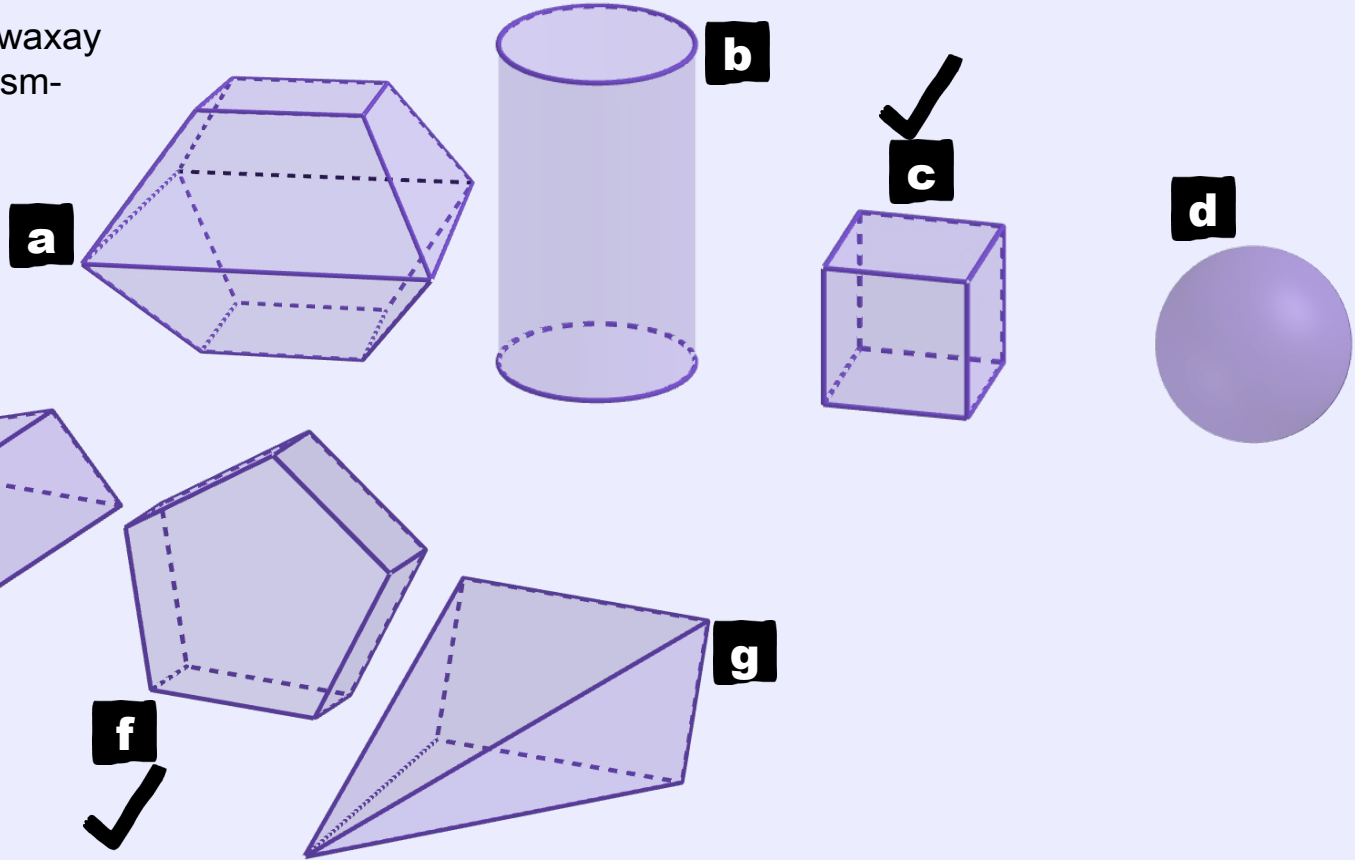
isku qumman (perpendicular)

isku masaafo (equidistant)

3) Jaantusyadani dhamaantood waxay muujinayaan isla prism-ka. Kee jaantusyada ayaa muujinaya qaybaha isgoysyada saxda ah ee ka caawiya in la muujiyo inuu yahay prism? Sharax sida aad u ogaatay.



1) Kee ka mid ah kuwani waxay u dhigmaan sifooyinka prism-ka?



2) Dhammeystir jumladaha erayada la bixiyay si aad u sharaxdo waxa prism-ku yahay.

Prism-ku waa shay . 3D

Dhammaan qaybihiisa isgoysyada 2D waa inay ahaadaan .

geeso badan (polygons)

Ugu yaraan hal jiho, dhammaan isgoysyada waa inay

isbar-barocod
(parallel)

isku ahaadaan.

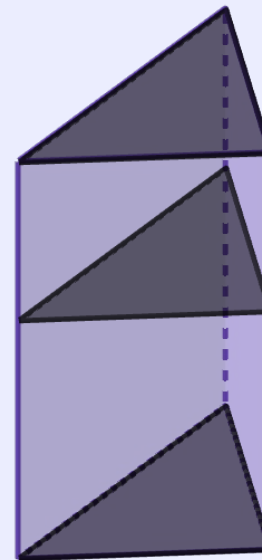
isku mid ah (congruent)

2D

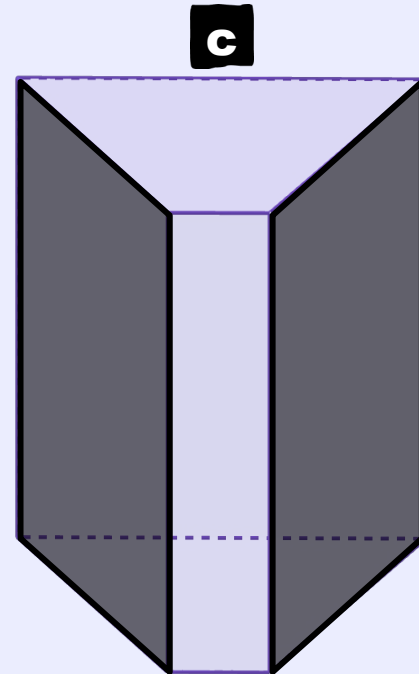
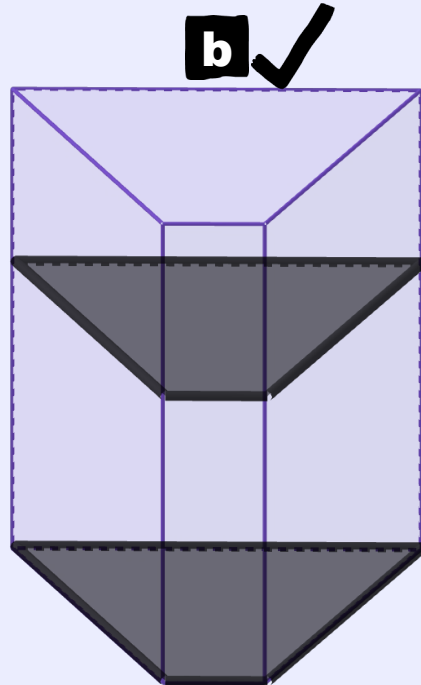
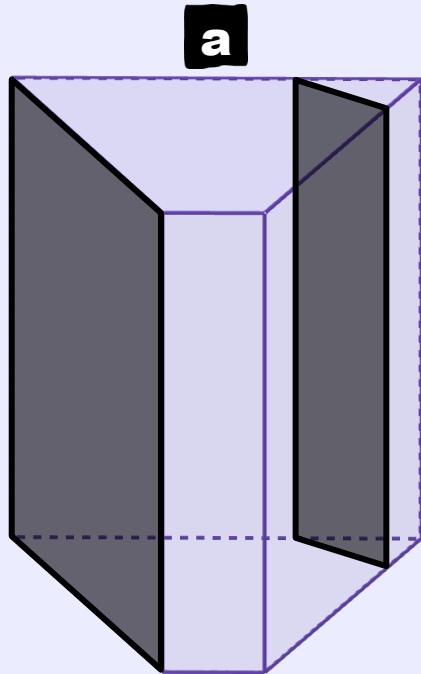
wareeg (circular)

toosan (perpendicular)

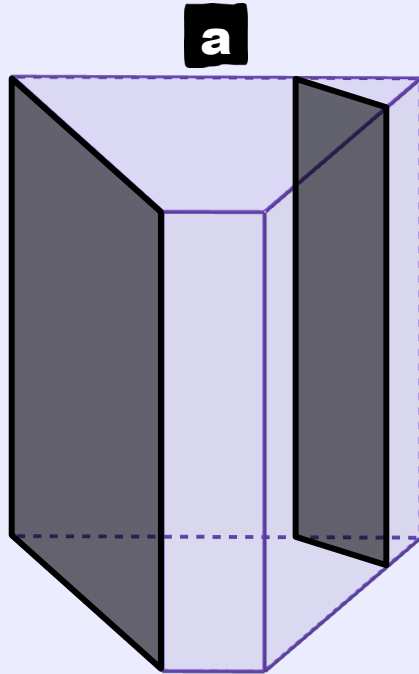
isle'eg (equidistant)



3) Jaantusyadani waxay dhammaan muujinayaan isla prism-ka. Jaantusyadee ayaa muujinaya qaybaha iskutallaabta (cross sections) ee saxda ah ee kaa caawinaya inay muujiso inuu yahay prism? Sharax sida aad u ogaatay.



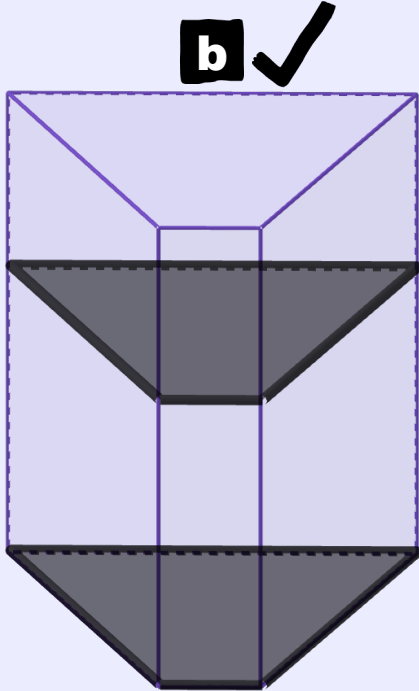
3) Jaantusyadani waxay dhammaan muujinayaan isla prism-ka. Jaantusyadee ayaa muujinaya qaybaha iskutallaabta (cross sections) ee saxda ah ee kaa caawinaya inay muujiso inuu yahay prism? Sharax sida aad u ogaatay.



Qaybahan iskutallaabta (cross sections):
waa geeso badan (polygons)
is barbar socdaan (parallel)
isku mid ma aha (not congruent)

Sidaa darteed, qaybahan iskutallaabtu kuma caawiyaan muujinta inuu kani yahay prism.

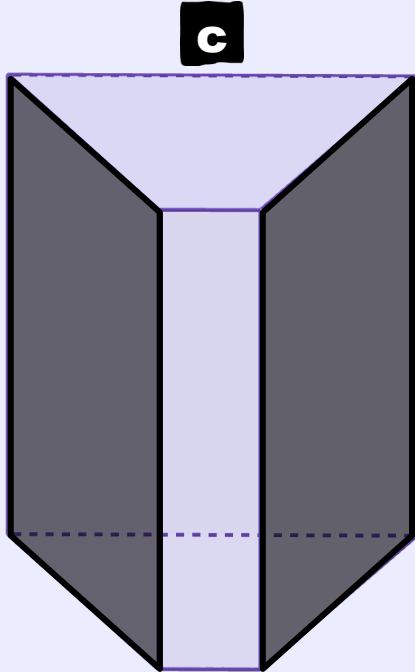
3) Jaantusyadani waxay dhammaan muujinayaan isla prism-ka. Jaantusyadee ayaa muujinaya qaybaha iskutallaabta (cross sections) ee saxda ah ee kaa caawinaya inay muujiso inuu yahay prism? Sharax sida aad u ogaatay.



Qaybahan iskutallaabta (cross sections):
waa geeso badan (polygons)
is barbar socdaan (parallel)
isku mid yihiin (congruent)

Sidaa darteed, qaybahan iskutallaabtu waxay caawiyaan muujinta inuu kani yahay prism.

3) Jaantusyadani waxay dhammaan muujinayaan isla prism-ka.
Kee ka mid ah jaantusyada ayaa muujinaya goosashada saxda ah ee ka caawinaysa in la muujiyo in ay tahay prism? Sharax sida aad u ogaatay.



Goosashadan (cross sections):
waa geesoolayaal (polygons)
isku barbar ma aha
waa isku mid (congruent)

Sidaas darteed, goosashadani kama caawinayaan in la muujiyo in tani tahay prism.

Sifooyinka prism-yada



Qeexida prism-ka



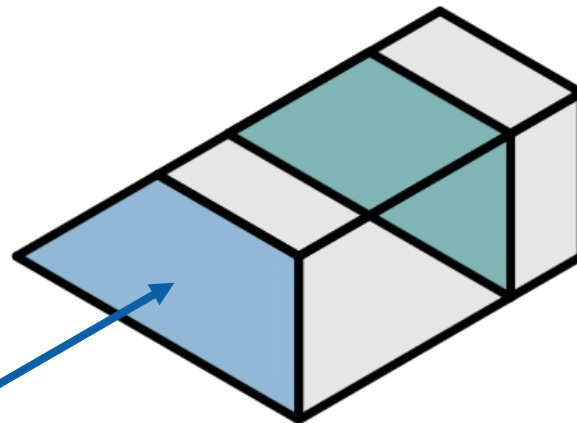
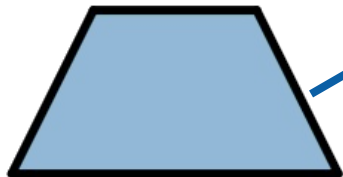
Kala saarista prism-yada

Sidee u magacaabnaa noocyada kala duwan ee prism-ka?

Waxaan qaadanaa wejiga ama goosashada (cross section) ee isku mid ah dhammaan qaabka, oo waxaan eegnaa qaabkiisa iyo sifooyinkiisa.

Tani waa afar geesle (quadrilateral).

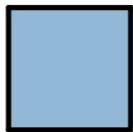
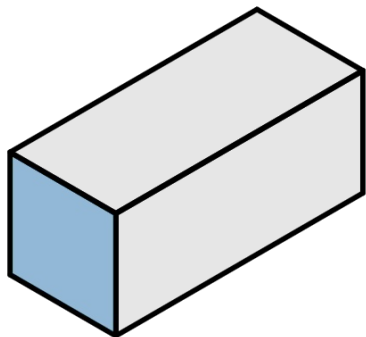
Gaar ahaan, waa trapezium.



Sidaas darteed, waxaan ugu yeeri karnaa tani: prism afar geesle (quadrilateral) ama prism ku salaysan trapezium

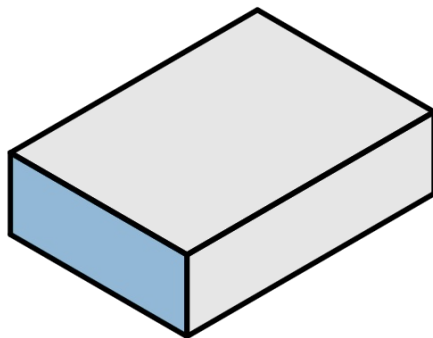
Magaca prism-ka sidoo kale badanaa wuxuu qeexaa in geesoolaha goosashada uu yahay mid joogto ah iyo in kale.

Marka laga hadlayo afar geeslayaasha, waxaan leenahay:



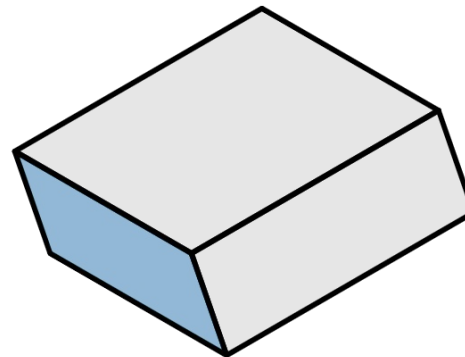
sal-labo-geesle (square-based)

murabba (prism)



leydi (rectangular)

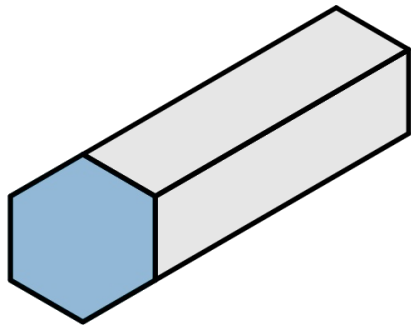
murabba (prism)



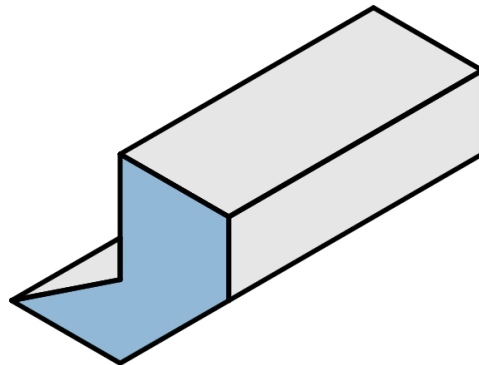
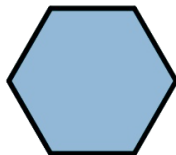
murabba sal-bar-bar (parallelogram-based prism)

Magaca murabbada wuxuu inta badan caddeeyaa in geeso-goynta (cross sectional polygon) ay tahay mid joogto ah (regular) iyo in kale.

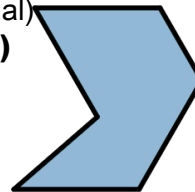
Geeso-goyn kale (polygons), waxaan leenahay tusaalooyin, sida:



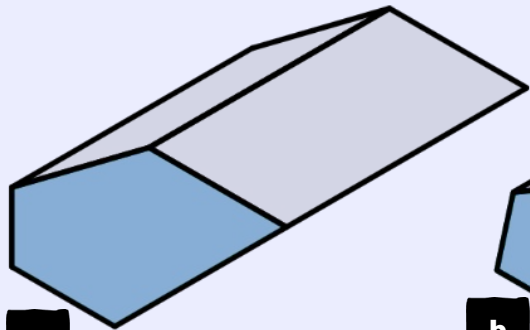
lix-geesle joogto ah (regular
hexagonal)
murabba (prism)



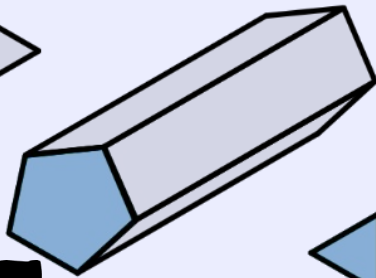
lix-geesle (hexagonal)
murabba (prism)



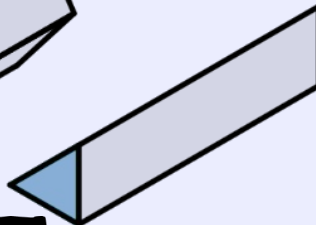
Isku-dhig murabbada (prism) magaceeda.



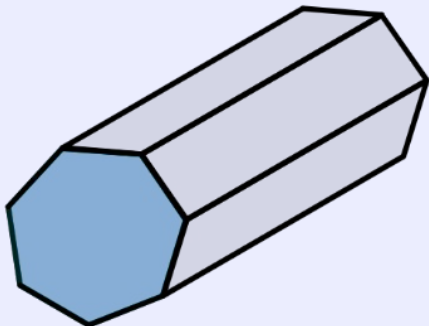
a



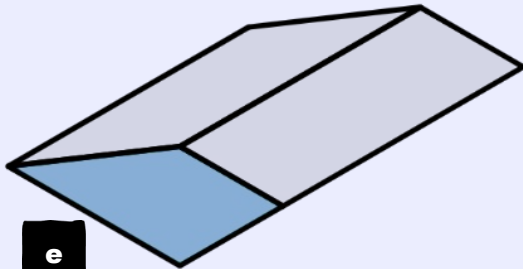
b



c



d



e

1 murabba toddoba-geesle joogto ah (regular heptagonal prism)

2 murabba shan-geesle (pentagonal prism)

3 murabba trapezium (trapezium prism)

4 murabba shan-geesle joogto ah (regular pentagonal prism)

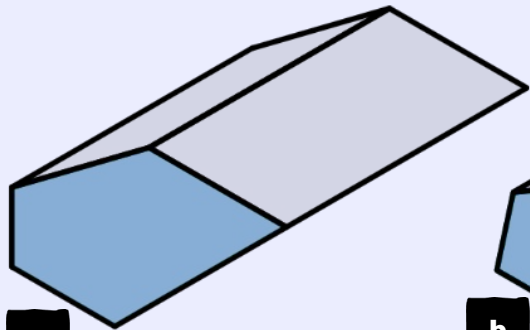
5 murabba saddex-geesle siman (equilateral triangle prism)

Kala-saarista murabbada (Categorising prisms)

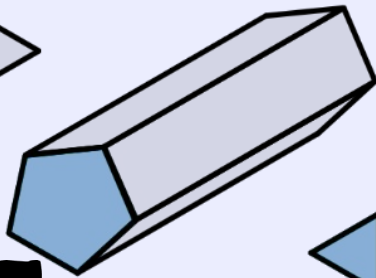


Hubi

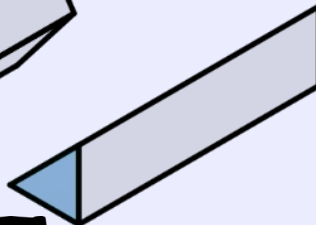
Isku-dhig murabbada (prism) magaceeda.



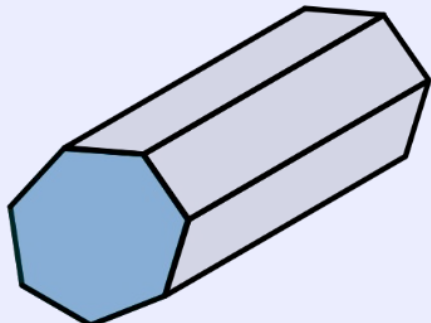
a



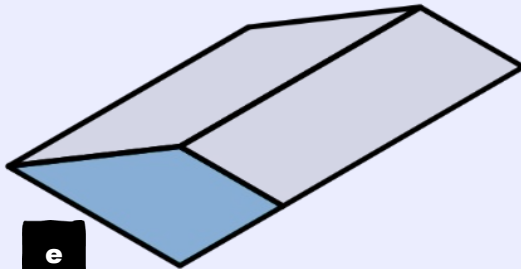
b



c



d



e

1

murabba toddoba-geesle joogto ah (regular heptagonal prism)

d

2

Prism shan-gees (pentagonal prism)

b

3

Prism trapezium (trapezium prism)

e

4

Prism shan-gees joogto ah (regular pentagonal prism)

a

5

Prism saddex-gees siman (equilateral triangle prism)

c

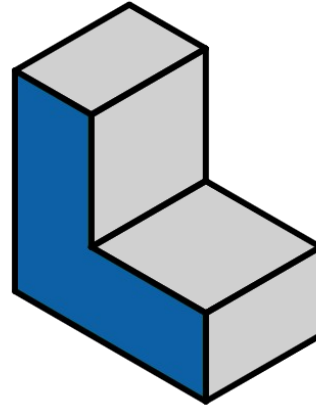
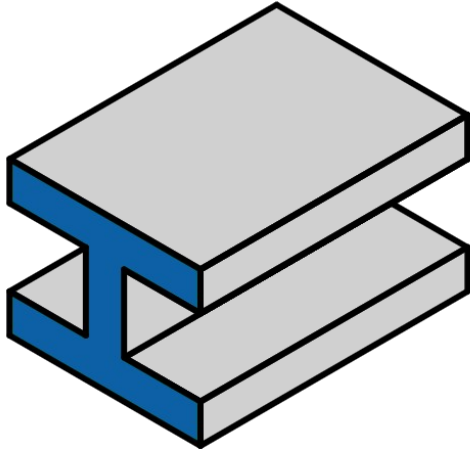
Kala-saarista prism-yada



Sharaxaad

Prism-yada waxaa loo isticmaalaa meelo kala duwan, oo ay ku jiraan dhismaha.

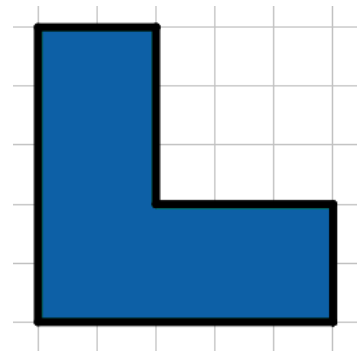
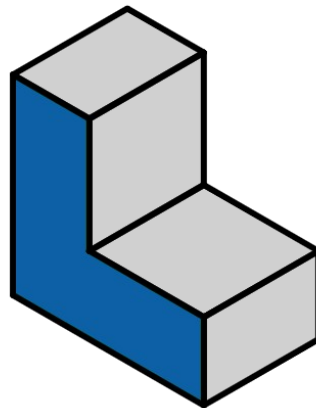
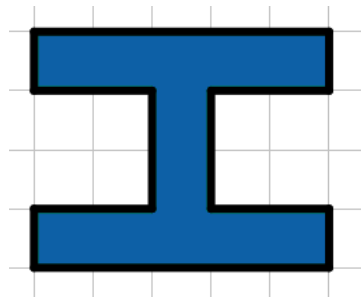
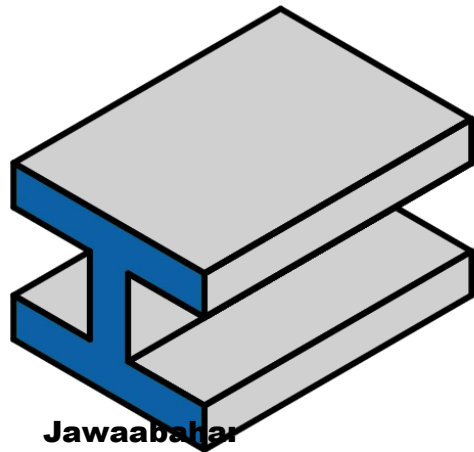
Waa kuwan tusaalayaal caadi ah.



Jawaabaha:
Marka la eego dhismaha, I-beam iyo L-frame waa magacyada ay doorbidaan.

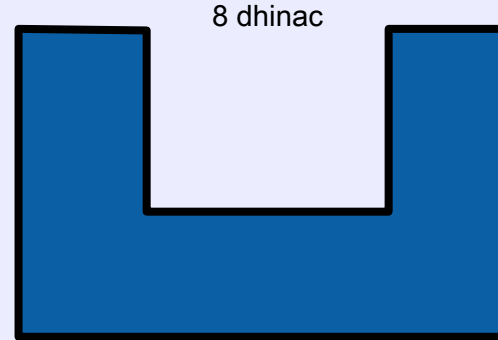
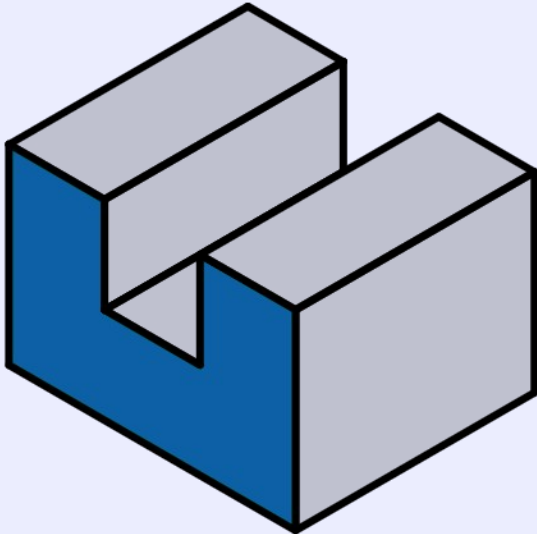
Hase yeeshe, waxaa sidoo kale lagu tilmaami karaa iyadoo la adeegsanayo geesoolayaasha isgoysyada (cross sectional polygon).

Haddii tirada dhinacyada prism-ka ay adag tahay in la arko aragtida 3D, waxaad had iyo jeer qori kartaa geesoolaha isgoysyada 2D marka hore oo tiri tirada dhinacyada.

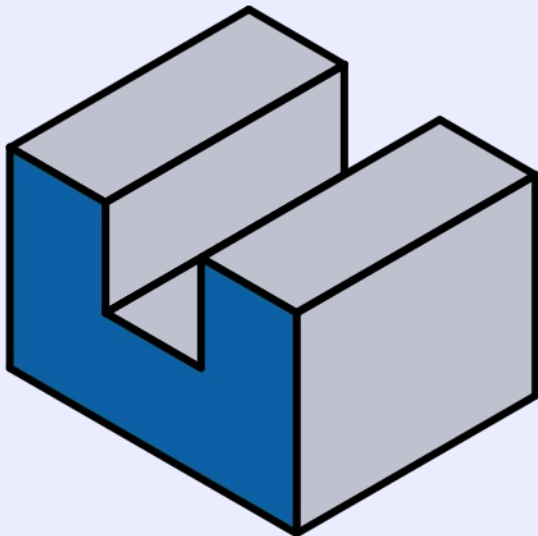


Kala-saarista prism-yada

Adigoo qoraya geesoolaha isgoysyada ee prism-kan, tiri inta dhinac ee uu leeyahay geesoolaha isgoysyada.

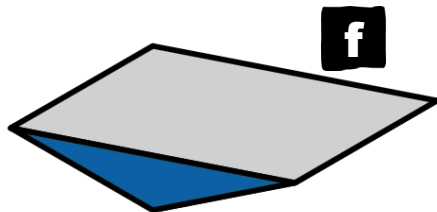
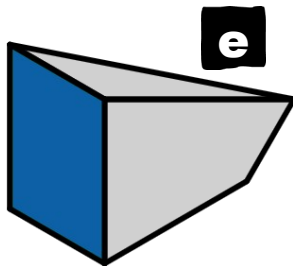
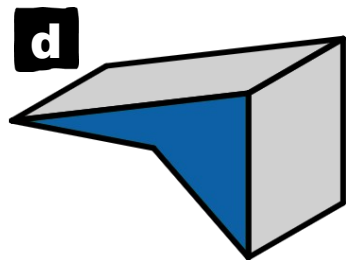
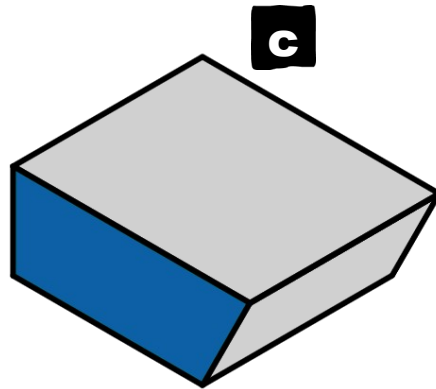
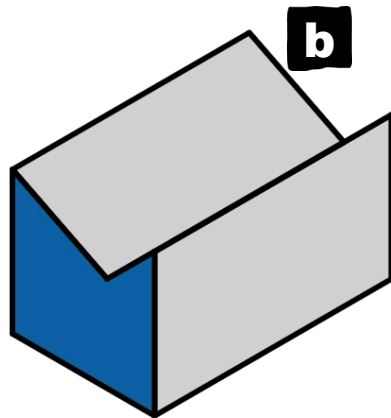
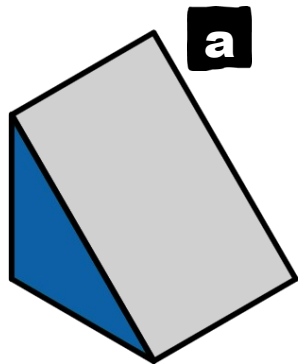


Waa maxay magaca priism-kaan?



- a** Priismka U-beam
- b** priismka lix-geesoodka (hexagonal prism)
- c** priismka lix-geesoodka joogtada ah (regular hexagonal prism)
- d** priismka siddeed-geesoodka (octagonal prism) ✓
- e** priismka siddeed-geesoodka joogtada ah (regular octagonal prism)

1) Dhig qaababkan 3D-ga ah safka saxda ah ee shaxda.



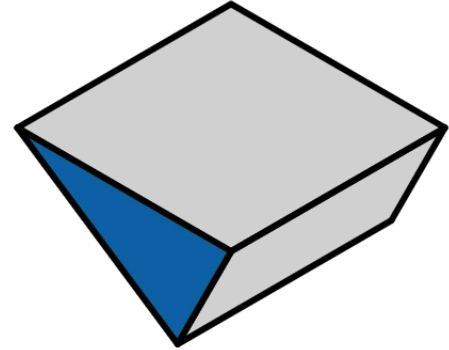
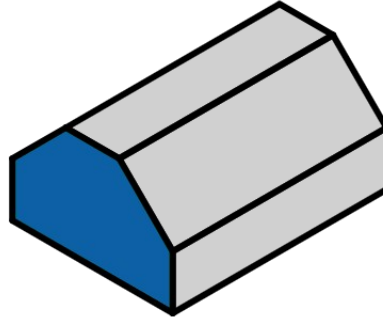
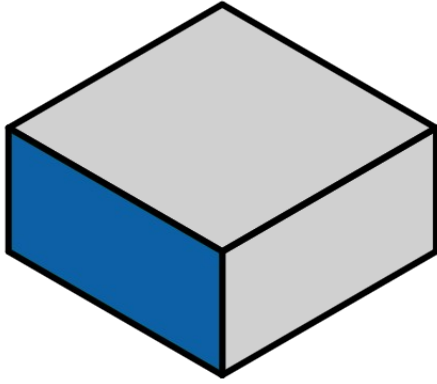
priismka saddex-geesoodka
(triangular prism)

priismka afar-geesoodka
(quadrilateral prism)

priismka shan-geesoodka
(pentagonal prism)

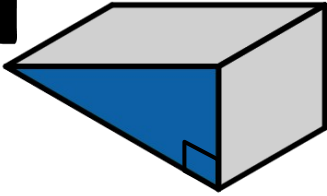
ma aha priism

2) Waraaqaha shaxanka (squared paper), sawir qaabka isgoysyada (cross sectional polygon) ee priism kasta.

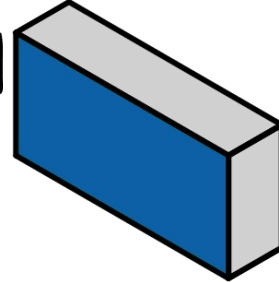


3) Qor magac ku habboon priism kasta.

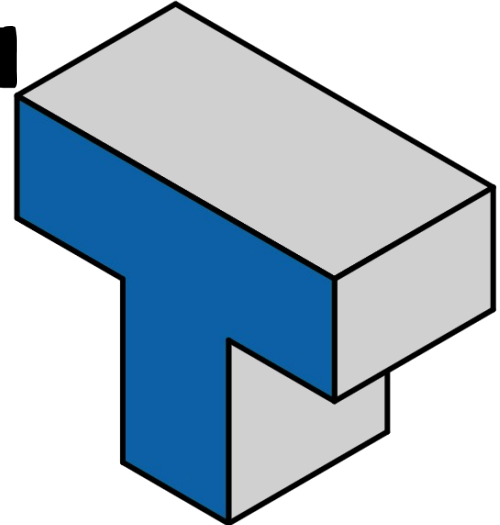
a



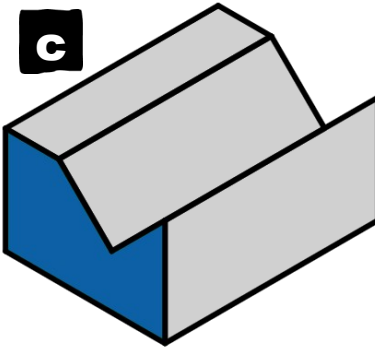
b



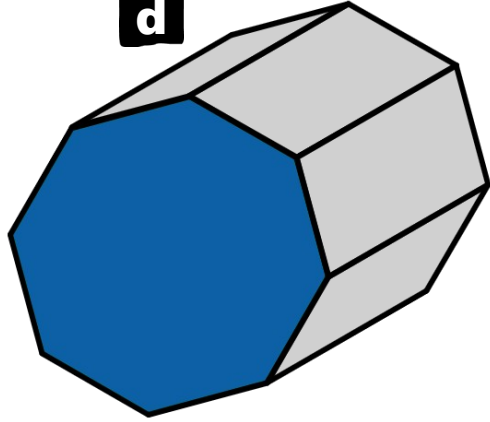
e



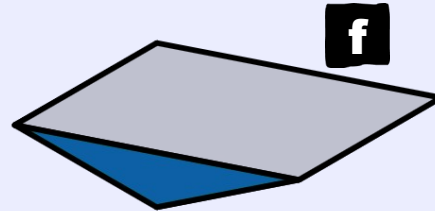
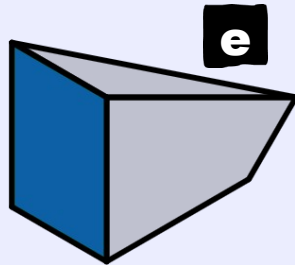
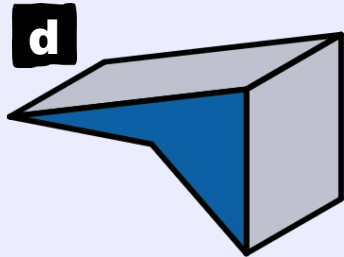
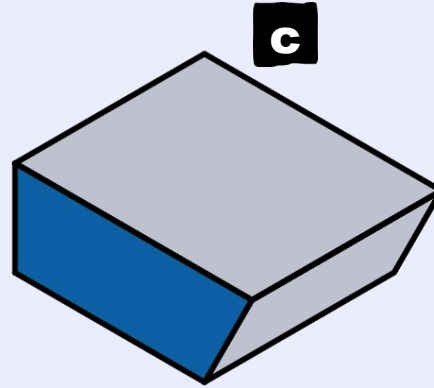
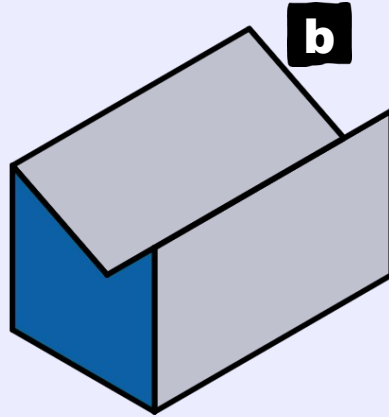
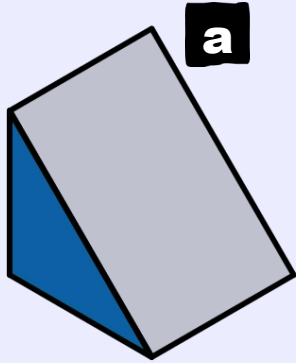
c



d



1) Dhig qaababkan 3D ee safka saxda ah ee shaxda.



priismka saddex-geesoodka
(triangular prism)

a f

priismka afar-geesoodka
(quadrilateral prism)

c d

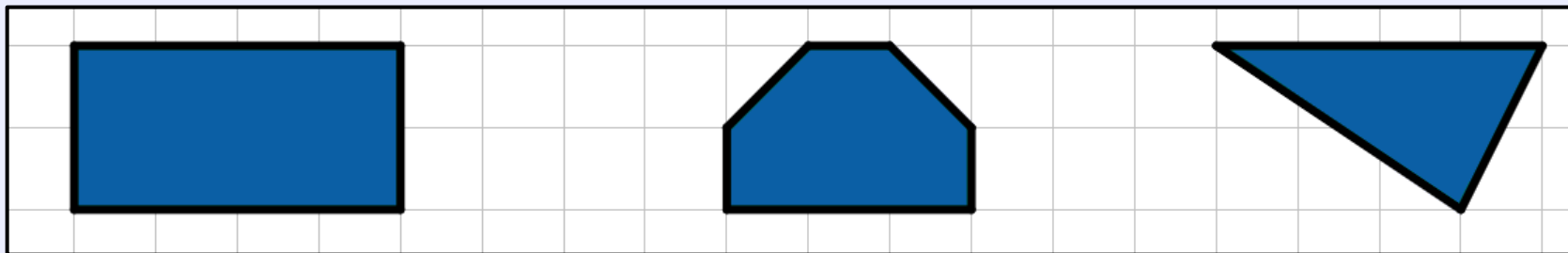
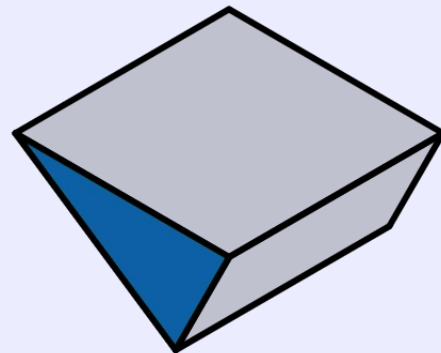
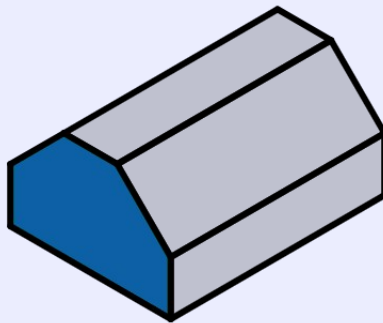
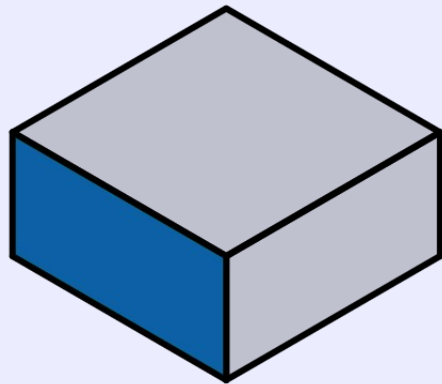
priismka shan-geesoodka
(pentagonal prism)

b

ma aha priism

e

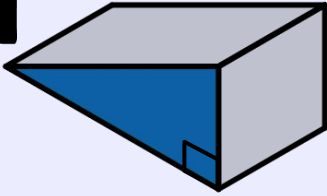
2) Waraaqo laba jibaaran, sawir qaabka isgoyska (cross section) ee mid kasta oo ka mid ah prism-yadan.



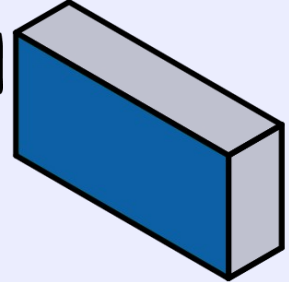
Kuwani waa qaabab qiyaas ah - haddii sawirkaagu wax yar ka duwan yahay, waa ok.

3) Qor magac ku habboon prism kasta.

a



b



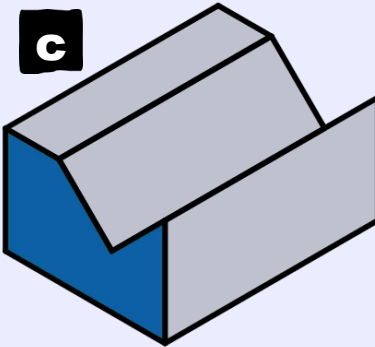
a

prism saddexagal
prism saddexagal xagal-qumman

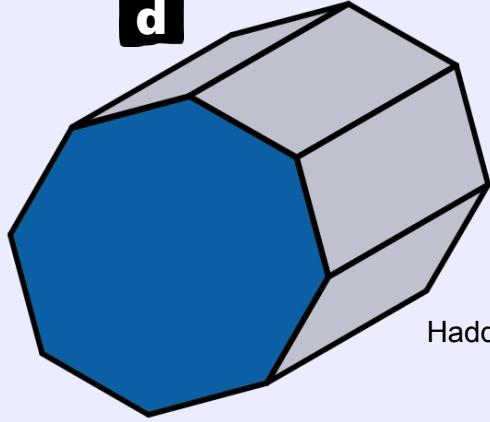
b

prism afar-geesood
prism leydi

c



d



c

prism hexagonal
prism hexagonal aan joogto ahayn

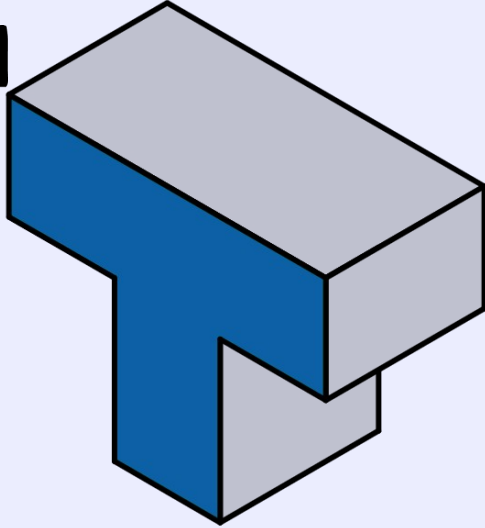
d

prism sideed-gees
prism sideed-gees joogto ah

Haddii aad la timid jawaab ka duwan, ma caddeyn kartaa?

3) Qor magac ku habboon prism kasta.

e



e

prism sideed-gees
prism sideed-gees aan joogto ahayn

Haddii aad la timid magac ka duwan prism kasta, ma caddeyn kartaa?

Fahanka sifooyinka prism-ka wuxuu fududeeyaa in la garto prism-yada iyo kuwa aan ahayn.

Ogaanshaha in prism-yada badanaa lagu garto qaabka iyo sifooyinka geesoolaha isgoyska (cross-sectional polygon) wuxuu u oggolaanayaa magacaabista iyo kala saarista prism-yada.

Fahamka in ay jiraan laba nooc oo prism (prism) ah: mid toosan (right) iyo mid qalloocan (oblique), wuxuu ballaariyaa fahamka waxa loo aqoonsan karo prism (prism).