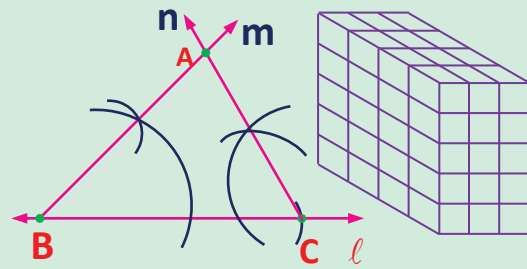


CUTUBKA 6aad



JOOMETARIGA IYO CABBIRAADA

Maxsuulka Cutubka:

Cutubkan dabadii, ardaydu waxay awoodi doontaa;

- *Soocidda xaglaha*
- *cadaynta saddex-xagalada isku sargo'an*
- *dhisidda saddexallada*

Tusmooyinka ugu muhiimsan:

6.1 Xaglaha

6.2 Dhisidda saddex -xagallada

6.3 Saddex -xagallada isku sargo'an

6.4 Cabbiraada

Hubin

Soo koobidda cutubka

Layliska nakhtiinka

HORDHAC

Cutubkan waxaynu ku naqtiimi doonaa waxyaabihii aad ku soo barateen fasalka 5^{aad} ee ku saabsanaa xaglaha, qeexida xaglaha lammaanayaasha iyo barashada qaar ka mid ah erey bixinada aasaasiga ah ee la xiriira xariiqaha barbarada ah iyo xaglaha ay sameeyeen markii ay isaga gudbeen

Adeegsiga kambaska (qalab dhamaystiran oo ka kooban saddex – xagalo, laydiyo, labajibaaranayaal, goobo, l. w. m oo ku jira sanduuq yar) iyo mastarad oo aad ku dhisi doontaan saaddex – xagallada. Saddex – xagallada isku sar go’an waa kuwo lagu qeexi doono lana tijaabin doono. Bedka saddex – xagallada xagasha qumman iyo wareega saddex – xagallada ayaa la xisaabin (shaqayn) doonaa, iyo halbeega bededka oo hal qaab loogu bedeli doono kuwo kale. Ugu dambayntii waxaad qiimo u samayn doontaan muga Biriisam laydiyeedyada Halbeegyada mugana hal qaab ayaad u bedeli doontaan kuwo kale.

6.1 XAGLAHA

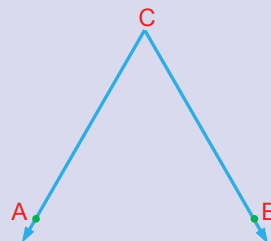
Casharkani waxaad ku aqoonsan doontaan xaglaha lidka isku ah iyo kuwa deriska ah iyo kuwa iska soo horjeeda iyo go’aansashada xaglaha isdhamaystira iyo kuwo is buuxsha.

Naqtiinka Layliska 6.1

1 Jaantuska 6.1 tilmaan

b Dhinacyada

t Xagal geeska



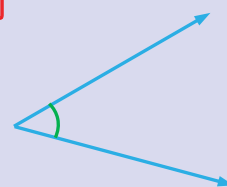
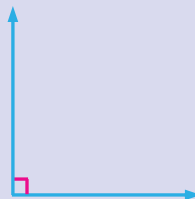
Jaantuska 6.1

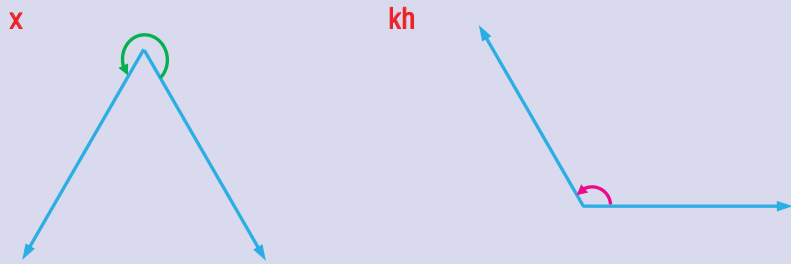
2 Jaantuska 6.2 tilmaan xagal kasta oo soo socota midkay tahay: xagal-fiiqan, xagal-qumman, xagal-daacsan, xagal-toosan iyo xagal-noqod.

b

t

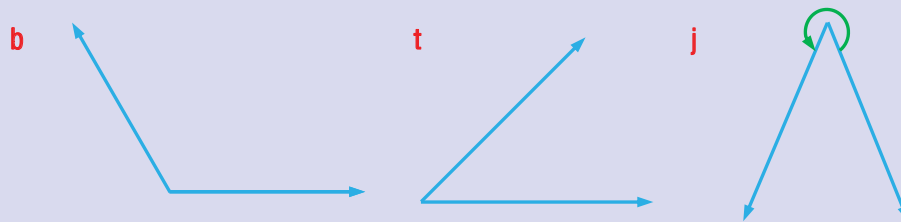
j





Jaantuska 6.2

3 Jaantuska 6.3 Cabbir xagal kasta adiga oo adeegsnaya xaglo beeg.



Jaantuska 6.3

4 Tilmaan xaglahan soo socda mid kasta xagasha uu yahay ee xagal-fiiqan, xagal – qumman, xagal – daacsan, xagal toosan, iyo xagal noqod:

b	203°	t	37°	j	91°	x	180°
kh	350°	d	90°	r	1°		

5 Waa maxay nooca xariiqaha ee xariiqaha barbarada ah? Xariiqaha is gooyana?

6.1.1 Xaglaha Isla Xidhiidha

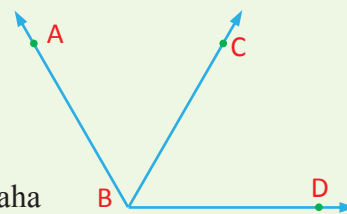
Hawlgalka 6.1

1 Jaantuska 6.4

b waa maxay dhinaca ay wadaagaan $\angle ABC$ iyo $\angle CBD$?

t Ma kuwo aan wadaagin dhinacyadaa xaglaha $\angle ABC$ iyo $\angle CBD$ miyay sameeyaan xariiq toosan?

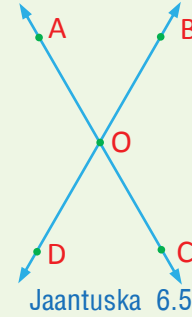
j Miyey leeyihiin Magac u gaar ah lammaanaha $\angle ABC$ iyo $\angle CBD$?



Jaantuska 6.4

2 Jaantuska 6.5

- b i** Waa maxay dhinaca ay wadaagaan xaglaha $\angle AOD$ iyo $\angle AOB$?
Waa maxay geeska ay wadaagaan xaglaha $\angle AOD$ iyo $\angle AOB$?
- ii** Waa imisa wadarta cabbiraada xaglaha $\angle AOD$ iyo $\angle AOB$?
- t i** Ma leeyihiin xaglahani $\angle AOB$ iyo $\angle BOC$ dhinac ay wadaagaan iyo gees ay wadaagaan?
- ii** Waa imisa isku darka cabbiraada xaglaha $\angle AOB$ iyo $\angle BOC$?
- j** Miyey is le'eg yihiin cabbirka xaglaha $\angle AOD$ iyo $\angle BOC$?
- x** Maxaad ugu yeedhaa lammaanaha xaglahan $\angle AOD$ iyo $\angle BOC$?
- kh** Ma jiraan xaglo lammaan oo kale oo sameeyay geeska 0 oo ka duwan xaglahan $\angle AOD$ iyo $\angle BOC$ oo leh cabbiro is le'eg?



Xaglaha waxaad u kala saari kartaan lammaanayaal:-

Qeexid 6.1: Laba xaglood oo wadaaga dhinac, gees oo aan wadaagin baraha gudaha ayaa loo yaqaanaa xaglo-deris ah.

Tusaale 1: Jaan 6.4 Lamaanaha $\angle ABC$ iyo $\angle CBD$ waxay leeyihiin dhinac ay wadaagaan oo ah \overline{BC} iyo gees ay wadaagaan oo ah B sidaa darteed $\angle ABC$ iyo $\angle CBD$ waa xaglo deris ah.

Qeexid 6.2: Laba xaglood oo deris ah oo aan wadaagin dhinacyada sameeyana xariiq toosan ayaa loo yaqaanaa lammaanaha xaglaha deriska ah ee toosan.

Tusaale 2: Jaantuska 6.5 Dhinacyada ma wadaagaan $\angle AOD$ iyo $\angle AOB$ dhinacyadoodu waa \overline{OD} iyo \overline{OB} waxayna sameeyaan xariiq toosan. Sidaa awgeed $\angle AOD$ iyo $\angle AOB$ waa lammaanaha xaglaha deriska ah ee toosan.

Markii ay laba xariiqood oo toosani ay iska gooyaan hal bar ah waxay sameeyaan afar xaglood. Jaantuska 6.5, \overline{BD} iyo \overline{AC} waxay iska gooyaan barta. Sameeyana afar xaglood $\angle AOD$, $\angle BOC$, $\angle COD$ iyo $\angle AOB$.

Jaan 6.5 Xaglaha $\angle AOB$, iyo $\angle COD$ iyo $\angle BOC$ iyo $\angle AOD$ waxaa loo yaqaan xaglaha qotonka ah ee iska soo horjeeda.

Jaan 6.5 markii xaglaha $\angle AOB$ iyo $\angle BOC$ ay yihiin lammaane xaglo deris ah oo toosan, kolkaa $m(\angle AOB) + m(\angle BOC) = 180^\circ$.

Si la mid ah, makrii $\angle BOC$ iyo $\angle COD$ ay yihiin lammaane xaglo deris ah oo toosan kolkaa $m(\angle BOC) + m(\angle COD) = 180^\circ$.

Sidaa darteed $m(\angle AOB) + m(\angle BOC) = m(\angle BOC) + m(\angle COD)$ haddii aad ka jartid $m(\angle BOC)$ labada dhinacba waxaad haysataa

$$m(\angle AOB) = m(\angle COD)$$

Ka dood markaa $m(\angle BOC) = m(\angle AOD)$

Xaglaha iska soo horjeeda way is le'eg yihiin

Hawlgalka 6.2

- 1 Ahmiyada sii Lammaanayaasha xaglah a ah ee soo socda
($20^\circ, 70^\circ$), ($30^\circ, 60^\circ$), ($10^\circ, 80^\circ$) iyo ($2^\circ, 88^\circ$)
 - b Xaglaha lammaane kasta isku gee
 - t Maxay wadaagan xaglaha lammaanayaasha ahi?
 - j Raadi qaar kale oo xaglaha lammaanayaasha ah kuwaas oo ay isku mid yihiin kuwii kor la inagu soo siiyay.
 - x Xaglahaani magacyo u gaara ma leeyihiin?
- 2 U tix geli lammaanayaasha xaglaha ah ee soo socda:
($30^\circ, 150^\circ$), ($1^\circ, 179^\circ$), ($60^\circ, 120^\circ$), ($90^\circ, 90^\circ$)
 - b Lammaane kasta isku gee.
 - t Wax u gaar ah oo ay wadaagaan lammaanaha xaglahani ay leeyihiini waa maxay?
 - j Raadi qaar kale a lammaamid yihiin oo laynagu siiyay kor?
 - x Lammaanayaasha xaglahan maleeyihiin magacyo u gaara?

Qeexida 6.3: Xaglaha lammaan waxaa ladhahaa xagla isbuuxsha goortii wadarta cabirkoodu noqdo 90° .

Tusaale 3: Ma lammaane is buuxsha baa 30° iyo 60° ?

Furfuris: Markii $30^\circ + 60^\circ = 90^\circ$, kolkaa 30° iyo 60° waa kuwo is buuxsha.

Qeexida 6.4: Haddii labada xaglood ee α iyo β ay yihiin kuwo isbuuxsha, kolkaa α waxaa loo yaqaanaa buuxshaha β (lidkeeduna waa la mid)

Tusaale 4: Raadi dhamaystiraha 57°

Furfuris: x u qaado dhamaystiraha 57° , kolkaa $x + 57^\circ = 90^\circ$

$$\text{Sidaa awgeed } x = 90^\circ - 57^\circ$$

$$\text{Sidaa darteed buuxshaha } 57^\circ \text{ waa } 33^\circ$$

Qeexida 6.5: Xaglaha lammaani hadii ay yihiin kuwo isdhamaystira markaa isku darka cabbirkoodu waa 180°

Tusaale 5: Miyey is buuxshaan 20° iyo 170° ?

Furfures: Markii $20^\circ + 170^\circ = 190^\circ \neq 180^\circ$, kolkaa 170° iyo 20° ma aha xaglo is dhamaystira.

Qeexida 6.6: Haddii labada xaglood ee y iyo θ ay yihiin xaglo isdhamaystira, kolkaa y waxa loo yaqaanaa buuxiyaaha θ sidoo kalena θ waa dhamaystira y .

Tusaale 6: Raadi dhamaystiraha 35° ?

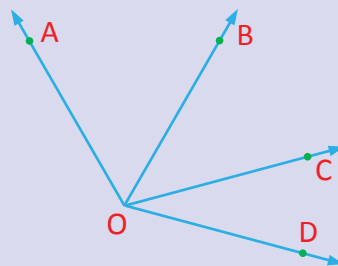
Furfuris: U qaado buuxiyaha 35° inuu yahay y kolkaa $y + 35^\circ = 180^\circ$.

$$\text{Markaa waxaad heli } y = 180^\circ - 35^\circ = 145^\circ$$

$$\text{Sidaa awgeed dhamaystiraha } 35^\circ \text{ waa } 145^\circ$$

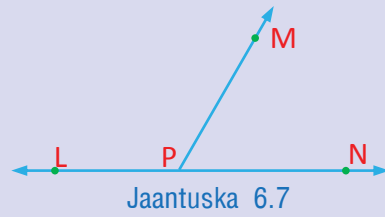
Layliska 6.2

1 Jaantuska 6.6, Magacaw 3 lammaanayaal oo xaglo deris ah



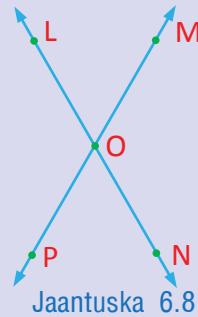
Jaantuska 6.6

- 2 Jaantuska 6.7, xaglaha $\angle NPM$ iyo $\angle MPL$ waa laba xaglood oo deris ah oo lammaane toosan ah hadii cabbirka $\angle MPL$ uu yahay 137° , waa imisa cabbirka $\angle NPM$?



- 3 Haddii α iyo β ay yihiin dhamaystiraha iyo buuxiyaha 32° siday u kala horeeyaan raadi α iyo β ?

- 4 Jaantuska 6.8, \overline{LN} iyo \overline{MP} waxay iska gooyaan barta O, hadii $m(\angle LOM) = 46^\circ$, raadi cabbirka:



- b $\angle NOP$
- t $\angle MON$
- j $\angle LOP$

- 5 Haddii α iyo β ay yihiin laba xaglood oo isdhamaystira ku min guuri tusahan hoose oo ku buuxi meelaha banaan ee xaglaha ku haboon.

α		69°		47°
β	32°		24°	

- 6 Haddi y iyo θ ay yihiin labo xaglood oo isdhamaystira ku minguuri tusahan hoose kuna buuxi meelaha banana ee xaglaha ku haboon.

α	140°	12°	$24\frac{1}{2}^\circ$	
θ		168°		154.5°

- 7 Hoos u taxyada A iyo B cabbiraadyada xaglaha qaarkood adaa lagu siiyay lammaane ka dhig hab lamid ah lammaaneyaasha sameeya xaglaha is buuxsha.

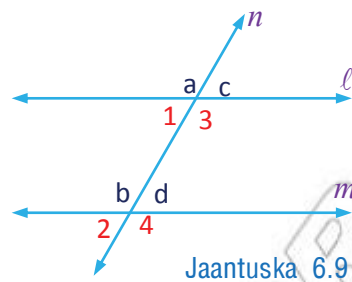
	A		B
i	20°	b.	72°
ii	36°	t.	133°
iii	47°	j.	154°
iv	26°	x.	160°
v	108°	kh.	144°

- 8 Waa noocee xagasha buuxisa xagal daacsan?
- 9 Sawir laba xaglood oo wadaaga dhinac laakiin aan deris ahayn?
- 10 Haddii θ uu yahay buuxiyaha β , β na uu yahay buuxiyaha δ , maxaad ku soo gabagabayni xiriirka ku saabsan baaxada xaglaha θ iyo δ ?

6.1.2 Xariiqaha Barbarada ah iyo Xaglaha

Qeexida 6.7: Xariiqka ka gudba laba iyo in ka badan o xariiqood ayaa loo yaqaanaa gudbane

Jaantuska 6.9: Xariiqan wuxuu ka gudbaa xariiqaha ℓ iyo m , sidaas awgeed waa gudbane.



Markii gudbanuhu ka gudbo laba xariiqood 8 xagloodbaa ka samaysma. Lammaane kasta oo xaglaha lagu siiyay waxay leeyihiin magac u gaar ah.

Jaantuska 6.9: ee sare xariiqaha ℓ iyo m waxaa ka gudba gudbanaha oo ay ka samaysmaan 8 xaglood oo kala duwan. Xaglahaas waxaa lagu magacaabaa lamaaneyaasha soo socda

- 1 Xaglaha lammaan ee a iyo b, 1 iyo 2 c iyo d 3 iyo 4 waxaa loo yaqaanaa xaglo gudboon .
- 2 Xaglaha lammaan ee 1 iyo d, iyo 3 iyo b waxa loo yaqaanaa xaglo – gudeed talantaali ah.
- 3 Xaglaha lammaan ee a iyo 4, iyo c iyo 2, waxaa loo yaqaanaa xaglo – dibadeed talantaali ah.
- 4 Xaglaha lammaan ee a iyo 2, iyo c iyo 4 waxaa loo yaqaanaa xaglo dibadeed waxayna gudbanaha kaga yaalaan dhinac isku mid ah.
- 5 Xaglaha lammaan ee 1 iyo b, 3 iyo d waxaa loo yaqaanaa xaglo gudeed waxayna gudbanaha kaga yaallaan dhinac isku mid ah.

Fasalka 5^{aad} waxaad ku soo barateen waxa ay yihiin xariiqaha barbarada ahi iyo sida loo sawiro iyada oo la adeegsanayo qalabka Afar – geeska ah iyo mastarad. Casharkan waxaad ku cadeyn doontaan dhacdooyinka kala duwan ee ku saabsan xaglaha ka samaysma Markii laba xariiqood oo barbaro ah uu ka gudbo gudbanuhu.

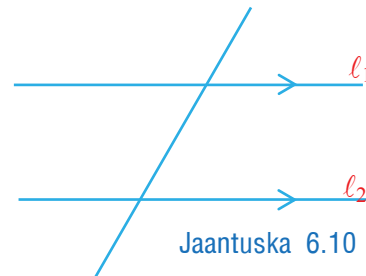
Xusuusnow! Laba xariiqood oo toosan oo dhaca sallax isku mida waa barbaro. Haddii ayna weligoodba kulmayn marka laxariiqo ama ay samaysmaan. Haddii l_1 iyo l_2 ay yihiin laba xariiq oo barbaro ah waxaan u qori karnaa $l_1 \parallel l_2$

Hawl-galka 6.3

- 1 **b** buuggaaga qorista ku sawir xariiqda l . Qaado bar kasta oo aan dhinacnaba ku dul oolin xariiqda “ l ” uguna yeedh “P”.
 - t** Isticmaal qalabka Afar geeska ah iyo Mastarad kuna sawir xariiq dhex Marta “P” oo barbaro la ah “ l ”.
 - j** Sawir xariiq marta barta “P” oo gudbane ah kaas oo gooya xariiqda “ l ”.
 - x** Qaado lammaane kasta oo xaglogudeed talantaaliya ee uu sameeyay gudbanuhu kadibna cabbir. Miyey isle’eg yihiin ama kala duwanyihiin?
 - kh** Qaado lammaane kasta oo xaglo dibadeed talantaaliya ee uu sameeyay gudbanuhu kadibna cabbir. Miyey is le’eg yihiin ama kala duwan yihiin?
 - d** Qaado lammaane kasta oo xaglo gudboon ah ee uu sameeyay. Gudbanuhu kadibna. Cabbir miyey is le’eg yihiin?
 - r** Cabbir lammaane kasta oo xaglo gudeed ah ee dhinacyada isku mid ka ah ee uu sameeyay gudbanuhu kadibna isku gee. Wadartoodu waa imisa?
- 2 Laga bilaabo **x**, **kh**, **d** iyo **r** waa maxay ahmiyada aad gebagebadii ku samaynaysid?

Xaqiiqooyin:- Markii labada xariiqood oo barbarada ah l_1 iyo l_2 uu kagudbo gudbanuhu:

- 1 Xaglaha gudboon way isleeg yihiin.
- 2 Xaglo-gudeedka talantaaliga ahi way is le’eg yihiin.
- 3 Xaglo-dibadeedka talantaaliga way is leeg yihiin.
- 4 Xaglo-gudeedka gudbanaha dhinacyada isku midka ah kaga yaal waa xaglo is buuxsha.



Jaantuska 6.10

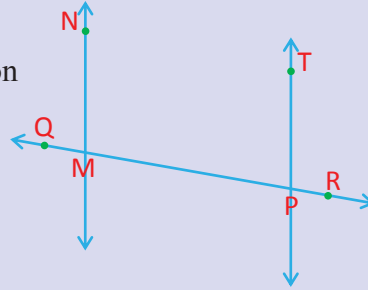
Layliga 6.3

1 Jaantuska 6.11

b Magacow lammaanaha xaglaha gudboon

t Markeebay is le'ekaanayaan cabbirada

$\angle NMQ$ iyo $\angle TPM$

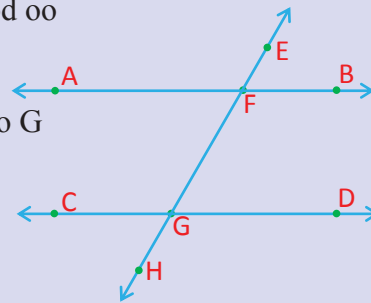


Jaantuska 6.11

2 Jaantuska 6.12 \overline{AB} iyo \overline{CD} waa labo xariiqood oo

barbaro ah. Hada m ($\angle BFG = 108^\circ$, raadi

dhamaan xaglaha kale ee ay sameeyeen F iyo G



Jaantuska 6.12

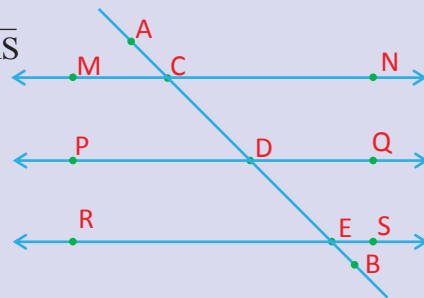
3 Jaantuska 6.13 Xariiqaha \overline{MN} , \overline{PQ} iyo \overline{RS}

waa saddex xariiqood oo barbaro ah

Gudbanaha \overline{AB} ayay ku kulmaan C,

D iyo E. Haddii m ($\angle REB = 135^\circ$,

waa imisa cabbiraka $\angle ACM$?

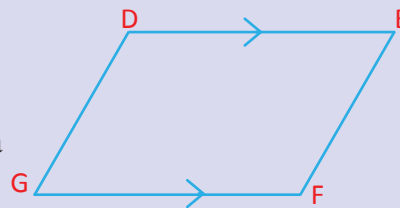


Jaantuska 6.13

4 Jaantuska 6.14 \overline{DE} waxay barbaro yihiin

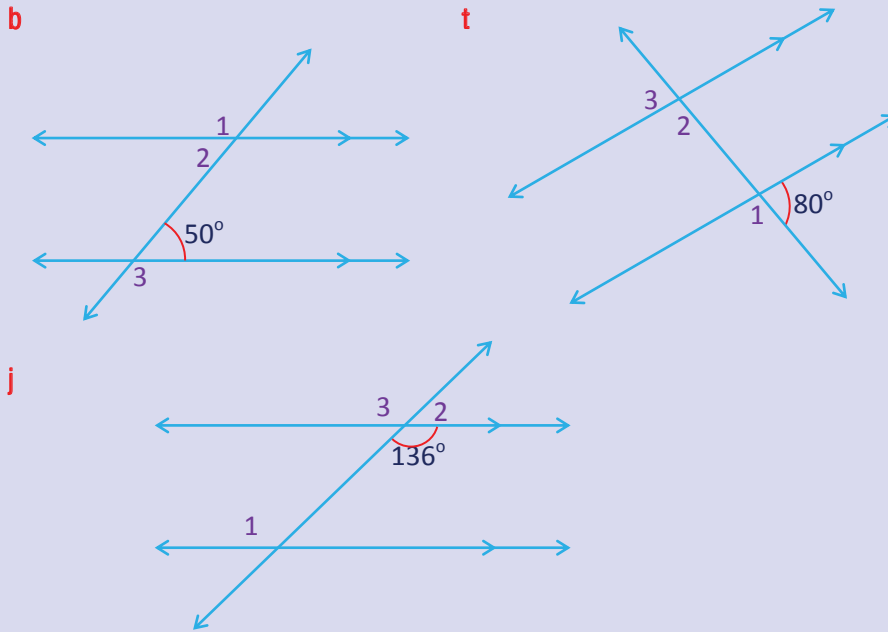
\overline{GF} iyo \overline{DG} oo barbaro la ah \overline{EF} Haddii

m ($\angle DEF = 73^\circ$, raadi cabbirada xaglaha hadhay ee Afar geeslahan.



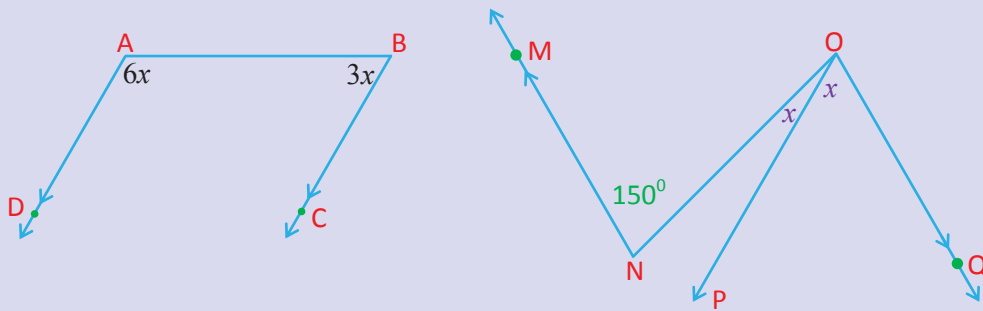
Jaantuska 6.14

5 Jaantuska 6.15, Soo saar xaglaha lagu calaamadiyay 1, 2 iyo 3 (Falaadha madaxyada xariiquhu waxay ku tusinaysaa xariiqaha barbarada ah)



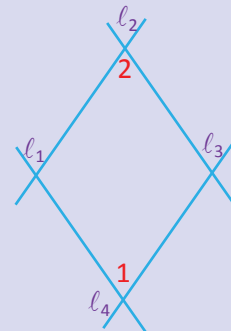
Jaantuska 6.15

6 Jaantuska 6.16 yadan hoose ee lagu siiyay. Falaadha madaxyada xariiquhu waxay ku tusi inay xariiquhu barbaro yihiin. Raadi qiimaha x.



Jaantuska 6.16

7 Jaantuska 6.17: l_1 waxay barbaro yihiin l_2 iyo l_3 oo ay barabro yihiin l_4 , haddii cabbirka 1 yahay 70° , waa imisa cabbirka 2?

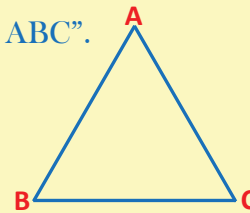


Jaantuska 6.17

6.2 DHISIDA SADDEX-XAGALLADA

Fasalladii hoose waxaad ku soo barateen sida loo kala badho xariiq gobolgobol loo qaybshay iyo xagal, loo adeegsanayo lammaanaha xagal – beega iyo geeska toosan. Halkan waxaad ku baran doontaan casharkan sida loo dhiso saddex – xagal lagu siiyay cabbiradiisa iyo qaar kamid ah ku tirsaneyaashiisa loo adeegsaday lammaanaha xagal – beega iyo geeska toosan.

Xusuusnow! Saddex-xagalku waa jaantus oodan oo ka samaysan 3 xariijimood wuxuu leeyahay 3 xaglood, 3 Gees iyo bed-oodan waxaana lagu magacaabaa xarfaha geesaha. Haddii A, B iyo C ay yihiin xarfaha geesaha, kolkaa halka jid ee magacaabida saddex – xagalka loo marayaa A, B iyo C waa $\triangle ABC$ oo loo akhrinayo “Saddex – xagalka ABC”.



Jaantuska 6.18

Inta aydaan dhisin saddex – xagal kahor bal aynu dhiso laba dhisitaan oo fudud inagoo adeegsanayna xagal – beegyada lammaan iyo geeska toosan.

Dhisida I:

Siin: Xariijinta AB iyo Xariiq l oo lagahelo barta P.

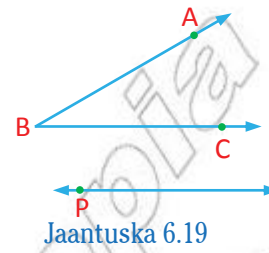
Si aynu u dhiso xariijin “ l ” dusheeda oo ku began barta p taasoo dhererka \overline{AB} le’eg.

Talaabooyinka dhisitaanka	Dhisida
Talaabo 1: U adeegso A xudunta iyo gacan le’eg dhererka \overline{AB} sawir qaansada goobada	
Talaabo 2: P oo ah xudunta lana mid ah gacanka sidii talaabadii 1, sawir qaansada goobada oo ay “l” ka goyso barta “Q”.	
Talaabo 3: Kolkaa \overline{PQ} , waxay leedahay dherer le’eg \overline{AB} .	

Dhisitaanka 2:

Siin: Xagasha ABC iyo xariiq ℓ oo ka kooban barta P.

Sida loo dhiso: Xagasha ku beeg barta P mid ka mid ah dhinacyadiisa oo ah ℓ lana mid ah cabbirka xagasha leh $\angle ABC$.



Talaabooyinka dhisida	Dhisitaanka
<p>Talaabo 1: u adeegso B xudunta iyo gacan kastoo haboon sawir goobo – gobol oo ay ka goynayso dhinacyada $\angle ABC$ ee R iyo S.</p>	
<p>Talaabo 2: U adeegso P xudunta iyo gacanka oo la mid ah sida talaabada 2, sawir goobogobol oo ay ℓ iska gooyaan barta E.</p>	
<p>Talaabo 3: Sawir goobo gobol oo leh “S” oo xudunta ah iyo dhererka \overline{SR} oo ah gacanka.</p>	
<p>Talaabo 4: Sawir goobo gobol oo leh “E” oo ay ku qotonto “ℓ” oo ah xudunta iyo dheerina \overline{SR} oo ah gacanka goobada gobol oo ay isku gooyaan barta “D” talaabadii 2.</p>	
<p>Talaabo 5: Adeegso geeska toosan kuna sawir \overline{PD}, kolkaa $\angle DPE$ waxay le’eg tahay $\angle ABC$.</p>	

Koox - hawleedka 6.1

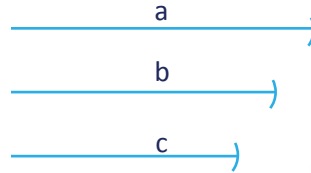
- 1 **b** Adeegso mastarad kuna sawir xariijinta dhererkeedu yahay 5cm
- t** Adeegso xagal – beeg iyo mastarad ku min guuri xariijinta “a”.
- 2 **b** Adeegso goobo – beeg sawir xagal cabbirkeedu yahay 90° .
- t** Adeegso xagal – beeg iyo Masarad kuna min guuri xaga a.

Hadda Waxaad arki doontaan sida loo dhiso saddex – xagallada markii qaar ka mid ah ku tirsanayaasha saddex – xagalka lagu siiyay.

Dhisida 3:

Siin: Saddex dhinac oo ka mid ah saddex – xagal leh dhererada halbeegyada a, b, iyo c.

Sida loo dhiso: Saddex – xagal leh dhererka dhinacyada a, b iyo c.



Jaantuska 6.20

Talaabooyinka dlusida	Dhisitaanka
Tal 1: Sawir xariiqda ℓ kana dooro barta P oo ku qotonta “ ℓ ”.	
Tal 2: Barta P ku dhixxariijin ay is le’eg yihiin dhererka xariijinta ee dhererkeedu yahay “a” halbeeg.	
Tal 3: U adeegso P inay tahay xudunta halbeega “c” uu yahay gacanka sawir goobo – badhkeed oo ka saraysa xariiq “ ℓ ”.	
Tal 4: U adeegso Q xudunta halbeega “b” gacanka. Sawir goobo – badhkeed oo goysa goobo- badhkeeda talaabadii 3 ^{aad} ee barta “R”.	
Tal 5: Sawir \overline{RP} iyo \overline{RQ} , kolkaa $\triangle PQR$ waa saddex – xagal dhinacyadiisu yihiin dhererka halbeegyada a, b, iyo c. Inta aydaan arag dhisitaanada kale ka hor, bal aynu eegno xiriirka ka dhex jira dhinacyada saddex – xagalka.	

Hawlgalka 6.4

- Adiga oo adeegsanaya xaglo-beeg iyo mastarad ma dhisi kartaa sadex- xagla leh saddexdan tiro ee soo socda?

b (1, 2, 3)	t (2, 2, 4)	j (6, 7, 12)
x (1, 2, 1.5)	kh (2, 2, 3)	d (6, 6, 6)
- Saddex kasta oo horsan oo ka mid ah su'aasha (1) ee sare, ku dar laba tiro oo yaryar wadartoodana barbardhig tirada 3^{aad} , ma wadarta labada tiro ayaa ka wayn tirad 3^{aad} ?
- Haddii b , t iyo j ay yihiin tirooyin saddex-gees ah, kaas oo sameeya dhererka dhinacyada saddex-xagalka, is bar bar dhig

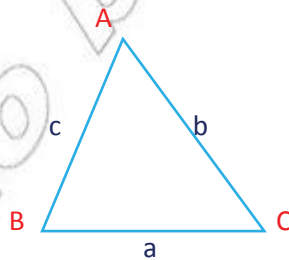
b $b + t$	t $b + j$	j $t + j$
------------------	------------------	------------------
- Markii lagu diro inaad ka soo shaqaysid tirooyinka dhererka dhinacyada saddex-xagal, waa maxay xaaladaha ugu muhiimsan ee aad ka fakaraysid inay tirooyinkan lakulansiyo?

Hawlgalka 6.4 wuxuu kuu horseedayaa inay aad iyo aad muhiim u tahay dhiraandhirinta Joomaterigu.

Saddex-Xagal aan isle'ekayn

Saddex-xagal kastaa, wadarta dhererka laba. Dhinac oo kasta waxaay ka wayn yihiin dhererka dhinaca saddexaad. Taas oo ah, hadii a , b iyo c ay yihiin dhererka dhinacyada saddax-xagal lagu siiyay ee ABC, kolkaa $a + b > c$,

$a + c > b$ iyo $b + c > a$.



Jaantuska 6.21

Sidaa darted markii lagu diro in aad ka soo shaqaysid tirooyinka dhererka dhinacyada saddex-xagal, waa inaad hubisid inay tirooyinku qancinayaan saddex-xagal isma le'eka ah. .

Laylis 6.4

- 1** Adiga oo adeegsanaya xaglo – beeg iyo Mastarad dhis saddex – xagal kasta oo leh dhinacyadan lagu siiya
- | | | | |
|----------|-----------------|----------|---------------|
| b | 3cm, 4cm fi 5cm | t | 6cm, 6cm, 6cm |
| x | 5cm, 4cm fi 9cm | j | 8cm, 4cm, 5cm |
- 2** Tirooyinka saddex – geesoodka ah waa kee ka laguuri diri karo inaad ka shaqaysid dhererka dhinacyada saddex – xagal?
- | | | | |
|-----------|-------------------|----------|------------------|
| b | (3cm, 2cm, 2.5cm) | t | (3cm, 4cm, 8cm) |
| j | (6cm, 6cm, 6cm) | x | 5cm, 4cm, fi 9cm |
| kh | (8cm, 4cm, 5cm) | | |
- 3** Haddii a iyo b yihiin dhererka dhinacyada saddex-xagal lagu siiyay. Tirooyinkan soo socda kee baa noqon kara dhererka dhinaca 3^{aad}?
- | | | | |
|----------|---|------------|-------|
| b | $a = 4\text{cm}$ iyo $b = 5\text{cm}$ | | |
| i | 7cm | ii | 10cm |
| | | iii | 9cm |
| t | $a = 3.6\text{cm}$ iyo $b = 4.4\text{cm}$ | | |
| i | 8.1 cm | ii | 8cm |
| | | iii | 2cm |
| j | $a = 2.5\text{cm}$ fi $b = 6.5\text{cm}$ | | |
| i | 4.5cm | ii | 1.5cm |
| | | iii | 9cm |

Saddex-xagalka waxaa kale oo lagu dhisi karaa markii labada dhinac iyo xagasha. Ku jirta ee u dhaxaysa labadaas dhinac ee lagu siiyaay.

Dhisida 4:

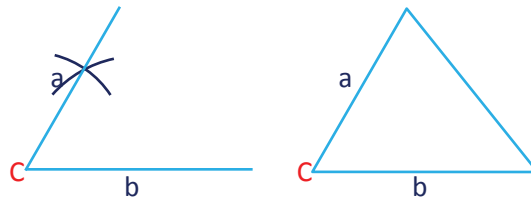
Siin: labada dhinac ee a iyo b , xagasha ku jirta ee $\angle C$ ee u dhaxaysa dhinacyadaas,




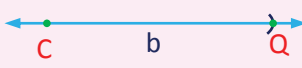
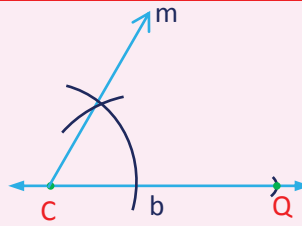
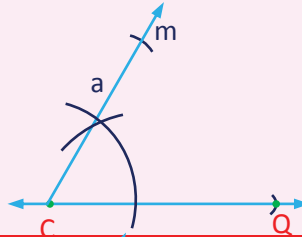
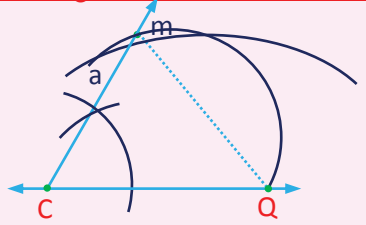
Jaantuska 6.22

Sida loo dhiso: Saddex – xagal leh ku tirsanayaasha sare.

Sawir gacmeed:



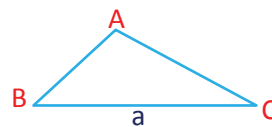
Jaantuska 6.23

Talaabooyinka Dhisida	dhisitaanka
Talaabo 1: Sawir xariiq? Dooro barta C ay qotonto?	
Talaabo 2: Dhis xariijinta oo leh C oo leh hal bar dhamaad oo xariijinta dhererkeedu yahay halbeega “b”	
Talaabo 3: Barta C ka dhis xagal cabbirkeedu le’eg yahay $\angle C$ uguna yeedh natiijada xariijinta “m”	
Talaabo 4: Dhis xariijinta leh “C” oo leh hal bar dhamaad, xariijinta ku qotonta oo ah “m” oo leh dherer “a” halbeeg	
Talaabo 5: Sawir xariijinta \overline{QR} kolka $\triangle RCQ$ waa saddex – xagalkii loo baahnaa.	

Sidoo kale waxaad u dhisi karta saddex – xagalka markii labo kasta oo xaglood oo ay ku jirto dhinaca saddex – xagal lagu siiyay. Talaabooyinku waa kuwan hoos lagu siiyay.

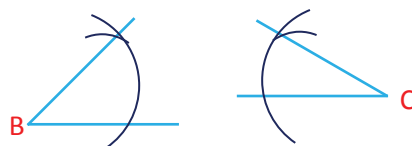
Dhisida 5:

Siin: Labada xaglood ee B iyo C oo ay ku jirto dhinaca ka dhexeeya xaglahaas ee dhererkeedu yahay a halbeeg in la dhis: saddex – xagal leh ku tirsaneyaasha sare.


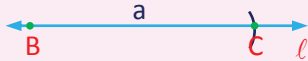
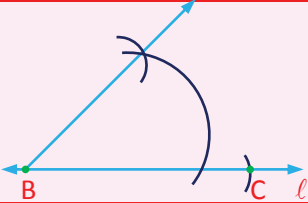
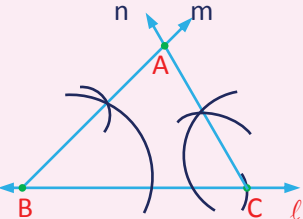
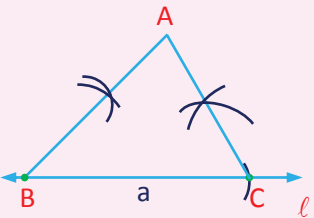


Jaantuska 6.24

Sawir gacmeed:



Jaantuska 6.25

Talaabooyinka Dhisida	Dhisitaanka
Talaabo 1: Sawir xariiq? Dooro barta B oo ku qotonta l	
Talaabo 2: dhis xariijinta Barta B dhererkeedunaya hay "a" halbeeg uguna yeedh bar dhamaadka C	
Talaabo 3: Dhis xagasha barta B oo cabirkeedu le'eg yahay $\angle B$	
Talaabo 4: Dhis xagasha barta C oo cabirkeedu le'eg yahay $\angle C$ halkay ay iska gooyaan m iyo n ha noqoto a	
Talaabo 5: Halka ay iska gooyaan m iyo n waxay noqon doonta geeska saddexaad ee saddex - xagalka. Ugu yeedh A kolkaa $\triangle ABC$ waa saddex - xagalkii loo baahnaa.	

Xidhiidhka Ka dhexeeya Dhinacyda iyo Xaglaha saddex-xagal

Kahor inta aydaan soo gabagabayn casharkan, bal aynu fiirino xidhiidhka ka dhexeeya dhinacyada iyo xaglaha saddex-xagalka.

Hawlgalka 6.5

- Idinka oo adeegsanaya xagal beeg iyo Mastrad dhisa sadex -xagaladan soo socda ee leh dhererka lagu siiyay.

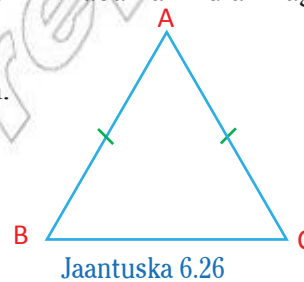
b	2cm, 2cm, 3cm	t	5cm, 5cm, fi 6cm
j	10cm, 11cm, fi 10 cm	x	6cm, 6cm fi 6 cm
- Su'aasha (1) ee sare cabira xaglaha ka samaysmay dhinacyada leh dhererka isku midka ah iyo dhinaca 3^{aad} ee loo adeegsaday qalabka xagal – beega. Waa maxay dhiraandhirinto aad ku samayseen?

- 3** Idinka oo adeegsanaya xagal beeg iyo mastarad dhisa sadex – xagaladan soo socda talaabo kasta oo aad qaadaanba cabira 3da xaglood ee xagal beega ka samaysmay.
- b** 3cm, 4cm, 5cm **t** 6cm, 7cm, 8cm
- j** 11cm, 15cm, 16cm
- 4** Suaasha (3) ee sare :
- b** Ma dhinaca ugu gaaban baa ka soo horjeeda xagasha ugu yar?
- t** ma dhinaca ugu dheer baa ka soo horjeeda xagasha ugu wayn?
- j** Ma xagasha ugu wayn baa ka soo horjeeda dhinaca ugu dheer?
- x** Maxagasha ugu yar baa ka soo horjeeda dhinaca ugu gaaban?
- 5** Dhis 3 saddex – xagal siman. Cabir xaglaha soona saar xidhiidhka ka dhexeeya. Natijada warqad wayn oo adag ku qor.
- 6** Dhis 3 saddex – xagal aan sinayn cabirna xaglahooda. Miyaad hesheen laba xaglood oo kasta oo isleeg oo sadex - xagal?

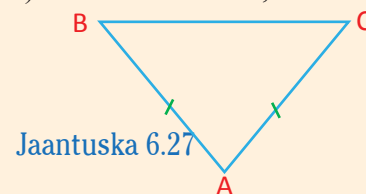
Hawlgalka sare hubiya sadax – xagalada soo socda ee muujinaya Muhimada xidhiidhada ka dhaxeeya dhinacyada iyo xaglaha saddex - xagalka.

Saddex – xagal – labaale ahi waa ka ay is le'eg yihiin laba ka mid ah xaglihiisu

Taasi oo ah: hadii $AB = AC$ kolkaa, $\angle ABC$ iyo $\angle ACB$ cabbiro is le'eg ayay leeyihiin.



Tusaale 1: Jaantuska 6.27 hadii $AB = AC$ iyo $m(\angle ABC) = 50^\circ$ hel cabirka, $\angle ACB$?

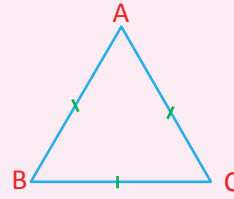


Furfuris: Maadaama $\triangle ABC$ uu yahay sadex -xagal labaale ah sidaa darteed $AB = AC$, kolkaa xaglaha iska soo horjeeda dhinacyadu waa inay is le'ekaadaan.

Taasoo $m(\angle ABC) = m(\angle ACB)$

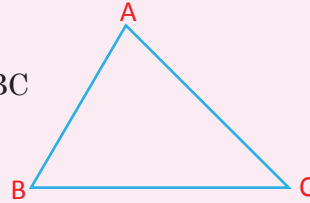
Kolka $m(\angle ABC) = 50^\circ$, S/awgeed $m(\angle ACB) = 50^\circ$

Saddex – xagalka siman waa saddex – xagalka ay 3 diisa xaglood is leegyihin. Taasoo, hadii $AB = AC = BC$, Kolkaa $m(\angle A) = m(\angle B) = m(\angle C) = 60^\circ$



Jaantuska 6.28

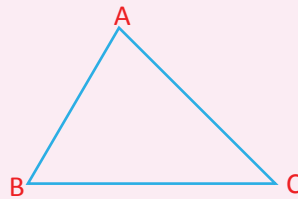
- 1 Sadex-xagal ka aan sinayn wuxuu leeyahay saddex xaglood oo aan sinayn ama aan is le'ekayn. Taasoo oo ah $\triangle ABC$ Haddii $AB \neq BC \neq CA$ kolkaa $m(\angle A) \neq m(\angle B) \neq m(\angle C)$ ta'e,



Jaantuska 6.29

- 2 Haddii labada xaglood ee dhinacyada iska soo horjeeda ayna isle'ekayn waa saddex-xagal isma le'eke ah dhinaca ka soo horjeeda xagasha ugu wayn waa dhinaca ugu dheer.

Taasoo ah $\triangle ABC$, haddii $m(\angle C) > m(\angle B)$ kolkaa $AB > AC$



Jaantuska 6.30

- 3 Haddii labada dhinac ee saddex-xagalku uu yahay mid aan isle'ekayn xaglaha iska soo horjeeda ee dhinacyadaasi waa kuwo aan isle'ekayn iyo xagasha ka soo horjeeddaa dhinaca ugu dheer oo ah xagasha ugu wayn.

Laylis 6.5

- 1 Adiga oo adeegsanaya xagal-beeg iyo Mastaradba dhis saddex- xagalladan soo socda mid kasta, Markii labada dhinac ee ay xagashu ku jirto lagu siiyay. Raadi xaglaha iyo dhinaca saddex-xagalka soo hadhay adiga oo cabbiraya

b $a = 3\text{cm}, b = 4\text{cm}$ iyo $\angle C = 40^\circ$

t $a = 5\text{cm}, b = 6\text{cm}$ iyo $\angle C = 50^\circ$

j $a = 6\text{cm}, b = 6\text{cm}$ iyo $\angle C = 60^\circ$

x $a = 6\text{cm}, b = 8\text{cm}$ iyo $\angle C = 90^\circ$

2 Dhis saddex-xagal, kaasoo labadiisa xaglood oo ku jirto hal dhinac oo lagu siiyay.

b $45^\circ, 90^\circ, 3\text{cm}$

t $60^\circ, 60^\circ, 5\text{cm}$

j $110^\circ, 30^\circ, 2\text{cm}$

x $40^\circ, 40^\circ, 6\text{cm}$

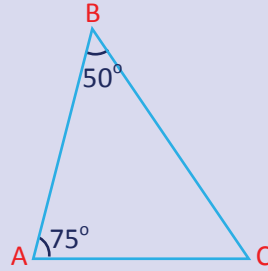
kh $60^\circ, 90^\circ, 3\text{cm}$

d $50^\circ, 70^\circ, 5\text{cm}$

r $40^\circ, 90^\circ, 3\text{cm}$

s $60^\circ, 40^\circ, 3\text{cm}$

3 Jaantuska 6.31 haddii $m(\angle A) = 50^\circ$ iyo $m(\angle B) = 75^\circ$, dhinacee ugu dheer? AC ama BC? Waayo?



Jaantuska 6.31

4 Ma dhisi kartaa saddex-xagal leh dhinacyada 6cm, 9cm, iyo 16cm?

5 Saddex-xagala ka ΔPQR , haddii $m(\angle P) = 30^\circ$ iyo $m(\angle Q) = 30^\circ$ Ma saddex-xagal labaalte ah baa? Waa imisa $m(\angle R) = ?$

6.3 SADDEXAGALLADA ISKU SAR-GO'AN

Joometarigu waa qayb aad u wayn oo khusaysa xidhiidhada ka dhex jira dhinacyada iyo xaglaha saddex-xagalka. Casharkan waxaad ku falanqayn doontaan muhimada xiriirka ka dhexeeya saddexxagallada. Idinka oo u adeegsanaya ereyga “Sar-go’naanshaha.”

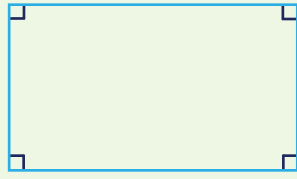
6.3.1 Isku-Sar-go’naanshaha Saddex -Xagallada

Hawlgalka 6.6

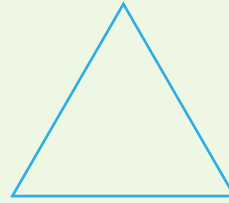
1 Jaantuska 6.32.

b labadan jaantus ma isku qaab baa?

t Ka minguuri mid ka mid ah labadan jaantus adiga oo adeegsanaya warqada khafiifka ah ee la dul dhigo si wax loogu sawiro si qumman oo sallaxan u kor dhig kuwa kalana. Gebi ahaanba ma ka minguurin kartaa si haboon talabaadna? Waayo?



Jaantuska 6.32

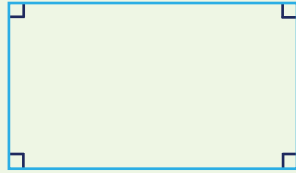


2 Jaantuska 6.33.

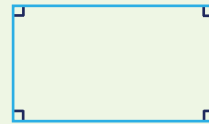
b Labada jaantus ma isku qaab baa?

t Labada jaantus baaxadoodu ma isku midbaa?

j Kaga minguuri warqad yar oo khafiif ah lana dul dhigo marka wax la sawirayo si qumman oo sallaxan u kor saar kuwa kalana. Ma ku haboonaan? Waayo?



Jaantuska 6.33



3 Jaantuska 6.34.

b labada xariijimood ma isku midbaa baaxada?

6 cm

t Mafidin karnaa xariijimaha?

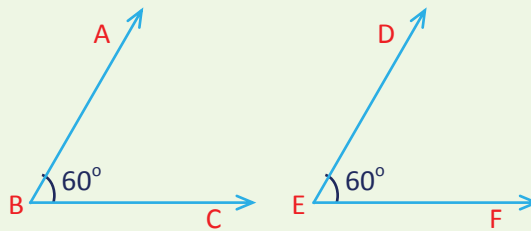
3 cm

Jaantuska 6.34

4 Jaantuska 6.35.

b Labada xaglood ma isku baaxadbaa?

t Ma fidin karnaa labada xaglood? Waayo?



Jaantuska 6.35

5 Jaantuska 6.36.

b Ma isku qaab baa labada jaantus?

- t Labada saddex-xagal miyey fidi doonaan markii si quman oo salaxan loo kor saaro kuwa kale? Maxay ku haboonaan doontaa habayntoodu?



Jaantuska 6.36

- 6 Goorma ayay kula tahay in laba jaantus oo Joomateriya gebi ahaanba isu daboolayaan (is dhamaystirayaan)?

Hawlgalka sare wuxuu si cad u muujinayaa lagama maarmaanimada fikirka cusub ee lagu magacaabo “Sar go’ naanshaha” si dareen leh uga hadlida, labada jaantus ee Joomateriyeed ee lagu sheegay sargo’naanta, haddii warqada khafiifka ah Lagaga minguuriyo ta ugu horaysa ee gebi ahaanba daboolaysa ta labaad. Marku si qoto dheer loo faahfaahiyo waxaynu helaynaa sidan soo socota.

Xusuus: Laba jaantus Joomateriyeed waxaa lagu sheegaa inay isku sar-go’an yihiin, haddii ay leeyihiin qaab iyo baaxad isku mid ah. Si aad u tilmaanto laba jaantus Joomateriyeed oo isku sar go’an, waxaynu u istic maali summadan “ \cong ” oo loo akhryo “isku sar - goan”.

Ka hor inta aynaan qeexin isku sar go’naanshaha saddex – xagalada, bal aynu fiirino qeexida isku sargo’naanshaha xariijimaha iyo xaglaha.

- 1 Labada xariijimood ee \overline{AB} iyo \overline{CD} way isku sar go’an yihiin Waxaana loo qoraa ($\overline{AB} \cong \overline{CD}$) markii dhererka \overline{AB} iyo \overline{CD} uu is le’eg yahay soo gaabin:
 $AB = CD$ hadii $\overline{AB} \cong \overline{CD}$



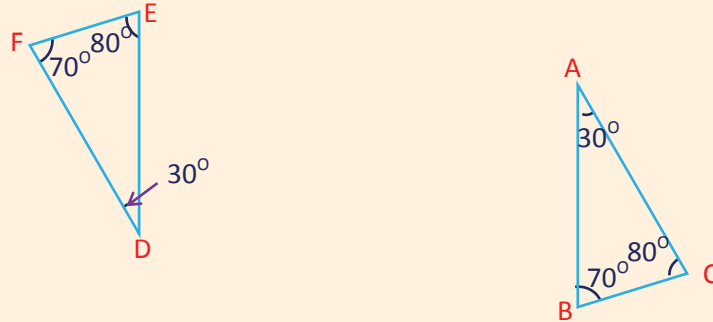
- 2 Labada xaglood $\angle ABC$ iyo $\angle DEF$ way isku sargoan yihiin, waxaana. Loo qoraa ($\angle ABC \cong \angle DEF$), markii cabirada $\angle ABC$ iyo $\angle DEF$ ay is le’eg yihiin, soo gaabin: $\angle ABC \cong \angle DEF$ markii $m(\angle ABC) = m(\angle DEF)$.



Jaantuska 6.37

Haddii laba saddex-xagal ay ku qancayaan iyadoo loo tixgelinayo xaglaha labada saddex-xagal oo isle'eg, kolkaa xaglaha is le'eg waxaa loo yaqaan xaglo gudboon (isku began) iyo dhinacyada ka soo horjeeda xaglahaas oo loo yaqaano dhinacyada gudboon.

Tusaale 1: Fiiri jaantuska 6.38 ee $\triangle ABC$ iyo $\triangle DEF$, tax xaglaha iyo dhinacyada gudboon E



Jaantuska 6.38

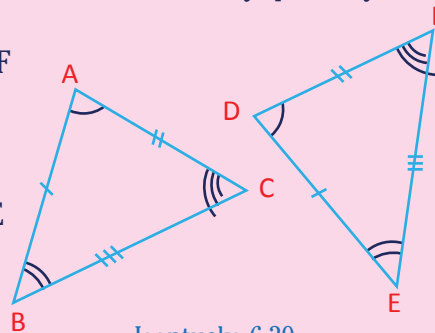
- Furfuris:**
- 1 $\angle A$ iyo $\angle D$, $\angle B$ iyo $\angle F$, iyo $\angle C$ iyo $\angle E$ waa xaglo gudboon
 - 2 \overline{BC} iyo \overline{EF} , \overline{AB} iyo \overline{DF} iyo \overline{AC} iyo \overline{ED} waa dhinacyo gudboon. Bal aynu qeexno laba saddex-xagal oo isku sargo'an.

Qeexida 6.8: Laba sadex – xagal waxaa la odhan karaa way isku sar go'an yihiin haddii geesahood is lahaan karaan sidaa darteed dhinacyada gudboon waa kuwo isku sar go'an xaglaha gudboonna sidoo kale waa kuwo isku sargo'an.

Qeexidan sare waxaynu dib ugu cadayn karnaa jaantusyadan soo socda ee ku xusan hoos:

Qeexida 6.9: Labada sadex -xagal ee $\triangle ABC$ iyo $\triangle DEF$ way isku sargo'an yihiin waxaana loo qoraa $\triangle ABC \cong \triangle DEF$, hadii xaaladaha soo socda ay qancinayaan:

- | | | | |
|---|-------------------------------------|---|-------------------------------|
| 1 | $\overline{AB} \cong \overline{DE}$ | 4 | $\angle ABC \cong \angle DEF$ |
| 2 | $\overline{BC} \cong \overline{EF}$ | 5 | $\angle BCA \cong \angle EFD$ |
| 3 | $\overline{CA} \cong \overline{FD}$ | 6 | $\angle CAB \cong \angle FDE$ |



Jaantuska 6.39

- Xusuus: 1** Nidaamka calaamadaha $\triangle ABC \equiv \triangle DEF$ oo keliya inooma sheegayaan inay 2 saddex - xagal isku sargoan yihiin. Waxay sidoo kale inoo sheegayaan habaynta ku tirsanyaasha 2 da sadaxagal ee isku sar-go'an.
- 2** Jaantusyada isku sar go'an ku calaamadii si isku mid ah ku tirsanyaasha gudboon si ay kuu tusto gudboonaanta (isku beegnaanta) ka dhaxaysa labo sadex -xagal.

Tusaale 2: Haddii $\triangle PQR \equiv \triangle RST$ Tax dhinacyada xaglaha isu sargo'an

Furfuris: $\overline{PQ} \equiv \overline{RS}$ $\angle PQR \equiv \angle RST$
 $\overline{QR} \equiv \overline{ST}$ $\angle QRP \equiv \angle STR$
 $\overline{RP} \equiv \overline{TR}$ $\angle RPQ \equiv \angle TRS$.

Tusaale 3: Haddii $\triangle ABC \equiv \triangle DEF$ iyo $AB = 2BC$ kolkaa side bay u xiriirayaan DE iyo EF?

Furfuris: Markii $\triangle ABC \equiv \triangle DEF$

Kolkaa $AB = DE$ iyo $BC = EF$

Sidaa awgeed $AB = 2BC$ oo u dhiganta $DE = 2EF$

Koox – hawleedka 6.2

- 1** Gooso warqad cad ku sawir saddex-xagalo, saddex-xagal kasta kaga minguuri warqada khafiifka ah ee la dul dhigo sawirada si qumman oo salaxan ugu dul qabo saddex-xagalka asalka ah. Imisa hab ayuu saddex – xagalku ugu sar go'naan karaa laftigiisu?
- 2** Gooso warqad cad kuna sawir sadex-xagal siman oo aad ku soo min guurisay warqada khafiifka ah. Imisa hab ayuu sadexxagalku ugu sar-gonaan doonaa laftigiisa?

6.3.2 Tijaabooyinka Isku Sar -go'naanshaha Sadde-Xagallada

Qeexitaankii iku sar go'naanta saddex-Xagallada, waxaad ku soo aragteen inay laba saddex-xagal oo isku sar go'ani ay leeyihiin ku tirsanyaashooda gudboon ee isku sar go'an. Haddii aad haysato si aad u tilmanto laba sadde- xagal oo isku sar go'an, Ma ku cadaayn ama xaqiijin doontaa dhamaan Lix-xaaladood? Waxaa jira tijaabooyin kafaalo qaadaya isku sar 'go'naanta laba sadde- xagal xataa ku hubin la'aanta lixda xaaladood. Qaar ka mid ah waxan lagu cadeeyay hoos.

B. Tijaabada dhinac-xagal-dhinac ee saddex -xagal isku sargoan**Hawlgalka 6.7**

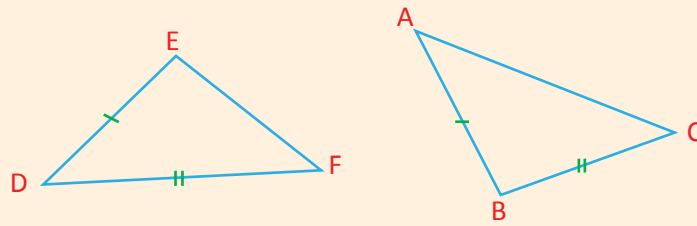
- 1
 - b Adiga oo isticmaalaya Mastarad iyo qalabka xaglo – beega ah ku sawir buuggaaga cashar qorista $\triangle ABC$ kaasoo leh labada dhinac ee \overline{AB} iyo \overline{BC} iyo Xagasha ku jirta ee u dhaxaysa labadaan dhinac ee $\angle B$ oo ah 90° iyo dhinacyada 3cm iyo 4cm.
 - t Sawir xariijinta DE ee dhererkeedu le'eg yahay dhererka \overline{BC} .
 - j Calaamadee xagasha barta D ee cabbirkeedu la mid yahay cabbirka $\angle B$.
 - x u adeegso D hal bar dhamaad oo xariijin ah, calaamadee \overline{DF} taas oo dhererkeedu la mid yahay \overline{BA} .
 - kh Dhamaystir $\triangle FDE$ kuna qabo barta F iyo E.
 - d U adeegso Mastarad kadibna Cabbir dhererka \overline{FE} is barbardhigna \overline{AC} .
 - r Ku cabbir xagal beeg $\angle E$ isbarbardhigna $\angle C$. Miyay isku sar go'an yihiin?
 - s Cabbir $\angle F$ oo is barbardhig cabbirka $\angle A$ Miyey isku sar go'an yihiin?
- 2 Adiga oo tixraacaya su'aasha 1 miyey isku sar go'an yihiin $\triangle ABC$ iyo $\triangle FDE$? Kani had iyo jeer Ma runbaa? Qaado saddex-xagallo badan inta aadkartid tijaabina.

Tijaabada dhinac – xagal – dhinac oo isku sar go'an

Laba saddex - xagal way isku sar go, an yihiin hadii ay jiraan isku beegnaan (gudboonaan) ka dhaxaysa geesaha kaas oo labada dlinac iyo xagasha ku jirta ee ugu horaysa ay isku sar go'an yihiin. Say u kala horeeyaan, qaybahan isku began ee saddex - xagalka labaaad.

Xusuus: Tijaabads sare waxaa lagu sharxi karaa soo gaabintan tijaabada Dhxdh.(SAS)

Tusaale 4: Jaantuska 6.40 fiiri $\triangle ABC$ iyo $\triangle DEF$, haddii



Jaantuska 6.40

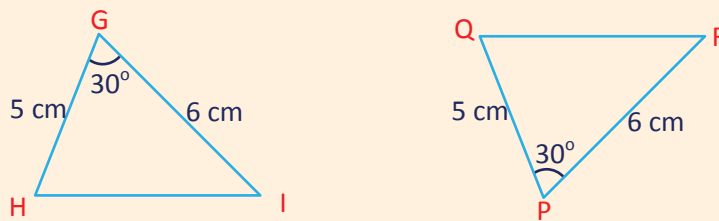
$\triangle DEF$, haddii

$$\overline{AB} \cong \overline{DE} \text{ iyo } \overline{BC} \cong \overline{EF}$$

Keebaa ay tahay inuu cadeeyo isku sargo'naanta xaglahs si ay $\triangle ABC \cong \triangle DEF$ ee tijaabadii Dhxdh? (SAS)

Furfuris: Haddii $\triangle ABC$ ay ku sargoan yihiin $\triangle DEF$ ee tijaabadii DhxDh, si cad ayay $\angle B \cong \angle E$; Markaa labadaan xaglood waa kuwo ka kooban oo dhinacyo isku sargo'a ni ka dhexeeyo.

Tusaale 5: Fiiri Jaantuska 6.41, Cadee in $\triangle GHI \cong \triangle PQR$. Dhinacee ku sargo'an \overline{HI} ?



Jaantuska 6.41

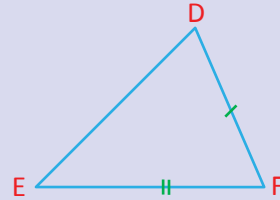
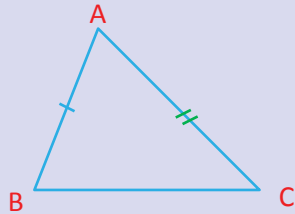
Cadayn:

- 1 $\overline{GH} \cong \overline{PQ}$ Siin
- 2 $\angle G \cong \angle P$ Siin
- 3 $\overline{GI} \cong \overline{PR}$ Siin
- 4 $\triangle GHI \cong \triangle PQR$ tijaabada DhxDh (SAS)
- 5 $\overline{HI} \cong \overline{QR}$

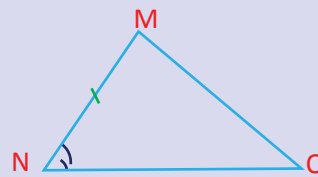
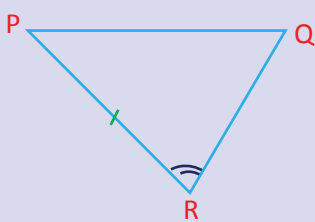
Laylis 6.6

- 1 Mid kasta oo ka mid ah kuwan soo socda, Magacaw qaybaha inay yihiin kuwo isku sar go'an si ay saddex-xagalladu u noqdaan kuwo isugu sargo'an tijaabadii DhxDh.(SA)

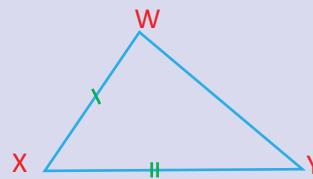
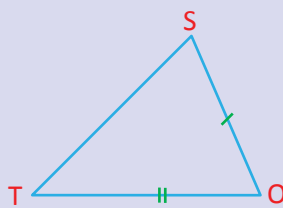
b



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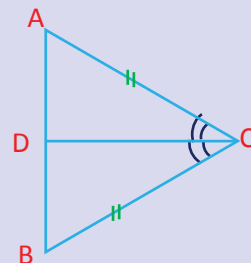


j



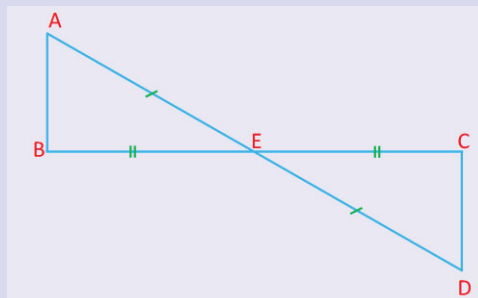
Jaantuska 6.42

- 2 Fiiri Jaantuska 6.43 haddii $\overline{AC} \equiv \overline{BC}$ iyo $\angle ACD \cong \angle BCD$, Cadee inay $\triangle ACD \cong \triangle BCD$



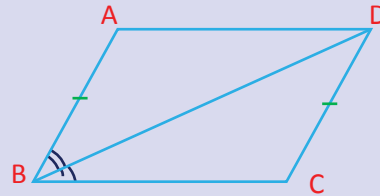
Jaantuska 6.43

- 3 Fiiri Jaantuska 6.44 Cadee in $\triangle AEB \cong \triangle DEC$



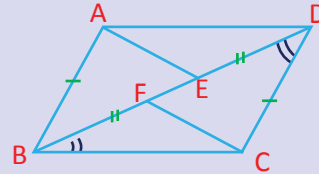
Jaantuska 6.44

- 4 Fiiri Jaantuska 6.45 Cadee in $\triangle ABD \cong \triangle CDB$.



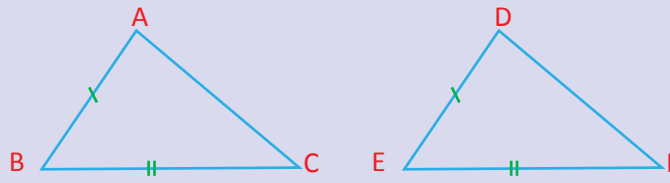
Jaantuska 6.45

- 5 Fiiri Jaantuska 6.46 hadii $\overline{AB} \cong \overline{CD}$, $\overline{BE} \cong \overline{DF}$ iyo $\angle ABE \cong \angle CDF$ Cadee in $\triangle AEB \cong \triangle CFD$?



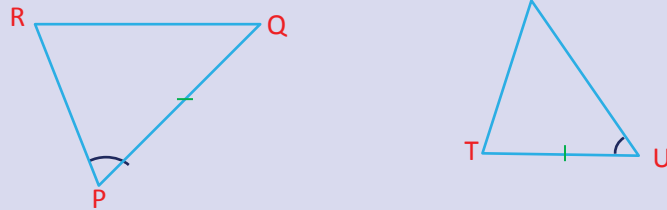
Jaantuska 6.46

- 6 Fiiri Jaantuska 6.47 hadii $\overline{AB} \cong \overline{DE}$ iyo $\overline{BC} \cong \overline{EF}$ xaglahee baa inay ku sar go'naadaan ay tahay si ay $\triangle ABC \cong \triangle DEF$ tijaabadii DhxDh? (SAS)



Jaantuska 6.47

- 7 Fiiri Jaantuska 6.48 hadii $(\overline{PQ}) \cong (\overline{TU})$, $\angle QPR \cong \angle TUS$, dhinacyadee bay tahay inay isku sar go'naadaan tijaabadii (DhxDh.) Siay $\triangle PQR \cong \triangle TUS$? (SAS)



Jaantuska 6.48

T. Tijaabada Dhinac-Dhinac-Dhinac (Dh.Dh.Dh)

Fiiri (B) Waxaynu ku soo aragnay sida loo tijaabiyo isku sar go'naanshaha saddex - xagallada iyadoo la adeegsanayo tijaabada dhinac – xagal – dhinac – Bal aynu fiirino sida isku sar go'naan -shaha loogu tijaabin karo saddex – xagallada iyada oo la adeegsanayo Dhinac – Dhinac – Dhinac. (Dh.Dh.Dh)

Koox – hawleedka 6.3

- 1 Adeegso lammaanaha xagal – beeg iyo Mastarad, dhis sadex – xagal ka ABC markii $AB = 6\text{cm}$, $BC = 7\text{cm}$ iyo $CA = 8\text{cm}$.
- 2
 - b Sawir xariijinta DE oo dhererkeedu = 6cm.
 - t U adeegso D bar dhamaadka jara goobo – badheed gacankeedu le’eg yahay BC.
 - j U adeegso E bar dhamaadka jara goobo – badheed gacankeedu le’eg yahay CA si ay isagagooyaan goobo – badheedka barta (t) bal labada goobo – badheed ha iska gooyaan F.
 - x Dhamaystir $\triangle DEF$ adiga oo sawiraya xariijinta isku xidha baraha F ilaa D iyo E.
- 3
 - b U adeegso qalabka xaglaha lagu cabiro $\triangle ABC$ iyo $\triangle DEF$.
 - t Is barbardhig $\angle A$ iyo $\angle D$; $\angle B$ iyo $\angle E$, $\angle C$ iyo $\angle F$ Xaglahan lammaani miyey isku sargo’an yihiin?
- 4 Waa maxay dhiraandhirinta ka dhaxaysa ee aad ku samaysay $\triangle ABC$ iyo $\triangle DEF$? Miyey isku sar go’an yiliin?

Koox – howleedkan sare iyo u kuurgelidii aad siiseen tijaabadii cusbayd ee isku sar go’naanta sadex-xagallada ee loo yaqaano tijaabada dhinac -dhinac – dhinac ee isku sargo’an.

Tijaabada dhinac-dhinac-dhinac ee isku sargo’naanta

Laba saddex-xagal way isku sar go’an yihiin hadii ay

Jiraan isku beegnaan ka dhaxaysa geesaha kaas

Oo 3 da dhinac ee hal saddex-xagal ay isku

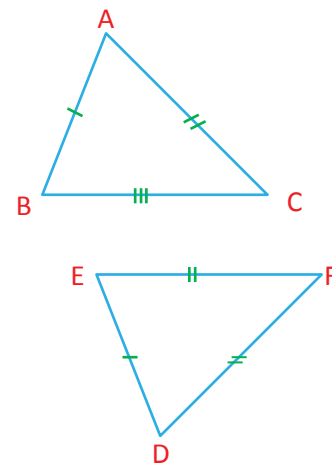
sar go’an yihiin, say u kala horeeyaan. Si ay

ugu beegnaadaan qaybaha saddex – xagalka labaad.

Soo gaabin, labada sadax-xagal ee ABC

iyo DEF, Haddii $\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}$, iyo $\overline{CA} \cong \overline{FD}$

kolkaa $\triangle ABC \cong \triangle DEF$.

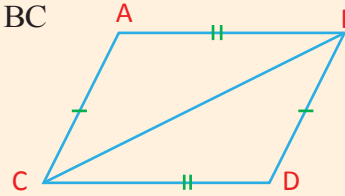


Jaantuska 6.49

Xusuus: Tijaabada sare ee isku sargo'naansh aha saddex-xagaldada waa mid ku tusinaya DhDhDh. (SSS)

Tusaale 6: Fiiri Jaantuska 6.50 $\overline{AB} \equiv \overline{DC}$ iyo $\overline{AD} \equiv \overline{BC}$

Cadee in $\triangle ADB \equiv \triangle CBD$
 kadibna $\angle A \equiv \angle C$



Jaantuska 6.50

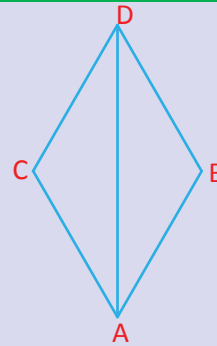
Cadayn: **Sababta**

- 1 $\overline{AB} \equiv \overline{CD}$ Siin
- 2 $\overline{AC} \equiv \overline{BD}$ Siin
- 3 $\overline{BC} \equiv \overline{BC}$ Dhinac Wadaag
- 4 $\triangle ACB \equiv \triangle CBD$ Talaabooyinka 1, 2, 3 iyo Dh. Dh. Dh
- 5 $\angle A \equiv \angle D$ qeexida sadex – xagalada isku sar go'an iyotalaabada **4aad** irra.

Laylis 6.7

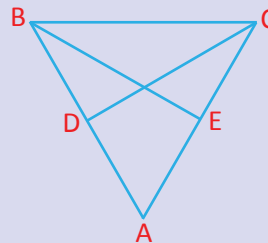
1 Fiiri jaantuskatu 6.51 $\overline{AB} \equiv \overline{AC}$ iyo $\overline{DB} \equiv \overline{DC}$

Raadi cabirka $\angle CDA$ haddii cabbirka $\angle BDA$ tahay 30° ?



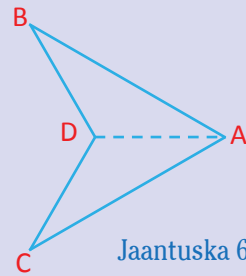
Jaantuska 6.51

2 Fiiri Jaantuska 6.52 $DB = 5\text{cm} = EC$ iyo $DC = 10\text{cm} = BE$. Haddii $m(\angle BDC) = 50^\circ$ raadi cabirka $\angle BEC$?



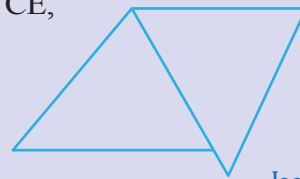
Jaantuska 6.52

- 3 Fiiri Jaantuska 6.53 $\overline{AB} \cong \overline{AC}$ iyo $\overline{DB} \cong \overline{DC}$
cadee in $\angle ADB \cong \angle ADC$



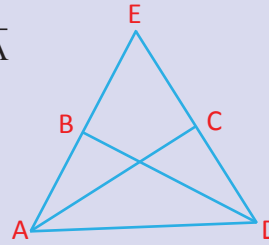
Jaantuska 6.53

- 4 Fiiri Jaantuskatus 6.54 $\overline{AC} \cong \overline{ED}$ iyo $\overline{BC} \cong \overline{CE}$,
hadii $m(\angle BCA) = 70^\circ$ Raadi cabbirka $\angle D$.



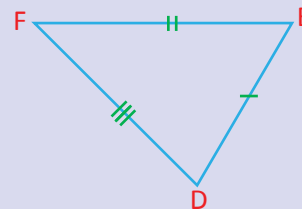
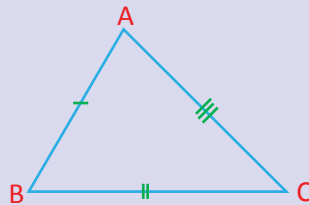
Jaantuska 6.54

- 5 Fiiri Jaantuskatus 6.55 $\overline{AB} \cong \overline{CD}$ iyo $\overline{BD} \cong \overline{CA}$
Cadee in $\triangle ABD \cong \triangle DCA$.



Jaantuska 6.55

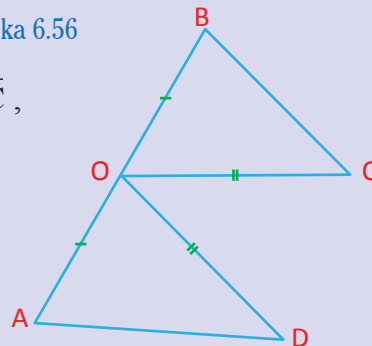
- 6 Fiiri Jaantuska 6.56 $\overline{AB} \cong \overline{DE}$, $\overline{BC} \cong \overline{EF}$ iyo $\overline{CA} \cong \overline{FD}$, hadii $\triangle ABC$ uu yahay
saddex – xagal xagal fiiqan waa maxay nooca sadex – xagalka $\triangle DEF$?



Jaantuska 6.56

- 7 Fiiri Jaantuska 6.57 $\overline{BO} \cong \overline{AO}$ iyo $\overline{OD} \cong \overline{OC}$,

$\triangle BOC \cong \triangle AOD \cong \triangle AOD$ kolkaa
DhDhDh kuwa ka soo hadhay ee
dhinacyada $\triangle BOC$ iyo $\triangle ADO$ waa
in ay isku sar go'naadaan?



Jaantuska 6.57

C Tijaabada Xagal-Dhinac-Xagal ee isku sargo'naanshaha Saddex-Xagallada:

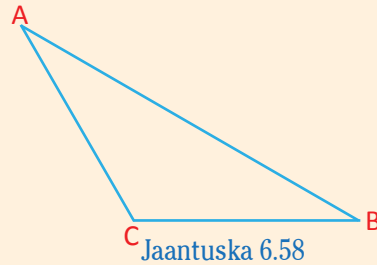
Sidii aydin ku soo aragteen tijaabooyinkii B iyo T waxay kususayeen isku sar go'naanta saddex-xa-gallada. Ka hor inta aydaan dhamaynin tijaabinta isku. Sar go'naan-shaha saddex – xagallada. Balaynu eegno tijaabada sadexaad oo loogu yeedho xagal – dhinac – xagal. (X.Dh.X)

Laakiin marka hore aynu eegno qeexida soo socota.

Qeexida 6.9: Dhinac waa midka lagu sheego inuu yahay ka ku dhex jira ama u dhexeeya laba xaglood hadii geesaha xagluhu ay sameeyaan bar-dhamaadka dhinaca.

Tusaale 7: Fiiri Jaantuska 6.58 Ma xariijinta

\overline{AC} ayaa ku dhexjirta $\angle A$ iyo $\angle C$?



Furfuris: Markii geeska A iyo C ay yihiin bar-dhamaadka \overline{AC} kolkaa \overline{AC} waxay ku dhex - jirtaa $\angle A$ iyo $\angle C$.

Hawlgalka 6.8

- 1 Adeegso xagal beeg iyo mastarad dhis $\triangle ABC$ kaa soo cabbirkiisu yahay m ($\angle A$) = 70° $AB = 5\text{cm}$ iyo m ($\angle B$) = 60° .
- 2 **b** Sawir xariijinta DE dhererkeedu yahay 5cm.
 - t** Bar – dhamaadka D ku dhis Xagal ku sargoan $\angle A$.
 - j** Bar dhamaadka E ku dhis xagal ku sar go'an $\angle B$.
 - x** Sawir falaadh dhexmarta D iyo E calaamadee halka ay iska jaraan oo ah F.
 - kh** Cabbir dhererka \overline{AC} iyo \overline{DF} isbarbardhig. Miyey isku sargo'an yihiin?
 - d** Cabbir dhererka \overline{BC} iyo \overline{EF} isbarbar dhigna. Miyay isku sar go'an yihiin?
 - r** Cabbir Xaglaha C iyo F isbarbar dhigna. Miyey isku sargo'an yihiin?
- 3 Miyey isku sar go'an yihiin saddex-xagalda $\triangle ABC$ iyo $\triangle DEF$? Waayo?

Haddii aad hawlgalkan sare ka soo shaqaysay si sax ah waxaad arki doontaa in $\triangle ABC \cong \triangle DEF$ iyo kan oo ina siinaya natiijada tijaabada saddexaad ee saddex - xagalka isku sar go'an ee loo yaqaano xagal - dhinac - xagal. (ASA)

Tijaabada Xagal – dhinac – Xagal ee isku sar go'naanshaha Saddex -Xagallada

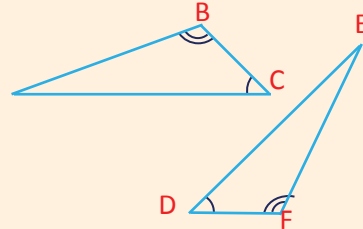
Laba saddex - xagal way isku sar go'an yihiin haddii ay jiraan isku beegnaan ka dhexaysa geesaha kuwaasoo labada Xaglood iyo dhinaca ku dhex jira hal saddex - xagal oo isku sar go'an, say u kala horeeyaan, kuwan oo ku began qaybaha saddex - xagalka labaad.

Xusuus: Tijaabada sare waxaa si gaaban loo gu sharxayaa sida tijaabada X dh X. (ASA)

Tusaale 8: Fiiri jaantuska 6.59 $\angle A \cong \angle F$

$\overline{AC} \cong \overline{FD}$ iyo $\angle C \cong \angle D$. haddii

$m(\angle B) = 20^\circ$, waa Imisa $m(\angle E) = ?$



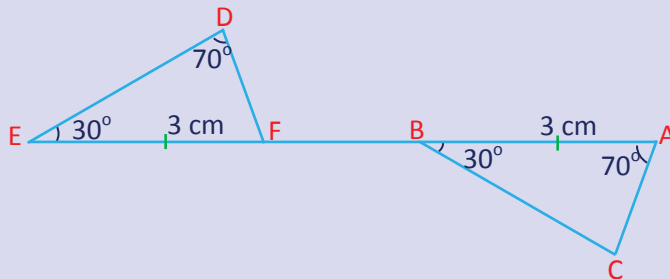
Jaantuska 6.59

Furfuris: Markii $\angle A \cong \angle F$, $\overline{AC} \cong \overline{FD}$ iyo $\angle C \cong \angle D$ kolkaa $\triangle ABC \cong \triangle FED$ ee tijaabada X DH X. (ASA) S/awgeed $\angle B \cong \angle E$ Qeexida sidaas darteed $m(\angle E) = 20^\circ$.

$$\therefore m(\angle E) = 20^\circ$$

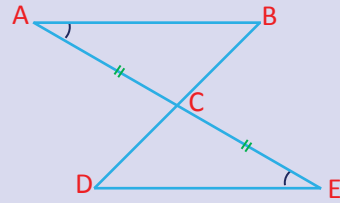
Laylis 6.8

1 Fiiri jaantuska 6.61 cadee $\triangle DEF \cong \triangle CAB$.



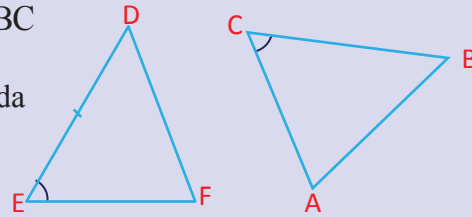
Jaantuska 6.61

2 Fiiri jaantuska 6.62 $\triangle ABC \cong \triangle EDC$? faahfaahi



Jaantuska 6.62

3 Fiiri jaantuska 6.63 $\angle E \cong \angle C$ iyo $\overline{DE} \cong \overline{BC}$. Xaglaheebaa ay tahay inay ku sar go'naadaan $\triangle ABC \cong \triangle FDE$ ee tijaabada XDHX?



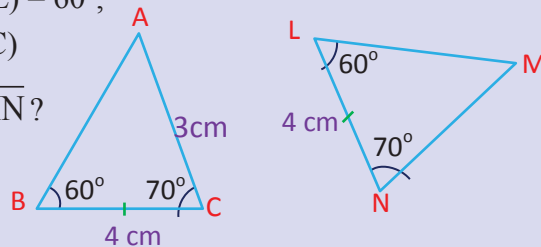
Jaantuska 6.63

4 Fiiri jaantuska 6.64 labadee baa ay tahay inay isku sargo' aan si $\triangle GHE \cong \triangle KLM$ ee tijaabada XDHX?



Jaantuska 6.64

5 Fiiri jaantuska 6.65, $m(\angle B) = m(\angle L) = 60^\circ$, $s(\overline{BC}) = s(\overline{NL}) = 4\text{cm}$, iyo $m(\angle C)$ $m(\angle N) = 70^\circ$, raadi dhererka \overline{MN} ?



Jaantuska 6.65

6.4 CABBIRAADA

Casharkan waxaad ku baran doontaan sida loo xisaabiyo ama looga shaqeeyo bedka xaglaha qumman ee saddex xagalada oo ku sallaysan qaaciidada bedka ee laydiga. Halbeegyada bedka sida loogu badelo hal qaab, qaabab kale iyo sida looga shaqeeyo wareega saddex xagallada. Waxaad sidoo kale ku arki doontaan

qaaciidada mugga Biriisim leydiyeed iyo halbeeg bedelka mugga loogu bedelayo hal qaab qaababkale.

6.4.1 Bedka Xaglaha Qumman ee Sadde Xagalka iyo Wareega Sadde-xagalada

Maxasuusan tihiin qeexida iyo qaaciidada bedka leydi? Qaaciidada ku salaysan bedka leydi. Waxa aad ka soo dhiraandhirin doontaan qaaciidada bedka xaglaha qumman ee saddex xagalada.

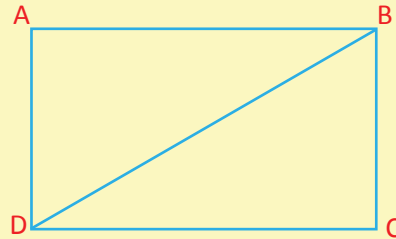
Hawl galka 6.9

- 1 **b** waa noocma Afar- geeslaha leydiga ahi?
t Waa imisa cabbirka xagal kasta ee leydi?
- 2 Tixgeli leydi dhererkiisu yahay 3cm iyo ballaciisa oo dhan 4cm. markaa:
b imisa senti mitir laba jibbaaran ayaad u qaybin kartaa leydiga?
t Maxaad ugu yeedhaa tiraada sentimitirka laba jibbaaran ee aad uqaybisay leydiga?
- 3 Tixgeli leydiga dharekiisu yahay “ ℓ ” halbeeg iyo ballaca “ w ” halbeeg Halkaasoo ℓ iyo w ay yihiin tirooyinka idil.
b imisa halbeeg laba jibbaaran ayaad u qaybin kartaa leydiga?
t Maxaad ugu yeedhaa tirade halbeega laba jibbaaran ee aad u qeybisay leydiga?

Xusuusnow:

- 1 Kani waa afar geesle afar dhinac leh, dhinacyada iska soo horjeedaa ay isku sar go’an yihiin, xaglihiisuna waa xaglo qumman. Bedka leydi (A) waa dhererka (ℓ) iyo ballaca (w) lagu siiyay tarantooda. Sida:

$$A = \ell \times w \text{ halbeeg laba jibbaaran.}$$

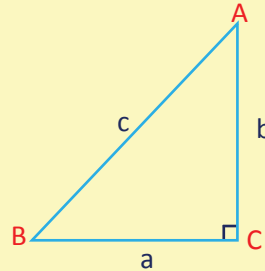


Jaantuska 6.66

2 Leydiga dhexdiisa xariijinta isku xirta geesaha iska soo horjeeda ayaa loo yaqaanaa xaglo gooye. Fiiri jaantuska \overline{BD} waa xaglo - gooye.

Bedka (A) saddex - xagal xagal qumman leh waa ka leh dhererka labada addimood (dhinacyada ka gaaban) waa a and b sida ay u kala horeeyaan waa:

$$A = \frac{1}{2} \times a \times b \text{ halbeeg laba-jibbaaran}$$



Jaantuska 6.67

Tusaale 1: Ka shaqee bedka saddex-xagal xagal-qumman leh, hadii dhererka iyo ballaca saddex xagalku yihiin 6cm iyo 8cm, sida ay u kala horeeyaan.

Furfuris: Siin $\ell = 6\text{cm}$, $w = 8\text{cm}$

$$\text{Sida loo helo bedka (A) saddex-xagal } A = \frac{1}{2} \times \ell \times w$$

$$\begin{aligned} &= \frac{1}{2} \times 6\text{cm} \times 8\text{cm} = \frac{48}{2} \text{cm}^2 \\ &= 24 \text{ sentimitir labajibaaran} \end{aligned}$$

Tusaale 2: Dhul-beereed leh qaab sadex-xagal xagal quman hadii dhererka iyo ballaca dhulku kala yahay 5m iyo 12m, say u kala horeeyaan, waa imisa goobtaas ku dhexoodan sadexagalku?

Furfuris: Siin $\ell = 5\text{m}$, $w = 12\text{m}$ sida lagu helo bedka waa

$$A = \frac{1}{2} \times \ell \times w = \frac{1}{2} \times 5 \times 12 = 30 \text{ m}^2 \text{ (mitir labajibaar).}$$

S/darted, meesha dhulka ah ee oodani waa 30 mitir oo laba jibaaran. Jaantuskatusyada bedka eekala duwan waxaa lagu cabbiraa halbeegyo kala duwan. Halbeegyada caanka ah ee bedka waxaa ka mid ah: Sentimitir laba jibbaaran & mitir labajibaaran Bal aynu eegno sida midba midka kale loogu bedelo.

1 Tixgeli bedka 1 mitir oo labajibaaran.

$$1 \text{ mitir labajibaar} = 1 \text{ mitir} \times 1 \text{ mitir}$$

$$= 100 \text{ sentimitir} \times 100 \text{ sentimitir}$$

$$= 10,000 \text{ sentimitir labajibaaran}$$

S/darted, 1 mitir laba jib = 10,000 sentimitir la ba jib.

- 2 Tixgeli bedka 1 sentimitir laba jibaran.

$$\begin{aligned} 1\text{sentimitir labajibaar} &= 1\text{sentimitir} \times 1\text{sentimitir} \\ &= \frac{1}{100}\text{mitir} \times \frac{1}{100}\text{mitir} \left(\frac{1}{100}\text{mitir laba jibaar} \right) \\ &= 0.0001\text{mitir laba jibaar} \end{aligned}$$

S/awgeed.

$$1\text{ senti mitir laba jibaaran} = 0.0001 \text{ mitir laba jibaaran}$$

- 3 Halbeega sadexaad ee bedku waa hektarka. Waxaad adeegsataan marka aad cabbiraysaan bedka dhulka.

$$1\text{hektar} = 10,000\text{mitir laba jibaaran}$$

Sidaa darted markii aad hektarka u badalaysaan mitir labajibaaran waxaad ku dhufanaysaan 10,000 markii aad u bedalaysaan mitir labajibaaran hiktarka waxaad u qaybisaan 10000.

Tusaale 3: U bedel 7 mitir oo labajibaaran sentimitir labajibaaran.

Furfuris: $1\text{m}^2 = 10\,000\text{cm}^2$.

$$7\text{m}^2 = 7 \times 10,000\text{cm}^2 = 70\,000\text{cm}^2$$

Tusaale 4: 860 000cm² u bedel m².

Furfuris: Markii $10000\text{cm}^2 = 1\text{m}^2$, $860\,000\text{cm}^2 = \frac{860,000}{10,000}\text{m}^2$
 $= 86\text{m}^2$

Tusaale 5: 5 hektar u bedel m² iyo cm².

Furfuris: $1\text{hektar} = 10,000\text{m}^2$

$$= (10,000 \times 10,000)\text{cm}^2$$

$$= 100,000,000\text{cm}^2.$$

$$\text{Kolkaa 5 heektarka} = 5 \times 10,000\text{m}^2$$

$$= 5 \times 100,000,000\text{cm}^2$$

$$= 500,000,000\text{cm}^2$$

$$= 50,000\text{m}^2$$

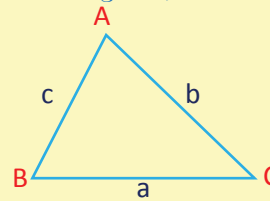
Tusaale 6: $680,000\text{m}^2$ u bedel hektar.

Furfuris: Markii $10,000\text{m}^2 = 1$ hektar

$$680,000\text{m}^2 = \frac{680,000}{10,000} = 68 \text{ hektar}$$

Fasalkii 5^{aad} waxaad ku soo barateen sida loo xisaabiyo ama looga shaqeeyo wareega saddex - xagalka.

Xusuus: Wareega saddex-xagal waa fogaanta ku wareegsan sadex-xagalka. Hadii, a, b iyo c' ay yihiin dhererka dhinacyada saddex-xagalka, kolkaa wareega saddex xagalku waa, $(a+b+c)$ oo halbeeg.



Jaantuska 6.68

Tusaale 7: Ka shaqee wareeg sadex-xagal dhinacydiisu kala yihiin 8cm, 9cm iyo 13cm.

Furmaata: Wareega s/xagal = wadarta dhererka dhinacyada.

$$= 8\text{cm} + 9\text{cm} + 13\text{cm} = 30\text{cm}$$

Tusaale 8: Raadi dhererka dhinaca sadexaad ee sadex-xagal labadiisa dhinac ee kale yihiin 6cm iyo 10cm iyo wareegiisa oo ah 29cm.

Turfuris: Bal dhererka dhinaca sadexaad aan u qaadano x, kadibna.

$$\text{Wareegu} = 6\text{cm} + 10\text{cm} + x\text{cm}$$

$$29\text{cm} = 16\text{cm} + x\text{cm}$$

$$x = 29\text{cm} - 16\text{cm}$$

$$x = 13\text{cm}$$

S/awgeed dhinaca 3aad dhererkiisu waa 13 cm.

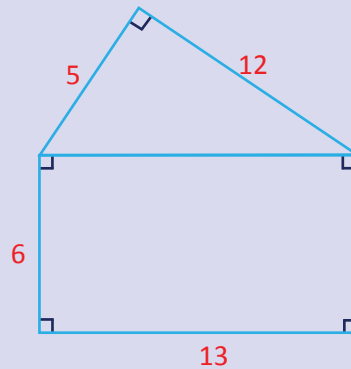
Laylis 6.9

- 1 Raadi bedka sadexagal xagal quman, kaasoo labadadhinac ee gaabani dhererkoodu kala yahay 6cm iyo 8cm?
- 2 Hal addin (lug) iyo bedka sadexagal xagal qumman ayaa kala ah 8cm iyo 24cm^2 , say u kala horeeyaan, raadi dhererka lugta (adinka)?

- 3 Hadii a iyo b ay yihiin dhererka lugaha (adimada) sadexagal iyo A oo ah badkiisa kadib ku minguuri oo dhamaystir tusahan soo socda ee hoose buuggaga cashar qorista.

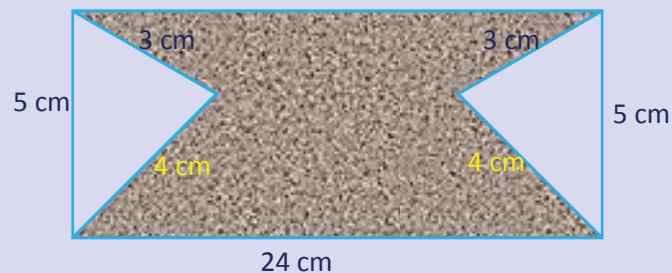
b	t	A
3		6
6	8	
	24	216

- 4 Fiiri jaantuskataska: 6.68, Raadi bedka.



Jaantuska 6.69

- 5 U bedel kuwan soo socda m^2 .
b $50,000cm^2$ **t** $1000cm^2$ **j** 6 heekta.
- 6 U bedel kuwan soo socda cm^2 .
b $8m^2$ **t** $0.6m^2$ **j** 3 heekta.
- 7 U bedel hektaro.
b $60,000m^2$ **t** $400,000,000sm^2$ **j** $120m^2$
- 8 Jaantuskataska 6.70 ka shaqee wareega iyo bedka qaybta hadhaysan.



Jaantuska 6.70

- 9 Ka shaqee wareega sadexagalka kaasoo dhererka 3 dhinac wata.
b 8sm, 11sm, iyo 13sm **t** 21sm, 11sm, iyo 25sm
j 9sm, 12sm, iyo 15sm

- 10** Dhererka labada dhinac ee sadex – xagal lagu siiyay ayaa kala ah 5cm iyo 14cm hadii uu wareega saddex-xagalku yahay 26sm soo saar lugta 3^{aad}.
- 11** Sadexagal xagal quman leh 3 diisa dhinac dhereradooduna kala yihiin 6sm, 8sm iyo 10sm.
- b** soo saar wareega sadex xagal.
- t** soo saar bedka sadex-xagalka.

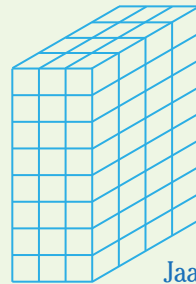
6.4.2 Mugga Biriisam Laydiyeed

Sida ugu badan ee caadiga ah markii loo fiirsado Biriisamku waa sanduuq maadaama salkiisu yahay leydi, geesaha dhinacyadiisuna ay yihiin kuwo ku qotoma salka, waxaana la odhan karaa biriisam leydiyeedku waa adke kasta oo meel oodan ah, meeshaas oodan (xiran) ee biriisamka ayaa la yidhaahdaa mugga biriisamka.

Waad qiyaasi kartaa mugga biriisam leydiyeed buuxinaya ee wata halbeega saddex jibbaaran. Taas oo ah tirada halbeega saddex-jibaaran ee buuxiya biriisam leydiyeedku inuu yahay mugga biriisam leydiyeedka

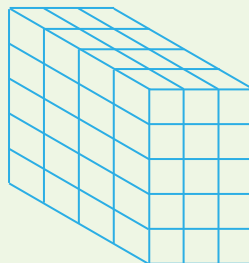
Hawlgalka 6.10

- 1** Imisa halbeeg saddex jibaaran ayaan ku buuxin karnaa biriisam leydiyeed
- b** dherer = 3cm balla C = 4cm iyo jog = 8cm?



Jaantuska 6.71

- t** dhare = 3cm, ballac = 4cm iyo jooga = 5cm?



Jaantuska: 6.72

- 2** Imisa halbeeg oo saddex jibaaran baan ku buuxin karnaa biriisam leydiyeed cabbirada dhinacyadiisu kala yihiin “ ℓ ” halbeeg, “ w ” halbeeg iyo “ h ” halbeeg? Maxaad ugu yeedhi (odhani) tirada halbeega sadex jibaaran ee aad ku buuxisay biriisamka?

Hawlgalkan sare, waxaad ku arki kartaa in: Mugga biriisam leydiyeed cabbirada dhinacyadiisu kala yihiin ℓ = dhererka, w = balaca iyo h = joogga waa:

$$V = \ell \times w \times h \text{ oo halbeegyo saddex - jibbaaran}$$

Tusaale 1: Soo saar muga biriisam leydiyeed dhererkiisa, ballaciisa iyo joogiisuba kala yihiin 8cm, 6cm iyo 10cm, say u kala horeeyaan.

Furfuris: Muga biriisamka = $\ell \times w \times h$

$$= 8\text{cm} \times 6\text{cm} \times 10\text{cm}$$

$$= 480\text{cm}^3$$

Tusaale 2: Muga biriisam leydiyeed lagu siiyay oo ah 270 Halbeeg 3 jibaar. Hadii dhererka iyo ballaca Biriisamku kala yihiin 6 halbeeg iyo 9 halbeeg, say u kala horeeyaan, soo saar joogga biriisamka.

Furfuris: Mugga = $\ell \times w \times h$

$$= 6 \times 9 \times h$$

$$270 = 54h$$

$$h = \frac{270}{54} = 5 \text{ halbeeg}$$

Mugga adkayaasha waxaa lagu sharxaa adeegsiga halbeegyada kala duwan ee cabbiraada. Tusaale: sentimitiro sadex – jibaaran (cm^3), Mitiro sadex – jibaaran (m^3), litir, mililitiro oo ah halbeegyada muga qaar ka mid ah, ee aad ku arki doontaan sida la isugu bedelo hal halbeeg oo mug ah mid kale.

1 $1\text{m}^3 = 1\text{m} \times 1\text{m} \times 1\text{m}$

$$= 100\text{cm} \times 100\text{cm} \times 100\text{cm}$$

$$= 1,000,000\text{cm}^3$$

Sidaa awgeed, $1\text{m}^3 = 1,000,000\text{cm}^3$

$$1\text{m}^3 = 1,000,000\text{cm}^3$$

$$2 \quad 1\text{cm}^3 = 1\text{cm} \times 1\text{cm} \times 1\text{cm}$$

$$= \frac{1}{100}\text{m} \times \frac{1}{100}\text{m} \times \frac{1}{100}\text{m}$$

$$= \frac{1}{1,000,000}\text{m}^3 = 0.000001\text{m}^3$$

$$\text{S/awgeed, } 1\text{cm}^3 = 0.000001\text{m}^3$$

$$3 \quad 1 \text{ litir} = 1000 \text{ militir} = 1000\text{cm}^3$$

Tusaale 3: u bedel 5 litir militir.

Furfuris: 1litir = 1000 militir

$$5\text{litir} = 5 \times 1000 \text{ militir}$$

$$= 5000 \text{ militir}$$

Waxaynu usoo gaabin karnaa militirka ml

Sidaa awgeed 5litir waa 5000ml.

Tusaale 4: U bedel 6000,000 cm³ litiro, iyo mitiro.

Furfuris: 1000cm³ = 1litira

$$\text{S/awgeed } 6,000,000 \text{ cm}^3 = \frac{6,000,000}{1,000,000} \text{L} = 6000\text{litir}$$

$$\text{Silamida } 1000 \text{ 000cm}^3 = 1\text{m}^3$$

$$\text{S/awgeed, } 6,000,000 \text{ cm}^3 = \frac{6,000,000}{1,000,000} \text{m}^3$$

$$= 6\text{m}^3$$

$$\text{Sidaa darted, } 6,000,000\text{cm}^3 = 6000 \text{ L} = 6\text{m}^3$$

Tusaale 5: U bedel 10 mitir sadex jibbaaran, sentimitir sadex - jibbaaran.

Furfuris: 1m³ = 1,000,000cm³

$$\text{S/awgeed, } 10\text{m}^3 = 10 \times 1,000,000\text{cm}^3$$

$$10\text{m}^3 = 10,000,000\text{cm}^3$$

Laylis 6.10

- 1 waa imisa saddex-jibaaran litirada biyo aynu ka buuxin karno qaabkiisu yahay biriisam leydiyeed cabbirada dhinacyadiisu kala yihiin $10m \times 20m \times 15m$?
- 2 Mugga biriisam leydiyeed oo dhan $300cm^3$. Haddii dhererka iyo ballaca Biriisamku yihiin 10cm iyo 5cm, siday u kala horeeyaan, soo saar jooga biriisamka?
- 3 Kuwan soo socda u bedel mid kasta mitir saddex jibaaran.
 - a $3,000,000,000 \text{ sm}^3$
 - b $500,000,000 \text{ sm}^3$
 - c $92,000,000 \text{ sm}^3$
- 4 Kuwan soo socda u bedel mid kasta sentimiitiro sadex-jibaaran.
 - a $5m^3$
 - b $27m^3$
 - c $32m^2$
- 5 Kuwan soo socda u bedel mid kasta mililitiro.
 - a 62litir
 - b 5litir
 - c 96litir
- 6 kuwan so socda u bedel mid kasta sentimitir sadex-jibaran.
 - a 2litir
 - b 5mililitir
 - c 11,000,000militir
- 7 kuwan soo socda u bedel mid kasta litriro.
 - a $2,000,000sm^3$
 - b 5,000,000 ml
 - c 6 m^3
- 8 Qarruurad ay kujiraan caano ka kooban 300ml. imisa litir oo caano ah ayaa qaruurada ku jirta?
- 9 Cabbirada dhinacyada sagxada qolalka kala ah $3m \times 5m$. Haddii joogga qolku yahay, 12m, soo saar mugga hawo ee ku jirta qolka?
- 10 Salka qol afar gees (laba jibbaarane) ah oo dhiniciisu yahay 5cm. Haddii muga qolku uu yahay $200m^3$ soo saar joogga qolka.

Hubin

↳ Xaglo Deris ah	↳ Litirka
↳ Xaglo gudeed talantaali ah	↳ Mitir saddex jibaaran
↳ Qaaciidada Bedka S/xagal xagal quman	↳ Militir
↳ Senti mitir saddex-jibbaaran	↳ Xariiqaha barbarada ah
↳ Xagasha dhamaystirta	↳ Wareega saddex-xagal
↳ Xaglaha is dhamaystira	↳ laydi
↳ Saddex-xagalada isku sargo'an	↳ Biriisam leydiyeed
↳ Xaglo dibadeedyada dhinacyada iskumidka ah ee gudbana	↳ Saddex xagal xagal quman Xagasha buuxisa
↳ Xaglo gudeedyada dhinacyada isku midka ah ee gudbanaha	↳ Xaglaha isbuuxsha Gudbane
↳ Lammaaneyaasha toosan ee xaglaha derisk ah	↳ Halbeeg saddex jibaaran
↳ Xaglaha iska soo horjeeda ee taagan	



Soo Koobida Cutubka

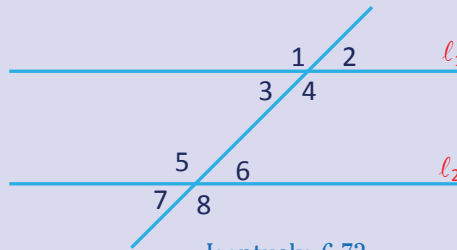
- 1 Laba xaglood oo wadaaga dhinac iyo gees ayaa loo yaqaanaa xago deris ah.
- 2 Habo xaglood oo deris ahi dhinacyada aanay wadaagin ee sameeya xariiqda toosan ayaa loo yaqaanaa hamaanaha toosan.
- 3 Xaglaha iska soo horjeeda ee taagan way is le'eg yihiin.
- 4 Labada xaglood ee wadarta cabbirkoodu yahay 90° waxaa la yidhaahdaa xaglaha is dhamaystira. Haddii labada xaglood ee x iyo y ay yihiin kuwo is dhamaystira, kolka x waa dhamaystiraha y lidkeeduna waa la mid.
- 5 Labada xaglood ee α iyo β waa xaglo is buuxiyo, hadii wadarta cabbiradoodu tahay 180° “ α ” waxaa la yiraahdaa buuxiyaha β lidkeeduna waa la mid.
- 6 Xariiqda ka gudba laba ama in ka badan oo xariiqood ayaa loo yaqaanaa gudbane.

- 7 Laba xariiqood oo toosan oo laga helo sallax isku mid ah waa bar-baro, hadii ayna is goynayn. Sikasta ha ahaatee w.
- 8 Markii laba xariiqood oo barbaro ah yihiin kuwo uu ka gudbo gudbanuhu:
- ♦ Xaglaha gudboon way isku sargo'an yihiin.
 - ♦ Xaglo gudeedka talantaaliga ahi way isku sargo'an yihiin.
 - ♦ Xaglo dibadeedka talantaaliga ahi way isku sargo'an yihiin.
 - ♦ Xaglo gudeedyada dhimacyada isku midka ah ee gudbanuhu way is buuxshaan.
- 9 Saddex-xagalkasta oo wadarta 2da dhinac ee kasta ee xaglihiisu way is le eg yihiin.
- 10 Saddex – xagalka labaalaha ah labadiisa xaglood way is leg yihiin.
- 11 Sadaxagalka siman cabirka xagal kasta waa 60° .
- 12 Hadii labada dhinac ee sadexagal yihiin kuwo aan is le ekayn xaglaha iska soo horjeeda ee dhinacyadani isma le'eka xagasha ugu waynina waa mid ka soo horjeeda dhinaca ugu dheer.
- 13 Hadii labada xaglood ee sadexagal ayna isle'ekayn, dhinacyada iska soo horjeeda ee xagalahani isma le'eka dhinaca ugu dheeri wuxuu ka soo horjeedaa xagasha ugu wayn.
- 14 Labo jaantuskatus joomatariyeed way isku sar go'an yihiin hadii ay leeyihiin qaab iyo baaxad isku mid ah.
- 15 Labo saddex-xagal way isku sargoan yihiin, hadii ay labada dhinac ee gudbooni (iskubeegani) isku sar goan yihiin xaglaha gudboonina isku sargo an yihiin.
- 16 Isku sar go'naanshaha laba sadexagal waxaa lagu mujin (tusin) karaa mid ka mid ah tijaabooyinka (SAS), (SSS), ama (ASA). Oo ku xidhan waxa ay ina siinayaan ku tirsaneyaasha sadexagalladu.
- 17 Bedka (A) sadexagal xagal quman leh oo ay dhinacyadiisu a, b, iyo c halbeeg yihiin waa ,
- $$A = \frac{1}{2} \times a \times b \text{ halbeeg. Laba jibaaran iyo wareega sadaxagal oo ah.}$$
- $$P = (a+b+c) \text{ halbeeg.}$$
- 18 $1\text{m}^2 = 10,000\text{cm}^2$
- 19 $1\text{cm}^2 = 0.0001\text{m}^2$
- 20 $1 \text{ hektar} = 10,000\text{m}^2$
- 21 $1\text{m}^3 = 1,000,000\text{cm}^3$
- 22 $1\text{cm}^3 = 0.000001\text{m}^3$
- 23 $1\text{litir} = 1000\text{ml} = 1000\text{cm}^3$
- 24 $1\text{m}^3 = 1000\text{litir}$

? Layliska guud ee cutubka 6^{aad}

- 1 Soo saar jooga leydi hadii Bedka laydi yahay 32cm^2 salkiisuna yahay 16cm ?
- 2 Raadi (hel) dhamaystiraha iyo buuxiyaha xagalahan soo socda.
b 20° **t** 30° **j** 45°
- 3 Wareega sadaxagalka ah 14cm . Haddii dhinacyada saddex xagalku haystaa yihiin dherer 5cm iyo 3cm raadi dhererka dhinaca sadexaad?
- 4 Badka sadex – xagal quman leh waa 64cm^2 , haddii dhererka adin (lug) ay tahay 16cm , raadi dhererka lugta kale?
- 5 Buuxiyaha xagasha 30° wuxuu laba jeer ka badan yahay xagasha raadi xagashaa?

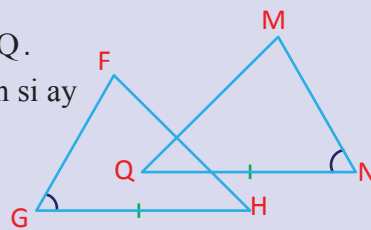
6 Jaantuska 6.73.



Jaantuska 6.73

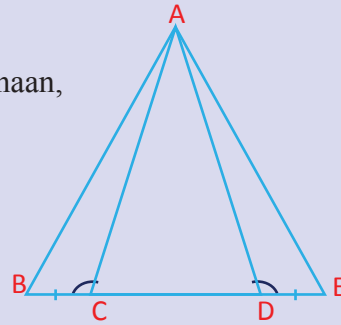
- b** Maxaad ugu yeedhaa lamaanaha xagasha 1 iyo 5?
- t** Maxaad ugu yeedhaa lamaaneyaasha xagal aha 3 iyo 6?
- j** Maxaad ugu yeedhaa lamaanaha xagasha 1 iyo 4?
- x** Ma xaglaha 1 iyo 2 ayaa ah xaglo deris ah? Waayo?
- kh** Goormay lamaanaha xaglaha 1 iyo 5 is le'eeg yihiin?
- 7 Kee baa ururada tirooyinka soo socda noqon kara shaqada dhererka dhinacyada sadex-xagal?
b 6,7,9 **t** 6,6,12 **j** 8,8,15
- 8 Sadex-xagalka $\triangle ABC$ $s(\overline{AB}) = 6\text{cm}$, $s(\overline{BC}) = 8\text{cm}$ iyo $s(\overline{CA}) = 9\text{cm}$ waatee xagasha ugu wayni? Teebaase ugu yar?

- 9 Fiiri Jaantuska: 6.74, $\overline{GH} \cong \overline{QN}$ iyo $\angle FGH \cong \angle MNQ$.
 Dhinacyadeebay tahay inay isku sar go'naadaan si ay $\triangle FGH \cong \triangle MNQ$



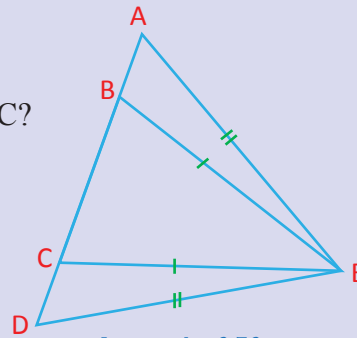
Jaantuska 6.74

- 10 Jaantuska 6.75, $\overline{BC} \cong \overline{DE}$ iyo $\angle ACB \cong \angle ADE$
hadii $\overline{AC} \cong \overline{AD}$ miyey isku sar go'naan doonaan,
 $\triangle ACB \cong \triangle ADE$ waayo?



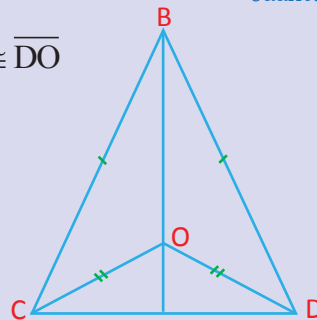
Jaantuska 6.75

- 11 Jaantuska 6.75, $\overline{AE} \cong \overline{DE}$, $\overline{BE} \cong \overline{CE}$
Hadii $\angle AEC \cong \angle DEB$ miyey, $\triangle AEB \cong \triangle DEC$?



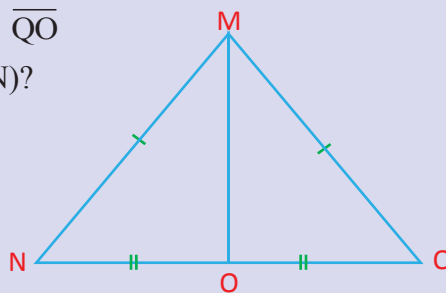
Jaantuska 6.76

- 12 Jaantuska 6.77, $\overline{BC} \cong \overline{BD}$ iyo $\overline{CO} \cong \overline{DO}$
Marka tus inay $\angle CBO \cong \angle DBO$.



Jaantuska 6.77

- 13 Jaantuska 6.78, $\overline{MN} \cong \overline{MQ}$, iyo $\overline{NO} \cong \overline{QO}$
hadii $m(\angle Q) = 65^\circ$ waa imisa, $m(\angle N)$?



Jaantuska 6.78

- 14 U bedel 2000 litir mitir sadex jibaaran.
15 U bedel 50000 cm² Mitir laba - jibaaran.