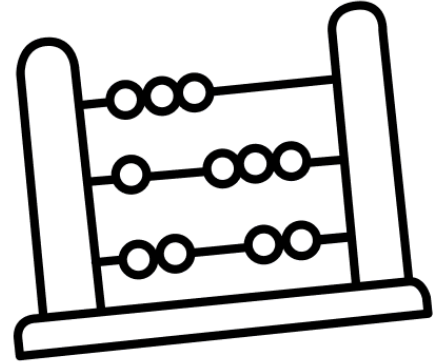


Saddexagallo isku mid ah (SAS)

Maths

Cutub: Sifooyinka joomatari: isku ekaansho iyo aragtida
Pythagoras



Natiijo

Waxaan qiimeyn karaa oo isticmaali karaa shuruudaha saddexagallada isku midka ah (SAS).

Erayada muhiimka ah

Haddii qaab uu si sax ah ugu habboonaado korka qaab kale iyadoo la isticmaalayo wareeg, milicsi, ama turjumaad, markaas qaababku waa isku mid.

Saddexagallo isku mid ah (SAS)

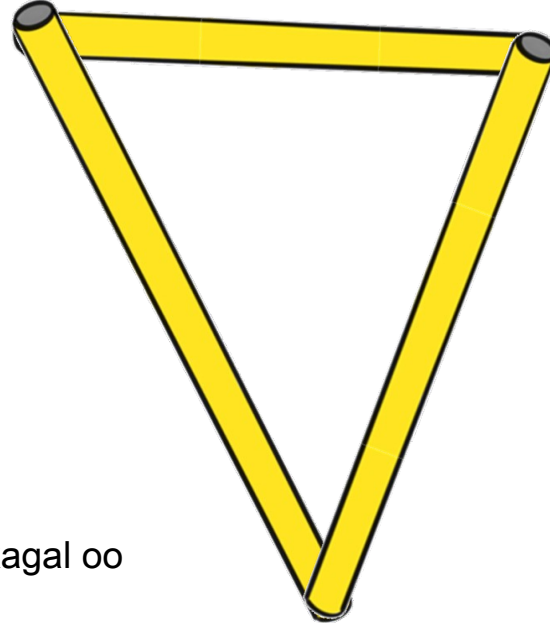


Caddaynta isku ekaanshaha SAS



Laba dhinac iyo xagal

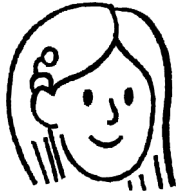
Nuur, Saciid iyo Suad waxay leeyihiin saddex caws oo dherer kala duwan waxayna samaynayaan saddexagallo.



Waxay ogyihiin inay kaliya samayn karaan hal saddexagal oo gaar ah oo leh saddexdan dherer oo caws ah.

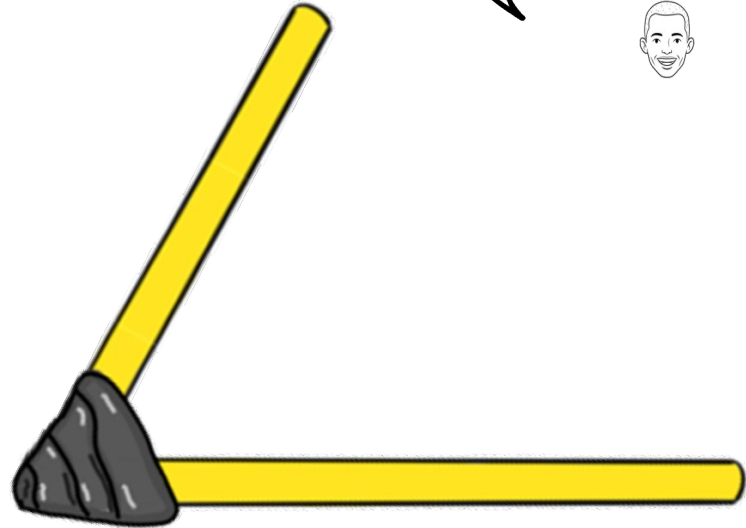


Haddii aan leenahay laba caws, oo lagu xidhay xagal go'an, imisa saddexagal oo kala duwan ayaan samayn karnaa?



Waxaan u malaynayaa inay jiri doonaan kuwo badan. Waxaa jira saddexagallo qumman oo kala duwan tusaale ahaan.

Laakiin cawsyadu waa dherer go'an.





Haddii cawsyadu ay noqon karaan dherer kasta, laakiin xagalku go'an yahay, markaas saddexagallo badan oo kala duwan ayaa la abuuri doonaa?

Xataa haddii aad hagaajiso hal dherer oo dhinac ah, wali waxaad heli doontaa tiro aan xad lahayn oo saddexagallo ah.

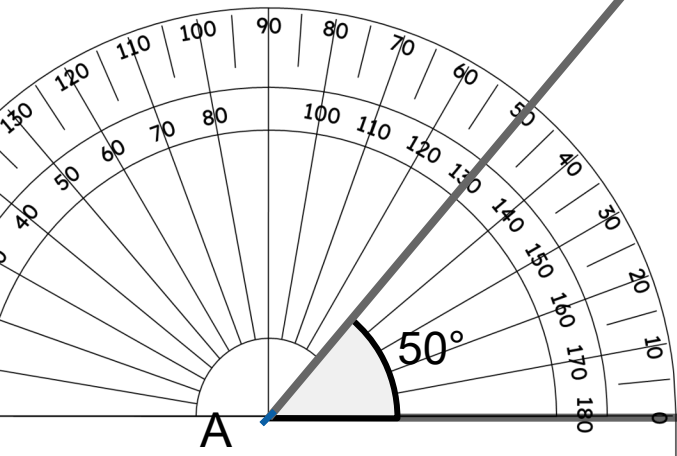


Haa! Waxaan u malaynayaa inaan ku tusi karno dhismo.



Caddaynta isku ekaanshaha SAS

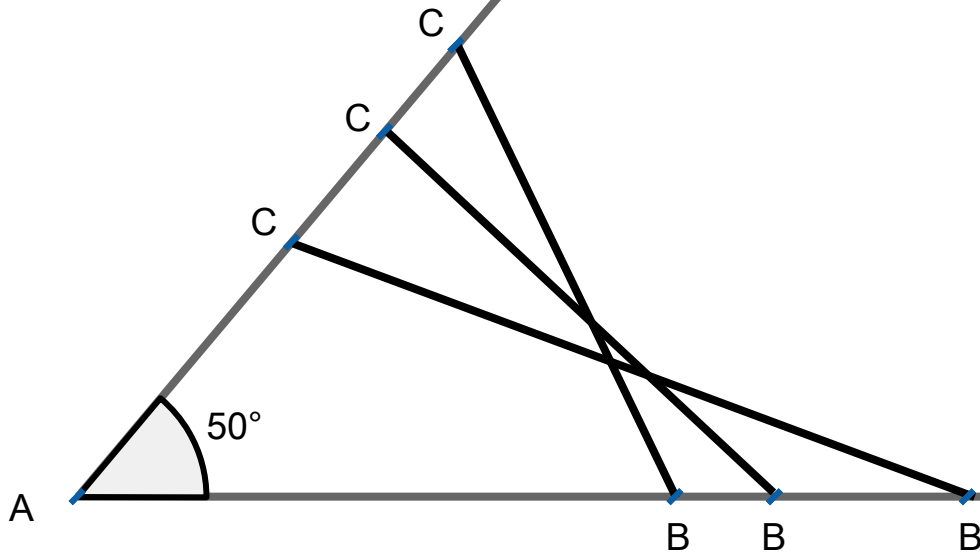
Haddii xagalka u dhexeeya labada dhinac uu go'an yahay 50° , waxaan ku sawiri karnaa lugaha sida rays, laga bilaabo barta A.



Cadeyn ku habboonaanta (congruence) iyadoo la adeegsanayo SAS

Dhibic kasta oo ku taal raysyada, waa la isku xiri karaa si loo sameeyo saddexagal.

Waxaa jira tiro aan xad lahayn oo saddexagallo suurtagal ah.



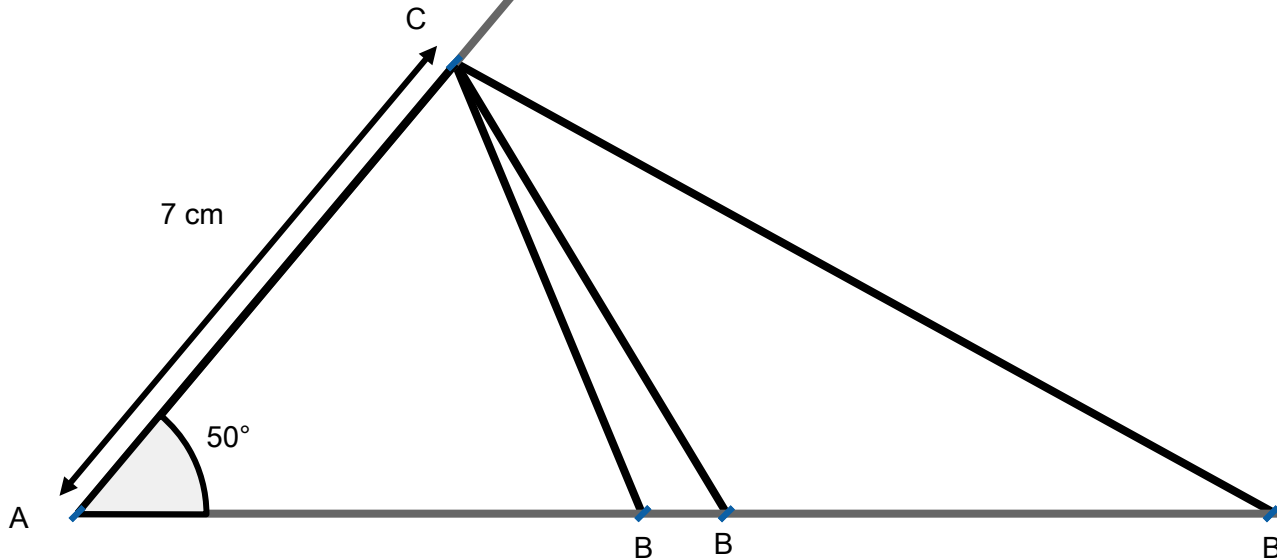
Cadeyn ku habboonaanta (congruence) iyadoo la adeegsanayo SAS



Sharaxaad

Maxaa dhacaya haddii aan hagaajinno mid ka mid ah dhererka saddexagalka? Aynu hagaajinno AC si uu noqdo 7 cm. B wali wuxuu tagi karaa meel kasta oo ku taal rayga.

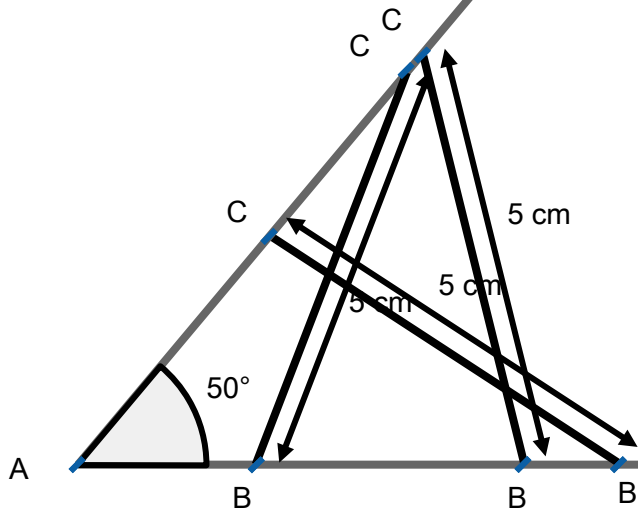
Weli waxaa jira tiro aan xad lahayn oo saddexagallo suurtagal ah.



Cadeyn ku habboonaanta (congruence) iyadoo la adeegsanayo SAS

Maxaa dhacaya haddii aan hagaajinno mid ka mid ah dhererka saddexagalka? Markan BC waxaa loo dejiyay inuu noqdo 5 cm.

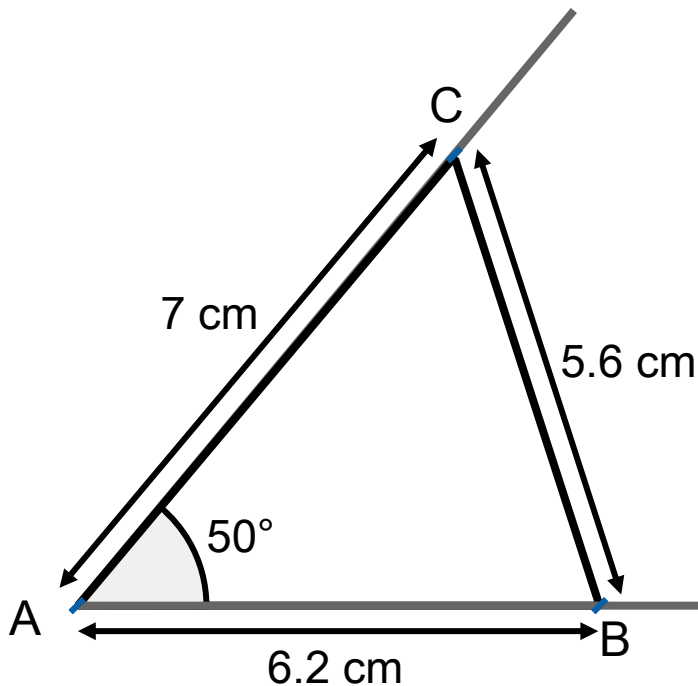
Tani wali waxay keentaa tiro aan xad lahayn oo saddexagallo suurtagal ah.



Gees hagaagsan oo ka soo horjeeda

Cadeyn ku habboonaanta (congruence) iyadoo la adeegsanayo SAS

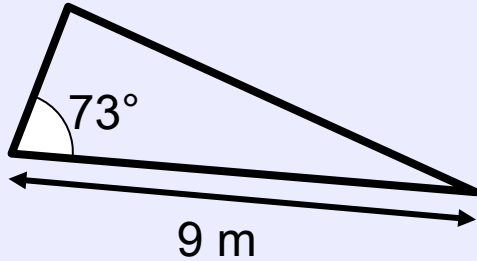
Waxaan ognahay in haddii aan hagaajinno labada dherer, kuwaas oo ah lugaha xagasha, markaas waxaan dhisi karnaa hal saddexagal oo keliya.



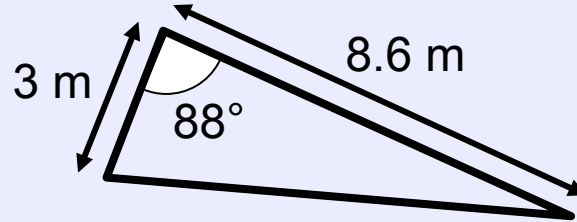
📎 Laba gees oo hagaagsan

Cadeyn ku habboonaanta (congruence) iyadoo la adeegsanayo SAS

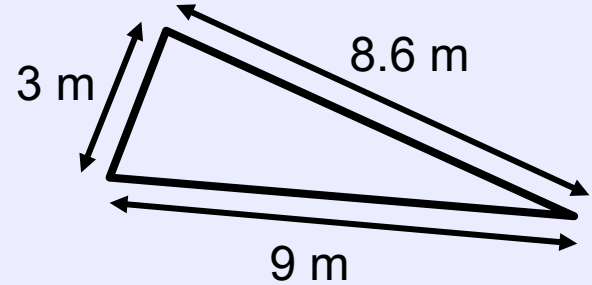
Marka la dhisayo, kee ka mid ah shuruudahan ayaa had iyo jeer keeni doona hal saddexagal oo hagaagsan?



a



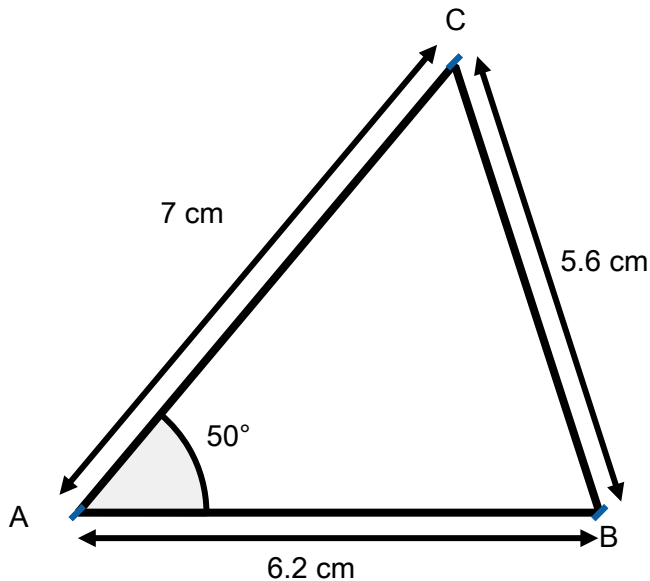
b



c

Labo saddexagal (triangle) waxaa la caddayn karaa inay isku mid yihiin (congruent) haddii dhinacyada u dhigma ay isku mid yihiin. Waxaan dhahnaa waxay isku mid yihiin SSS (dhinac-dhinac-dhinac).

Xagasha ka soo horjeeda (opposite) sidoo kale waa go'an.



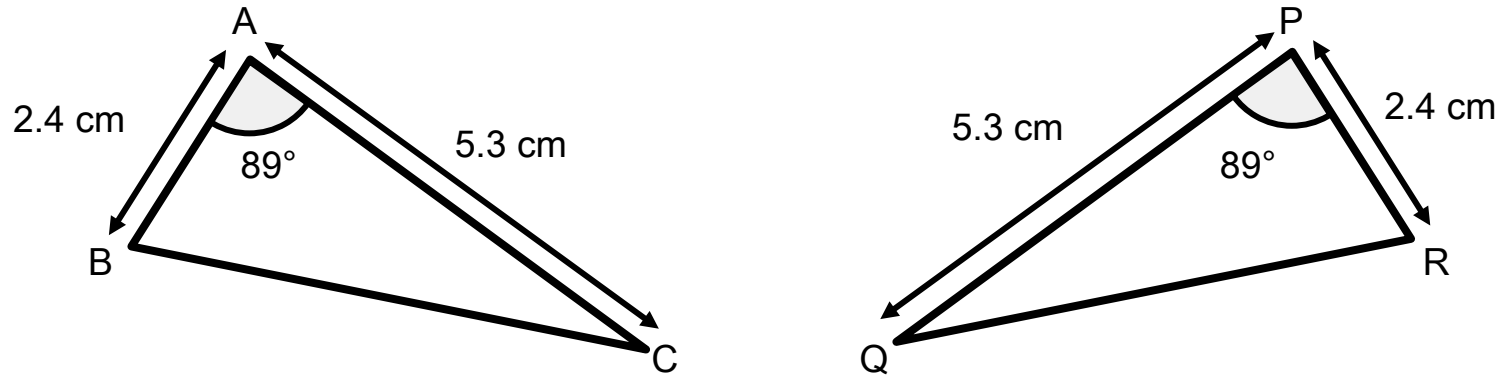
Haddii aan ognahay labo dhinac iyo xagasha u dhexaysa, waxaa jira hal saddexagal (triangle) oo keliya oo la samayn karo.

Dhammaan saddexagallada (triangles) leh SAS isku mid ah waxay isku mid yihiin (congruent).



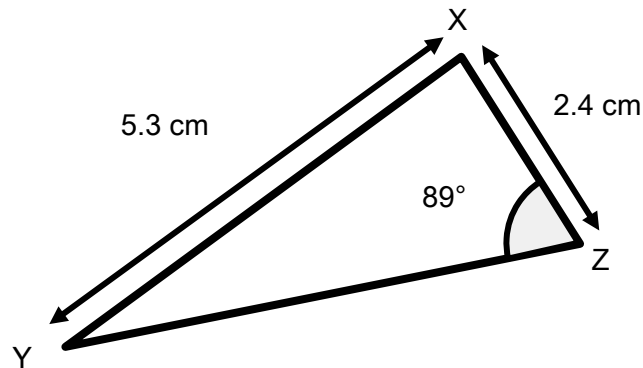
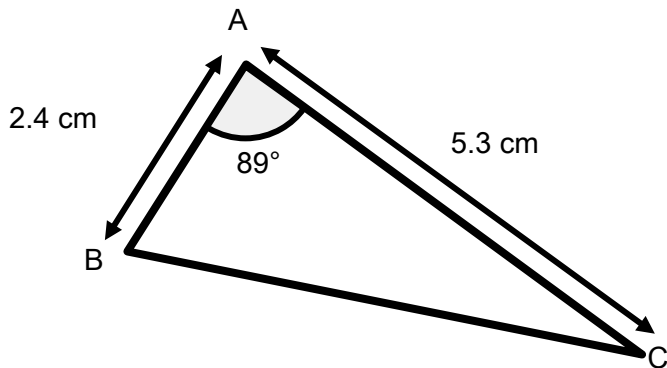
Caddaynta isku ekaanshaha (congruence) iyadoo la adeegsanayo SAS

Tani waxay ka dhigan tahay in labo saddexagal (triangle) lagu caddayn karo inay isku mid yihiin (congruent) iyadoo la adeegsanayo SAS (dhinac-xagal-dhinac) sidoo kale.



Labadan saddexagal (triangle), waxaan arki karnaa in $AB = PR$, $\angle BAC = \angle QPR$ iyo $AC = PQ$, sidaas darteed saddexagalladan waxay isku mid yihiin (congruent) SAS.

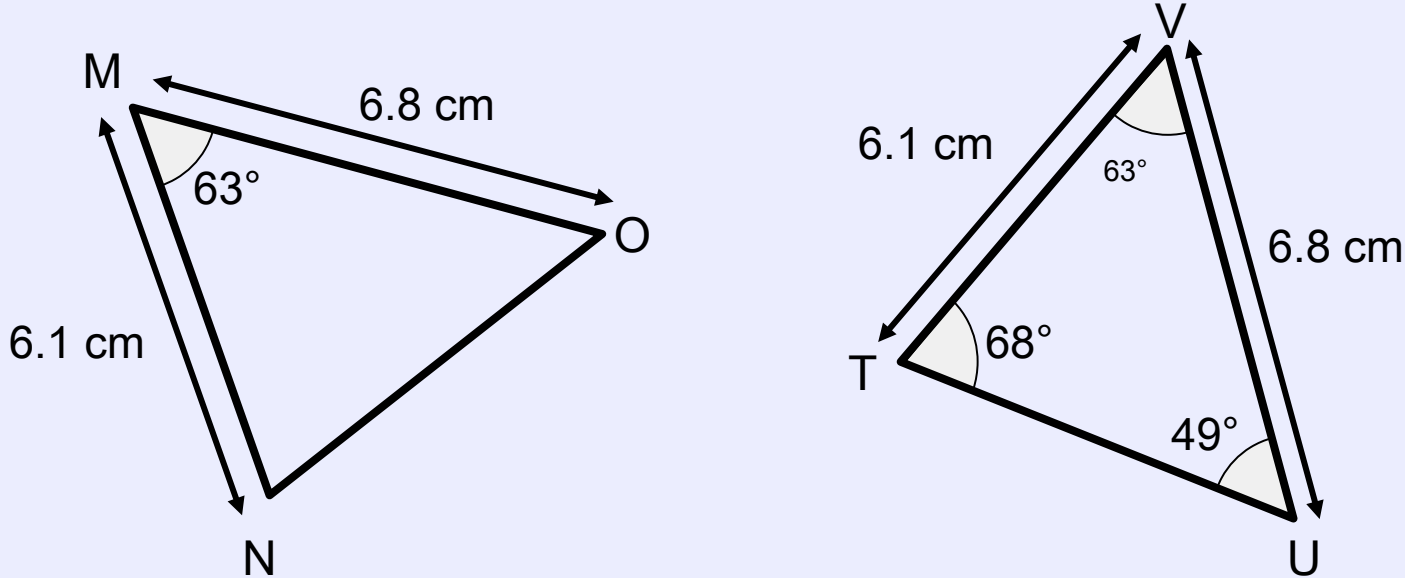
Tani waxay ka dhigan tahay in labo saddexagal (triangle) lagu caddayn karo inay isku mid yihiin (congruent) iyadoo la adeegsanayo SAS (dhinac-xagal-dhinac) sidoo kale.



Labadan saddexagal (triangle), waxaan arki karnaa in $AB = XZ$, $AC = XY$ iyo $\angle BAC = \angle XZY$, hase yeeshee labadan saddexagal (triangle) ma aha isku mid (congruent). 89° ma aha mid u dhexeysa labada dhinac ee la yaqaan labada saddexagal (triangle).

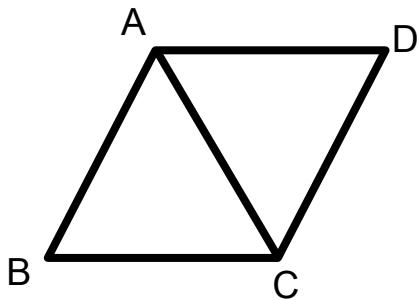
Cadaynta isku-simenaanta (congruence) iyadoo la adeegsanayo SAS

Saddax-xagalladan midba midka kale ma siman yahay (congruent)?



Haa, $\angle TVU = 180 - (68 + 49) = 63^\circ$, marka saddex-xagalka MNO wuxuu la siman yahay (congruent) saddex-xagalka TVU iyadoo la adeegsanayo SAS.

Adeegsiga sifooyinka la yaqaan ee qaababka, waxaa suurtagal ah in la caddeeyo in saddex-xagallada ay isku siman yihiin (congruent) iyadoo la adeegsanayo SAS.



Caddee in saddex-xagalka ABC uu la siman yahay (congruent) saddex-xagalka ACD, marka la eego in ABCD uu yahay rhombus.

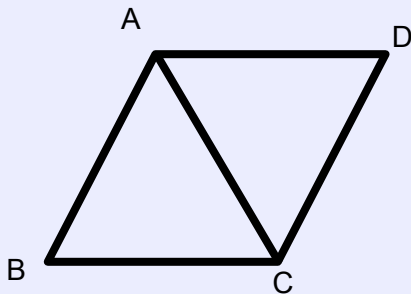
$AB = CD$ sababtoo ah waa geesaha rhombus.

$\angle ABC = \angle ADC$ sababtoo ah waa xaglaha iska soo horjeeda ee rhombus.

$AD = BC$ sababtoo ah waa geesaha rhombus.

Sidaa darteed, saddex-xagalka ABC wuxuu la siman yahay (congruent) saddex-xagalka ACD iyadoo la adeegsanayo SAS.

Marka la eego in ABCD uu yahay rhombus, caddee in saddex-xagalka ABC uu la siman yahay (congruent) saddex-xagalka ACD.



$AB = CD$ sababtoo ah waa geesaha rhombus.

$\angle DAC = \angle ACB$ sababtoo ah waa

gudaha isku-beddelka (interior
alternate)

xaglaha ku yaal khadadka barbaraha
(angles in parallel lines)

AC waa gees la wadaago (shared edge) labada saddex-xagal.

Buuxi meesha bannaan.

Sidaa darteed, saddex-xagalka ABC wuxuu la siman yahay (congruent) saddex-xagalka ACD iyadoo la adeegsanayo SAS.

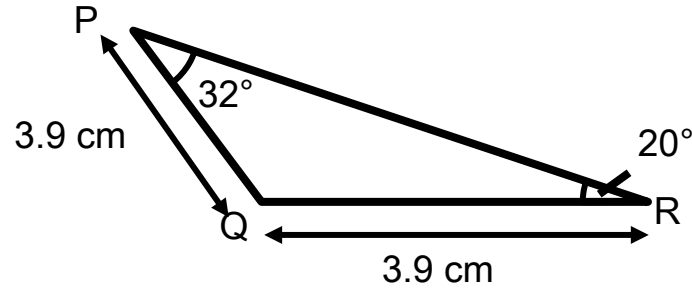
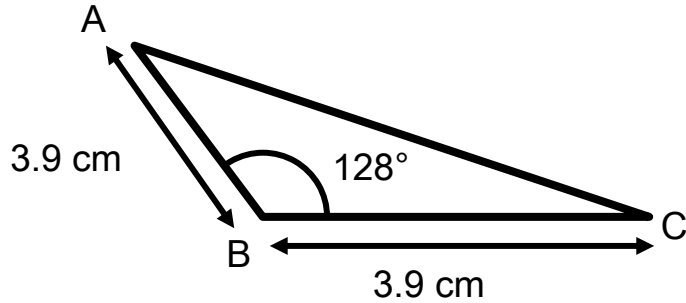
1) Samee saddexagallada soo socda:

a) Saddexagal ABC, halkaas oo $AB = 6$ cm, $BC = 9$ cm iyo $\angle ABC = 42^\circ$

b) Saddexagal PQR, halkaas oo $PQ = 6$ cm, $QR = 9$ cm iyo $\angle QPR = 42^\circ$

2) Qiyaas cidhifyada iyo xaglaha labada saddexagal ee aad ku dhisay su'aasha 1. Ma waa saddexagallo isku mid ah (congruent triangles)?

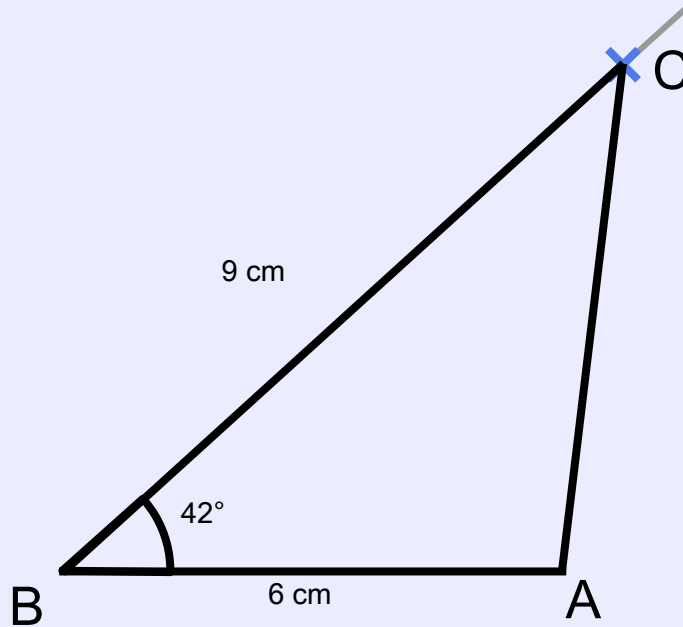
3) Caddee in saddexagalka ABC uu la mid yahay saddexagalka PQR iyadoo la adeegsanayo SAS.



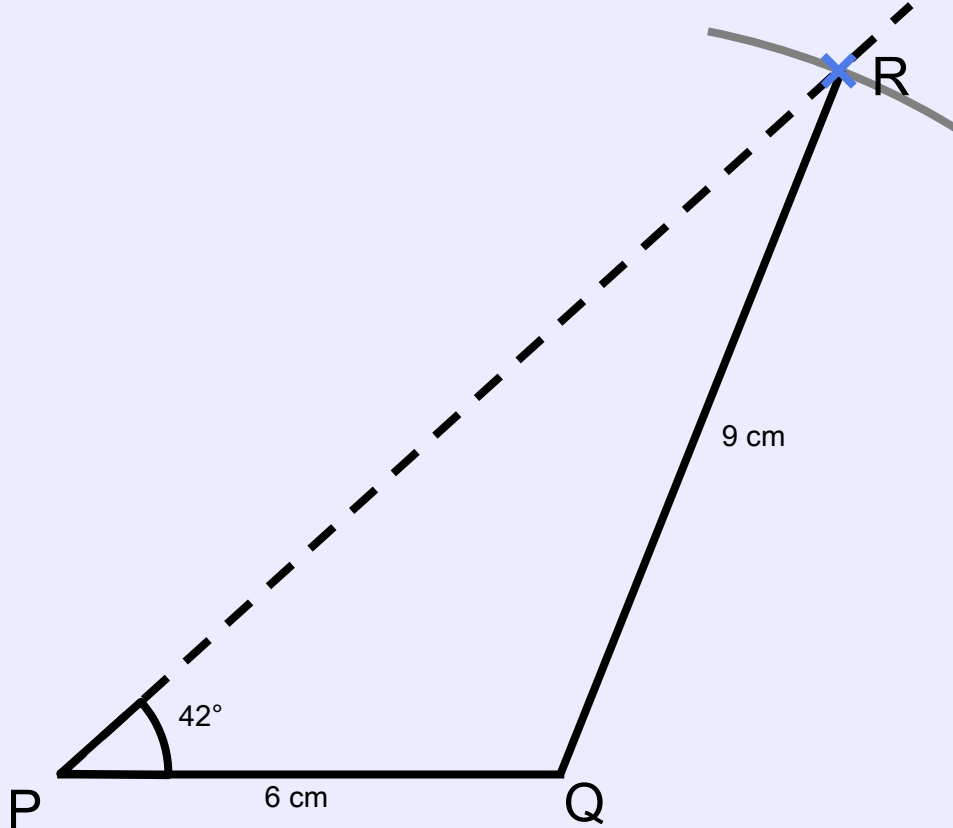
4) Marka la eego barbaroodle ABCD, caddee in saddexagalka ABC uu la mid yahay saddexagalka ACD iyadoo la adeegsanayo SAS.

1) Samee saddexagallada soo socda:

a) Saddexagal ABC, halkaas oo $AB = 6$ cm, $BC = 9$ cm iyo $\angle ABC = 42^\circ$



b) Saddexagal PQR, halkaas oo $PQ = 6$ cm, $QR = 9$ cm iyo $\angle QPR = 42^\circ$



2) Cabir cidhifyada (edges) iyo xaglahi (angles) labada saddex-xagal (triangles) ee aad ka dhisatay su'aasha 1. Ma waa isku qaab (congruent triangles)?

Saddex-xagalka ABC:

$$AB = 6 \text{ cm}$$

$$BC = 9 \text{ cm}$$

$$AC = 6.1 \text{ cm}$$

$$\angle ABC = 42^\circ$$

$$\angle BAC = 96.6^\circ$$

$$\angle ACB = 41.4^\circ$$

Saddex-xagalka PQR:

$$PQ = 6 \text{ cm}$$

$$QR = 9 \text{ cm}$$

$$PR = 12.5 \text{ cm}$$

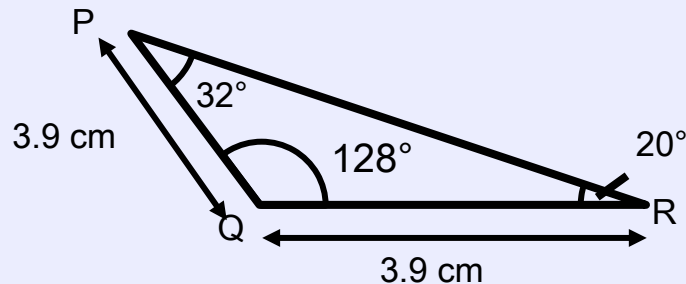
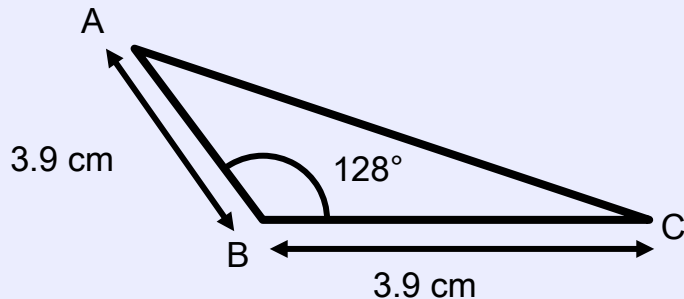
$$\angle QPR = 42^\circ$$

$$\angle PQR = 111.5^\circ$$

$$\angle PRQ = 26.5^\circ$$

Maya, isku qaab (congruent) ma aha.

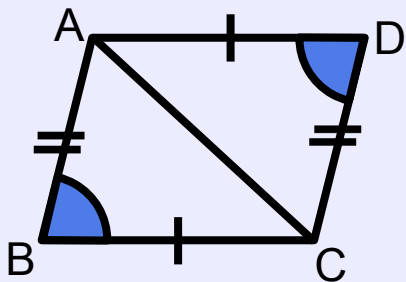
3) Caddee in saddex-xagalka ABC uu isku qaab yahay (congruent) saddex-xagalka PQR iyadoo la adeegsanayo SAS.



Xaglaha gudaha ee saddexagalka waa 180° , sidaas darteed $\angle PQR = 180 - (32 + 20) = 128^\circ$.

$AB = PQ$, $\angle ABC = \angle PQR$ iyo $BC = QR$, marka saddexagalka ABC wuxuu la mid yahay saddexagalka PQR iyadoo la adeegsanayo SAS (dhinac-xagal-dhinac).

4) Marka la eego barbaroodle ABCD, caddee in saddexagalka ABC uu la mid yahay saddexagalka ACD iyadoo la adeegsanayo SAS.



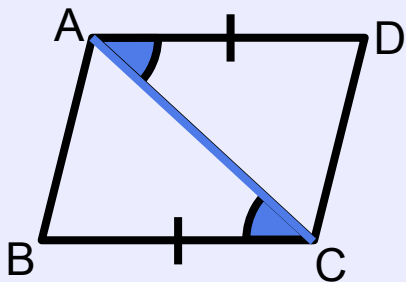
$AD = BC$ sababtoo ah cidhifyada iska soo horjeeda ee barbaroodle waa isku dherer.

$\angle ABC = \angle ADC$ sababtoo ah xaglaha iska soo horjeeda ee barbaroodle waa isku cabbir.

$AB = DC$ sababtoo ah cidhifyada iska soo horjeeda ee barbaroodle waa isku dherer.

Sidaas darteed, saddexagalka ABC wuxuu la mid yahay saddexagalka ACD iyadoo la adeegsanayo SAS.

4) Marka la eego barbaroodle ABCD, caddee in saddexagalka ABC uu la mid yahay saddexagalka ACD iyadoo la adeegsanayo SAS.



$AD = BC$ sababtoo ah cidhifyada iska soo horjeeda ee barbaroodle waa isku dherer.

$\angle DAC = \angle ACB$ sababtoo ah waa xaglaha gudaha ee isku beddesha (alternate interior angles).

AC waa dhinac la wadaago.

Sidaas darteed, saddexagalka ABC wuxuu la mid yahay saddexagalka ACD iyadoo la adeegsanayo SAS.

Qaabka casharka

Saddexagallo isku mid ah (SAS)

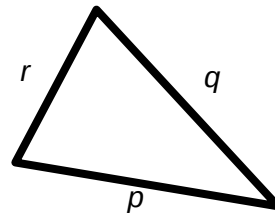
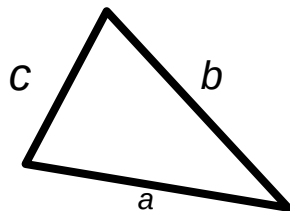


Caddaynta isku midnimada (congruence) iyadoo la adeegsanayo SAS



Laba dhinac iyo xagal

Caasha iyo Yacquub waxay ka hadlayaan inta macluumaad ee loo baahan yahay si loo caddeeyo in laba saddexagal ay isku mid yihiin.

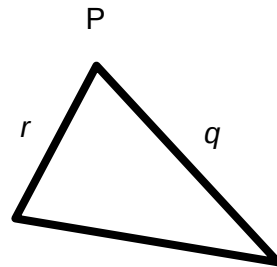
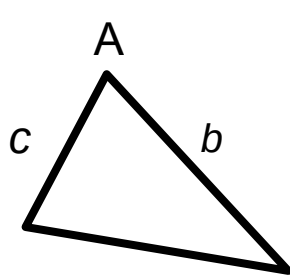


Haddii aad ogaato kaliya in saddexda dhinac ee u dhigma ay isku dherer yihiin, markaas waxaad caddayn kartaa inay isku mid yihiin iyadoo la adeegsanayo SSS.

Haa, xaglaha waxaa go'aamiya dhererka dhinacyada. SSS!



Caasha iyo Yacquub waxay ka hadlayaan inta macluumaad ee loo baahan yahay si loo caddeeyo laba saddex-xagal oo isku mid ah (congruent).

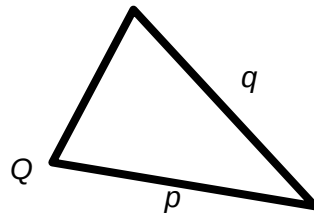
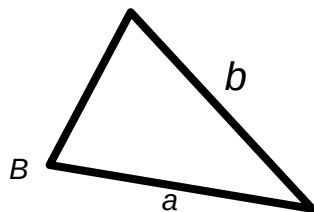


Haddii aad taqaanid laba dhinac oo isku mid ah (corresponding sides) iyo xagasha u dhaxaysa, waxaad caddayn kartaa in labada saddex-xagal ay isku mid yihiin (congruent).

Haa, iyadoo la adeegsanayo SAS (dhinac-xagal-dhinac)!



Caasha iyo Yacquub waxay ka hadlayaan inta macluumaad ee loo baahan yahay si loo caddeeyo laba saddex-xagal oo isku mid ah (congruent).

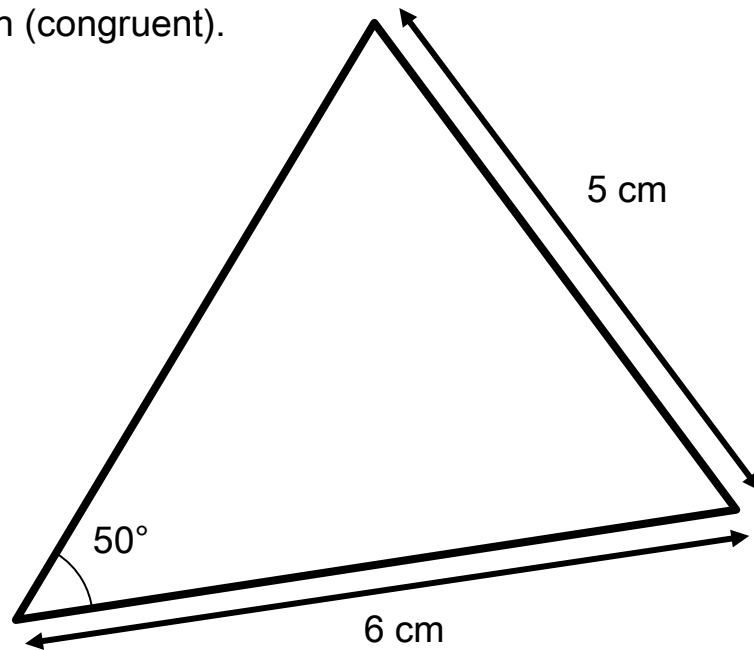
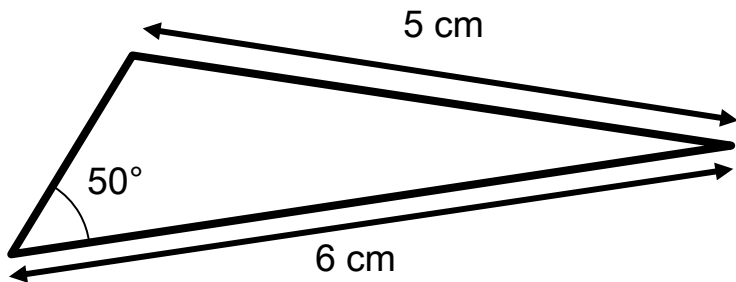


Laba dhinac oo isku mid ah (corresponding sides) iyo xagal, ma caddaynayaan inay isku mid yihiin (congruent)?

Ma hubo? Aynu eegno tusaale.



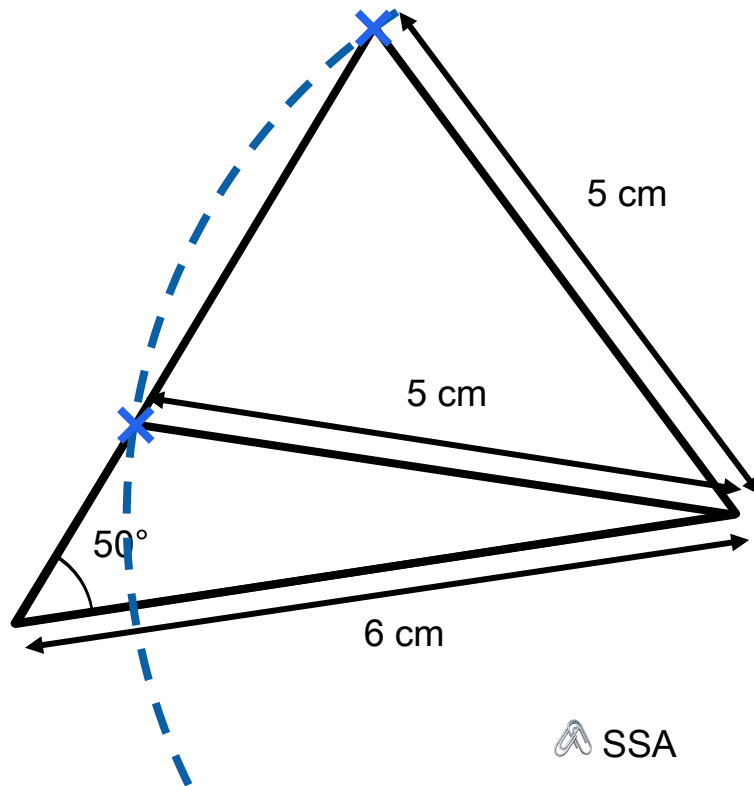
Labadan saddex-xagal mid kasta wuxuu leeyahay xagal 50° , cidhif dhererkiisu yahay 5 cm iyo cidhif dhererkiisu yahay 6 cm, laakiin ma aha kuwo isku mid ah (congruent).



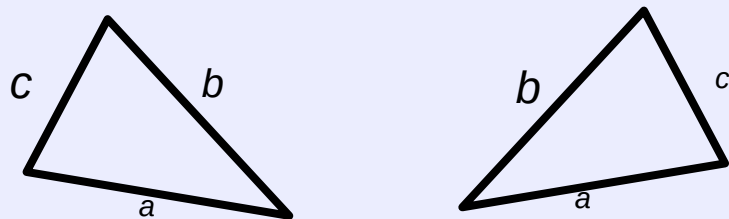
Labadan saddex-xagal, waxay leeyihiin isla xagal iyo laba cidhif oo isku dherer, laakiin ma aha kuwo isku mid ah (congruent).

Tani waxay ugu wacan tahay goobada (circle) leh radius 5 cm, oo ku goysa shucaaca (ray) laba meelood oo kala duwan.

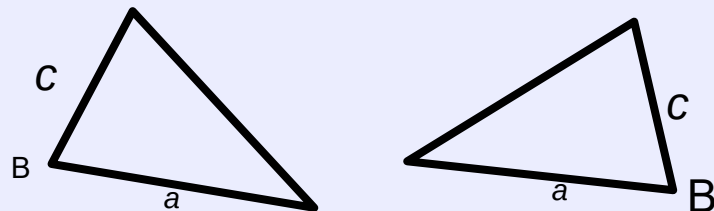
Ogaanshaha laba dhinac iyo xagal kuma filna in la caddeeyo isku midnimo (congruence). Xagashu waa inay tahay mid u dhaxaysa labada dhinac ee la yaqaan.



Isku mid (Congruent) SSS



Isku mid (Congruent) SAS



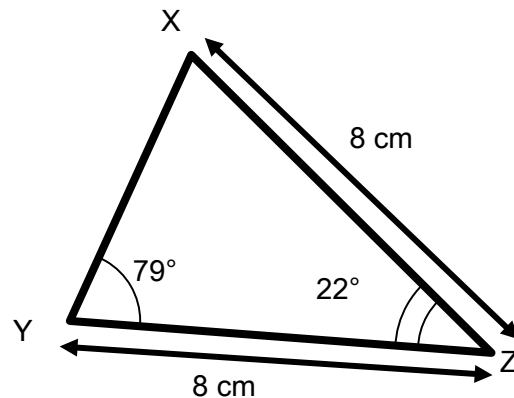
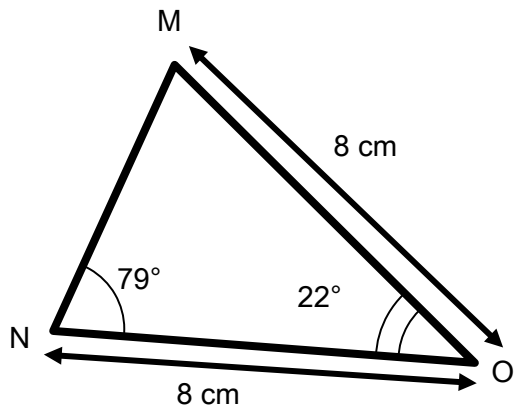
Marka waxaan u baahanahay ugu yaraan saddex xog, mid ka mid ah lammaane kasta oo dhinac iyo xagal ah



Laakiin waa inay ahaadaan lammaanaha u dhigma ee saddexagal kasta.



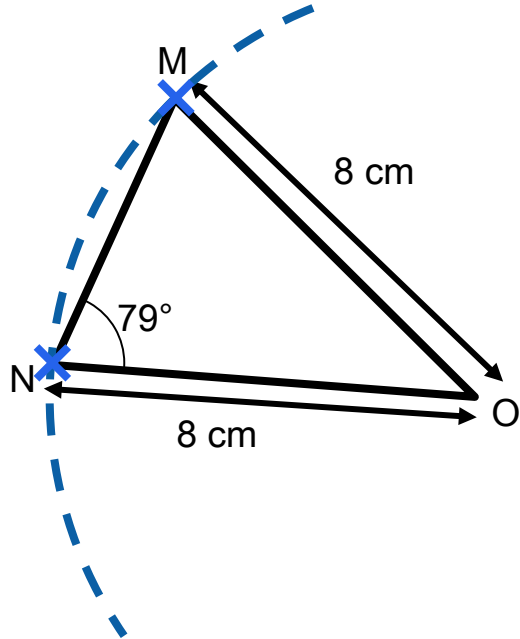
Waa kuwan laba saddexagal, saddexagalka MNO iyo saddexagalka XYZ. Ma isku mid (congruent) yihiin?



Xagalka la bixiyay ma aha mid u dhexeeya labada dhinac ee la yaqaan, marka ma qanciyo SAS.
Ma xisaabin kartaa xagasha u dhexaysa?

Haa, waa saddexagal isku dhinac (isosceles).

Goobta (circle) radius 8 cm, oo xarunteedu tahay O, waxay ku goysa laynka (ray) ka bilaabmaya N oo 79° ah NO laba jeer, marka laga reebo mid ka mid ah isgoysyada, oo aan abuurin saddexagal.



Tani waa tusaale kiis gaar ah halkaas oo SSA uu abuuri lahaa saddexagal go'an. Maadaama saddexagalku yahay isku dhinac (isosceles), dhammaan xagalaha kale waa la heli karaa. Marka shuruuduhu sidoo kale waxay xaqiijiyaan SAS.

Waa kee saddexda xog oo ku filan si loo caddeeyo isku midnimada (congruence) laba saddexagal?

Dhammaan xagluhu waxay xaqiijiyaan isu ekaanshaha (similarity) laakiin ma aha isku midnimo (congruence)

a

Dhammaan saddexda xagal

b

Dhammaan saddexda dhinac

c

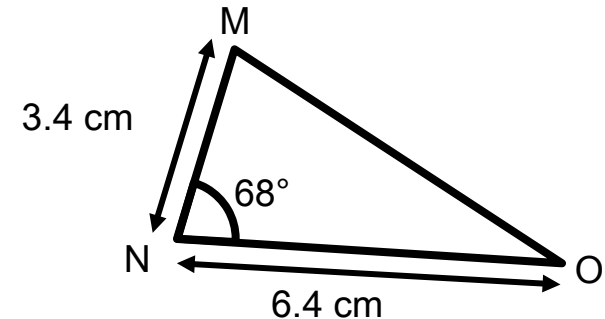
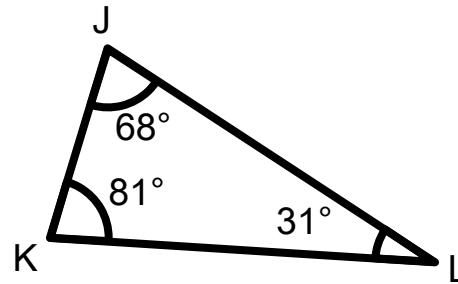
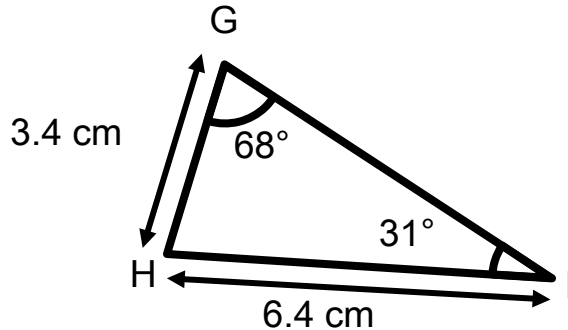
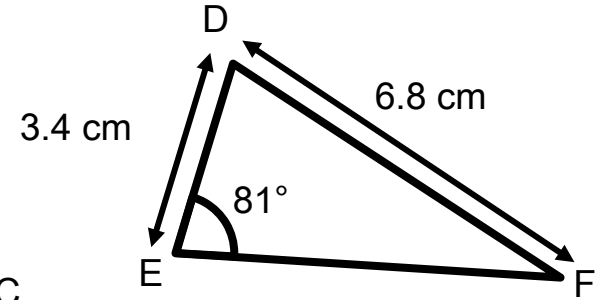
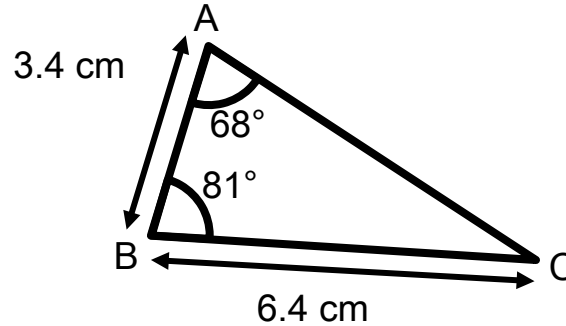
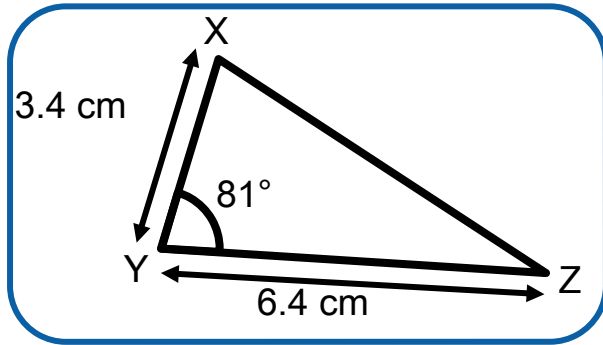
Laba dhinac iyo xagasha u dhaxaysa

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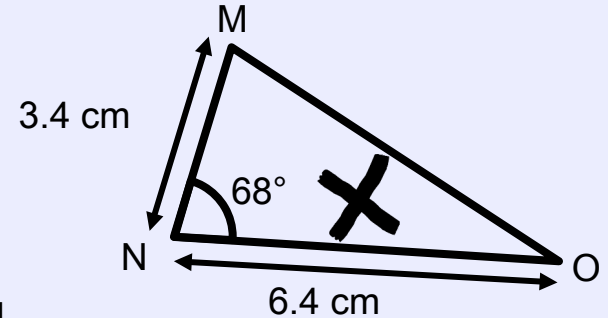
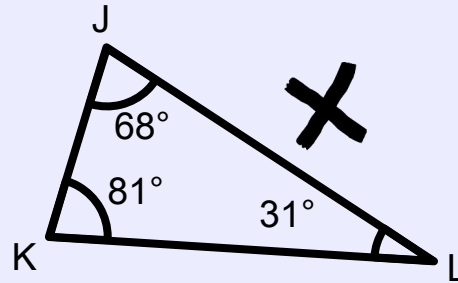
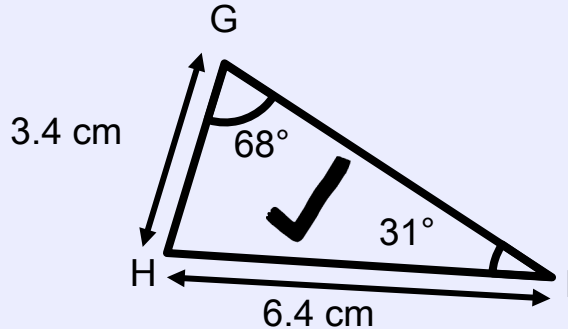
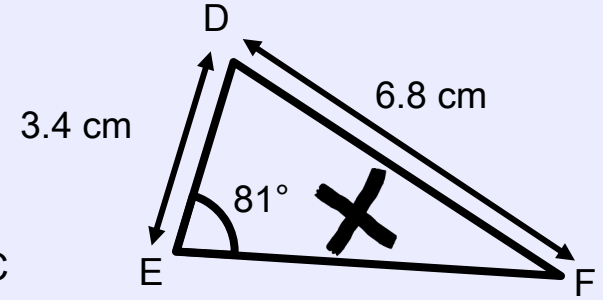
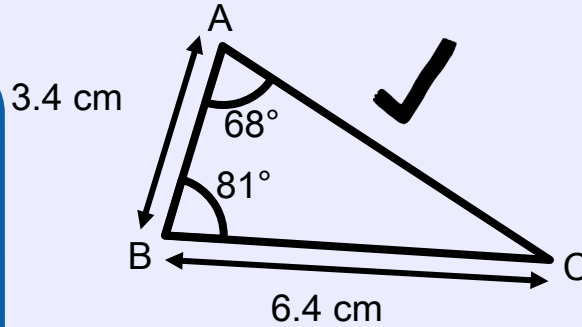
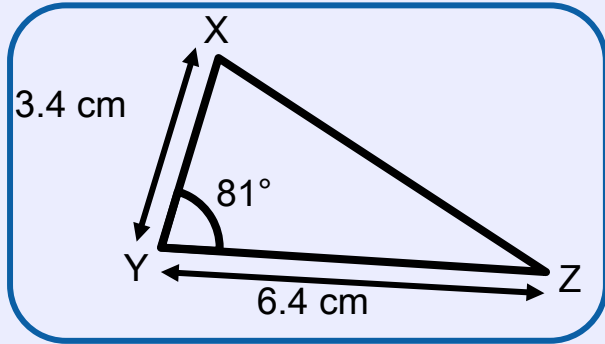
Laba dhinac iyo xagal kale

SSA kaligeed dammaanad qaadi karto isku midnimo (congruence).

1) Saddex-xagalladan midkee ayaa hubaal ah inuu la mid yahay (congruent) saddex-xagalka XYZ?



1) Saddex-xagalladan midkee ayaa hubaal ah inuu la mid yahay (congruent) saddex-xagalka XYZ?



Labo saddexagal waxaa lagu caddayn karaa inay isku mid yihiin (congruent) haddii labada dherer oo dhinac iyo xagasha u dhaxaysa ay isku mid yihiin.

Haddii laba dherer oo dhinac iyo xagal, oo aan u dhaxayn, la yaqaan, tani ma caddayso isku midnimada (congruence). Waxaa jiri kara laba saddexagal oo leh faahfaahintan.