

XISAAB

Tilmaame Bare

Fasalka 7^{aad}

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JAMHURIYADA DIMOQRAADIGA FADARAALKA ITOOBIYA
WASAARADDA WAXBARASHADA

MOE

Birr 47.60



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$a : b$
 $a : b = c : d$
 $I = R \times D \times T$



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WASAARADDA WAXBARASHADA

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FASALKA 7^{aad}

Qorayaal, Tafatirayaal, Ansixiyayaal

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Jamhuriyada Dimoqraadiga Fadaraalka Itoobiya
Wasaarada Waxbarashada



Buugga waxa la daabacay 2002 E.C, Dajinta iyo soo saaridda buuggan waxa fuliyay wasaarada waxbarashada ee jumhuriyada Dimoqraadiga Fedaraalka Itoobiya mashruuca hoos yimaad ee uqaybsan kor u qaadista iyo horumarinta tayada waxbarashada Guud oo taageero ka helay hayada IDA Credit No. 4535 ET oo ah the Fast Track Initiative catalytic fund iyo dawladaha Finland, Italy, Netherland iyo United Kingdom.

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Wasaaradda waxbarashadu waxay u mahad naqaysaa shakhsiyaadka iyo kooxaha si toos ah iyo si dadban uga qayb galay daabicista iyo soo bixitaanka buuggan.

Kuwa haysta ogolaashaha qoraalka lookiin lagu eedeeyo inay gaf ka galeen xuquuqda buugga. Waa in ay la xidhiidhaan xafiis waynaha wasaaradda Waxbarashada ee ku taala Arata kiilo. Adiss Ababa Itoobiya.

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CUTUBKA **1** TIROOYINKA LAKAB

HORDHAC

Fasaladii hore ardaydu waxay ku soo barten tirooyinka tirsiiimo, abyooneyaasha iyo jajabyada. Haddaba tirooyinkan oo kaliya ma faahfaahin karaan xaaladaha kastaae nolasha xoqiiqada ku ah. Sidaas darteed muhimada ugu weyn ee cutubkani waa in la helo hab tirooyin kale kuwaasoo dhammaan tirooyinkan laga wada dhex

helo iyo tirooyinka cusub oo kale ee qaabka $\frac{a}{b}$ halka a iyob ay yihiin

Abyooneya $b \neq 0$. Haddaba, Cutubkan waxaa lagaaga baahan yahay in aad ardayda u sheegto sababta tirooyinka loo sii fidiyey, aanad u sheegto tirooyinka cusub ee la dhaho tirooyinka lakab. Cutubkani waxaad u socotaa in aad ardayda ka dhigto in ay dabakhaan siday u sharixi lahaayeen habka tirooyinka sida ururka tirooyinka tirsiiimo, Tirooyinka lakab iyo siday ugu muujin lahaayeen xariiqda tirada ayna uguqori lahaayeen siday u kala horeeyaan.

Ujeedooyinka Cutubka

Marka cutubkani dhammaado kadib, Ardaydu waxay awoodi doonaan in ay:-

- *Qeexaan una qoraan tirooyinka lakab jajab ahaan.*
- *Tusaan xidhiidhka ka dhexeeya N , W iyo Z*
- *Kala horumariyaan ama u qoraan siday u kala horeeyaan, tirooyinka lakab.*
- *Ku shaqeeyaan xisaabfalada tirooyinka lakab.*

Kaabayaasha loo doorbiday:

Waad ogtahay in ardaydu siyaabo kala duwan waxku soo bartaan. Qaar waa kuwo aragti ahaan hanuunsan oo u diyaar ah inay ka helaan macluumaadka sawirada ama Muuqalada Telefishanka (videos). Qaarna si fiican ayay u qabtaan markay maqlaan amarada iyagoonaqriyin akhriyin.

Barayaashu waxay isticmaalaan kaabayaal si ay ugu soo saaraan hababka waxbarasho ee kala duwan. Mastarada waxaa loo isticmaalaa in lagu sawirio xariiqda tirada. Sidaas darteed waxaa lagugula talinayaa inaad isticmaasho mastarada, moodeeladaheerkulbeegyada si aad u tustid tabnaanta, eber iyo toгнаanta tirooyinka. Waxaa kale oo aad isticmaali kartaa. Shaxano muujinaya xidhiidhada ka dhexeeya N, W, Z iyo Q ee cutubkani.

Sida dhabta ah waad isticmaali kartaa qalabyo kale si aad ardayda uga caawiso inay helaan xirfadaha looga baahnaa cutubkan.

1.1 NUXURKA TIROOYINKA LAKAB

Xiisadaha loo qoondeeyey: 9 xiisadood

Waxa laga rabo Ardayga

Dhammaadka cutub – hoosaadkani ardaydu waxay awoodi doonaan in ay:-

- *U qoraan tirooyinka lakab Jajab ahaan.*
- *Ugu muujiyaan tirooyinka lakab si urur jajabyo ah xariiqda tiradakorkeeda.*
- *Sharaxaan xidhiidhka ka dhexeeya W, Z iyo Q*
- *Soo saaraan qiimaha sugan ee tiro lakab.*
- *furfuraan isle'egyada fidud ee leh tiro lakab.*

Ereyo

- Tiro tirsiiimo, Tiro Idil, Abyoone, Jajab, tiro lakab, Qiime sugan, xariiq tiro.

Hordhac

Cutub-hoosaadkan waxa ugu weyn waa in ardayda loo naqtiimo wixii ay ku soo barten fasaladii hore eeku saabsanaa tirooyinka tirsiiimo, tirooyinka idil, abyooneyaasha iyo jajabyada, dabadeedna ay qeexaan waxa aytahay tiro lakab. Gabagabadana waxaad u qorshayn hawlgalo si aad ardayda uga caawino si ay u helaan fikradaha ugu muhiimsan ee cutub-hoosaadkan. Sidaas darteed, waxaa lagaaga baahan yahay in aad ardayda ku xidhid hawlgalka ama hawlgalada oo aad kala doodid, una soo koobtid fikradaha ugu muhiimsan adigoo adeegsanaya weedhahooda. Dhammaadka waad ururin kartaa fikradaha aad ka hesho arday kala duwan, iskuna dar fikradaha, dabadeedu soo koob sharaxaadda oo idil.

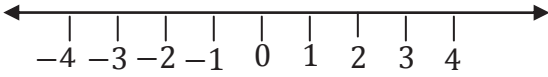
Fikradaha Barista

Cinwaan-hoosaadkan tilmaan ayaa lagaa siiyey sidaan casharka u bilaabi lahayd, laakiin kartidaada hal abuur ee fasalka dhexdiisaah waa lagama-maarmaan. Hadafka habka gudbinta casharku waa in ardayda loo soo saaro macluumaad si ay u isticmaalaan hawlgalada weedhofuran iyo shaqo kooxeedyada si loogu dardargaliyo ardayda ayadoon la isticmaaleyn habka baraha oo kaliyainuu hadlo.

Cutub-hoosaadkan dhexdiisa waxaad u socotaa inaad ka hadasho fikradaha tirooyinka tirsiiimo, tirooyinka idil, abyooneyaasha iyo Jajabyada. Si aad u caawiso fahamka ardayda ee arintan ku saabsan, u habee ardayda siay uga doodaan hawlgalka 1.1 ee soo socda.

Jawaabaha Hawlgal 1.1

Haawlgalka 1.1 waxay ardaydu ka heli karaan xidhiidhada ka dhexeeya ururka tirooyinka tirsiiimo, tirooyinka idil, abyooneyaasha iyo sida loogu muujiyo halka ay kaga dhacaan xariiqda tiradakorkeeda.

1. b. $\mathbb{W} = \{0, 1, 2, 3, \dots\}$
t. $\mathbb{Z} = \{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}$
2. b. Haa ururka abyooneyaasha taban ma'aha tiro idil.
t. a. $\mathbb{Z}^- = \{\dots, -3, -2, -1\}$
t. dhammaan jajabyada sida $\frac{-3}{2}, \frac{-1}{2}, \frac{1}{2}, \frac{3}{5}$ iwmaha abyooneyaal
3. 
4. 0 iyo 3 waa tirooyin idil iyo abyoone
 $3, -5, 100, 0$ iyo $\frac{-18}{6} = -3$ waa abyooneyaal
 $\frac{1}{5}, 2.5, -3.5$ iyo $\frac{-1}{5}$ ma'aha tiro idil, manaaha abyoone
5. b: $n=0$ t. $n=3, 4, 5, 6, 7, 8$
j. $n=11, 12, 13, 14, \dots$ x. $n=18, 19, 20, 21, 22, 23, 24, 25, 26.$
6. Haa, 1 ayaa ah tirada ugu yar tirooyinka tirsiiimo
7. Haa, 0 ayaa ah tirada ugu yar tirooyinka idil
8. Maya, majiro tiro tirsiiimo ugu wayni, tiro tirsiiimo kasta waxa jira tiro tirsiiimo ka dambeysa.

Qiimeyn

Isticmaal hawlgalka 1.1 si aad u qiimeysid aqoonta ardayda. Ujeedada qiimeytani waa in ardayda loo soo saaro hab lagu kala caddeeyo kuwo kala kulmay dhibaatooyinqiimeynta noocan ahi waxay ku fiican tahay ama waxtar u leedahay. Qorshaha barnaamaj lagu kabayo. Sidaa awgeed hawlgalka 1.1 wuxuu ku siin macluumaad waxtarleh oo ku saabsan adkaanshaha ardayda iyo kuliidashada ardayda ee xagga waxbarashada, sidaa awgeed waxaad awoodi inaad ku salaysid waxbaristaada meesha ay ardaydu ka liidato.

Markaad tan qabatid, waa inaad u habaysaa ardayda inay ka doodaan hawlgalka 1.2 kaasoo ku hogaaminaya qeexidda tirooyinka lakab.

Ka dib ugudubqeexidda ururka tirooyinka lakabkolkaana u gudub hawlgalka 1.3, kaasoo kaa caawin doona sidii aad ugu muujin lahayd tirooyinka lakab barta ay kudhacaan.

Hawlgalka 1.4 wuxuu kugu hogaamin sidii aad u caddayn lahayd tirooyinka lakab iyo xidhiidhka ka dhexeeya ururka tirooyinka tirsiiimo, tirooyinka idil, abyooneyaasha iyo tirooyinka lakab.

Hawlgalka 1.5 wuxuu ku hogaamin ardaydu inay qeexaan qiimaha sugan ee tiro.

Jawaabaha hawlgal 1.2

$$1. \quad b. \quad \frac{325}{100} \quad t. \quad \frac{3}{2} \quad j. \quad \frac{-16}{10} \quad x. \quad \frac{4}{1} \quad kh. \quad \frac{11}{10}$$

2. Haa, waan karnaa. Tusaale ahaan.

$$2 = \frac{2}{1} = \frac{4}{2} = \frac{6}{3} = \frac{8}{4}$$

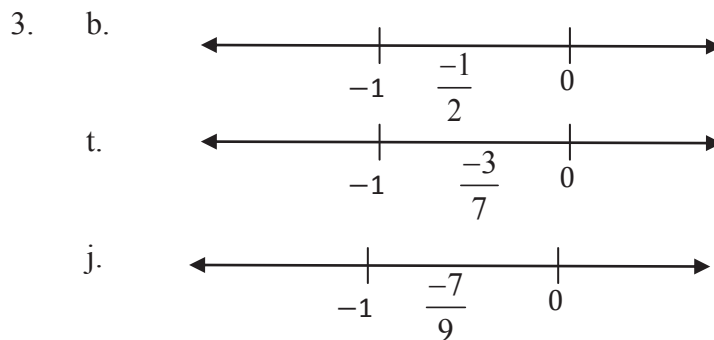
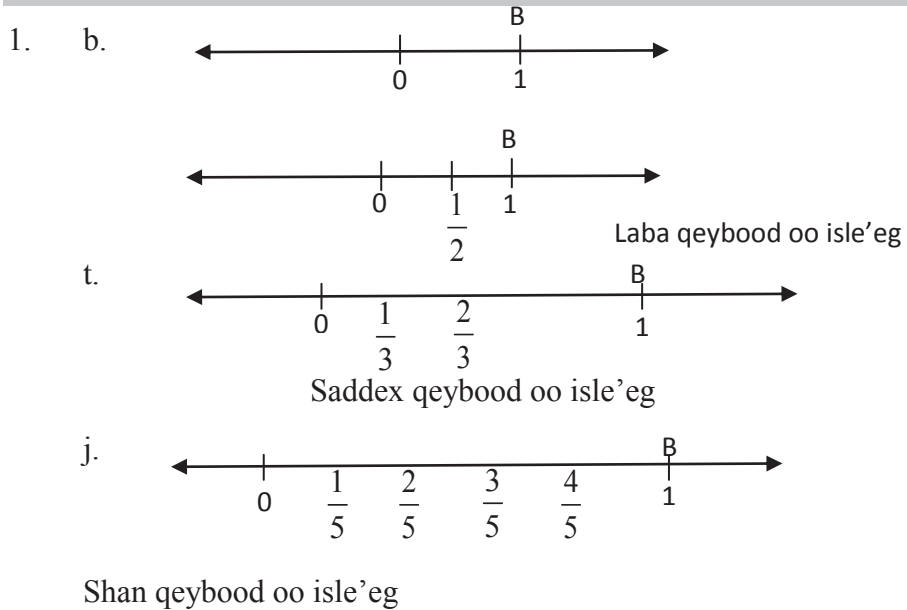
$$3 = \frac{3}{1} = \frac{6}{2} = \frac{9}{3} = \frac{12}{4}$$

$$4 = \frac{4}{1} = \frac{8}{2} = \frac{12}{3} = \frac{16}{4}$$

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

$$3. \quad b. \quad \frac{3}{5} \quad t. \quad \frac{2}{5}$$

Jawaabaha hawlgal 1.3



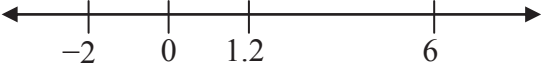
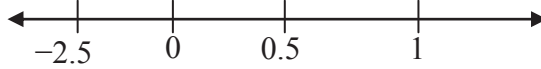
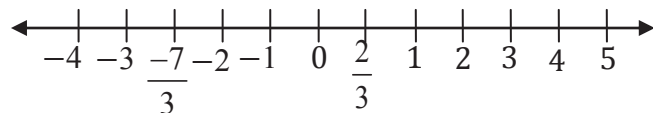
4. haddii $\frac{a}{b}$ ay tahay tiro lakab oo u dhexeysa 0 iyo 1, u qeybi xariijinta cidhifyadeedu yihiin 0 iyo 1 “b” qeybood oo isle'eg, dabadeed dhig $\frac{a}{b}$ xariijinta dusheeda meel u dhexeysa 0 iyo 1.

- * Haddii $\frac{a}{b}$ ay tahay tiro lakab oo u dhexeysa 0 iyo -1, u qeybi xariijinta cidhifyadeedu yihiin 0 iyo -1, “b” qeybood, dabadeed dhig $\frac{a}{b}$ xariijinta dusheeda meel u dhexeysa 0 iyo -1.

Jawaabaha hawlgal 1.4

1. b. $0 = \frac{0}{1}$ t. $2 = \frac{4}{2}$ j. $5 = \frac{20}{4}$
 x. $8 = \frac{24}{3}$ kh. $11 = \frac{33}{3}$ d. $15 = \frac{30}{2}$
2. b. $-8 = \frac{-16}{2}$ t. $-3 = \frac{-3}{1}$
 j. $-13 = \frac{-39}{3}$ x. $3 = \frac{9}{3}$
3. Tirooyinka lagugu siiyey kh, d, r iyo s ma'aha Abyooneyaal.

Jawaabaha layliska 1.1

1. b. 
 t. 
 j. 
2. b. Maadaama dhammaan abyooneyaashu ay yihiin tirooyin lakab,-3,-2,-1,0,1,2,3....waa tirooyin lakab
 t. Jajabyada sida $-\frac{2}{3}, -\frac{1}{5}, -\frac{3}{8}, \frac{1}{2}, \frac{3}{2}$, iwm
 waa tirooyin lakab, laakiin ma'aha tirooyin abiyoon.
 j. majirto tiro abyoon oo aan ahayn tiro lakab maadaama dhammaan abyooneyaashu wada yihiin tirooyin lakab.
 x. 0,-3,
3. b. 2 iyo 15 waa tirooyin tirsiimo
 t. -5, -2, 0, 2 iyo 15 waa Abyooneyaal
 j. dhammaan tirooyinka xagga sare lagugu siiyey waa tirooyin lakab.
 x. -0.25, 1.8, $\frac{-4}{3}, \frac{1}{8}$, ma'aha Abyooneyaal $\frac{2}{3}, 3.1$

4. Tirooyinka lakab ee togani waa tirooyinka eber ka weyn tirooyinka lakab ee aan tabnayn waa tirooyinka lakab ee togan oo ayeber lajirto.
5. b. $x = \frac{4}{5}$ t. $x = 12.25$ j. $x = \frac{2}{3}$
 x. $x = -2$ kh. $x = -2, -1, 0, 1$
 d. majirto tiro idil u dhexeyso -1 iyo 0 ,
6. b. $\frac{14}{35}$ t. $\frac{12}{35}$ j. $\frac{18}{35}$
 x. $\frac{5}{35}$ kh. $\frac{6}{35}$ d. $\frac{5}{35}$

Jawaabaha hawlgal 1.5

1. b. $\frac{3}{2}$ halbeeg t. 4 halbeeg j. $\frac{5}{2}$ halbeeg
 x. 0 halbeeg kh. 3 halbeeg
2. 8 ama -8
3. i. a ii. a iii. 0
4. Tiro kasta oo lakab oo “b” ah
- i. Haddii “b” ay tahay tiro togan qiimaheeda sugani waa “b” nafteeda
- ii. Haddii “b” tahay tiro taban, qiimaheeda sugani waa (b) taban waayo $-(-b) = b$, taasoo togan.
- iii. Haddii “b” ay eber tahay, qiimaheeda sugani waa Eber.

Jawaabaha layliska 1.2

1. b. 8 ama -8 t. 3.5 ama -3.5
 j. $\frac{12}{17}$ ama $\frac{-12}{17}$ x. $4\frac{2}{5}$ ama $-4\frac{2}{5}$
2. b. $3\frac{1}{4}$ t. $\frac{24}{53}$ j. 0 x. 26
 kh. 201 d. $12 + 13 = 25$ r. $33 - 15 = 18$ s. 10

3.

x	-3	-1.5	$4\frac{1}{3}$	-1	-4.5	-0.8	$\frac{3}{2}$	$\frac{7}{12}$
m	3	1.5	$4\frac{1}{3}$	1	4.5	0.8	$\frac{3}{2}$	$\frac{7}{12}$

4. b. = t. < j. = x. >

5. $-1|-7| - |-4+3|, |4-3|, \left|\frac{7}{3}\right|$

6. b. 20 t. 23 j. 25 x. $|m|+|n|=|3(5.2)|+|-4.5|$

$$=|15.6|+|-4.5|=15.6+4.5=20.1$$

kh. $6|m|-3|y|=6|-1.2|-3|0.5|=6(1.2)-3(0.5)=7.2-1.5=5.7$

7. b. $x=24$ ama -24 t. $x=0.4$ ama -0.4 j. $x=\frac{1}{5}$ ama $-\frac{1}{5}$ x. malahafurfuriskh. Malaha furfuris, dib u xasuuso in tiro kasta oo x ah $|x| \geq 0$, sidaa darteed ma jiro tiro x ah taasoo $|x| =$ tiro taban.d. Malaha furfuris, waayo tiro lakab kastoo x ah, $|x| \geq 0$.8. $a > b$, haddii a iyo b labaduba togan yihiin $a < b$, haddii a iyo b labaduba taban yihiin $a < b$, haddii a ay taban tahay, islamarkanab ay togan tahay.9. b. $|x+y| \leq |x| + |y|$ Ka soo qaad in $x = -8, y = 3$

$$|-8+3| \leq |-8| + |3| \Rightarrow 5 \leq 11 \text{ taasoo run ah}$$

t. $|x-y| \geq |x| - |y|$ ka soo qaad in $x = -2, y = 9$

$$|-2-9| \geq |-2| - |9| \Rightarrow |-11| \geq -9$$

 $11 \geq -9 \dots \dots \dots$ Taasoo run ah.

$$10. \quad b. \quad |x + 2y| = |-3 + 2(5)| = |-3 + 10| = |7| = 7$$

$$t. \quad |3 - xy| = |3 - (-3)(5)| = |3 + 15| = |18| = 18$$

$$j. \quad \frac{|x|}{|y|} = \frac{|-3|}{|5|} = \frac{3}{5}$$

$$x. \quad |x| \times |x - y| = |-3| \times |-3 - 5| = (3)(8) = 24$$

Qiimeyn

Way fiican tahay in la isticmaalo habka qiimeynta waxqabadka, sida ardayda oo ka doodda soo jeedinta hawl galada. sidoo kale waain aad siisaa shaqo guri, shaqo fasal islamarkaa waa in aad u qiimaysaabuugta ardaydu wax ku qoraan. Arintan waxaad u isticmaali kartaa layliska 1.1, layliska 1.2 ama laylis kale oo kasta oo la mid ah.

1.2 ISBARBARDHIGGA IYO HORSANAANTATIROOYINKA LAKAB

qoondaha: 7 xiisadood

Waxa laga rabo Ardayga

Dhammaadka cutub-hoosaadka, ardaydu waxay awoodi doonaan in ay:-

- *Isbarbardhigaan tirooyinka lakab*
- *Inay u qoraan siday u kala horeeyaan tirooyinka lakab ayagoo ku muujiinaya xariiqda tirada korkeeda.*
- *Soo saaraanqiimaha sughan ee tirooyinka lakab.*

Ereyo

- Isbarbardhig, Horsanaan, ugu yar, ugu weyn, jajabyo isu-dhigma, sareeye, hooseeye, Hooseeyaha ay wadaagaan.

Hordhac

Waa dabiici inla isbarbardhigo walxaha si loo ogaado ka weyn iyo ka yar. Ardaydu way yaqaanaan Isbarbardhiga iyo horsanaantaabyooneyaasha la siiyey. Cutub hoosaadkan waxa lagu tusmeeyey isbarbardhigga iyo horsanaanta tirooyin lakab lagu siiyey.

Fekradaha Barista

Hadda waxaad u socotaa in aad ka doodaan jajabyada isku-dhigma, sida laysu barbardhigo iyo horsanaanta tirooyinka lakab. Sidaa darteed, si aad uga caawiso ardayda fahanka sii shaqadahawlgalkan 1.6 ee soo socda.

Jawaabaha Hawlgal 1.6

1. $\frac{6}{10}$ iyo $\frac{9}{15}$

2. $\frac{-3}{5}, -\frac{2}{5}, \frac{-1}{2}, 0, \frac{2}{5}, \frac{1}{2}, \frac{3}{5}, 1$

3. b. $\frac{1}{4} = \frac{2}{8}$, iyo $\frac{1}{4} = \frac{3}{12}$ t. $\frac{2}{3} = \frac{6}{9}$ iyo, $\frac{2}{3} = \frac{10}{15}$

j. $-\frac{4}{5} = -\frac{8}{10}$, iyo $-\frac{4}{5} = \frac{-12}{15}$ x. $-1.5 = -\frac{15}{10} = -\frac{3}{2}$, iyo $-1.5 = \frac{-6}{4}$

4. b. < t. > j. < x. =

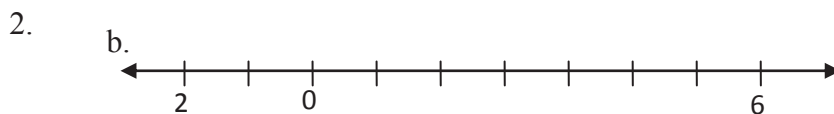
Qiimeyn

Isticmaal hawlgalka 1.6 si aad u ogaatid aqoonta ardayda. Ujeedada qiimeyntani waa si loo helo habkii lagucaddeeyn lahaa ardayda la kulantay dhibaato weyn.

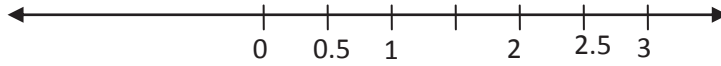
Qiimeynta noocan ahi waxay waxtar u leedahay qorshaha dib u habaynta barnaamijka, sidaa awgeed hawlgalka 1.6 wuxuu kaa siin doonaa macluumaad waxtarleh oo ku saabsan arday kasta wuxuu ku liito iyo wuxuu ku fiican yahay, dabadeed sidoo kale waxaad awoodi doontaan in aad wax-dhigistaada ku salaysid waxyaalaha dhaliishu ka timid ee aad ogaatay. Waxaa kale oo aad ardayda siin kartaa shaqo-guri, shaqo fasal, iyo in aad qiimayso buugaagta ay waxku qortaan ardaydu. Arintan waxaad u isticmaali kartaa layliksa 1.3 ama laylis kale oo kastaa oo la mid ah.

Jawaabaha layliksa 1.3

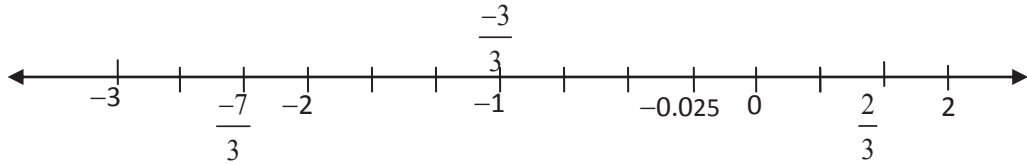
1. b. < t. < j. < x. <
 kh. < d. > r. = s. >
 sh. < dh. =



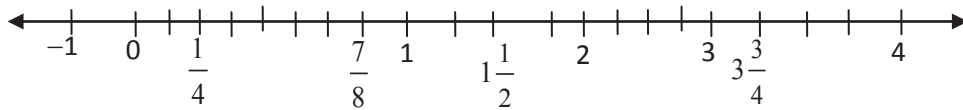
t.



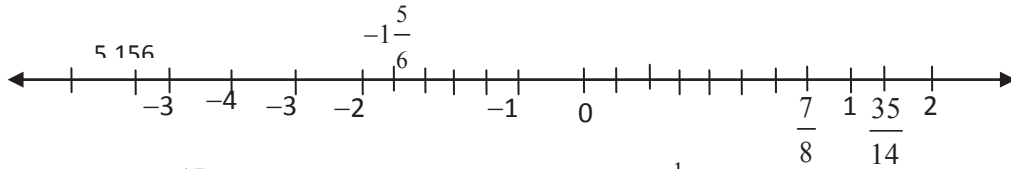
j



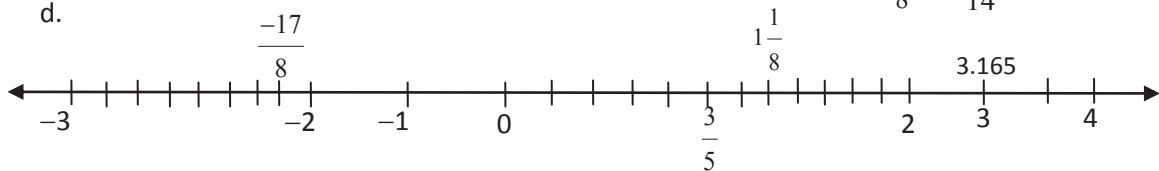
x



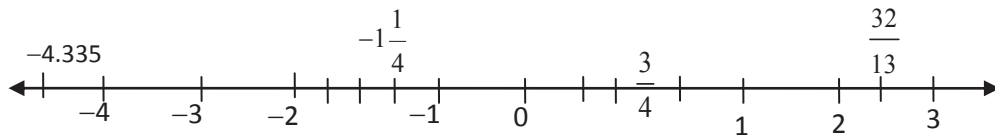
kh



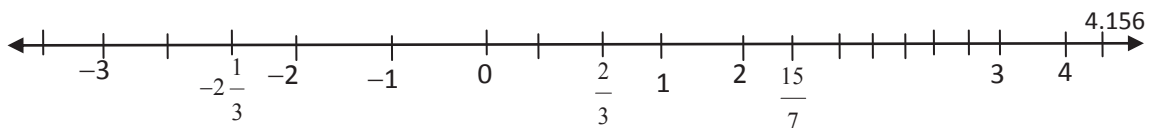
d.



r.



s.



3. b. $-9.0, -3.2, -1, -\frac{1}{2}, 0.75$ t. $-1.9, -1.8, -0.9, 0, 0.5, 2.3$

j. $-2, -\frac{8}{5}, -1, 0, \frac{3}{2}, 8$ x. $-1.3, -1, 1\frac{1}{5}, 1.3, |-2|, 3\frac{1}{2}$

4. b. $\frac{5}{7} = \frac{40}{56}, \frac{6}{8} = \frac{42}{56}$

$$\therefore \frac{5}{7} < \frac{6}{8}$$

$$t. \quad \frac{-2}{5} = \frac{-6}{15}, \frac{-1}{5} = \frac{-3}{15}, \frac{2}{3} = \frac{10}{15}, \frac{4}{5} = \frac{12}{15}$$

$$j. \quad \frac{3}{5} = \frac{42}{70}, \frac{4}{7} = \frac{40}{70}, \frac{9}{10} = \frac{63}{70}$$

$$x. \quad -1, -0.7, -\frac{3}{4} = -0.75$$

$$\therefore -1 < 0.75 < -0.7$$

$$\text{Sidaas: } -1 < -\frac{3}{4} < -0.7$$

1.3 XISAABFALADA TIROOYINKA LAKAB

Xiisadaha loo qoondeeyey 16 xiisadood

Waxa ardayda laga rabo

Dhammaadka cutub-hoosaadkan, ardaydu waxay awoodi doonaan inay:

- *isugeeyaan tirooyinka lakab*
- *isticmaalaan astaamaha kala horumarinta iyo hormogalinta ee isugeynta*
- *ka goyaan tiro lakab tu kale oo lakab*
- *raadiyaan taranta laba tirooyin lakab*
- *isticmaalaan xeerarka isku-dhufashada tirooyinka lakab*
- *isticmaalaan astaanta kala horumarinta iyo hormogalinta isku dhufashada iyo astaanta kala dhigga isku dhufashada ee isugeynta.*
- *Tiro lakab u qaybiyaan tiro lakab kale oo aan eber ahayn.*
- *uisticmaalaan xeerarka isuqeybinta si ay u helaan qeybta.*

Ereyo

Astaanta hormogalinta, astaanta kala horumarinta, astaana kala-dhigga.

Hordhac

Cutub-hoosaadkan waxaa loo siiqeybiyaa afar qeyb-hoosaad: Isugeynta, kala goynta isku dhufashada iyo isu qeybinta tirooyinka lakab. Waxaad u wadihabayntaqeybtani siday isugu xigaan.qayb kasta waxay leedahay qayb-hoosaadyo hawlgalo iyo laylisyo lagu siiyey.Sidaa awgeed, waxaa lagaa rajeynayaa in aad ardayda ku hawlgaliso si uu u noqdo fasalka oo dhammi mid firfircoon.

Fikradaha Barista

Waxaad ku bilaabi kartaa qeybtan tusaale sida ka lagugu siiyey buugga ardayga, dabadeed u gudub hawlgalka 1.7, hawlgalkani waxay naqtiimayaan sida laysugu geeyo ama lookala gooyo abyooneyaasha.Dabadeed waxaad ka doodaama ka

hadashaa sida laysugu geeyo tirooyinka lakab loona naqtiimo astaanta hormogalinta iyo astaanta kala horumarinta isugeynta.

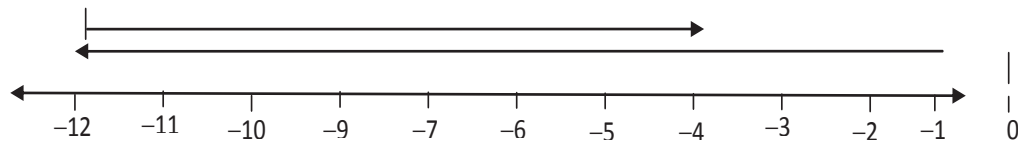
Hadda, ardaydu waxay urursadeen hababka isugeynta laba tiro oo lakab. Dabadeed waa wax dabiici ah in aad hore ugu fidiso kala goynta. Haddaba, ardayda ku caawi layliso adigoo siinaya tusaaleyaal sida ku qoran buugga ardayga. Sii laylissi aad u qiimeyso ardayda. Markaad qabatid isugeynta iyo kala goynta waxaad u gudbi kartaa isku-dhufashada iyo isku-qeybinta sida lagugu siiyey buugga ardayga. Ka dhig ardayda kuwo kaga qeybqaata fasalka dhexdiisa adigoo isticmaalaya Hawlgalka 1.8 ee ku saabsan isku-dhufashada iyo Hawlgalka 1.9 ee ku saabsan isu qeybinta.

Qiimeyn

Adigoo ugu hawlgalinaya ardayda ka doodista hawlgalada (1.7, 1.8, 1.9) u qiimee shaksi-shakhsi ama koox-koox. Waxaa kale oo aad siin kartaa shaqo, guri, shaqo - fasal iyo adigoo ku qiimeynaya ardayda buuggaagtooda ay wax ku qoraan oo aad qiimeyso. Arintani waxaad u isticmaali kartaa adigoo isticmaalaya layliska (1.4, 1.5, 1.6 iyo 1.7) ama Laylis kasta oo kale oo la mid ah.

Jawaabaha hawlgal 1.7

1. b. $-12 +$



$$\therefore -12 + 8 = -4$$

t. $6 + (-7)$



$$\therefore 6 + (-7) = -1$$

j. $-3 + (-15)$



$$\therefore -3 + (-15) = -18$$

x. $\frac{3}{2} + \frac{1}{2} = \frac{3+1}{2} = \frac{4}{2} = 2$



$$\therefore \frac{3}{2} + \frac{1}{2} = \frac{3+1}{2} = \frac{4}{2} = 2$$

2. b. $29 - 17 = 12$

t. $23 - 38 = -15$

j. $-32 - (-15) = -32 + 15 = -17$

x. $12 - (-23) = 12 + 23 = 35$

3. $112^\circ\text{F} - 19^\circ\text{F} = 93^\circ\text{F}$

4. $5 + 3 - 6 + 9 + 3 - 2 - 3 = 9$

\therefore Wiishku wuxuu istaagidoonaa dabaqa 9^{aad} ugu dambeynta.

Jawaabaha layliska 1.4

1. b. $\leftarrow \text{-----} \rightarrow$

$$\therefore -4 + (-7) = -11$$

t.

$\leftarrow \text{-----} \rightarrow$

$$\therefore -28 + 12 = -16$$

j.

$\leftarrow \text{-----} \rightarrow$

$$\therefore 12 + -9 = 3$$

x.

$\leftarrow \text{-----} \rightarrow$

$$\therefore -\frac{3}{2} + \left(-\frac{3}{4}\right) = \frac{-6}{4} + \left(-\frac{3}{4}\right) = \frac{-6(-3)}{4} = -\frac{9}{4}$$

Kh.

$\leftarrow \text{-----} \rightarrow$

$$\therefore 11 + (-8) = 3$$

d.

$\leftarrow \text{-----} \rightarrow$

$$\therefore -14 + (-20) = -34$$

2.	b.	$\frac{18}{8}$	t.	$\frac{12}{8}$	j.	$\frac{46}{16}$	x.	-18	kh.	$-\frac{99}{10}$
	d.	-20	r.	0	s.	-220	sh.	98	dh.	-11.1
	c.	2.0	g.	-3.5						
	f.	17	q.	$6\frac{11}{30}$	k.	2.50				

3. d

a	b	c	a + b	b + a	(a + b) + c	b + c	a + (b + c)
3	-4	8	-1	-1	7	4	7
-1.5	-2.7	3.2	-4.2	-4.2	-1.0	0.5	-1.0
$\frac{3}{4}$	$-\frac{5}{7}$	-0.5	$\frac{1}{28}$	$\frac{1}{28}$	$-\frac{13}{28}$	$-\frac{17}{14}$	$-\frac{13}{28}$
-7	12	-8	5	5	-3	4	-3

4. Hoos u dhaca heerkulku wuxuu ahaa 52°C

Jawaabaha layliska 1.5

1. b.



Waxan naqaan in

$$-6 + 12 = 12 - 6 = 6$$

$$t. \quad -13 - (-8) = -13 + 8$$



$$\therefore -13 - (-8) = -13 + 8 = -5$$

$$j. \quad \frac{18}{20} - \left(-\frac{12}{20}\right) = \frac{18}{20} + \frac{12}{20} = \frac{9}{10} + \frac{6}{10} = \frac{15}{10}$$



2. b. 2 t. 11 j. -4.6 x. -11

kh. $\frac{6}{4}$ d. -11 r. $\frac{20}{4} = 5$ s. $\frac{21}{20} = 1\frac{1}{20}$

3.

x	y	z	x - y	y - x	(x - y) - z	y - z	x - (y - z)
8	-5	-10	13	-13	23	5	3
-1.5	2.8	-3.5	-4.3	4.3	-0.8	6.3	-7.8
$2\frac{1}{3}$	$-1\frac{1}{4}$	$-\frac{1}{4}$	$3\frac{7}{12}$	$-3\frac{7}{12}$	$13\frac{1}{3}$	-1	$\frac{10}{3}$
$-\frac{1}{2}$	-2.8	-1.5	2.3	-2.3	3.8	-1.3	0.8

4. b. $\frac{3}{4} - \frac{1}{4} \neq \frac{1}{4} - \frac{3}{4}$
 t. $\left(\frac{6}{5} - \frac{2}{5}\right) - \frac{3}{5} \neq \frac{6}{5} - \left(\frac{2}{5} - \frac{3}{5}\right) \Rightarrow \frac{4}{5} - \frac{3}{5} \neq \frac{6}{5} - \left(-\frac{1}{5}\right) \Rightarrow \frac{1}{5} \neq \frac{7}{5}$
5. -12°C

Jawaabaha Hawlgal 1.8

1. b. -48 t. 6 j. -12
2. b. -80 t. -0.45 j. $\frac{-5}{8} \times \frac{4}{15} = \frac{-5 \times 4}{8 \times 15} = \frac{-20}{120} = -\frac{1}{6}$ x. -0.24

Jawaabaha layliska 1.6

1. b. -72 t. 42 j. 0 x. $\frac{1}{4}$ kh. $\frac{1}{6}$
 d. -1.44 r. $-\frac{1}{6}$ s. $\frac{2}{3}$
2. b. -1.75 t. 0.27 j. -1 x. 3.0 kh. 1,800
 d. -700 r. 3 s. 1432.2
3. b. taban t. togan j. togan
 x. togan kh. taban d. togan
4. b. $5(-6+9) = 5(-6) + 5(9) = -30 + 45 = 15$
 t. $-5(-8-6) = -5(-8) + -5(-6) = 40 + 30 = 70$
 j. $-8(-9+15) = -8(-9) + -8(15) = 72 + (-120) = -48$
 x. $-7(-2-3) = -7(-2) + -7(-3) = 14 + 21 = 35$
 kh. $5(1.8+2.2) = 5(1.8) + 5(2.2) = 9.0 + 11.0 = 20$
 d. $\left(-\frac{2}{3} + \frac{5}{4}\right) \times (-12) = -\frac{2}{3}(-12) + \frac{5}{4}(-12) = 8 - 15 = -7$
 r. $5\frac{1}{4}(1.8+2.2) = 5\frac{1}{4}(1.8) + 5\frac{1}{4}(2.2)$
 $= \frac{21}{4}(1.8) + \frac{21}{4}(2.2) = \frac{21}{4}\left(\frac{18}{10}\right) + \frac{21}{4}\left(\frac{22}{10}\right) = \frac{189}{20} + \frac{231}{20} = \frac{420}{20} = 21$
 s. $-\frac{3}{4}(0.8+(-16)) = -\frac{3}{4}(0.8) + -\frac{3}{4}(-16) = -\frac{3}{4}\left(\frac{8}{10}\right) + 12$
 $= \frac{-6}{10} + 12 = \frac{-6+120}{10} = \frac{114}{10} = \frac{57}{5} = 11.4$

5. b. = t. > j. < x. = kh. < d. <
r. = s. =

6.

a	b	c	a × b	b × a	(a × b) × c	a × (b × c)
-2	8	-5	-16	-16	80	80
$-\frac{1}{2}$	$-\frac{3}{2}$	4	$\frac{3}{4}$	$\frac{3}{4}$	3	3
-0.5	-0.25	$-\frac{4}{5}$	0.125	0.125	-0.1	-0.1
$-\frac{3}{4}$	-8	$-\frac{1}{2}$	6	6	-3	-3

7. b. $(5 + 3) \times 4 = 8 \times 4 = 32$

Laakiin $5 + 3 \times 4 = 5 + 12 = 17$

$\therefore (5 + 3) \times 4 > 5 + 3 \times 4$

t. $(-6 + 7) \times 2 = (-6 \times 2) + (3 \times 2) = -12 + 6 = -6$

Laakiin $-6 + 3 \times 2 = -6 + 6 = 0$

$\therefore (-6 + 3) \times 2 < -6 + 3 \times 2$

j. $(-6 - 7) \times (-2) = (-6 \times -2) - (7 \times (-2))$

8. b. $x(y + z) = xy + xz$

$$\Rightarrow -\frac{1}{2}\left(\frac{7}{6} + \frac{1}{9}\right) = \left(-\frac{1}{2}\right)\left(\frac{7}{6}\right) + \left(-\frac{1}{2} \times \frac{1}{9}\right)$$

$$\Rightarrow -\frac{1}{2}\left(\frac{21+2}{18}\right) = -\frac{7}{12} + \frac{-1}{18}$$

$$\Rightarrow -\frac{1}{2}\left(\frac{23}{18}\right) = \frac{-21+2}{36} = -\frac{23}{18} = -\frac{23}{36}$$

$\therefore x(y + z) = xy + xz$

t. $x(y - z) = xy - xz$

$$\Rightarrow -\frac{1}{2}\left(\frac{7}{6}-\frac{1}{9}\right)=-\frac{1}{2}\left(\frac{7}{6}\right)-\left(\frac{1}{2}\right)\left(\frac{1}{9}\right)$$

$$\Rightarrow -\frac{1}{2}\left(\frac{19}{18}\right)=-\frac{7}{12}+\frac{1}{18}$$

$$\Rightarrow -\frac{19}{36}=\frac{-21+2}{36}\Rightarrow -\frac{19}{36}=-\frac{19}{36}$$

$$\therefore x(y-z)=xy-xz$$

j. $(xy)z = x(yz)$

$$\Rightarrow \left(-\frac{1}{2}\times\frac{7}{6}\right)\frac{1}{9}=-\frac{1}{2}\left(\frac{7}{6}\times\frac{1}{9}\right)\Rightarrow \left(-\frac{7}{12}\right)\left(\frac{1}{9}\right)=\frac{1}{-2}\left(\frac{7}{54}\right)$$

$$\Rightarrow \left(-\frac{7}{108}\right)=-\frac{7}{108}$$

x. $xy = yx \Rightarrow \left(-\frac{1}{2}\right)\left(\frac{7}{6}\right)=\left(\frac{7}{6}\right)\left(-\frac{1}{2}\right)\Rightarrow \frac{-7}{12}=\frac{-7}{12}$

Jawaabaha Hawlgal 1.9

1. Taranta laba tirooyin lakab taban way kaweyntahay taranta tiro lakab taban iyo tiro lakab togan.

2. b. Jawaab mid ah ayaa la helayaa taasoo ah $960 \div 8 = 960 \times \frac{1}{8} = 120$

t. waxaan ku soo gabagabeyn in ay laba tirooyin lakab kasta oo a iyo

b ah. $a \div b = a \frac{1}{b}; b \neq 0$

3. b. $\frac{-72}{6} = 72 : 6 = -12$

t. $\frac{-225}{-25} = \frac{225}{25} = 125 \div 25 = 9$

j. $\frac{0}{-6} = 0 \div -6 = 0$

x. $\frac{\frac{-5}{4}}{\frac{2}{3}} = \frac{-5}{4} \div \frac{2}{3} = \frac{-5}{4} \times \frac{3}{2} = \frac{-15}{8}$

4. Tibaaxda $\frac{18}{6}$, 18 waa la qaybshe islamarkaana' 6 waa qaybshe

5. b.1 t. -1 j. 1 x. 1.

Jawaabaha layliska 1.7

$$1. \quad \begin{array}{llll} \text{b.} & -6 & \text{t.} & 0.5 & \text{j.} & 0 & \text{x.} & -0.5 \\ \text{kh.} & -\frac{1}{16} & \text{d.} & 0.729 & \text{r.} & 0.9 & & \\ \text{s.} & -\frac{1}{12,500} = -0.00008 & & & & & & \end{array}$$

$$2. \quad \begin{array}{llll} \text{b.} & -\frac{1}{2} & \text{t.} & 10 & \text{j.} & -2 & \text{x.} & 5 \\ \text{kh.} & \frac{1}{6} & \text{d.} & \frac{5}{4} & \text{r.} & 2 & \text{s.} & -0.4883 \\ \text{sh.} & 10.05 & & & & & & \end{array}$$

$$3. \quad \begin{array}{llll} \text{b.} & -6 & \text{t.} & 2 & \text{j.} & 3 & \text{x.} & -85 \\ \text{kh.} & -3 & \text{d.} & -9 & \text{r.} & -\frac{3}{28} & & \end{array}$$

$$4. \quad \begin{array}{llll} \text{b.} & -\frac{3}{4} & \text{t.} & -\frac{5}{8} & \text{j.} & \frac{2}{5} & \text{x.} & -2b \end{array}$$

$$5. \quad \text{b.} \quad \frac{3}{4} \div \frac{1}{2} \neq \frac{1}{2} \div \frac{3}{4}$$

$$\text{Waayo} \quad \frac{3}{4} \div \frac{1}{2} = \frac{3}{4} \times \frac{2}{1} = \frac{6}{4} = \frac{3}{2}$$

$$\text{Laakiin} \quad \frac{1}{2} \div \frac{3}{4} = \frac{1}{2} \times \frac{4}{3} = \frac{4}{6} = \frac{2}{3}$$

∴ Isuqeybinta tirooyinka lakab ma ogola ama kuma shaqeyaan kala hormarinta

$$\text{t.} \quad \left(\frac{5}{7} \div 10 \right) \div \frac{1}{14} \neq \frac{5}{7} \div \left(10 \div \frac{1}{14} \right)$$

$$\text{Waayo,} \quad \left(\frac{5}{7} \div 10 \right) \div \frac{1}{14} = \left(\frac{5}{7} \times \frac{1}{10} \right) \div \frac{1}{14}$$

$$\text{Laakiin} \quad \frac{5}{7} \div \left(10 \div \frac{1}{14} \right) = \frac{5}{7} \div (10 \times 14)$$

$$= \frac{5}{7} \div 140 = \frac{5}{7} \times \frac{1}{140} = \frac{1}{196}$$

∴ isuqeybinta tirooyinka lakab ma'ogola hormogalinta.

Ogow inaad abuuri kartid tusaaleyaal kala duwan oo aad adigu samaysato si aad ugu tuso in isu-qeybinta tirooyinka lakab aanay ogolayn kala horumarinta iyo hormogalinta.

Jawaabaha layliska Cutubka

1. b. 4.8 t. 0 j. $-|-6|$ x. $3\frac{1}{8}$
2. b. 1.85 t. $2-\sqrt{2}$ j. $b-a$ x. $1.2+2.8=4$
 kh. $\left|2\frac{1}{3}\right|-1-|1.5|=2\frac{1}{3}-1-1.5=\frac{7}{3}-1-1.5=\frac{7}{3}+(-1-1.5)=\frac{7}{3}+-2.5$
 $=\frac{7}{3}-\frac{25}{10}=\frac{70-75}{30}=\frac{-5}{30}=-\frac{1}{6}$
3. b. $|4x|-x=|4(-8)|-(-8)|-|-32|+8=35+8=40$
 t. $|2|-2x|-4|x|=|2|-2\left(-\frac{1}{2}\right)|-4\left|-\frac{1}{2}\right|=|2||1|-4\left|-\frac{1}{2}\right|=$
 $=(2)(1)(4)\left(\frac{1}{2}\right)=4$
4. b. $|4x|-x=|4(-8)|-|(-8)|$
 $|-32|+|8|=32+8=40$
 t. $|2|-2x|-4|x|=|2|-2\left(-\frac{1}{2}\right)|-4\left|-\frac{1}{2}\right|=|2||1||4|=|-\frac{1}{2}|$
 $(2)(1)(4)\left(\frac{1}{2}\right)=4$
5. b. $-2.3, -1.2, -1, -\frac{1}{2}, -0.001, 1.001, 1.001, \frac{3}{2}$
 t. $-1.25, -\frac{2}{3}, -\frac{1}{2}, 0.125, \frac{1}{4}, \frac{2}{3}, 0.75$
6. b. $\frac{9}{8}$ t. $-\frac{161}{38}$ j. 1.64 x. -6.01
 kh. -108 d. -10.5 r. 0.896 s. -2.88
7. b. 4 t. -4 j. $\frac{6}{7}$ x. 7.5 kh. -9
 d. 6.93 r. $-\frac{29}{8}$
8. b. RUN t. BEEN j. BEEN x. BEEN
9. abyoonayaashu waa 7, 8 iyo 9.
10. 21
11. $y=-3$
12. 275 ft
13. Birr 1884

CUTUBKA ISLEEGYADA IYO DHEELIYADA TOOSAN

HORDHAC

Hawsha ugu muhiimsan cutubkan waa sii fidinta iyo qoto dheeraynta aqoonta iyo awoodsiinta ardayda nuxurada salka u ah furfurista isle'egyada toosan iyo dheeliyada toosan tii oo la adeegsanayo xeerarka qoob doorinta.

Cutubkani wuxu ka kooban yahay laba qaybood. Qaybta hore waxa lagu falanqayni furfurista isle'ega iyadoo la adeegsanayo xeerer ka isu geynta, kala goynta, isku dhufashada iyo isu qaybinta. Qaybta labaad waxa sidoo kale lagu qaadaadhigayaa furfurista dheeliyada toosan oo leh weheliyeyaasha togan oo la jira doorsoomaha loo adeegsanayo xeerarka qaab doorinta.

Adiga oo adeegsanaya xeerarka qaabdoorinta isku dhigaanta ,waa inaad falaqeyso aasaaska xeerarka qaab doorinta iskudhigma marka lagu hawlan yahay furfurista isle'egyada toosan iyo dheeliyada toosan.

Ujeedooyinka Cutubka

Cutubkani marka uu dhamaado ka dib ardaydu waxay awood u yeelan doonaan inay:

- *Furfuraan isle'egyada toosan iyaga oo adeegsanaya xeererka qaab doorinta isku dhiganta.*
- *Furfuraan dheeliyada toosan iyaga oo adeegsanaya xeerarka qaab doorinta isku dhignaanta*

Kabayaasha Loo Doorbidey Waxbarista

Cutubkani waxaa suuragal ah in aanay jirin kaabayaal gaar ah oo ku habboon waxbarista furfurista isle'egyada iyo dheeliyada toosan. Baruhu wuxuu adeegsan karaa nooc kasta oo kaabayaasha barista, kuwaas oo ka caawinaya baris – barashada furfurista isle'egyada toosan

2.1 FURFURISTA ISLEEGYADA TOOSAN

Xisadaha loo qoondeeyey: 13 Xiso

Waxa ardayda laga rabo

Dhammaadka cutub-hoosaadka kadib ardaydu waxay awood u yeean doonaan inay.

- *Furfuraan isle'eegyada toosan iyagoo u adeeganaya xeerarka qaabdoorinta iskudhigma (doorsoomaha leh weheliye togan).*

Ereyada

- Isle'eg
- Isle'eg toosan
- Furfurista isle'egta
- Furfuris
- Urur furfuriseed (urur- rumeed)
- Qaab-doorinta isku dhignaanta.

Hordhac

Hawsha ugu muhiimsan cutub hoosaadkan waa in ay ardaydu awoodaan in ay furfuraan isle'egyada toosan ee leh hal doorsoome . Cutub hoosaadkani wuxuu ka kooban yahay hal cinwaan-hoosaad oo kaliya .Waxaad falanqeyn doontaa sida loo helo furfurista isle'egta toosan ee ururka lagu siiyey ,waxaad ardayda ka caawin doontaa sida loo doorto furfurista iyada oo lagu bedalayo tiro kasta doorsoomaha islamarkaana si loo furfuro isle'egta toosan iyadoo la adeegsanayo qaab doorin iskudhigma

Fekradaha Barista

Casharka waxaad ka bilaabi adiga oo waydiinaya ardayda si ay u furfuraan isleegyada toosan ee fudud, kuwaas oo u baahan hal minguurinta iskudhiganta oo kaliya ,islamarkaana u gudub furfurista isle'egyada toosan kuwaas oo u baahan hal

minguur isku dhiganta in ka badan. Ugu dambeyn waxaad falaqayn doontaa sida loo adeegsado masalooyinka kuwa kugu hogaaminaya isleegyada toosan.

Inta aanad u gudbin hababka tooska ah ee furfurista isle'egta toosan waxaad siin hawlgal 2.1 kaasoo ay ku jiraan -soocida ,kafadaha miisaanka lagu siiyey ee hoos u dhacaysa ama kor u kacaysa iyada oo la saarayo walax sida liin kafada dusheeda, hawlgalka waxaa kale oo ku jira ,masalooyin kuwaas oo ardayda ka caawinaya si ay u -soocaan.

- Isle'egyada toosan ee laga soo dheeganayo isle'egyo kale
- Tibxo is leh iyo tibxo aan islahayn
- Furfurista isle'egta toosan lagu siiyey loo adeegsanaya tirooyin lagu siiyey.

Liiska ku dhiirigali ardayda in ay ka shaqeeyaan masalada ugu horeysa iyada oo la tagayo tukaanka ugu dhaw.

Haddii ay hirgalayso in laga jawaabo su'aalaha waxaad siin kartaa ifino ku saabsan , masalada labaad iyada oo loo fiirsanayo tirada lab iyo dhadig ee ardayda ah ee xisadaada fasalka xisaabta.

Hawlgalka 2.1 wuxuu ardayda awoodsiinayaa waxaa loola jeedo isleegta toosan ee leh hal doorsoome iyo habka lagu furfurayo. Kadib waxaad waydiin ardayda su'aalo afka ah oo ku saabsan tibaaxaha aljabro, islamarkaana ugu dambeyn sii qeexda isle'eg toosan. kadib marka la qeexo isle'egta toosan. Waa inaad ku bilawdo adiga oo siinaya tusaalooyin fudud islamarkaana u gudbaya inaad ka codsato ardayga in ay keenaan sababta tallaabo kasta ee furfurista isleegyada toosan loo qaaday.

Jawaabaha Hawlgal 2.1

1. i. maadaama kafad walba ay saaran tahay 4 kg oo liin ah, kafadaha dheeligoodu wuu siman yahay .
- ii. maadaama ay kafad walba ay saaran tahay $\frac{1}{2}$ oo liin ah, kafaduhu way isku dheelitiran yihiin.
- iii. Kafada bidix waxaa saran $\frac{1}{2}$ kg oo liin ah islamarkaana kafada midig waxaa saaran 1 kg oo liin ah. sidaas darted kafaduhu iskuma dheelitirna.
- iv. Kolka loo labanlaabo 2kg liinta kafad kasta, kolkaa labada kafadood way isku dheelitiran yihiin.

- v. i, ii, iii iyo iv waxan ku soo gunaanadi kartaa u geynta iyo ka goynta kiloogaraamka liinta oo isku mid ah dheeligu wuxuu ahaanayaa dheeli siman
Ka goynta kiloogaraamyo kala duwan oo liin ah labada kafadood dheeligoodu ma sinaanayo, marka aan labanlaabno
2. Tirada wiilasha ardaydu waa 20 islamarkaana gabdhuhuna waa 40
3. b. $3x$ iyo $20x$ waa tibxo is leh
t. x , $-6x$ iyo $-24x$ waa tibxo is leh
j. $3a$ iyo $6a$ islamarkaana x iyo $-2x$ waa tibxo is leh
x. $4a^2$, $3a^2$ iyo $-8a^2$ waa tibxo is leh
4. Kuwa soo socda waa isleegyada toosan.
- b. $x=3$ t. $x-4=6$ j. $3x+1=-5$ x. $\frac{x+2}{3}=-3$
5. j
6. t
7. j
8. Siin $6x-26=2$ si loo hubiyo $x=4$ in ayey u tahay furfuris isle'egta lagu siiyey ku bedal 4 meesha x ,
 $6(4)-26=2$
 $24-26=2$
 $-2=2$ ----- waa been.
- Sidaas darteed, $x=4$ u ma'aha furfurista $6x-26=2$
9. Si aan u hubino in tirada lagu siiyey ay u tahay furfuris iyo in kale marka aan ku badalno isleegta lagu siiyey doorsoomheeda tiradaas islamarkaana waxaynu ogaan inay ka dhigto isle'egyada run ama been, haddii tiradaasi ay ka dhigto isleegta run, kolkaa waa furfurista isle;egta ama haddii kale u ma'aha furfuris.

Ka shaqaynta hawlgalkan, waa in ardayda aad dhiirigalisaa si ay u naqtiimaan cinwaanada la midka ee fasaladii hore ay ku soo dhigteen inta ayna isku dayin ka shaqaynta hawlgalka, kadib ku hag ardayda islamarkaana ka sii ifino si ay uga shaqeeyaan hawlgalka.

Jawaabaha Hawlgal 2.2

- b. 2 u gee dhinac walba isle'egta
t. 5 ka goo dhinac kasta isle'egta

- j. talaabada 1: ugee 5 dhinac walba isle'egta
Talaabada 2: U qeybi dhinac walba 3.
- x. talaabada 1: 8 u gee dhinac walba isle'egta
Talaabada 2: u qeybi dhinac walba 2
- Kh. talaabada 1: ugee $\frac{1}{2}$ dhinac walba isle'egta
Talaabada 2: u qeybi dhinac walba 4
- d. talaabada 1: ku dhufo dhinac walba 7
talaabada 2: ka goo 21 dhinac walba isle'egta
talaabada 3: u qeybi dhinac walba 2
- r. talaabada 1: ku dhufo dhinac walba 5
talaabada 2: ka goo 3 dhinac walba isle'egta
talaabada 3: u qeybi dhinac walba 2

Qiimeyn

Ilaa hadda waxaan ka wada hadleynay isle'egyada toosan iyadoo la adeegsanayo xeerarka qaab doorinta. Si dheeri ah u qiimeynta waxaad u isticmaali kartaa laylis 2.1 si ardaydu u awoodaan isku dayidda furfurista layliska fasalka dhexdiisa iyo guriga.

Jawaabaha Laylis 2.1

Si looga shaqeeyo su'aalaha tirada 1 iyo 2 waa in aad ka codstaa ardayda in ay af ahaan kaga jawaabaan.

1. b. $x = -16$ t. $x = 5$ j. $m = 3$ x. $y = 6$
Kh. $x = 7$ d. $x = -11$ r. $x = 1$ s. $x = 0$
2. Maadaama $x = -3$ islamarkaana ,sidaas darteed, $4x - 2 = -14$
3. Maadaama $x = 1$ sidaadarteedna $3x + 1 = 4$
4. b. $x = -37$ t. $x = 38$ j. $x = 3$ x. $x = 5$
kh. $t = -48$ d. $a = -4$ r. $x = 3$ s. $m = -1$
sh. $x = 5$ dh. 29 c. $x = 38$ f. $x = 3$
q. $x = -3$ g. $y = -1$ k. $m = 3$

Jawaabaha Hawlgal 2.3

1.
 - i. $3x$
 - ii. $3x+20=80$
 - iii. Tirada aan ka fekaray waa 20 sabab $3(20)+20=80$ waa run
 - iv. Talaabada 1: u dhig dorsoonaha si ay ugu taagnaato masalada
Talaabada 2: u diyanri isle'eg toosan oo taagan masalada
Talaabada 3: u furfur doorsoomaha adoo isticmaalaya astaamaha isle'ekaanshaha
2. Tiradu waa 23
3. Tiradu waa 26
4. Tiradu waa 25
5. Tiradu waa 1

Qiimeyn

Halkan waxaad uga dooran kartaa laylis 2.2 tabahaada qiimeynta. Waxaad u siin kartaa masalooyinka laylis, shaqo fasal iyo shaqo-guri ahaan.

Jawaabaha Layliska 2.2

1.

b. $x = -25$	t. $x = 6$	j. $y = 10$	x. $x = 20$
kh. $a = 2$	d. $x = -9$	r. $x = -5$	s. $x = \frac{25}{3}$
sh. $x = 1$	dh. $x = 5$	c. $x = -1$	g. $x = 0$
q. $x = 6$	f. $x = 0$	m. $x = 8$	n. $x = 1$
w. $x = -1$	h. $x = 5$	y. $y = -3$	a. $m = 1$
e. $t = -5$	i. $x = 2$	o. $a = 6$	u. $t = 6$
2. Labada abyoone togan ee isku xigaa waa 39 iyo 40
3. Tirada la rabaa waa 12
4. Tirada la raadinayo waa 75
5. Isugeynta laba abyoone togan waa 3 iyo 4
6. Tirooyin ku waa 3,4 iyo 5.
7. Tiradu waa 2.

2.2 FURFURIDDA DHEELIYADA TOOSAN

Ujeedooyinka Gaarka ah

Dhammaadka cutub-hoosaadkan ka dib, ardaydu waxay awood u yeelan doonaan inay:

- *furfuraan dheeliyada toosan ee leh weheliyayaasha togan iyagoo adeegsanaya xeerarka qaab doorinta isku dhigma*

Erayo: Dheeli toosan, macaash, dakhli, astaaamaha.

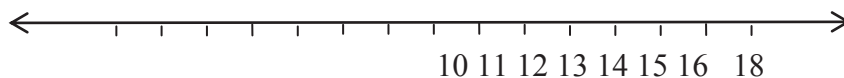
Hordac

Cutub-hoosaadkan howshiisa u wayni waa si u ardayda uga awoodsiyo furfurista dheeliyada toosan ee leh hal doorsoome. Qaybtani waxaad ku falanqayn doontaa xeerarka qaabdoorinta dheeliyada toosan adigoo adeegsanaya xariiq tiro. Waxaad tan u raacin doontaa wada qaadaadhigga weedh xisaabeedyada ku hoggaaminaya dheeliyada toosan.

Fikradaha Barista

Waxaad ku bilaabi kartaa casharkani adigoo ku dhiirigalinaya kana gacan siinaya inay af-ahaan kaga shaqeeyaan hawlgalka 2.4 ee buugga ardayga lagu siiyey. Hawlgalka 2.4 wuxu ardaydaada awoodsiinayaa inay fahmaan dheeli la siiyey. Kolka sidaa loo qabto kadib, waxaad falanqayn kartaa xeerarka qaab-doorinta dheeliyada toosan iyo astaamahooda. Waxaa kale oo aad tusi kartaa in dheeli toosan u caadiahad u lahaan doono furfurisyo tiro aan la koobayn (ma koobme ah) laakiin lagu tilmaami karo u adeegsashada xariiq tiro.

Tusaale ahaan, $x-2 \leq 12$. Halkan furfuristu waa $x \leq 14$ islamarkaana loogu muujin karo xariiq tiro korkeed sida soo socota.

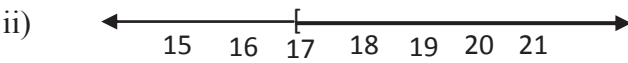


Si dheeraad ah, waxaad tani u raacin kartaa ardaydaa inaad siiso weedh xisaabeedyo ku hagaya ku shaqaynta dheeli toosan.

Jawaabaha Hawlgal 2.4

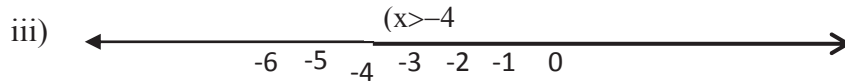
Su'aalaha tirada 1 ilaa 4 waa in aad raadisaa si aad u dhiirigaliso ardayda ka siiaana jawaabo afka ah.

1. b) Haa, waayo $10 + 3 = 13$, $12 + 3 = 15$ kolkaana $13 < 15$.
Haddaba, $10 < 12$ ay u malagalistaa $13 < 15$.

- t) Haa, waayo $10 - 14 = -4$, $12 - 14 = -2$. Tanina waxan ka helaynaa $-4 < -2$ ay run tahay, sidaadarteed, siinta $10 < 12$, $10 - 14 < 12 - 14$ ay run tahay.
- j. Haa, waayo $4 \times 10 = 40$ islamarkaa $4 \times 12 = 48$, kalkaa $40 < 48$. Haddaba, $10 < 12$ waxay malagalistaa in $10 \times 4 < 12 \times 4$ ay run tahay.
- x. Haa, waayo $\frac{10}{2} = 5$ islamarkaana $\frac{12}{2} = 6$ kolkaana $5 < 6$
- kh. Maya, waayo $-2 \times 10 = -20$, $-2 \times 12 = -24$ taasoo ah $-20 < -24$ waa been, siinta $10 < 12$, $-2 \times 10 < -2 \times 12$ ma'aha run.
- d. Haa, waayo $\frac{10}{-2} = -5$, $\frac{12}{-2} = -6$, taasoo ah $-5 > -6$ ay run tahay, kolkaana siinta $10 < 12$ kadib $\frac{10}{-2} > \frac{12}{-2}$ waa run
- g. Hawlgalada min "b" ilaa "d" waxaan ku soo gunaanadaynaa in:
- U geynta ama ka goynta tiro mid ah dheeli labadiisa dhinac ma bedasho jahada summadda dheeliga.
 - Ku dhufashada ama u qaybinta tiro togan mid ah labada dhinac ee dheeliga waxba kama bedasho jahada summadda dheeliga.
 - Kolkaad ku dhufato ama u qaybiso dheeli tiro taban waa inaad bedashaa jahada summadda dheeliga.
2. b. kafadda bidix waxa saaran kiloogaraam bun ka korodhsana ah.
- t. kafaduhu iskuma dheelitirna
- J. kafadda bidix ayaa waxa saaran bun in kiloogaraam ka korodhsana ah.
- x. kafaduhu ma dheelitirna.
- kh. Min b ilaa x ee su'aasha 6^{aad} waxan ku soo gunaanadaynaa in: U geynta, ka goynta ama ku dhufashada tiro togan dhinac kasta xaddiyo aan isle'ekayn aanay wax saameyn ah ku keenayn xaaladdaa.
3. i) $x+6 > 24$
 $x > 18$ ka goo dhinac kasta 6
- ii) 
- iii) 19, 21, 22, 30, waa ururka fur-furista dheeliga toosan $x+6 > 24$
4. i) siint $2x + 8 > x + 4$
 $2x > x - 4$ ----- ka goynta 8 dhinac kasta.
 $x > -4$ ----- ka goynta x dhinac kasta.

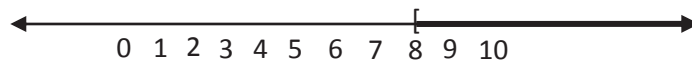
ii) $-2, 0, 1, 3$ waa xubno ka mid ah ururka furfurista dheeliga

$$2x + 8 > x + 4$$



Jawaabaha Layliska 2.3

1. b. $x > 8$ t. $x < 12$ j. $m \geq 12$ x. $x > 4$
 kh. $x < -2$ d. $x \geq -4$ r. $x > -2$ s. $x < -3$
 sh. $x \leq -4$ dh. $x > 3$ c. $m < 0$ g. $y > -2$
2. i) talaabada 1; astaanta kaldhigga isku dhufashada ee isugeynta talaabada 2; u gee 8 dhinac walba talaabada 3; fududee dhinac walba talaabada 4; u qaybi 4 x dhinac walba
 ii) waxaynu ka muujin karnaa furfurista xariiq tiro korkeeda sida hoos ku xusan



3. siin : $2x + 4 < x + 3$
 si looga raadiyo furfurista ururka guud $U = \{-3, -2, 0, 1\}$ waa in aad ku bedeshaa tiro walba meesha dooxsoomaha x, $x = -3$
 $2(-3) + 4 \leq -3 + 3$ -3ku bedal x
 $-6 + 4 \leq 0$ fududeynta
 $-2 \leq 0$ waa run
 Sidaas darteed, $x = -3$ waa fur-furista dheeliga
 $x = -2$
 $2(-2) + 4 \leq -2 + 3$ -2 ku bedal x
 $x -4 + 4 \leq 1$ fududee
 $0 \leq 1$ Waa run
 Sidaas darteed, $x = -2$ waa u furfurista dheeliga.
 $x = 0$
 $2(0) + 4 \leq 0 + 3$ 0 ku bedal x
 $0 + 4 \leq 3$ fududee
 $4 \leq 3$ waa been.
 Sidaas darteed, $x = 0$ u ma'aha furfurista dheeliga

$$2(1) + 4 \leq 1 + 3 \dots\dots\dots 1 \text{ ku bedal } x$$

$$2 + 4 \leq 4 \dots\dots\dots \text{ fududee}$$

$$6 \leq 4 \dots\dots\dots \text{ ma'aha run}$$

Taasoo ah $x=1$ ma'aha furfurista dheeliga.

Sidaas awgeed ururka furfurista dheeliga $2x + 4 < x + 3$ ee ururka guud $U = \{-3, -2, 0, 1\}$ waa $\{-3, -2\}$

4. Laylis Kooxeed

b. siin : $4(2x + 3) > 3(3x - 3)$
 $8x + 12 > 9x - 6 \dots\dots\dots$ Astaanta kaladhigga isku dhufashada.
 $8x > 9x - 18 \dots\dots\dots$ laga gooyey 12 dhinac walba
 $-x > -18 \dots\dots\dots$ laga gooyey 9x dhinac walba
 $x < 18 \dots\dots\dots$ lagu dhuftey dhinac walba(-1.)

t. Siin : $-\frac{3}{2}(4m - 6) \leq \frac{2}{3}(6m + 3)$

marka hore ka saar bilaha adiga oo adeegsanaya astaanta kala dhiga ee isku dhufashada

$$-6m + 9 \leq 4m + 2$$

$$-6m \leq 4m - 7 \dots\dots\dots$$
 ka goo 9 dhinac walba

$$-10m \leq -7 \dots\dots\dots$$
 laga gooyey

$$4m \text{ dhinaca walba}$$

$$m \geq \frac{7}{10} \dots\dots\dots$$
 loo qeybiyey dhinac
 walba 2

j. $2.5y - 4.5 > 8.5y + 7.5$
 $2.5y > 8.5y + 12 \dots\dots\dots$ loo geeyey 4.5
 dhinac walba
 $-6y > 12 \dots\dots\dots$ laga gooyey 8.5y
 dhinac walba
 $y < -2 \dots\dots\dots$ loo qeybiyey
 dhinac walba -6

Jawaabaha Layliska 2.4

1. Qiimaha furunka midkiiba 2 bir
 Ku soo qaado x tirada furunka dheeliga waa

$$2x \leq 8 \dots\dots\dots u \text{ qeybi dhinac walba } 2, \text{ si aad u hesho } \\ x \leq 4$$

Wadarta tirada furunka uu iibsaday waa 4.

2. Halkii tufaax qiimihiisu waa 5 birr islamarkaana qiimaha hal cambe ahna waa 1 bir

Siin: caasha waxay qorshaysatay inay iibsato tiro badan oo tufaax ah markaa ha ahaato $5x$ islamarkaana waxay iibsaa hal cambe oo lagmamaarmaan ah, haddaba waxay noqonaysaa $1 + 5x$.

Wadar ahaan waxay haysataa 16 ,markaa $1+5x$ qiimahu waa in ka yaradaa ama lamid noqdaa 20 ,dheeligu wuxuu noqon $1+5x \leq 16$

Imika u furfur x ahaan

$$1 + 5x \leq 16$$

$$1 + 5x - 1 \leq 16 - 1 \dots\dots\dots ka \text{ goo } 1 \text{ dhinac walba.}$$

$$5x \leq 15 \dots\dots\dots fududeynta$$

$$x \leq 3 \dots\dots\dots u \text{ qeybi } 5 \text{ dhinac walba}$$

Sidaas darteed, caasha waa in ay iibsato 3 tufaax.

3. b. u soo qaado W todobaadyada uu lacagta la soo baxayo.

$$500 - 25W \geq 200$$

- t. furfur dheeliga W ahaan

$$500 - 25W \geq 200$$

$$-25 \geq -300 \text{ ka goo } 500 \text{ dhinac walba}$$

$$W \leq \frac{-300}{-25} = 12 \text{ rog horsanaanta dheeliga kolkaa u qeybi dhinac walba } - 25$$

Hubin

$$500 - 25W \geq 200$$

$$500 - 25(12) \geq 200 \text{ ku badal } 12 \text{ meesha } W$$

$$500 - 300 \geq 200$$

$$200 \geq 200 \dots\dots\dots \text{ Waa run}$$

Jawaabaha Layliska Ee Cutubka 2^{Aad}.

1. b. $m = 12$ t. $y = 1$ j. $m = -5$ x. $t = -\frac{3}{2}$
 kh. $m = -4$ d. $x = 2$ r. $x = 4$ s. $x = 14$

2. b. $x=2$ t. $x=4$ j. $x=-3$ x. $x=-\frac{3}{5}$

3. Aan u soo qaadano y in ay tahay tirada. Dabadeed waxaa nalasiya $4y$ inay kordayso 8

$$4y + 8 = 24$$

$$= 16$$

$$= 4$$

∴ sidaadarteed tirade waa 4.

t) u qaadu x inay tahay tirada. Hal la hoos dhigay ka tiro waa $\frac{1}{3}x$ iyo labo la

hoos dhigay 5 ka tiro waa $\frac{2}{5}x$.

wadarta labada tiro waa 22. Dabadeed qoociidadan waxaa loo qori karaa qaabka isle'eg toosan sidan soo socta:

$$\frac{1}{3}x + \frac{2}{5}x = 22$$

$$5x + 6x = 15 \times 22 \quad \text{Dhinac kasta ku dhufo 15 si aad ooga saartid}$$

$$= 15 \times 22 \quad \text{Isugee tibaaxda dhinaca bidixe}$$

$$x = 30 \quad \text{Dhinac kasta u qaybi 11}$$

jawaabtaada waxaad ku hubin kartaa sidan soo socota:-

$$(30) = 10 \text{ iyo } \frac{2}{5}(30) = 12 \text{ sidoo kalt}$$

$$10 + 12 = 22 \text{ midaas oo run ah.}$$

j) U qaado tirada hore ee abiyoonaha x . daadeed saddexda abiyoonayaal ee iskuxig xiga waa

$$x, x + 1, x + 2.$$

Waxaa laga siiyay wadarta saddexda abiyone ee togan inay tahay 24. Sidaadarteed, waxaad haysataa

$$x + (x + 1) + (x + 2) = 23$$

$$3x + 3 = 24 \quad \text{Dhinac kasta kajar 3.}$$

$$3x = 21$$

$$x = 7 \quad \text{Dhinac kasta u qaybi 3.}$$

Saddexda abiyoonayaal ee iskuxig xigay waxay yihiin 7,8,9 iyo 7 waa abiyoonaha u horreya ee saddexda abiyoonayaasha toganee iskuxig xiga.

- x) U qaado s inay tahay tirade gawaadhida ee la iibiyaa sanad kasta. Dabadeed dulsarku wuxuu noqon 2000 s iyo ninka iibshuhu wuxuu helayaa

$500 \times 12 = 6000$ Birr sanadkiiba. Sidaadarteed, wadarta kaydka sanadkiiba waa:

$2000s + 6000 = 100,000$ tani waxay tahay isle'eg toosan oo ku muujiyay weedho.

$2000s = 94,000$ kajar 6000 birr dhinac kaste

$$s = 47$$

sidaa awgeed, iibiyuhu waa in uu iibiyaa 47 gaadhi si uu u helo kayd dhan 100,000 Birr sanad kasta.

- Kh) ka soo qaad dheerarka laydigu in uu yahay l iyo ballaciisuna yahay w . laakiin waxaad haysataa dherarkiisu in uu yahay saddex laabka ballaca laydiga.

$$l = 3w \quad (1)$$

Wareega laydiga ee dherarka l iyo ballaca w waxay noqon:

$$\text{Wareega } (p) = 2l + 2w = 24$$

$l + w = 12$ U qaybi dhinac kasta 2.

$3w + w = 12$ ku badel $3w$ meeshii l adoo ka keenaya (1)

$$4w = 12$$

$$w = 3\text{cm}$$

$$l = 3w = 3(3) = 9\text{ cm}$$

$$2l + 2w = 2(3) + 2(9) = 24$$

Sidaa awgeed dheerarka iyo ballaca laydigu waxay yihiin 3cm iyo 9 cm sida ay u kala horeeyaan.

- d. U qaado da'da ubax in ay tahay "x" dabadeed da'da cabdi waxay noqon $x + 10$. Sannad kadib da'da cabdi waxay noqon $2x$.

$$\text{sidaadarteed } x + 10 = 2x$$

$$10 = 2x - x$$

$$x = 10$$

da'da ubax waa 10 jir islama kaana da'da cabdi waa 20 jir

4. b. $x > 7$ kh. $m \leq -2$ sh. $m > 2$ f. $t \leq 14$
 t. $m < -22$ d. $x < 0$ dh. $X < 0$ q. $x \leq -2$
 j. $m < 2$ r. $x < 7$ c. $m > -\frac{1}{2}$ k. $m \leq -47$
 x. $t \geq -1$ s. $x \geq 2$ g. $x \geq 41$ l. $y \geq -3$

5. b. u soo qaado x tirada sanduuqyada islamarkaana waxaa lagu siiyey awooda ugu badan ee wiishku waa 262 kg
 Markaa ,waxa aad heli dheeliga $64 + 70 \leq 262$
 $64x \leq 192$ ka goo
 dhinac walba 70
 $x \leq 3$ u qeybi dhinac
 walba 64
 Sidaas darteed, tirada ugu badan ee sanduuqayada u gaadhsiin karo wiishku markiiba waa 3.
- t. Siin: $R=25x$ islamarkaana $C=15x + 100,000$ faa'iido waxa aad heli marka $R > C$, taas oo ah $25x > 15x + 10,000$
 ka goo 15x dhinac walba $x < 10,000$
 $x > 10,000$ 10 u gaybi dhanac kasta. Sidaa darted wax soo saarku waxu kuu noqonayaa macaash, kolka tirada walxaha la soo saaro ka badan tahay 10,000.

CUTUBKA 3 SAAMI, SAAMIGAL IYO BOQOLEY

HORDHAC

Muhimadda shaqada cutubkani waa si loo fidiyo loona qoto dheereeyo aqoonta iyo kartida ardayda ee nuxurada salka u ah saamiga, saamigalka iyo boqoleyda ,oo ay la jirto adeegsashada xirfadaha iyo nuxurada fekradaha lagu furfuro masalooyinka.

Tusaalooyinka xaqiiqada adduunka iyo laylisyo ka dhigaya mawduucyada kuwa mar kaliya wada dhacaya oo la xiiseeyo. Cutubka waxa loo qaybiyey saddex cutub-hoosaad oo cutub-hoosaad kasta loo sii kala qayb-qaybiyey cinwaan hoosaadyo. Cutub-hoosaadka kowaad wuxuu ku lug leeyahay saami iyo saamigal sidoo kale cutub-hoosaadka labaadna wuxuu faahfaahinayaa adeegsiga saami si loogu xisaabiyo boqoleyda oo tusaalooyin ka caawinaya dhibaatooyinka nolosha dhabta leh . Cutub hoosaadka u dambeeya waxa lagu bandhigay u adeegsashada boqolleyda iyo dheefta fudud. Cutub-hoosaad kasta wuxuu ku bilaabmaa hawl gal, sidaa darteed, ardaydu waxay faham u yeelan doonaan la kulanka nuxurada la raboy.

Ujeedooyinka Cutubka

Dhammaadka, cutubka kabiid ardaydu waxay awood u yeelan doonaan inay:

- *Fahmaan fikaradaha, summadaha saami iyo saamigalka*
- *Furfuraan maslooyinka khuseeya boqoleyda*
- *Dhaqangaliyaan boqoleday ku furfurista maslooyinka faa'iido ,khasaare iyo dheef fudud.*

3.1 SAAMI IYO SAAMIGAL

(6 xiso)

Waxa ardayda laga raboo

Dhamaadka cutub-hoosaadkan, ardaydu waxay awood u yeenlan doonaan in ay:

- *Sharaxaan fekradda fahamka saami*
- *Furfuraan maslooyinka fudud ee saamiga*
- *Furfuraan masalooyinka saamigalka*

EREYO:

Saami	madoorsoomaha saamigalinta
Saamigal	cidhfo
Saamigal quman	dhexyo
Saamigal rogaal	taranta isweydaar
Tibix hore (isirka hore)	tibixda dambe (isirka hore)

Hordhac

Shaqada muhiimka ah ee cutub-hoosaadkani waa garansiinta ardayda nuxurada saami iyo saamigal. Cutub-hoosaadka waxa loo sii kala qaybiyey labo cinwaan – hoosaad. Cinwaan-hoo-saadka koowaad wuxuu ku lug leeyahay macnaha u qeexitaanka saami si isku barbardhiga laba xaddi tii oo la isticmaalayo isu qaybin. Cutub-hoosaadkani waxaad ku falanqayn doontaa sida loogu qoro saamiga laba xaddi saansaanta ugu fudud iyo u tarjumidda qiyaasaha loo qoro saansaan saami.

Cinwaan-hoosaadka labaad wuxu ka hadlayaa nuxurka saamigalka. Cinwaan-hoosaadkan ,waxa aad ku naqtiimi doontaa saamigalka quman iyo ka rogaal islamarkaana waxa aad ku falanqayn doontaa qeexda saamigal lagaa siinayo tusaalooyin ku lugleh saamigalka.

3.1.1 Saami

Fekradaha Barista

Si loo bilaabo casharka waydii ardayda si dhawr daqiiqo ugu qaadato ka fekaridda ama ay wax uga xasuustaan tirooyinka idil iyo jajabyada. Ku qor sabuuradda dhamaan jawaabta arday walba u ku jawaabo adoo hubinaya heerka fahamkooda.

Ardaydu waa inay tiriyaan wiilasha iyo gabdhaha fasalka ku jira oo ay isbarbardhigaan tirada wiilasha iyo tirada gabdhaha fasalka si ay u helaan inta jeer

ee tirada wiilashu ay ka badan tahay tirada gabdhaha. Fallanqee jawaabaha oo ku hoggaami ardaydu inay keenaan nuxurka saamiga ,waxaad kadib u gudbi kartaa hawlgalka 3.1 B. Ujeeddada hawlgalkan waa inuu ka gargaaro ardaydu inay xusuustaan nuxuro dhawr ah oo ay ku soo barten fasalladii hore jajabyada ,si ay uga keenaan qeexda saamiga .Haddaba , sii ardaydu 10 ama 15 daqiiqo si ay u fallanqeeyaan, ka codso inay ka jawaab bixiyaan su'aal kastoo lagu siiyey hawlgalka 3.1 B .

Adoo dhex wareegaya fasalka,hubi jawaabahoodu inay sax yihiin ama qalad yihiin ugu dambayn,adoo isticmaalaya ka qeybqaadashada firfircoon ka faaloo jawaabahooda oo sii jawaabaha saxda ah.

Jawaabaha hawlgal 3.1-B

1. Qaybta laba tiro ayaa la yidhaa jajab. Odhaah kale ,tibaaxda, $\frac{a}{b}$ halka ,a,b $\in Z$ ayaa la yidhaa jajab.
2. Jajab waxaa la odhan karaa waa tibixda u hooseysa haddii qaybshaha ay wadaagaan sareeyaha iyo hooseeyuhu tahay 1.
3. b. $\frac{2}{5}$ t. $\frac{1}{3}$ j. $\frac{8}{3}$ x. $\frac{3}{2}$
4. Saami waa isbarbardhigga, laba xaddi ama laba tirooon isu qaybino.
5. Waa xidhiidhkooda kolka loo eego baaxada ay wadaagaan ee loo tibaaxan karo qaab qoton ahaan weedh gaar ahaaneed, hal tiro waa dhufsanaha tiro kale, qayb ka mid ah ama qaybo ka mida.
6. Kolka loo tibaaxo tirooyinka ugu yar ee la leh saami 1 ah ayaa qaybshahooda kaliya ee ay wadaagaan.
7. Laba xaddi oo la isbarbardhigay waa inay isku nooc noqdaan ama ay noqdaan halbeegga cabbiro isku mid ah. Tusaale ahaan, tirada wiilasha iyo ta gabdhaha, kiiloogram iyo, graam, saacado iyo, sekenno ayaa la is barbardhigi karaa.
8. Saami waa qaybta laba xaddi waana inay u qoran tahay saansaanta u fudud laakiin jajab waa qaybta laba tiro.
9. Saamiga 3:5 xaqiiqo ahaan macnuhu waa 3 gabdhood kasta waxaa jira 5 wiil (ama tirada gabdhuhu waa $\frac{3}{5}$ laabka tirada wiilasha).
10. Tiri tirada wiilasha iyo tirada gabdhaha fasalka oo isbarbadhig.
11. Wax soo saarka maalinle ee warshadda waxay le'eg tahay $\frac{5}{7}$ ka wax soo saarka maalinle ec B.

12. b. 4:7 t. 7:4
 j. Saamiga tirada gabdhaha iyo tirada wiilashu male'eka saamiga tirada wiilasha iyo tirada gabdhaha
13. Dhererka faadume wa 12.5cm.
14. Saamiga A waa Birr 300, saamiga B waa Birr 600 islamarkaa saamiga C waa Birr 1500
15. Dhererka qayb kastaa waa 84 km, 294 km iyo 462 km siday u kala horeeyaan. Guud ahaan, saami kastoo a:b, horsanaanta ayaa aad muhiim u ah, taasoo ah $a:b \neq b:a$

Heerkani, waa inaad hubtaa in ardaydu ay garanayaan macnaha saami. Waxa kaloo laga filayaa inay sheegaan sida loo qoro saamiga laba xaddi islamarkaana ay sheegaan faraqa ama xidhiidhka ka dhexeeya jajab iyo saami.

U sii qoto dheerayn, adoo isticmaalaya tusaalooyinka lagu siiyey buugga ardayga kala hadal kuwa soo socda.

1. Imisa hab ayaa saamiga laba xaddi oo A iyo B loo qoran karaa?
2. Xaddiyada la isbarbardhigayo waa inay noqdaan nooc isku mid ah ama waa inay noqdaan cabbiraadda halbeeg isku mid ah.

Tusaalle, ma la isbarbardhigi karaa?

b. 20 will iyo 15 adhi

t. 1.5 kg iyo 2000 mg

j. 20 km iyo 15 kg

x. 3 sac iyo 2 bilood.

Ku dhiirigali kana qanacsii ardayda si ay u tarjumaan qiyaaso u qoran saansaan saami. Shaqo kooxeed 3.1 ayaa si wayn uga gargaari doona in ardaydu awoodaan ka helista aqoon qoto dheer xidhiidhka ka dhexeeya qiyaasaha khariidad iyo nuxurka saami. U kooxee ardaydaada nidaam kasta oo ku haboon una ogolow inay ka doodaan ayna qabtaan shaqo kooxeed 3.1 Maalin ka dib ,mid ka mid ah kooxaha u ogolw inay jawaabaha u bandhigaan fasalka adigoo siinaya jawaabta saxda lana falanqaynaya sida loogu turjumo qiyaasaha u qoran saansaanta saami una u bandhigaya tusaalooyin kale oo khariidado ah.

Jawaabaha shaqo kooxeed 3.1 -T

1. b. way sagan tahay 1:200 macnuhu yahay dhismuhu waa 200 halbeeg qiyaas la mid ah islamarkaa dhererka dhismaha ee qorshuhu waa , halbeeg dherer qiyaasta la midka ah .Tan macnaheedu waa in dhismaha dhabta ah yahay 200 laabka dhererka qorshuhu inta u yahay (dheer yahay sida

qorshaha) dhererka dhismaha ee qorshuhu waa $\frac{40}{200} = 0.5 = 0.5$ mitir ama 50

cm .

t. Waayo qorshuhu waa shaxan u e'g, dhinacyada kalena waa la isu barbardhigi karaa .Ka soo qaad in baladhka qorshaha dhismuhu yahay 7.5 cm ,dhismaha dhabta ahi waa 200 laabka u ka balaadhan yahay ka qorshaha ,sidaasi, dhismaha dhabta ahi waa $200 \times 7.5 \text{ cm} = 1500 \text{ cm}$ ama baladhka 15m ah.

j. Haddii baladhka albaabka dhismaha dhabta ahi yahay 1.2 m, albaabka qorshuhu wuxuu noqon doonaa $\frac{1.2}{200} = 0.006m$ ama waa 0.6 cm.

2. Waxaad soo qaadi kartaa khariidadda dugsigiina ka dibna ka codso ardaydu inay isku dayaan turjumidda qiyaasta khariiradda.

3.1.2 Saamigal

Kadib kolkaad dhameeyso ka wada hadalka nuxurka saamiga, waxaad ku bilaabi kartaa casharka barida nuxurka saamigal. Waydii ardayda su'aalaha soo socda adigoo sabuurada ku qoraya si loo bilaabo.

1. Waa maxay jajabyo isku dhigma iyo saamiyo isku dhigma?
2. Waa maxay taranta is weydaar?
3. Maxaad ula jeedaan saamigal?

Kadib, sabuuradda ku qor, dhamaan jawaabaha arday walba bixiyo jowaabtu ta ay doonto ha ahaatee la falanqee ardayda oo la soo bax jawaabta ay ardaydu inta badani ka bixisay su'aal kasta? Qeexidda nuxurka saamigalka ka hor ,waxa loo baahan yahay inaad u naqtiinto saamigalka quman (toosan) iyo saamigalka aan qumanayn. Ulajeeddada hawlgal 3.1 T ,waxay tahay inuu ka caawiyo ardayda xusuusta nuxurada ay ku soo barten fasaladii hore ee saamigalka quman iyo saamigal rogaal.

Jawaabaha hawlgal 3.1 T

1. b. Birr 8, birr 18 iyo birr 6 siday u kala horeeyaan qaybta (B) waxaad raacin kartaa in:
 - t. Tirada qalin bigga aad soo iibstay kolka uu kordho ,qiimaha lacagta aad bixinaysaana iyana way korodhaa.
 - j. Kolka tirada qalin bigga aad soo iibstay yaraato lacagta aad bixiso way yaraataa
 - x. Tirada qalimada la soo iibiyey waxay saamigal quman (toosa) la leedahay qiimaha la bixiynayo ,.
2. b. (i) 12 maalmood
(ii) 8 maalmood

- t. min qaybta (6) ,waxaad ku soo gunaanadaa in kolka tirada shaqaale ay korodho/dhimanto .tirada maalmaha la rabo in lagu dhameeyo hawl la mid ah dhimanto/korodho.
- j. Tirada dadka loo shaqaaleysiiyo iyo tirada maalmaha la rabo in lagu dhameeyo hawshu waa isu saamigal rogaal (aan qumanayn)
3. $x = \frac{3}{5}y$ islamarkaa $Z = \frac{3}{2}y$. Haddaba $\frac{x}{2} = \frac{3}{5}y \div \frac{3}{2}y = 2:5$
4. b. 3:5 t. 3:8 j. 5:8
- x. Isbarbardhigga qaybo iyo qaybo ayaa la yidhaa saami.
- kh. Qaybo la barbardhigayo wax idil ayaa la yidhaa saamigal.
5. b. male'eka t. le'eg j. le'eg x. ma le'eka
6. b. $x = 10$ t. $p = \frac{3}{2}$ j. $x = 9$ x. $y = 10$ kh. $m = 21$
- d. $a = \frac{5}{11}$
7. Isle'e kaanshaha laba saami ayaa sameeya saamigalka.
Isle'egta $8:12=24:36$ ayaa la yidhaa saamigal.
8. b. Saamigal quman t. Saamigal rogaal.
j. Saamigal rogaal x. Saamigal quman.
9. Ka dhig x inay u taagnaato tirada bogga ay xoghayntu ku garaacday 7 maalmood. Maadaama tirada bogagga ay si toosa u la bedalmayso tirada maalmaha, waxad ku heli sida soo socota

Tirada bogagga	Tirada maalmaha.
70	5
x	7

Isle'eg u qorista labada saami, waxaad heli

$$5:7=70:x$$

$$x = \frac{7 \times 70}{5} = 98 \text{ bog.}$$

10. Ka dhig x tirada maalmaha 6 nin ay ku qabtaan shaqada maadaama ay tirada raggu si dadban isula bedasho tirada maalmaha, waxaad heli ta soo socota:

Tirada ragga	Tirada maalmaha.
4	3
6	x

Isle'eg u qorista labada saamiyada, waxaad heli

$$4:6 = X:3$$

$$x = \frac{4 \times 3}{6} = 2$$

2 - maalmood

Weedh xisaabeedyada ah sida tusaaleyaasha 6 iyo 7 ee lagu siiyey buugga ardayga, ayaa fursad fiican ka geysanaya hanashada xirfado badan oo looga baahan yahay wadajir u barashada saami iyo saamigal. Ujeedadan ayaa loo siiyey laylis 3.1. Si kasta ha ahaatee, fahamka fiicani, waa inaad ardayda ku hagi kartaa si ay ugu furfuraan masalooyinka nololaha runta ah ee lagugu siiyey hawlgalada soo socda. Kolka hore ardayda u dhis saddex kooxood, kadibna koox kasta waa inaad ka siisaa hal hawlgalada soo socda. Kooxda 1^{aad} hawlgalka 1, kooxda 2^{aad} hawlgalka 2 islamarkaa hawlgalka 3 kooxda 3^{aad}.

Hawlgal 1

1. Soo saar saamiga
 - b. 7 maalmood iyo $1\frac{1}{2}$ todobaad
 - t. 0.15 km iyo 75000 mm
 - j. 900 seken iyo $1\frac{2}{3}$ saac
 - x. Birr 38 iyo Birr 9.50
2. Tibxaha koowaad, labaad, iyo afaraad ee saamigalka waa 15, 10, iyo 35 raadi tibixda saddexaad.
3. Labada cidhifo ee saamigal waa 12 iyo 42. Haddii midka ka mid ahi dhexyuhu yahay 24, kolkaa soo saar ka kale?
4. Saamiga X:Y waxay u fududeysan tahay 3:4
 - b. haddii X ay tahay 6, waa imisa Y?
haddii Y ay tahay 12 waa imisa X?
 - j. haddii X iyo Y loo geeyo 35 waa maxay X iyo Y?

Hawlgal 2

1. Dugsi ayey ku jiraan 1400 arday ah iyo 70 bare, qor saamiga ardayda iyo barayaasha ka dhexeeya oo u tibaax saansaanta ugu fudud.
2. Ganacsade ayaa ku soo iibsadey baabuur Birr 120,000 waxaanu ku gaday Birr 15,000. Waa maxay saamiga faa'iidada iyo qiimaha iibka, u qor saansaanta ugu fudud?
3. Baabuur ayaa ku socdaa 60 km saacadii
4. Waa imisa fogaanta u socon karo 12 daqiiqo?
5. 15 nin ayaa ku qoda god 12 maalmood. Imisa maalmood ayey ku qodi karaan 10 nin god la mida?

Hawlgal 3

1. Dugsi ayey fasalka 7^{aad} ku jiraan 150 arday oo saamiga wiilasha iyo gabdh uhu tahay 7:8. Imisa wiil iyo imisa gabdhood ayaa fasalka 7^{aad} ku jira?
2. Dhakhtar jiif, saamiga neerasta dhediga ah iyo neersiga labka ah waa 4:3
 - b. haddii ay yihiin wiilashu 12, waa intee neerasta gabdhaha ahi?
 - t. tirada neerasta dhediga ah iyo tirada neerasta labka ah kolka labadaba la labanlaabo ,saamigu miyuu isbedelayaa ? Jawaabtaada faahfaahi?
3. A , B iyo C ayaa ku bilaabay maalgalinta meherad Birr 20,000 , Birr 50,000 iyo Birr 70,000 siday u kala horeeyaan. Haddii u sanadku kolkuu dhamaaday ay heleen faa'iido ah Birr 7000 soo saar saamiga faa'iidada mid kasta helayo.
4. 50 arday kastaba 4 bare ayaa loo magacaabey. Imisa bare ayaa loo magacaabi, kolka dugsiga 1325 arday dhigtaan
5. Tilmaanta looga baahan yahay waxyaabaha samaynta keega la isugu darayo 50 gm badhart (burcad) iyo 1050 gm oo daqiiq (bur)
 - b. Waa imisa saamiga burcadka iyo burku?
 - t. Intee burcad ah ayaa loogu baahan yahay 199.5gm bur ah ?
 - j. Intee bur ah ayaa loo rabaa 300 gm burcad ah?

Jawaabaha hawlgal 1^{aad} (buugga baraha)

1. b. 2 : 3 t. 2 : 1 j. 3 : 20 x. 4 : 1
2. Tibixda sadexaad waa 17.5
3. Tibixda dhexe ee kale waa 21
4. b. 8 t. 9 J. X = 15 iyo Y = 20

Jawaabaha hawlgal 2^{aad} (buugga baraha)

1. 20 : 12. 2. 1 : 4 3. 12km 4. 18maalmood

JAWAABAHA HAWLGAL 3^{AAD} (BUUGGA BARAHA)

1. Waxaa ku jira 70 wiil iyo 80 gabdhood
2. b. 16 kalkaalin caafimaad dhedig ah t) isma bedesho
3. Birr 1000, Birr 2500 iyo Birr 3500 siday u kala horeeyaan
4. 106 bare
5. b. 1 : 21 t. 9.5 gm j. 6300 gm.

Jawaabaha laylis 3.1

1. Haddii laba xaddi lagu siiyey ayna cabbirka halbeegyadu isku mid ahayn, marka hore ka wada dhig (u wada rog) halbeeg isku mid ah iyaga, haddaba,
 - b. 9 : 100 t. 1 : 25 j. 5 : 3 x. 6 : 1
2. b. 17 : 16 t. 16 : 33
3. b. 7 : 10 t. 5 : 17

4. b. saamigal t. ma'aha saamigal j. saamigal
x. ma'aha saamigal
5. b. 10 t. 15 j. 21 x. 96
6. 0.138km ama 138m nolosha dhabta ah
7. Xagal kasta ee saddexagalku waa $36^0, 60^0$ iyo 84^0
8. saamiga A = Birr 2500, saamiga B = Birr 1500 iyo saamiga C = Birr 3500
9. b. 0.95 kg kobar, 0.04kg Tin ah iyo 0.01 kg sink ah
t. 0.475kg kobar, 0.02kg tin iyo 0.05 kg Naxaas ah
10. Birr 69.00
11. 2.8kg
12. 70 wiil iyo 80 gabdhood
13. 5 :16
14. Abiib wuxuu helaa Birr 2,833.24, xuseen –na wuxuu helaa Birr 4516.76
15. Birr 37.50
16. 18 nin
17. 16 kg
18. $6\frac{2}{3}$ maalmood
19. $2\frac{1}{2}$ saac
20. 27 daqiiqo

Qiimeyn

Waxaad goor kasta loo bahan yahay inaad ka fekarto barashada awoodda ugu hooseysa ee laga filayo ardayda dhamaadka cutub-hoosaadka. Adeegso tabo qiimeyneed kala duwan iyo kuwa aan toos ahayn si aad ugu heesho jowab celinta heerkooda faham ee mawduuca. Ka sii laylisyo weedh-xisaabeedyada fudud oo ay ugu furfuran saamiga iyo masalooyinka nolosha dhabta ee saamigalka. Tusaale ahaan, waydii ardayda inay sharaxaan nuxurka saami iyo saarnigal.

- Waydii iyagu si ay u raadiyaan saamiga laba xaddi.
- Waydii ardayda xaddi la siiyey si ay ugu qaybiyaan sami la siiyey.
- Ka codsi ardayda inay xaddi la siiyey u qaybiyaan saami la siiyey .
- Ka codso inay soo saaraan xaddiga dahsoon, kolka saamiga iyo hal xaddi la siiyo.

Su'aalaha afka ah ,shaqo kooxeed, shaqooyin fasal, su'aalo kadis ah, shaqo guri iyo mashaariico ayaa ka caawin doona tabaha qiimeynta muhiimka ah si aad u ururiso xogta ku habboon sifaha ardayda. Si aad uga gacan siin karto shaqsi,shaqsi ardayda dib uga dhacaysa kolka waxbarashadu socoto .

U caadayso weydiinta laba ama saddex su'aalood dhamaadka fasal kasta oo qoraal ah. Tani ayaa xiiso galin doonta ardaydu inay ka qayb-qaadasho fir-fircoon u yeeshaan casharka maalin kasta iyo hore usii aqrinta ciiwaanka.

3.2 QOTO DHEERAYNTA BOQOLEYDA

(7 xiso)

Waxa laga rabo ardayda

Dhammaadka, cutub-hoosaadkan ardaydu waxay awoodi doonaan inay:

- *Xisaabiyaan boqoleyda xaddi la siiyey*
- *Furfuraan masalooyinka ku saabsan boqoleyda*

Erayada

- Boqolkiiba (dulsaar)
- Sal
- Boqoley
- Hanti

Hordhac

Cutub hoosaadkani wuxu ku lug leeyahay sii qoto dheeraynta barashada boqoleyda. Waxa kaloo iyana la xoog saareyaa nuxurka iyo tibaaxaha sida salka, hantida, dulsaarka ,iyo boqoleyda salka la oo yahay loogu isticmaalayo nuxurka saamigalka. Cutub-hoosaadku waxa ka loo lagu bandhigayaa xisaabinta furfuridda weedh xisaabeedyada kala duwan ee ah wax soo saar, cashuurta, caymiska, maalgalinta, iwm.

Fekradaha Barista

Si aad u bilowdo casharka kollka hore waydii ardayda waxa ay ka fahmi karaan xidhiidhka ka dhexeeya boqoley iyo jajab tobanle. Qor dhamaan jawaabaha arday kastaa ka bixiyo. La falanqee jawaabta oo ku hag ardayda si ay ku keenaan nuxurka boqoley. kadib waxaad siin kartaa hawlgalka 3.2 si ay ugaga jawaabaan su'aalaha iskood ama si madax banaan. Ahmiyadda hawlgalkani waa inay ka gargaarto ardaydu inay dib u xusuustaan nuxurada sida jajab tobanle, dulsaar, aanay arkaan xidhiidhka ka dhexeeya.

U sii 10 ilaa 15 daqiiqo si ay jawaabta ugu qortaan buugta oo hubi adoo wareegaya fasalka dhexdiisa ,ku soo dhawee ardayda isxilqaanta inay ku tusto shaqada sabuurada ayna ka faaloodaan jawaabta islamarkaana jawaabta saxda ah keenaan.

Jawaabaha hawlgal 3.2

1. Jajab tobanle waa jajabka leh jibbaarka 10 sida 10,100,1000 ama 10,0000 iwm ay u yihiin hooseeyeyaal .
2. Boqolkii waa saamiga tiro ee 100. Ereyga boqolkii macanaheedu waa boqolkiiba ama boqolkii walba, tusaale ahaan ,saamiga 25 iyo 100 waa 25%.

3. Jajab kasta waxaa loo bedali karaa jajab tobanle taas oo sareeyaha loo qaybinayo hooseeyaha.
4. Jajab tobanle u qoridda boqoleuy ahaan, waxaad u dhaqaajin (u rari) dhibicda tobanle laba god ilaa midig, islamarkaa raaci summadda % rogaal ahaan, boqol si loogu qoro jajab tobanle waxaad ka tuuri summadda % oo dhig ama u dhaqaaji dhibicda jajab tobanleh laba god bidix
5. b. $\frac{3}{20}$ t. $\frac{3}{100}$ j. $\frac{5}{1}$ x. $\frac{3}{1}$ kh. $\frac{109}{45}$
6. b. 0.5 t. 0.13 j. 0.571428 x. 1.12 kh. 3.5
7. b. 0.03 t. 0.0105 j. 0.25 x. 0.1223 kh. 0.00102
8. b. $53\frac{1}{2}\%$ t. 63.2% j. 175% x. 12.5%
9. b. 37% t. 103% j. 1.5% x. 58%
10. Tiro togan kastoo n ah, n% waxay la macno tahay 1%—ka $n = \frac{n}{100}$
11. Waxa cad in 75% ardaydu ay xidhan yihiin dirays. Haddaba, 25% ardaydu aanay xidhneyn direys
12. Ardayda waxa gabdho ah 32% wiilalna waxa ah 68%
13. Kharashka cunnadu waa Birr 2625
14. Waxaad ogaatay in tirada 100 loo isticmaali karo tirada ugu habboon isbarbardhigga. U qaado 100 hooseeyaha la barbardhigayo jawaabta ka 100 imtixaan kasta

$$\text{Imtix. xisaabta : } \frac{18}{20} = \frac{18 \times 5}{20 \times 5} = \frac{90}{100}$$

$$\text{Imtix. Ingiriiska:- } \frac{23}{25} = \frac{23 \times 4}{25 \times 4} = \frac{92}{100}$$

hodan waxay ka heshay 90 dhibcood xisaabka, 92 dhibcood ingiriiska 100kiiba mid kasta, haddaba imtixaanka ingiriiska ayey ku fiicnayd.

Kadib ka wada hadalka tusaalooyinka buugga ardayga ku qoran waa inaad hubisaa inay ardaydu awood saart furfurista mas'alooyinka boqoleyda ka hadlaya. Si aad u hubiso heerka fahanka ardaydu u yeesheen, waxaad siin kartaa hawlgalka soo socda ee jawaabtiisa hoos lagu siiyey.

Hawlgal 1

1. Furfur kuwa soo socda.
 - b. $6\frac{1}{4}\%$ inty ka tahay tirada le'eg 275%?
 - t. 35% intee ayey ka tahay 30.1?
 - J. 112 imisa ayey boqolkii ka tahay 160?
 - X. 11.25% ka 115 tiradee ayay ka tahay.

2. Qiimaha kombuyuutar ayaa ah Birr 12500.50 ay la jirto korodhka cashuurta. Haddii uu korodhka cashuurta tahay 15%, soo saar qiimaha ka hor korodhka cashuurta?
3. Macdaar ayaa hoos uga dhigay qiimaha suudh 15% qiyaas ah, si qiimaha gadidu u noqoto Birr 459.85 waa imisa qiimihii hore ee iibku?
4. Xuseen ayaa qaata Birr 3250 bil kasta waxa uu bixiyaa cashuurta dakhli ah 12% Waa imisa hantida cashuurta uu bishii ku bixiyo?
5. Beer ayaa waxaa ku yaal dhir 500 ah oo ay 35% ka mid tahay geedo 20% tahay dhir yar-yar iyo 15% oo ah xawaash soo saar tirada geedaha, dhirta yar-yar iyo xawaashka, waa imisa geedaha aan intaa midnaba ahayn.
6. Dakhliga A 25% ayuu dheer tahay dakhliga B islamarkaa dakhliga B wuxu yahay 8% dakhliga C. Haddii dakhliga a yahay Birr 4050 kolkaa soo saar dakhliga C
7. Wax soo saarka nin beeraley ayaa kolkii hore hoos u dhacay 5% ka dibna u kordhay 5%. Waa imisa boqolkii inta u korodhey ama dhimantay?

Jawaabaha hawlgal 1 (buugga baraha)

1. b. 4400 t. 86 j. 70% x. 12.9375
2. Birr 10870.00
3. Biir 541.00
4. Birr 390.00
5. Waxaa ku yaala 175 geed, 100 dhir yar yar iyo 75 xawaash ah 150 geed ah ayaan midnaba ahayn.
6. Dakhliga B waa Birr 3240 sidoo kale dakhliga C waa Birr 3000
7. Dhimaalku (hoos u dhaca) waa $\frac{1}{4}\%$ ama 0.25 %.

Hawlgalkan waxa raacsan, sii ardaydu si uga sheqeeyaan ayna uga doodaan su'aalaha 1 iyo 2 ee layliska 3.2 ee buugga ardayga ku qoran.

Inta ay ka shaqeeyaan ardaydu su'aalaha ku wareeg fasalka si aad u fiiriso jawaabhooda, ku dhiirigali kana gacan sii ardayda .

Ugu dambeyn, la falanqee jawaabaha si ardaydu ka qaybgal firfircoon ugu yeelato, adoo siinaya ardayda jawaabta saxda ah .

Si dheeri ah hubi in ardaydu fahmayaan ayna adeegsan karaan jidka $\frac{B}{S} = \frac{D}{100}$

Halka A tahay hanta, B tahay sal (raasamaal) , p tahay dulsaar % si aad y hubiso su'aalaha 4-15 ee laylis 3.2 ugu sii shaqo guri iyo mashruuc ahaa, ka dig ardaydu inay u soo jeediyaan fasalka shaqada guri ee ay la haayeen .

Jawaabaha laylis 3.2

1. b. Birr 116.40 t. 178.2
j. 4.375km ama $4 = \frac{3}{8}$ km x) 663m
2. b. 100.8 t. 11764.7 j. $15\frac{3}{4}\%$ x. 1305
kh. 800 d. 5000 r. $43\frac{1}{3}\%$
s. 650 sh. 2160 dh. 125%
3. Maadaama 434 gabdhood ku jiraan, waxaa ku jira 806 wiil
4. 420 arday ayaa lug ku yimaad dugsiga
5. Waxa ku jira 32kg oo sink ah iyo 128 kg oo kobor ah
6. Waxay kaydsataa Birr 375.
7. 27 daqiiqo
8. Tirakoobka magaaladu waa 10,000
9. Qiimuhu wuxuu kordhey 80%
10. Waa in la bixiyaa 210
11. Qiimaha korodh ka cashuurtu 15%
12. Wadarta qiimaha u bixiyo macmiilku waa birr 10,481
13. Wadarta wax soo saar waa $48865500 + (0.25 \times 48865500)$ oo ah 61,081,875.
14. $120 + 5\% \times 120 = 120 + 6 = 126$. Wadarta hantida ay la jirto korodhka cashuurtu waa Birr 126
15. Wadar ta wax soosaarku waa $48865500 + (0.25 \times 48865500)$ oo ah 61,081,875
16. Waxa laina siiyey in 44% daryeelka caafimaad ay bixiyaha hosbitaaladu haddaba $(100 - 44)\% = 56\%$ ka daryeelka caafimaad ay bixiyaan goob caafimaadyo. Kolkaa waxa jixa 12% inay ka yar yihiin hosbitaaladu. Haddaba 12% ka tirada goob caafimaad waa 6.
Sidaa awgeed, goob-coafimadadu $\frac{6 \times 100}{12} = 50$.
 \therefore 50 goob-caafimaad
17. b. Birr 2520 ayuu keydsadaa.
t. Birr 3096 ayuu ku bixiyaa kiro iyo walxo kale
18. $\frac{306 - 240}{240} \times 100\% = \frac{120}{240} \times 100\% = 50\%$
Haddaba tirada macmiil waxay u korodhay 50%
19. $160,000 + 12\% \times 160,000 = 160,000 + 19,200 = 179,200$.
Haddaba, dhamaan qiimaha iibka oo u la jiro cashuur korodhku waa Birr 179,200.
20. Wuxu ahaa qiimaha koodhku Birr 220

Qiimeyn

Danta u qiimeynta heerkooda faham awgeed, ka codso ardayda inay sheegaan jidka ah

- b. Boqoleyd. kolka salka “s” iyo dulsaarka boqolkiiba la og yahay.
- t. Dulsaarka boqolkii (D) kolka ama salka (S) iyo “B” la og yahay.
- j. Salka “S” kolka (B) iyo dulsaarka boqolkii (D) la og yahay.

Ka Codso ardaydu inay adeegsadaan jidadkaa adigoo siinaya mas’alooyinka nolosha dhabta ah ee ku lug leh boqoleyda

3.3 ADEEGSASHADA BOQOLEYDA

(11 xiso)

Waxa laga rabo ardayda

Dhammaadka cutub-hoosaadka ardayda waxay a woodi doonaan in ay:

- *U adeegsadaan nuxurka boqoleyda furfurista mas’alooyinka faa’iidada iyo khasaaraha*
- *U adeegsadaan nuxurka boqoleyda furfurista mas’alooyin dheefta fudud*

Ereyada

Faa’iido (macaash)	qiimaha iibka (q ,i ama s.p)
Khasaare	qiimaha gadidda(q,g ama c.p)
Dheef fudud (I)	hanti (H)
Dulsaarka dheef (D)	raasamaal (R)

Hordhac

Ujeeddada ugu weyn cutub-hoosaadkan waa u sii ballaadhinta iyo u sii qoto dheereynta aqoonta iyo kartida ardayda ee adeegsiga boqolleyda si ay ugu xisaabiyaan faa’iidada ,khasaaraha iyo dheefta fudud.

Cutub-hoosaadkan waxuu loo qaybiyey laba ciinwaan –hoosaad kaliya .Ciiwaan-hoosaadka hore wuxa bandhigayaa faa’iidada iyo khasaaraha .Cutub-hoosaadka labaadna waxa lagu falanqeynayaa dheefta fudud.

3.3.1 Faa'iido iyo khasaare

Fekradaha Barista

Si aad u bilowdo casharka waxaa kaa caawin doona u xiisagalinta ardayda hawlgalka 3.3 B, ka shaqeynta iyo falanqaynta hawlgalkan, ardaydu waxay awood u yeelan doonaan aqoonsashada waxa macaashka iyo khasaaruhu ay yihiin.

Jawaabaha hawlgal 3.3

1. b. qiimaha gadidda t. qiimaha iibka
2. b. qiimaha gadidda. t. qiimaha iibka
3. Kolka qiimaha iibku u ka badan yahay qiimaha soo qadashada ka dib waa faa'iido ,laakiin kolka qiimaha gadiddu ka yar yahay qiimaha soo iibinta, kolka waxaa jira khasaare .
4. Kolkan qiimaha soo qadashada (q.g) ee dibigu waa 5600 islamarkaa qiimaha iibinta (q.i) dibigu waa 6200 haddaba $q.i > q.g$ wuxuu faa'iiday Birr 600
5. Qiimaha soo iibinta (q.i) ee Tv-gu waa Birr (3800 + 85)=3885.qiimaha gadidda Tv-gu waa Birr 3250,maadaama , $q.g > q.i$,kolkaa wax dhacay khasaare ah Birr 635.

$$6. \quad q.g = \frac{q.i \times 100}{100 - \text{khasaare}\%} = \frac{6400 \times 100}{100 - 20} = \frac{640000}{80} = 8000$$

Sidaas awgeed, qiimaha soo iibintu waa birr 8000.

Ku dhiirigali kana gacan sii ardayda soo dhiraandhirinta jidka (5) iyo (6) ee ku qoran buugga ardayga si ay ardaydu u noqdaan kuwo si weyn ugu baraarugsan isticmaalka jidadka 3,4,5 iyo 6, ardayda u samee kooxo shaqeeya shaqo-kooxeed 3.3. Ujeedada shaqo-kooxeedkan waa adeegsashada jidka (5) iyo (6) .Hubi in ardaydu fahmeen nuxurka boqolkii faa,iidada iyo khasaaraha.

Jawaabaha shaqo-kooxeed, 3.3

1. Haddii c.p- ka qalin qori yahay Birr X, kolkaa q.g- ka 15 qalin qori = 15Xama q.i ee 12 qalin big = Birr 15 X

ama q.i ee 1 qalin big = $\frac{15x}{12}$, maadaama $q.i > q.g$ waxa jira faa'iido.

1.3.2 Dheef fudud

Figrada barista

Waa in ay ardaydu ku bilaabaan casharka shaqada hawlgal 3.3.T ee lagu siiyey buugga ardayga. Sii ardayda 10 ilaa 15 daqiiqo si ay uga sheegaan una

falanqeeyaan mas'alooyinka hawlgalkan .Ujeedada hawlgalkani waa siinta ardayda fursad ay ku fahmaan nuxurka dheefta fudud ,raasmaal, iyo dulsaarka dheefta wakhti a sii yey oo sannado ah.

Ku dhiirigali kana gacan sii ardayda si ay u sheegaan noocyada dheefta bangiga ganacsiga itoobiya (CBE) ama bangiyada kale ay leeyihiin.

Jawaabaha hawlgal 3.5 T

1. Xadiga lacagta qof uu amaahday waxa la yidhaahdaa raasamaal
2. Lacagta dheeriga ah ee in la siiyo laga dayntaha mudo la ogyahay waxaa la yidhaahdaa dheef fudud
3. Dheefta fudud waxay dhan tahay Birr 180
4. Dulsaarka dheeftu waa 1%
5. b. Birr 4320 t. Birr 11,520 j. Birr 221.54

Waxaa raacsan, ka qanac sii ardayda inay curiyaan islamarkaana isticmaalaan jidka loo adeegsado soo saarista dheef fudud si loogu aburo ardayda inay si wayn ugu baraarugsanaadaan adeegsashada jidka dheefta fudud, kooxo ka samee ardayda oo ka codso inay qabtaan shaqo kooxeed 3.4. Danta laga rabo shaqa kooxeedkan waa si loo adeegsado jidka dheefta fudud.

Jawaabta shaqo kooxeed 3.4

Waxa cad in ay jiraan laba nooc oo dheef ah. Waxaya kala yihiin dheef fudud iyo dheef kor. Maadaama dheefta la helayo dhamaadka mudo la ogyahay loo geeyo raasamaalka oo wadarta lagu qaadto dheefta mudada xigta, kolkaa dheef korka ayaa ka abdo badan dheefta fudud. Ugu dambeyn, hubi in ardaydu ay awoodaan sheegista iyo u adeegsasha jidka soo socda iskood.

$$R = \frac{I}{D \times T}$$

$$D = \frac{I}{R \times T}$$

$$T = \frac{I}{D \times R}$$

Si loo xoojiyo aqoonta ardayda ee u adeegsashada boqolayda, si ay u furfuraan mas'alooyinka faa'iido, khasaare iyo dheefta fudud waa inaad ugu dirtaa laylis 3.3 shaqo fasal iyo tu guri ahaan. Waa inaad ardayda ugu doortaa arday si uu sabuurada ugu tuso shaqada islamarkaa waxaa lagaaga baahan yahay in aad siiso oo aad falanqayso jawaabta saxda ah.

Jawaabaha laylis 3.3

1. C.P = Birr (450+30) = birr 480 iyo S.P = Birr 540

$$\text{Macaash \%} = \frac{540 - 480}{480} \times 100\% = 12.5\%$$

2. Ma faa'iidin mana khasaarin

3. ka dhig x qiimaha soo iibinta (C.p), kolkaa, $\frac{s.p - x}{x} = 15\%$

$$\frac{368 - x}{x} = \frac{15}{100} \Rightarrow \frac{368 - x}{x} = \frac{3}{20} \Rightarrow 3x = 20(368 - x)$$

$$\Rightarrow 3x = 7360 - 20x$$

$$\Rightarrow 23x = 7360$$

$$\therefore x = 320$$

Haddaba, macaash=368-320=48

Waxay ku gadaysaa Birr 418 si ay faa'iidadeeda u labanlaabto.

4. Qaybta koowaad

$$\text{Faa'iido \%} = \frac{s.p - c.p}{c.p} \times 100\%$$

$$\frac{s.p - c.p}{c.p} \times 100\% \cdot 20\% = \frac{84 - c.p}{c.p} \times 100\%$$

$$c.p = 70$$

$$\text{Qaybta labaad faa'iido \%} = \frac{s.p - c.p}{c.p} \times 100\%$$

$$30 = \frac{s.p - 70}{70} \times 100$$

$$s.p = 91$$

5. Ka soo qaad s.p ee shay in ay tahay birr X, kolkaa

s.p - da 20 shay = birr 20X

c.p- da 23 shay = birr 20 X

c.p -da 1 shay = birr $\frac{20}{23}x$, maadaama s.p > c.p waxaa jira faa'iido ganacsi

$$\text{faa'iido} = x - \frac{20}{23}x = \frac{3}{23}x$$

$$\text{faa'iidada \%} = \frac{\text{faa'iido} \times 100\%}{c.p} = \frac{\frac{3}{23}x}{\frac{20}{23}x} \times 100\% = 15\%$$

6. Birr 620
7. Birr2340
8. $4\frac{1}{8}\%$
9. $3\frac{1}{8}$ sano
10. Ayaa dheef fudud badan lagu helay waayo b) birr 750 t) birr 960

Qiimayn

Waxaad isticmaali kartaa tabo qiimayn oo kala duwan iyo kuwa dadban si aad u heshid , heerkooda faham ee ciwaanka .Sii mashruuc, shaqo guri ama kadisyo.

Jawaabaha layliska guud

1. b. 7:1 T. 1:7
2. Qofka hore wuxuu saami u helayaa 2784,qofka labaadna wuxuu saami u helayaa 4640 islamaar kaa ka saddexaadna wuxuu helayaa 6496
3. Birr 225
4. Saamiga A waa Birr 10000, saamiga B waa Birr 15000
5. 12 maalmood
6. 10 saacadood
7. 320 mitir
8. 6%
9. Birr 2576
10. 15%

CUTUBKA HABEYNTA XOGTA

Hordhac

Bulshada casriga ahee nolosha casriga ku jirta ayaa waxa aad muhiim u ah xogta. Waa xogta loo ururiyey sinidaansan una agaasiman si u qof go'aan uga keen karo sidaa awgeed, waa wax muhiim ah in la garto sida xog loo ururiyo, agaasimo, koobta islamarkaa loo bandhigo.

Cutubkan dhexdiisa waxaad rabtaa inaad ardayda u barto sida xog la ururiyaey loogu adeegsado amaaradaha Taaley, dhisto islamarkaa tarjunto xariiq garaafeedyada iyo jaart goobeedyada, soo saaridda tirsinka, badidhacaha, dhexfurka iyofaraqafooxda xogta.

Ujeeddooyinka cutubka

Dhammaadka cutubkan ardaydu waxay awood u yeelan doonaan in ay:

- *Ururiyaan xog ayna dhisaan xariiq garaafeed iyo jaart garobeedyo fudud ee xog la siiyey.*
- *Soo saaraan tirsinka, dhexfurka, iyo badidhacahaxog la siiyey .*
- *Raadiyaan faraqatooxda xog la siiyey.*

Kaabayaasha waxbarasho ee loo doorbidey

Waxaad ogtahay in ardaydu wax ku bartaan habab kala duwan oo badan. Qaar waxay si fiican wax ugu bartaan aragga, ku hanta warka daawashada sawirka ama fiidiyooga. kuwo kale waxay si fiican wax ugu qabtaan inay wax ka maqlaan bareyaasha halka ay ka aqrin lahaayeen. Barayaashu waxay adeegsadaan kaabeyaal wax barasho si ay uga gacan siiso ku barashada hababkan kala duwan xaglo beege iyo mastarad ayaa haddaba loo isticmaalaa xaglaha jaart goobedyada. Haddaba, waxaa lagu talinayaa in aad u adeegsato muunado (modeelo) garaafyo ah sida xariiq garaafeedyo iyo jaart goobedyada cutubkan islamarkaas waxa kale oo aad u isticmaali kartaa qalabyo noocyo kale ilaa xad inta ay ardayda ka garansiinayahanashada xirfadaha loo baabanyahay.

4.1 U ADEEGSASHADA AMAARADAH TAALEY XOG URURINTA

Qoondaha: 5xiiso

Waxa aradayga laga rabo:

Dhammaadta cutub-hoosaadkan ardayda waxay awoodi doonaan in ay:

- *ka soo ururiyaan deegaankooda xogo fudud oo loo adeegsadoo amaaradaha taaley*

Ereyo: xog, amaarado taaley, tusaha amaarado taaley, tuse

Hordhac

Shaqada u waynee cutub –hoosaadkani waa in ardayda lagu dhaliyo sameynta xog ururin fududay oo ay ka soo ururiyaan deegaankooda. Si ayu sameeyaan sidan waxay u isticmaali karaan amaaradaha taaley si ay u agaasimaan xog.

Fikradaha Barista

Cinwaan-hoosaad kasta waxa lagu ifiyey sida loo bilaabo casharada laakiin hal abuurka aad u yeelato fasalka ayaa muhiimad aadwayn leh. Niyadda ku hayntabaridda gudagelkeeda kaa gacan siinaya inaad ku fidiso hawlgalo, weedho furan iyo shaqo kooxedyo u xiiso-galineya kuna hagaya ardaydu barashada halkii qudbad lagu siin lahaa. Hadda waxaad ku bilaabi kartaa cinwaan hoosaadkan adoo u naqtiimaya waxa ay xog tahay. Waayo tani waxay ka gacan siin kartaa ardaydu falanqeynta xog ururinta soo socota. Waxaad ardayda ugu xiiso galin kartaa aanad kaga caawin kartaa inay soo ururiyaan xog ururinta noocyo kala duwan ah. Waxaad uguxiisogalin kartaa in iyagu soo ururiyaan xogaha sida tirada dadka qoysas guri kuwada nool, xiiseynta maaddo ee arday, dadka jacel hal cayaar, rabitaanka shaqo kolka ay koraan iyo kuwa la mid ah.

Tusaale ahaan:

1. Tagle wuxuu la nool yahay hooyadii, aabahii, iyo walaashii, kolkaa waxaa ku wada nool 4 qof guriga qoyskooda.
2. Dhool waxay la nooshahay hooyadeed, aabaheed, laba wiiloo walaalaheed ah iyo gabadh u adeerkeed dhalay. Haddaba, 6 qof ayaa guriga kuwada nool
3. Cabdi maadada uu jecel yahay waa xisaab.
4. Waris waxay rabtaa inay bare noqoto kolka ay waynaato.
5. Kubadda cagta ayuu Dheeg jecel yahay ciyaaraha.

Amaaradaha taaley waxaa loo isticmaalaa ku tirinta walxaha waa xariijimo yar-yar oo qotoma oo mid waliba u taagan tahay halbeeg kaliya. Tusaal ahaan / waxay u taagan tahay hal(kow) // waxay u taagan tahay 2, /// waxay u taagan tahay 3, //// waxay u taagan tahay 4. Amaarada taalley ee koox 5 ah waxaa loo sawiraa mar kasta afarta hore oo la dhex gudbay ta 5aad sida ### sidani oo ah sida ugu fudud ee loo tiriyo tirada kooxo shan ah, laakiin haddii qof u dheehdo ku celinta 7 goor waxaa u taagnaata ###// .

Cutub-hoosaadkani waxaad ka dhex mari doontaa xog ururinta loo isticmaalayo amaarado taaley. Si aad uga gargaarto inay ardaydu fahmaan waxaad ardaydaka yeeli inay ka shaqeeyaan howlgalka soo socda:-

Jawaabaha hawlgal 4.1

- | | | |
|-----------------|------------------|-----------------|
| b. saddex arday | t. afar arday | j. saddex arday |
| x. saddex arday | kh. saddex arday | d. saddex arday |
| r. laba arday | s. laba arday | sh. ardayna |

Hawlgal 4.1

Waxa laga ogaanayaa inay caddahay haddii aad isugu dubarido xogsaansaanta tuse ahaaneed, waayo way u jilicsantahay in la fahmo oo la isticmaalo xogta. Tusaale ahaan, kolka laga fiiriyo **tuse 4.1**. hoos u taxa 1, qof kuwuxu ka fahmi karaa inay jiraan saddex arday ay leeyihiin ayaa kaliya laba guri kuwada nool. Si la mida, qofayaa sooci kara tirada ardayda qoyskooda ku wada nool yihiin 3, 4, 5, 6, 7 iyo sidoo kale.

Ogow:- in tirada amaaradaha taaley ay le'eg tahay tirada ardayda sheegtay tirada dadka ku nool gurigooda. Tusaalayaasha sidaa ah ayaa la yidhaa tusaha amaaradaha Taaley.

Qiimayn

U isticmaal hawlgal 4.1 si aad u qiimeyso waayo-aragnimadii hore ee ardayda. Maanka ku haynta qiimeyntu waa inaad u hesho agab lagu xaqiijiyo in ardayda ay si wayn ugu adkaatay. Si ay qiimeyntu u noqoto mid waxtar ugu leh qorshaha barnaamaj loogu kabo. Sidaa ayey qiimeynta hawlgal 4.1 kaaga siinaysaa sifo qiimogalsan ku xoogganaanta arday kasta iyo ku liidashada, oo si aad u awooddo in ku wajahida baristaada dhinacyada lagu liito.

Kadib kolkaad qabato tani ayaa waxaad siin shaqo kooxeed 4.1. Halkan adoo ku talagalaya in shaqo kooxeedku keeno iskaashi wax wada barashoayaadgo'aamin tirada ardayda koox kasta aad ka dhigaysid. Waxaad iyana aad ka siin tilmaamo ah sida looga shaqeeyo iyo mid kasta shaqada waxay tahay. Shaqo kooxeedkani ardaydu waxay ku baran sida la iskugu dubarido xogta kaliya ma'aha ee laakiin iyana waxa ka loo ay ku baran sida loo ururiyo xog- halkan u ogolow ardaydaiinay dhameeyaan shaqo kooxeedkooda ayna ugu soo badhigaan fasalka. Waxaa wanaagsan inaad isticmaasho qiimeynta sifo si ay ardaydu uga wada qaybqaataan : ka doodsiiinta bandhigga shaqo kooxeed

Jawaabaha shaqo kooxeed 4.1

Jawaabta shaqo kooxeedku waxay ku xidhan tahay jawaabta su'aal kasta ay ardaydu ka bixiyaan. Sidaas darteed, waxaad u go'aansan kartaa sifahasida shaqada ardaydu u qabteen hawl kasta si ka lug leh.

Qiimeyn

Waa inaad siisaa shaqa guri, shaqooyin fasal oo aad ardayda ugu qiimeysaa hubinta ama u sixidda buugta laylisyadaa ula jeedada ayaad u isticmali laylis 4.1 ama laylis kasta oo la mid ah.

Jawaabaha layliska 4.1

1.

Bisha	Meskerem	Hidar	Tahisas	Tir	Yekatit	Megabit	Ginbot	Sene	Hamile	Nehase
Amaarado Taaley										
Tirada ardayda dhalatey bisha	5	5	2	5	3	2	3	2	2	1

2.

Dhibco	8	9	10	11	12	15	16	18	19	20
Amaarada taaley										
Tirada dhibcaha leh	4	3	4	1	3	5	8	5	4	3

Su'aalaha 3 iyo 4 waxay u baahan yihiin ka ururinta xog fasalka. U sii mashruuc shaqo kooxo ahaan oo ka codso inay fasalka ku soo bandhigaan.

4.2 DHISMAHA IYO "U" MUUJINTA XARIIQ GARAAFEEDYO IYO JAART GOOBEED

Xiisadaha loo qoondeeyey: 10 xiisadood

Waxaardayda laga rabo:

Dhamaadka cutub-hoosaadkan, ardaydu waxay awood u yeelan doonaan inay:

- *Dhisaan xariiq garaafeedyo iyagoo adeegsanaya xogo la ogyahay*
- *Dhisaan xariiq garaafeedyo ay u isticmaalaan xog ay ka ururiyaan deegaankooda.*
- *Muujiyaan xariiq garaafeedyo fudud.*
- *Dhisaan jaarti goobeedyo iyagoo adeegsanaya xog la ogyahay*
- *Dhisaan jaart goobeedyo ay u isticmaalayaan xog ay ka ururyeen deegaankooda.*
- *Muujiyaan jaartiyo goobeed fudud*

Ereyo

- xariiq garaafeed, jaarti goobeed

Hordhac

Ujeedada garaaf waa muuq u yeelista sawir ahaan ururka xogta qaab ah si dhammaan xagta u arki karo wadajir ahaan islamarkaa si dhaqso ah ugu habeeyo ninka tarjumayaa. Noocyo badan oo garaafyo kala duwan ayaa jira, islamarkaana mid waliba wuxu kaga duwan yahay ka kale wax ka dhigainuu ku faa'iido badan habdhis u gaar ah. Xariiq garaafeedyo iyo jaart goobeedyo waa labada nooc oo garaafyo aad ku barandoonto cutub-hoosaadka dhexdiisa.

Fikradaha Barista

Xariiq-Garaafeedyo

Hadda waxaad u socotaa inaad ku barato nooc garaaf ah oo la yidhaa xariiq garaafeed. Si ardaydu waxtar ugu yeelata fahamka ku hawlgali hawlgalka 4.2 ee soo socda.

Jawaabaha hawlgal 4.2

1. Adeegso salaxa $-xy$ oo ku muuji baraha lagugu siiyey buugga ardayga kadibna iskuguxidh baraha xariijimo.
2. b. garaafka heerkulka iyo maalmaha t. 7 barood j. 43° x. 67°
Kh. waa labadaba t.a, waxay ka korodhaa 43° ilaa 53° kadibna u dhacdaa 50° , haddana way korodhaa
3. I) b.) 9 t.) 20,000.00 J. 70,000.00
x. dhacda waqtiba-waqfiga ka dambeeya. Garaafka la ina siiyey waxaan ka sameyn karaa tusaha qiimayaasha soo socda.

Qiimayaashaa baabuurka	
Sannadka	Qiimaha
1997	200,000.00
1998	180,000.00
1999	170,000.00
2000	150,000.00
2001	130,000.00
2002	100,000.00
2003	70,000.00

3. II) b. 6 t. 1,000 j. 500
x. way korodhaa waqtiba ka danbe
garaafka waxan ka heli karnaa tusaha qiimayaasha soo socda:-

Culayska dibiga	
Bisha	Culeys kg
Maskaram	500
Tikimti	600
Hidhaar	700
Tahsaas	800
Tir	900
Yakaatiit	1000

Soo koobid ahaanta hawlgalka 4.2 kuma haysid kuwa soo socda.

Dhamaan garaafyada aan ku soo aragnay hawlgalka 4.2. waxa la yidhaa xariiq garaafeedyo .Xariiq garaafeedyadu waxay isbarbardhigaan laba doorsoome .Doorsoome kasta waxa lagu dul qoraa dhidib .Xariiq garaafeedku wuxu leeyahay dhidib qotoma iyo dhidib jiifa .Xariiq garaafeed waxa lagu qoraa dhibcaha garaafka dushiisa, taasoo kadibna la isugu xidhi karo xariiq toosan .hawlgalka 4.2 su'aasha 2, waxaad ka ogaatay in heerkulku isku bedalo maalin ilaa maalin. Hawlgalka 4.2. su'aasha 3. I qiimayaasha baabuurku isku bedalay sannadilaa sannad .Hawlgalka 4.2. su'aasha 3.II ,culayska dibigu wuu is bedalay bil kasta. Mid kasta xariiq garaafeedyadani waxay tusaan isbedalka xogta wakhti socda. Xariiq garaafeed wuxu u faa'iido badan yahay soo bandhigidda xogta ama warka bedala xidhiidh ahaan wakhti socda.

Marmarka qaar xariiq garaafeed waxaa la yidhaa jaarti xariiqeed. Xariiq garaafeed waa habka u soo koobashada laba qaybood war ah siday u xidhiidhaan iyo siday u kala gadisan yihiin iyaga oo isku tiirsan ama aan kalta madax banaanayn.

Tirooyinkaku dhinac qoran xariiq garaafeedka waxaa la yidhaa qiyaa xariiq garaafeedka qaybo ahaan waxaad ku arkaysaa dhidibo(qoton iyo jiif), cinwaan, qiyaaso, baro, iyo xariiqo.

Qiimayn

Ugu shaqo galinta ardayda dood siinta shaqada hawlgalka 4.2. iyo u qiimayntasi qofqof ah ama koox-koox ah ardayda.

Jaartiyo Goobeedyo

Hadda waxaad bilaabaysaa barashada garaaf nooc kale oo la yidhaahdo Jaartiyo goobo. Marmar waxaa la yidhaahdaa garaafyo goobo. Aad ayey uga duwan tahay xariiq garaafyada. Si ay ugugargaato fahamka ardayda casharkan, u sii ardayda shaqo ahaan hawlgalka 4.3.

Jawaabaha hawlgal 4.3

1. b. 50% hadhaysan iyo 50% aan hadhaysnayn
t. 75% hadhaysan iyo 25 % aan hadhaysneyn
j. 66.64% hadhaysan iyo 33.36 aan hadhaysanayn .
2. Sawir goobo oo u midabee si tilmaanta lagu siiyey ah
3. Waa laylis gacan ka qabasho ah, kolkaa u dir ardaydu inay soo ururiyaan xog islamarkaana si khusaysa u qabataan

Soo koobid ahaan hawlgalka 4.3 waxaad u qori kartaafegradaha soo socda;-

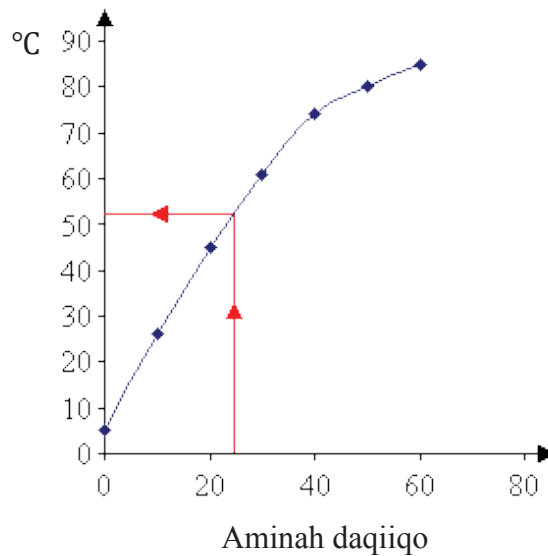
Goobooyin ayaa kaa gargaari kara in la muujiyo warka ku lug leh saamiyada xubin walba ,goobada waxaa loo qaadan karaa si walax idil ah waxaana loogu qaybin tiiyooyin loo eegayo saami galka qaybkastaa u leedahayqoob-gabal. Sida goobo garaafeedyadaaoo kale ayaa la yidhaa jaart goobeedyo.Jaartiyo goobeed waxaa lagu muujiyaa boqoleyda.Sidaa awgeed, waxaloo isticmaalaa isbarbardhigga qaybaha kala duwan ee walax idil mid ah.Goobada ama garaaf goobeedku wuxu u taaganaadaa 100%- ka xogta qayb kastoo meel ka ah goobadu waxay u taagan tahay qayb ka mid ah 100% kaa. Habka sidani ah ayaa waxaa suurogal ah in loogu garawsado sida wax ama shay loogu qaybiyey kooxo kala duwan .Sidaa awgeed, jaart goobeed waa goobooyin uQaybsan qaab-gabalo, halka qaab-gabal kastaa u taagan tahay jajibka intawadarta u xaddiga goobo garaaf ahaaneed dhamaan qiimayaasha la isticmaalay ayaa la isku geyn.Kadibna si loo helo qaybtaqaab-gabalkastawaxaa 360°lagudhufan jajibka si aad u hesho xagasha u taagan qaybtaa.

Qiimeyn

Ardayda ku shaqa galidoodsiiita; shaqada hawlgalka 4.3 oo ugu qiimee ardayda. qof ahaan ama koox-koox.

Jawaabaha laylis 4.2

1. b. u adeegso dhidibka _____ x sanadaha islamarkaana dhidibka-Y culayska ka dibna ku muuji baraha oo u isticmaal xariijin isku xidha baraha .
(t)xariiq garaafeedku wuxu tusayaa culayska arday wakhti socda.
- j 7
- x. kordha min 1991 ilaa 1994
- Kh. dhinma 1994 ilaa 1997
- d. min 1993 ilaa 1994
- r. 54
- s. 48



2. b. qiyaasta heerkulka 25 daqiiqo Ka dib kulayl ku waa $52c^{\circ}$
3. b. baabuur fuul 36°
 - t. cuno 108
 - j. kiro guri 72
 - x. 90
 - kh. Birr 900
4. b. 40% kayd, 30% cunto, 20% kiro guri iyo 10% baabuur fuul.
 - t. waa in la sawiro jaarti goobeed.

4.3. TIROSINKA, DHEXFURKA, BADIDHACAHA IYOFARAQATOOXDA XOG

Xisaska loo qoondeeyey: 5xiso

Waxa ardayda laga rabo

Dhamaado, Cutub-hoosaadkan ardaydu waxay awood u yeelan doonaan inay:

- ✓ *Sharaxaan tibxaha tirosin, dhexfurbadidhece iyo faraaqa tooxda xog.*
- ✓ *Xisaabiyaan tirosinka xog*
- ✓ *Xisaabiyaan dhexfurka xog.*
- ✓ *Xisaabiyaan badidhacaha xog*
- ✓ *Xisaabiyaan faraaqa xog.*

Ereyada

- Tirosin
- Badidhece
- Dhexfurka iyo faraaqa xog

Hordhac

Waxa aad u faa'iido badan in la helo celcelisyada go'an sida looga loo dhiraandhiriyo xog islamarkaa kuwa ugu muhiimsan waa tiroyin, dhexfur iyo badidhece. Wax kaloo aad kaga heli kartaa war deeraad ah soo gaaridda tiroyinka, dhexfurka iyo badidhacaha xogta celceliskan ayaad waxa suuragal ah inaad ugu baahato cabirka fiiqsanaant inaad hesho sida xogtu ugu kala gadisan tahay. Xeerkan ardayda waxay tixgalin kaliya kooxda xogta si fududu cabbirta kala duwanaanta faraq qiimaha u sareeya iyo qiimaha u hooseeya ee xogta.

Figradaha barista

Waxa aad ku bilaabi kartaa qayb hoosaadkan ka codsashada ardayda fasaladii hore celceliska darajada imtixaan sida lagugu siiyey hawlgalka 4.4. Su'aasha 1Waydii ardayda siday u soo saaraan celceliska dhibcaha imtixaannadooda. Ugu habee ardayda inay arinta laba-laba u falanqeeyaan, kadibna dhamaan ardayda fasalka ula wadaagaan sida loo soo saaro celcelis.

U gudagal su'aalaha hawlgalka dhammaantood oo ka yeel ardayduinay gartaan celcelisyada kala duwan.

Jawaabaha Hawlgalka 4.4

1. b. waxay ku xidhan tahay dhibcaha arday ee qof ahaaneed.
t. falanqaynta sida loo raadiyo dhibico celceliska
2. b. 4 t. 4
j. 3, 3, 3, 4, 4, 4, 4, 5, 6, qiimaha bartanku (dhexfurka) waa 4 waayo waa tiro kisi ah.
x. $6 - 3 = 3$
3. b. 85.4
t. Dhibcaha u saraysa waa 95 islamarkaa dhibcaha u hoosayaa waa 70, haddaba faraqu xogtu waa 25
j. 85 x. 85

Hawlgal 4.3 iyo shaqo kooxeed 4.2.ayaad kaga dhigi kartaa may ra caawin karta ardaydu in ay u helaan faham balaadhan celceliska iyo sida loo soo saaro .Sidaa awgeed soo koobid ahaan waxaad u qori kartaa fegradaha soo socda.

Tirosin: mar-mar waxaa la yidhaahdaa celceliska aritmatika, oo ah wadarta liiska tirooyinka oo loo qaybiyo tira tirooyinka liisku ka kooban yahay. Caadi ahaan tirosinka liiska tirooyinka waxa loo yaqaan celcelis.

$$\text{Tirosin} = \frac{\text{wadarta tirooyinka liiska}}{\text{Tirada liiska}}$$

Dhexfur:- waa qiimo bardhameedka liiska kolka loo qoro horsanaan kordhaysa ama dhinmaysa .

Haddii liisku yahay tirooyinka tiro kinsi ah tirada bartanka ee horsanaantani ayaa ah dhexfurka xogta.

Haddii tirada tirooyinka ay dhaban tahay, dhexfurku waa wadarta labada tiro bartameed oo loo qaybiyey 2.

Badidhece:- waa qiimaha u soo noqnoqoshada badan liiska.Iyana waa nooc kaloo celcelis ah,liisku wuxuu lahaan karaa hal badidhacein ka badan .Tusaale ahaan liiska dadka jecel madooyinka badidhace waxa u noqon karaa ka loo doorasho badan yahay ama ka u cod badan.

Faraq xog:-waa faraq u dhaxeeya qiimaha u sareeya iyo qiimaha u hooseeya liiska xog.

Qiimayn

Uga qabo ardayda qiimayn ka doodiinta hawlgalka 4.4. oosi shaqsi-shaqsiyah ama koox ahaan ah.Waa inaad siisaa shaqo guri, shaqooyin fasal oo aad ugu qiimaysaa ardayda hubinta buugtooda qoraal. Arintaniwaxaad u isticmaali kartalaylis 4.3.

Jawaabaha layliska 4.3

$$1. \quad b. \quad \frac{40 + 70 + 90 + 80 + 100}{5} = 76$$

$$t. \quad \frac{100 + 1300 + 110 + 120 + 140}{5} = 120$$

$$j. \frac{100 + 80 + 90 + 120 + 110}{5} = 100$$

$$x. \frac{90 + 80 + 100 + 90 + 100}{5} = 92$$

$$kh. \frac{130 + 110 + 70 + 90 + 130}{5} = 106$$

2. b. $30.7 = \text{Tirosin} = 29.3$ t. Faraqa xogta $= 33 - 25 = 8$
 j. badidhece $= 32$
 dhexfur $= 3 \ 2 \quad 3,3,3,3,4,4,5,5,6,6.$
3. b. $\text{Tirosin} = 4.2$
 t. Faraqa xogta $= 6 - 3 = 3$
 Badidhece $= 3$
 j. dhexfur $= 4$
4. b. ardayga I $= 88$
 Ardayga II $= 70.625$
 Ardayga III $= 88$
 t. ardayga I $= 16$ j. ardayga I $= \text{maya} = 88.5$
 ardayga II $= 34$ ardayga II $= 21$
 ardayga III $= 21$ ardayga III $= \text{maya} = 88.5$
 x. ardayga I iyo III kh. ardayga II
 d. ardayga I r. ardayga II

Jawaabaha laylis guud

1.

Daafi kiintaalo	12	13	14	15	11	5
Amaarado Taaley						
Tirada kiintaal daafi la gaday	8	6	3	8	3	2

$$\begin{aligned} \text{Tirosin} &= \frac{12(8) + 13(6) + 14(3) + 15(8) + 11(3) + 5(2)}{30} \\ &= \frac{96 + 78 + 42 + 120 + 33 + 10}{30} \end{aligned}$$

12.63

Badidhece = 12 iyo 13

Faraqa xogta = 15 - 5 = 10

2.

mushahar maalinle	20	25	30	35	40
Amaarado Taaley					
Tirada shaqaalaha	3	6	4	4	3

Tirosin

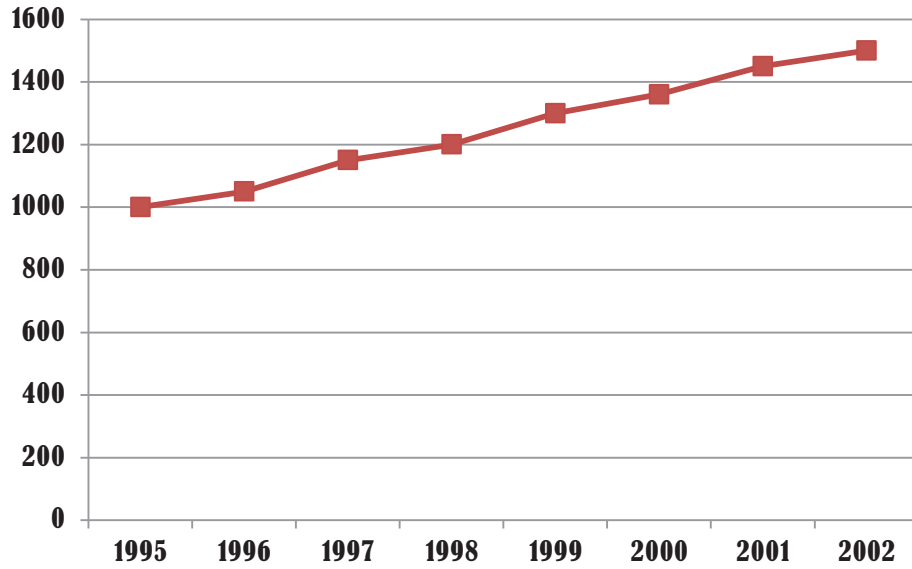
$$\begin{aligned} & \frac{20(3) + (25)6 + 30(4) + 35(4) + 40(3)}{20} \\ &= \frac{60 + 150 + 120 + 140 + 120}{20} = 29.5 \end{aligned}$$

dhexfur= 30

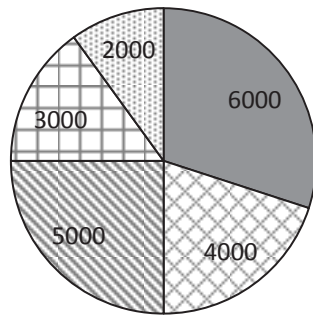
Badidhece= 25

Faraqa xogta =40 – 20=20

3.



4.



5. b. wiilka u dheer =170
 gabadha u dheer= 155
- t. wiilka u gaaban=150
 gabadha u gaaban =130

j. Farqaga wiilasha $170-150=20$
 farqaga gabdhaha $= 155-13=15$

x. Tirosindhererka wiilal=

$$\frac{150 + 160 + 165 + 155 + 160 + 170 + 165 + 155 + 156 + 165}{10}$$

$$=160.4$$

kh. Tirosin dhererka gabdhaha =

$$\frac{150 + 140 + 132 + 145 + 148 + 145 + 150 + 135 + 130 + 155}{10} = 143$$

d. 4 arday

r. 6 arday

s. dhexfurkawiilasha =160.....dhexfur gabdho =145

Badidhecewiilasha= 155,160,165.....Badidhecegabdh0=145,150

6. b. 33,37,40,42,51,56,61,63,65,70,72,74

$$\text{Tirosin} = \frac{33 + 37 + 40 + 44 + 51 + 56 + 61 + 63 + 65 + 70 + 72 + 74}{12}$$

$$= 55.3$$

$$\text{Dhexfur} = \frac{56 + 61}{2} = \frac{117}{2} = 58.5$$

Badidhace = Malaha

Faraqa xog = $74 - 33 = 41$

t. 58, 60,65,71,75,77,80,80,85,86,88

$$\text{Tirosin} = \frac{58 + 60 + 65 + 71 + 75 + 77 + 80 + 80 + 85 + 86 + 88}{11} = 75$$

Dhexfur = 77 waayo waa kisi

Badidhace = 80

Faraqa = $85 - 58 = 30$

j. 7,10,12,14,16,16,18,20,24,25,27,27

$$Tiro sin = \frac{10+12+14+16+16+18+20+24+25+27+27}{12} = 18$$

$$Dhexfur \frac{16+18}{2} = \frac{34}{2} = 17$$

Badidhece = 16 iyo 27 (lababadidhace)

$$Faraqa = 27-7 = 20$$

CUTUBKA SHAXAMADA JOOMATERIGA IYO CABBIRAADDA

HORDHAC

Hawsha ugu muhiimsan ee cutubkan waafidinta iyo u qoto dheeraynta aqoonta iyo awoodda ardayda ee ku saabsan fikradaha salka u ah shaxannada joomateriga iyo cabbiraadaha. Cutubkani wuxuu u qeybsamaa saddex cinwaan oo magac ahaan ah afardhinacleyaasha, geesoolayaasha, goobooyin, aragtiinada saddexagalada iyo cabbiraadaha. Cinwaan kasta wuxuu u sii kala baxaa (u qeybsamaa) cinwaan hoosaadyo. Cinwaanka cabbiraaddu wuxuu ka kooban yahay wareegyada iyo bedadka saddexagalka, koorta iyo barbarrooleyaasha, bed-duleedyada iyo mugagga biriisamyada iyo dhululubooyinka.

Ujeedooyinka cutubka

Cutubkani marka uu dhamaado kadib ardaydu waxay awood u yeelan doonaan inay:

- *Soocaan, dhisaan ayna sharaxaan astaamaha afardhinac layaasha sida koorta iyo barbarroolaha.*
- *Soocaan faraqa u dhexeeya geesoolayaasha, golxada leh iyo geesoolayaasha tuurta leh*
- *Raadiyaan wadarta cabbirada xaglaha gudaha ee geesooleyaasha tuurta leh.*
- *Soo saaraan wareegga iyo bedka saddexagallada iyo koorta /kooraha*
- *Faah-faahiyaanqaybaha islamarkaa soo saaraan cabbirada biriisamyada laydiga ah iyo dhululubooyinka.*

Kaabayaasha loo doorbiday waxbarista Cutubka.5

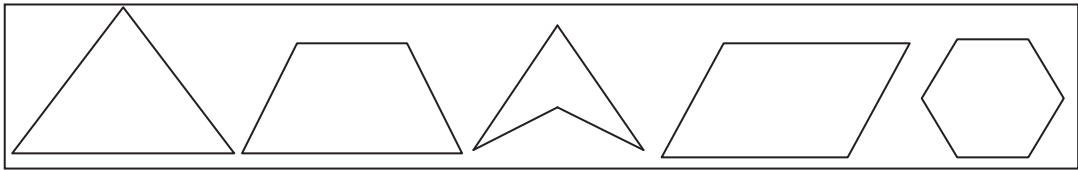
- Iyada oo lagu daray buugga ardayga iyo tilmaamaha baraha, waxa laguwaaninayaa in aad diyaariso islamarkaana aad keento fasalka dhexdiisa qalabyadan soo socda markasta oo uu cinwaanku u baahan yahay.

Qalabyada: Mastarad, xaglo-beege, goobeeye, maqasyo, warqad adag oo dhuuban.

Jaarti ka kooban

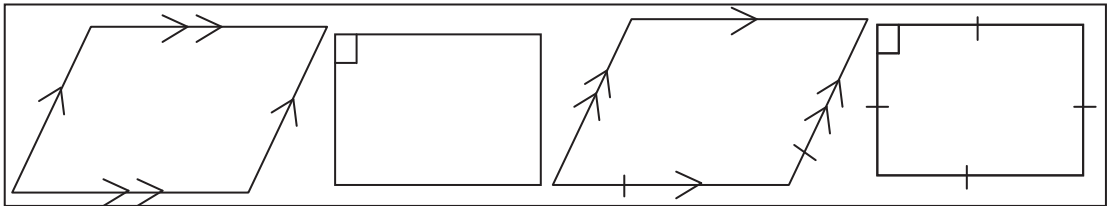
- Ururka geesoolayaasha kala duwan sida saddexagalada, afargeesleyaasha, shangeesleyaasha, lixgeesleyaasha iyo sidookale ay ku jiraan geesoolayaasha golxada leh.

Ururka geesooleyaasha kala duwan sida:



Jaan 5.1

Ururka barbarrooleyaasha sida.



Jaan 5.2

Shaxannadda adke sida biriisamyada iyo goobooyinku waa lagama maarmaan.

5.1 AFARDHINACLEYAAL, GEESOOLEYAAL IYO GOOBOYIN

Qoondaha: 12 xiso

Waxa ardayda laga rabo:

Dhamaaka Cutub-hoosaadkani ardaydu waxay awoodi inay:

- Sharaxaan macnaha (fikrada) afardhinacle ayna, kala sooci karaan qeybaha afardhinacle yaasha.
- Faahfaahiyaan qeybaha koorta.
- Dhisaan koor cabbirkeedda la siiyey ayna faahfaahiyaan astaamaha koorta
- Sharaxaan nuxurada barbaroolaha
- Dhisi karaan barbaroolaha cabbirkiisa la siiyey ayna qeexaanastaamaha barbaroolaha.
- Dhisi karaan laydiga, labajibbaarane, iyo qardhaasta cabbirkooda la siiyey.
- Sharxi karaan astaamaha laydiga, labajibbaaranaha, qardhaasta,
- Kala sooci karaan xidhiidhka ka dhexeeya barbaroolaha, koorta, laydiga iyo laba jibbaarane,
- Kala sooci karaan faraqa u dhexeeya geesoolaha tuurta leh iyo geesoolaha golxada leh,
- Magacaabaan geesoolayaasha ilaa 10 dhinacleh iyadoo loo eegayo tirada dhinacyada.
- Qeexi karaan goobo.
- Soocaan xuddunta, gacanka, dhexroorka, boqonka iyo qaansada goobada.
- Sharaxaan xidhiidhka ka dhexeeya gacanka, dhexroorka iyo boqonka goobada.

Ereyada

Afar-dhinacle, xaglo-gooye, afargeesle, xaglo-gudeedyo afargeesle, dhinacyada deriska ah ee afargeeslaha, dhinacyada iska soo horjeeda ee afargeesle, koort, barbarroole, laydi, qardhaas, labajibbaarane, geesooletuur leh, geesoole golxo leh, goobo, gacan, dhexroor, boqon iyo qaansada goobo.

Hordhac

Hawsha ugu muhiimsan ee cutub-hoosaadkan waa in la baro ardayda fekradaha afardhinacle, geesooleyaasha iyo goobooyinka. Cutub-hoosaadkawaxa loo sii qaybqaybiyey saddex cinwaan-hoosaad oo muhiim ah. Cinwaan hoosaadka ugu horeeya wuxuu ka kooban yahay afardhinacle, cinwaan-hoosaadkan waxa aad wada falanqaynaysaan islamarkaana faahfaahin fekradaha, dhisidda iyo astaamaha koorta, barbarroole iyo barbarroleyaasha khaaska ah. Cinwaan hoosaadka labaad wuxuu ka kooban yahay geesoolayaasha. Halkan, waxaad kala sooci doontaa kala duwanaanshaha geesooleyaasha tuurtaleh iyo geesoolayaasha golxadaleh islamarkaana abla'ablayn geesooleyaasha, adigoo u eegaya tirada dhinacyadooda. Cinwaan-hoosaadka saddexaad wuxuu ka kooban yahay goobooyinka, taasoo aad wada falanqaynaysaan goobada, soocidda gacan, dhexroor, boqon iyo qaansada goobada.

Kaabayaasha waxbarasho

Ciinwaankan wuxuu ka kooban yahay afardhinacle, geesoole iyo goobo, kuwaas oo ay ka kooban yihiin cinwaan hoosaadyo kala duwan, cinwaan hoosaad kasta waxaa la socda hawlgalo, jaantusyada iyo qeexo. Hababka cinwaan hoosaadkan loo faahfaahiyey waa odhaahaha sida soo socota.

5.1.1 Afardhinacleyaasha

Si aad u bilawdid bandhigga cinwaan-hoosaankan waydii ardayda su'aalo afka ah oo ku saabsan macnaha afardhinacleyaasha iyo kooraha islamarkaana inaysoocaan qeybahooda. Ku dhiirigalioo ka caawi si ay uga jawaabaan su'aalaha. U fufudee ardayda in ay falanqeyaan macneyaasha xaglo-gooyeyaasha, xaglo-gudeedyada, dhinacyada deriska ah iyo dhinacyada iska soo horjeeda ee afardhinacle. Ugu dambayn wada falanqeyaa jawaabaha islamarkaana ku hogaami ardayda si ay u garawsadaan fekradahanafardhinacle. Waxaad u gudbi kartaa kolkaa hawlgalka 5.1. Ujeeddada hawlgalka 5.1 waa siduu uga caawin lahaa ardayda in ay sharaxaan macnayaasha afardhinacle iyo koorta islamarkaana ukalaa sooci lahaayeen qeybahooda. Haddaba sii ardayda 10 daqiiqo si ay uga shaqeyaan hawlgalka 5.1. Ugu dambayn falanqee jawaabahooda, faalo ka bixi islamarkaana sii jawaabta saxda ah.

Jawaabaha hawlgalka 5.1

- B) 1. 4
2. \overline{AB} , \overline{BC} , \overline{CD} , iyo \overline{DA}
3. b) ABCD ama BCDA ama CDAB ama DABC
t) afardhinacle
4. $\angle A$, $\angle B$, $\angle C$ iyo $\angle D$
5. \overline{AB} and \overline{DC} , \overline{BC} iyo \overline{AD}
6. \overline{DA} iyo \overline{AB} , \overline{AB} iyo \overline{BC} , \overline{BC} iyo \overline{CD} , \overline{CD} iyo \overline{DA}
7. Sawir \overline{AC} iyo \overline{DB}
8. Koor
- T) b. shaxan afardhinac si fudud ugu oodan.
t. xariijimaa sameeya afardhinaclaha
J. dhinacyada leh gees wadaag
x. dhinacyada aan lahayn gees wadaag
kh. koortu waa afargeesle leh hal dhinac lamaane barbaro ah.
r. xagasha kaga dhacda gudaha geeska afardhinacle (afar geesle)
- J) b) koortu waa afardhinacle leh laba dhinac kalioo barbaro ah.
t) i. dhinacyada barbarada \overline{AB} iyo \overline{DC} waasalala.
ii. dhinacyada aan barbarada ahayn \overline{AD} iyo \overline{DC} waa addimo
iii. fogaanta u dhexaysa salalka waa joogga koorta. T.a \overline{DA} , waa joog.

B) Dhisitaanka iyo astaanmaha koorta

Si aad u bilowdo casharkan, diyaari qalabyada mastarad, xagal-beege iyo goobeeye lamaane ah, marka hore xusuusi ardayda si ay u xusuustaan

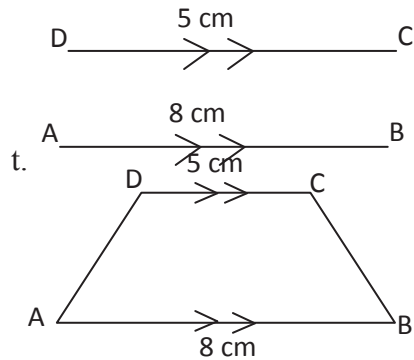
macnahaasha (fekradaha) muhiimka ah ee ay soo barten kuna saabsanaa dhisitaanka fasaladoodii hoose, sida dhisidda.

- b) xariijimo isku sargo'an t) xaglo isku sargo'an
- j) xariiq ku qotoma xariiq lagu siiyey kana gudubta barta lagu siiyey ee xariiqda lagu siiyey dusheeda ah.
- x) xariiq barbaro la ah xariiqda lagu siiyey kana gudubta bar lagu siiyey oo aan duldhacayn xariiq lagu siiyey.

Ku dhiiri geli ardayda islamarkaana ka gacansii si ay u dhisaan koor leh cabbirada lasiiyey (addimada), sharax qeybaha koorta islamarkaana sharaxaad ka bixi astaamaha koorta, hawlgalka 5.2. aad ayuu uga caawinayaa dhisidda koorta iyo kala soocida qeybaha koorta.

Jawaabaha hawlgalka 5.2

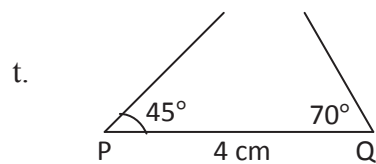
1. b.



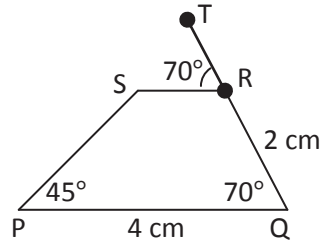
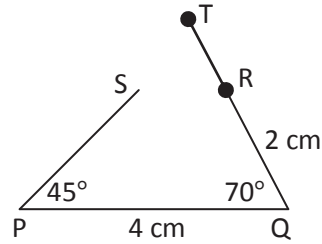
j. Afardhinaclahasamaysmay waa koor.

2.

b. \overline{PQ} 4 cm x. iyo kh.



j.



kh. Haa, PQRS waa koortii loo baahnaa

3. Dhinacyada barbaraha ahi waa salalka koorta.

- Dhinacyada aan barbarada ahayn waa addimada koorta.
- Fogaanta qotonka u dhexeeya salalka waa joogga koorta.

Qiimayn

Ka fekar mar walba ujeeddooyinka gaarka ah ee laga filayo ardayda dhamaadka qeybta. Adeegso qiimayn xeeladaha waxbarasho kala duwan mid toos ahiyomid aan toos ahayn si aad uga hesho jawaab celin ku saabsan heerka fahamkooda ee cinwaanka.

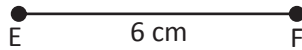
Su'aalo afka ah, shaqo kooxeed, hawlgalo, tijaaboyin, shaqo –guri iyo hawlgalo loo diro ayaa kaa caawinaya xeeladaha waxbarsho ee qiimaynta joogtada ah si aad u Uruuriso xog la xidhiidha fulinta hawlaha ardayda. Sidaas-awgeed waxad uga gacan siin kari ardayda shaqsi ahaan marka ay waxbaranayaan.

Jawaabaha layliska 5.1

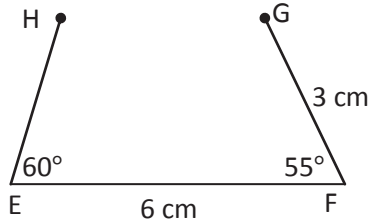
1. b. run t. run j. been x. run kh. been
d. been r. been s. run sh. run
2. Laba
3. 60° iyo 30°

4. $70^\circ, 110^\circ, 110^\circ$

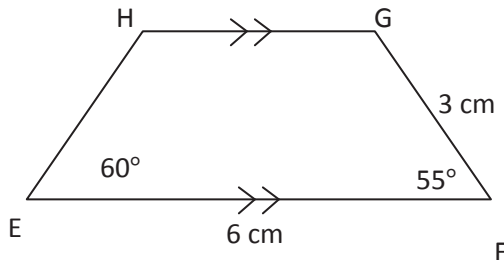
5. talaabada 1, dhisxariijinta $EF=6\text{cm}$



talaabada 2, dhis $m(\angle E)=60^\circ$ iyo $m(\angle F)=55^\circ$, halka $FG=3\text{cm}$



Talaabada 3, isku xidh, H iyo G ,afardhinaclaha EHGH waa koortii larabay,

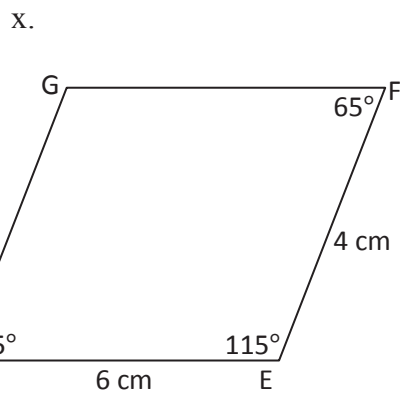
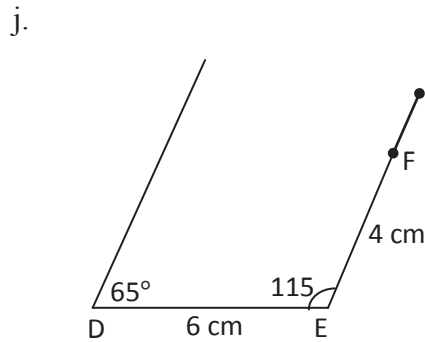
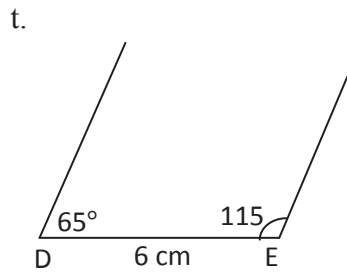
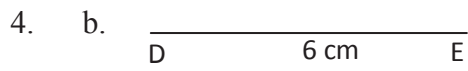


T.Dhisitaanka iyo astaamaha barbarroolaha

Si aad u bilowdid casharka fursad u sii ardayda in ay sharaxaad ka bixiyaan erayga barbarroole, kadib ku qor sabuuradda, dhammaan jawaabaha u arday kastaa bixiyey. Jawaabtu waxay doonto hanoqtee. Adiga oo lasoonaya kartidooda falanqee islamarkaana faalo ka bixi jawaabaha islamarkaana sii sharaxaad sax ah iyo caddeymaha barbarroolaha. Taas waxa raacsan dhiirgalinoka gacansiya ardayda si ay u dhisaan barbarroolecabbiradiisa la siiyey islamarkaana u sharax astaamaha barbarroolaha.

Jawaabaha hawlgalka 5.3

1. wadartoodu waa 180°
2. barbarroole
3. waa afardhinacle dhinacyada iska soo horjeedaa ay barbarroyihiin.



Kh. Haa ,DEFG waa barbaroolaha loo baahanaa .

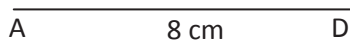
- d. i) isku sargo'an
 ii) isku sargo'an
 iii) xaglo-isku sidkan
 iv) midba ka kale ayuu qaybshaa

Qiimayn

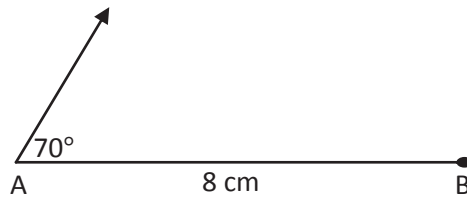
Si aad uga gacansiiso fahamka ardayda, waxaad u siin kartaa laylisyo sida layliska 5.2, shaqo guri ahaan, ama shoqooyin loo diro islamarkaa u sax shaqadooda.

Jawaabaha layliska 5.2

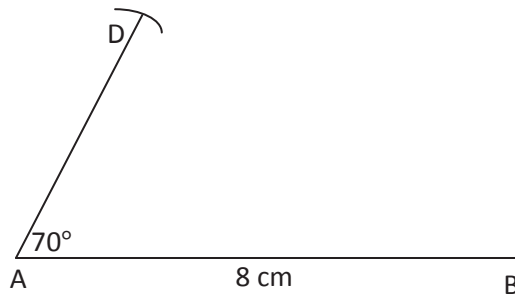
1. 115° iyo 65°
2. 6cm
3. 8cm
4. 110°
5. $66^\circ, 66^\circ, 114^\circ, 114^\circ$
6. 31 halbeeg
7. Talaabada 1 sawir $AD=8\text{cm}$



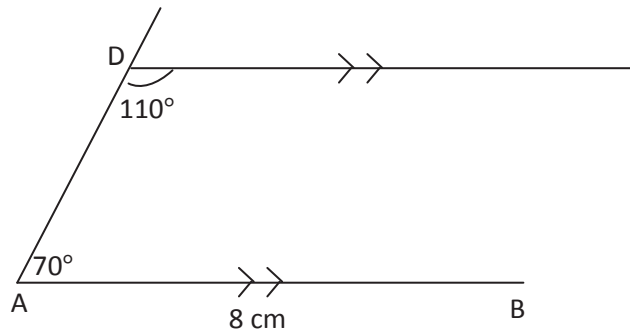
Talaabada 2, sawir xariiq barta A oo samaynaysa 70° xagal ah



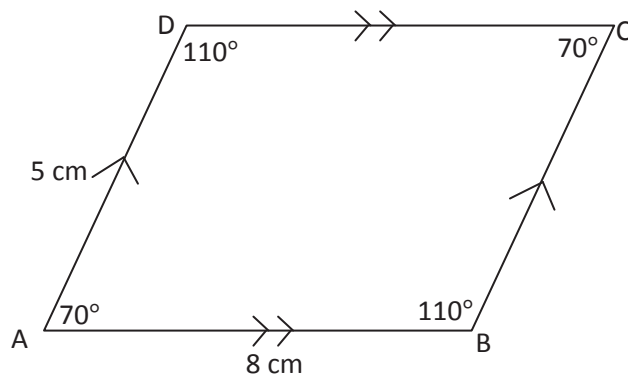
Talaabada 3, adiga oo dul saaraya goobeeyaha leh gacan 5 cm barta A sawir qaanso ka goynaysa xariiqda sarc barta D.



Talaabada 4, sawir xariiq ka gudbaysa D oo la barbarro ah \overline{AB} , halka $\angle D=110^\circ$



Talaabada 5:ka sawir min qaansada D gacanka 8 cm si ay ugula kullanto xariiqda tallaabada 4. Barta C isku xidh B iyo C. ABCD waa barbarroolihii la rabay.



J. DHISITAANKA IYO ASTAAMAHA BARBARROOLEYAAL GAARAH

Si aad u bilawdo casharka ,waydii ardayda su'aalaha soo socda adiga oo ku qoraya sabuuradda,

1. Afar dhinaceleyaashee ayaa lagu magacaabaa barbarrooleyaal khaas ah?Waayo?
2. Waa maxay abitooy?
3. Waa maxay labajibbaarane?
4. Waa maxay qardhaas?
5. Xidhiidh nooc ee ah ayaad ka aragteen dhexdooda.?

U ogolow ardaydu in ay ka doodaan jawaabaha su'aalaha kor ku xusan. Su'aalaha afka ah wax raacsan u ogolow in ay ka shaqeeyaan islamarkaana kawada hadlaan hawlgalka 5.4 iyo shaqo-kooxeedka 5.2 ee lagu siiyey

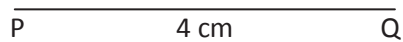
buugooda, inta ay ardaydu ku hawlan yihiin shaqada su'aalaha ku qoran sabuuradda, hawlgalka 5.4 iyo shaqo-kooxeed 5.1 ku dhex wareeg fasalka, dhagayso wada hadalkooda (sida ay u falanqeynayaan) oo dhiirigali islamarkaana ka gacan sii. Ugu dambayn uga mahadnaq shaqada ay qabteen Faalo ka bixi jawaabaha islamarkaana kasii jawaabta sax ah kuwa ay qaldeen.

Jawaabaha hawlgalka 5.4

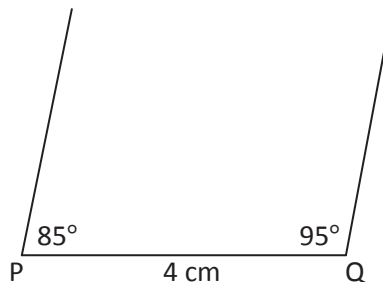
1. Laydi waa barbarroole leh xagal qumman.
2. Haa, laydi waa barbarroole.
3. Labajibbaarane waa laydi dhinacyadiisa deriska ahi isku sargo'an yihiin.
4. **Siin:** $AB=6\text{cm}$ iyo $BC=4\text{cm}$
Si loo dhiso laydiga ABCD
Talaabooyinka
 - b. sawir $AB=6\text{cm}$
 - t. sawir xariiqo ku qotoma \overline{AB} , kuwaasoo ka gudba A iyo B,
 - j. cabbir 4cm goobeeyaha, dulsaar cirbadda barta A islamarkaa ku sawir qaanso xariijinta sare islamarkaa ku muuji barta D,
 - x. sawir xariiq la barbaro ah \overline{AB} oo ay iskusargo'an yihiin islamarkaa muuji barta C, kadib ABCD waa laydigii la rabay.
5. **Siin** $PQ=4\text{cm}$ iyo $m(\angle P)=85^\circ$ si aad u dhiso qardhaasta PQRS.

Talaabooyinka

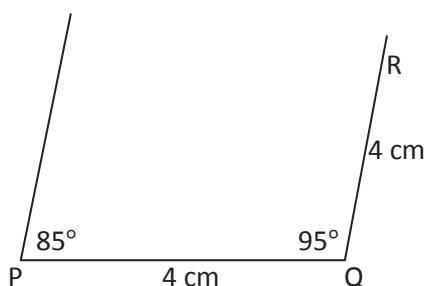
1. Sawir xariijinta $PQ=4\text{cm}$



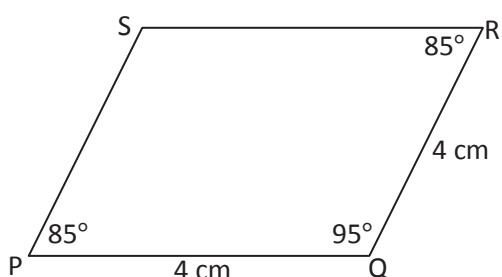
2. Dhis $m(\angle P)=85^\circ$ islamarkaana $m(\angle Q)=95^\circ$, waayo?



3. Muuji barta R sidaa oo ay $QR=4\text{cm}$, waayo?



4. Dhis $m(\angle QRS)=85^\circ$ (S waa bar wadaag \overline{PS} iyo \overline{RS})

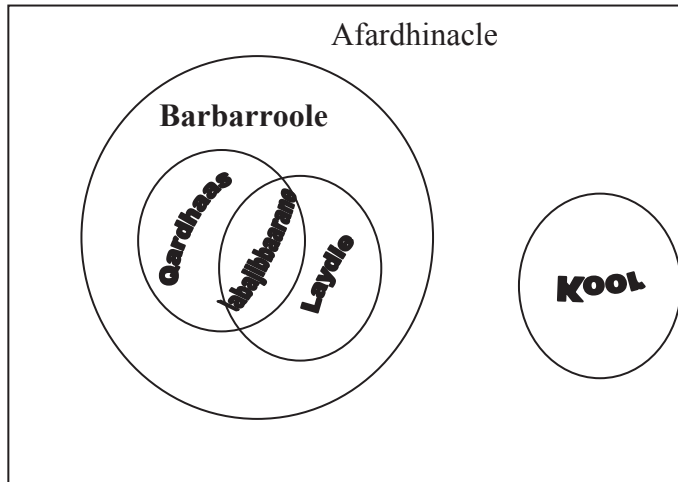


(PQRS waa qardhaastii la rabay)

Furfurisada shaqo –kooxeed 5.1

1.
 - b. labajibbaarane waa qardhaas laakiin qardhaastu ma 'aha labajibbaarane,
 - t. labajibbaarane waa laydi laakiin laydigu ma 'aha labajibbaarane,
 - j. laydigu ma noqon karo qardhaas islamarkaana qardhaastu ma noqon karto laydi .
 - x. qardhaastu ma noqon karto abitooy islamarkaana abitooy ma noqon karo qardhaas.
 - Kh. qardhaas waa barbaroole laakiin barbarooluhu ma'aha qardhaas
 - d. laydi waa barbaroole laakiin barbarooluhu ma'aha laydi
2.
 - b. xaglo-gooyeyaasha laydiga way isku sargo'an yihiin
 - t. xaglo-gooyeyaasha qardhaastu waaisku qotome qaybshe.
 - j. xaglo-gooyeyaasha labajibbaaranuhu way isku sargo'an yihiin islamarkaana qoton ahaan ayey isku kala badhaan.
 - x. xaglo –gooyeyaasha koor labaale ah way isku sargo'an yihiin

3. b. qardhaas, laydi iyo labajibbaarane
t. koor, Abitooy



Qiimayn

Waxaad ka gacan siin kartaa si ay u fahmaan siinta laylisyo badan islamarkaana ku falanqeeya jawaabaha su'aalaha fasalka dhexdiisa.

Jawaabaha laylis 5.3

1. b. $X=2$ t. 10,10,8
2. $X=6, y=2$
3. $X=20$ waxay malagalistaa in $AB=CD=BC$ kolkaas ABCD waa qardhaas
4. b. been t. been J. been X. been
kh. been d. run r. run s. been
sh. run dh. Run

Su'aalaha 5, 6 iyo 7 waxa loo siin ardayda hawlgal ahaan shaqo guri si ay u bartaan dhisitaanada shaxannada joomateri.

Ogow in:

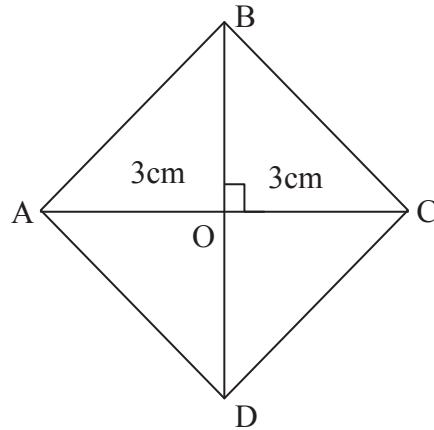
Su'aasha tirada 5 iyo tirada 6 ay la mid yihiin su'aalaha hawlgal 5.4. ee tirada 4 iyo tirada 5

7, siin: $AC=6\text{cm}$

Si loo dhiso labajibaaranaha ABCD

Talaabooyinka

1. Sawir xagal-gooyaha $AC=6\text{cm}$
2. Ku sawir qotome qaybshaha barta O.
3. U qaado xudunta O, islamarkaana ka dhig \overline{OA} ama \overline{OC} gacmada ku sawir laba qaanso oo ka kala goynaya qotonka \overline{AC} baraha B iyo D
4. Ku xidh A ilaa D, D ilaa C, C ilaa B iyo B ilaa A (Fiiri shaxanka hoose)
5. ABCD waa labajibbaaranaha la rabay.



5.1.2 Geesooleyaasha

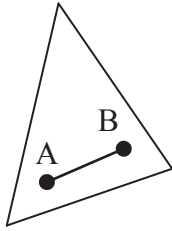
Ka hor ardaydu waxay barten noocyada kala duwan afardhinacleyaasha ah sida koorta, barbarroolaha, qardhaasta, laydiga ,labajibbaaranaha iyo kuwo kale. Waxaad casharka ku bilaabi kartaa marka hore adiga oo waydiinaya macnaha hilin fudud oodan iyo hilin si fudud u oodan oo ay xariijimo sameeyeen, kadib kolkaad hubiso in ay ardaydu si habboonu macnayn karaan fekradaha, dhiirigali islamarkaana ka caawi inay ka shaqeeyaan hawlgalka 5.5. ee ku qoran buugga ardayga. Danta hawlgal 5.5 waa ka caawinta si ay qeexaan geesoole islamarkaa inay kala soocan faraqa u dhexeeya geesoolaha tuurta leh iyo geesoolaha golxada leh. Ugu dambeyn waxa kalood siisaaqexda 5.6.

Jawaabaha hawlgalka 5.5

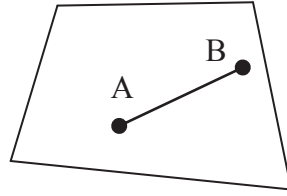
1. Geesoole waa shaxan fudud oodan oo ay sameeyeen saddex xariijimoodama in ka badan.
2. Geesoole

3. Goobo

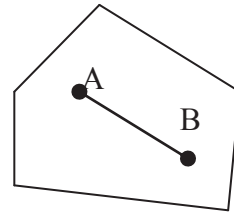
4. b.



i)



ii)

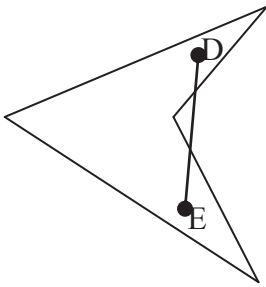


iii)

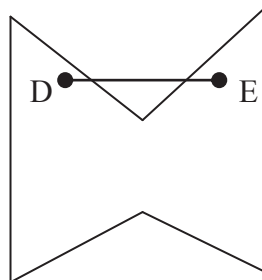
t) haa ,geesooleyaasha tuur leh

5.

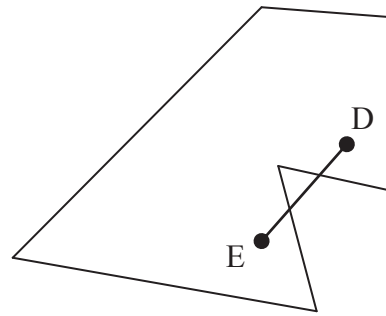
b.



i.



ii.



Iii.

t. Haa ,geesooleyaasha golxo leh.

Qiimayn

U adeegso xeelad waxbarasho qiimaynta joogtada ah si toos ah ama si aan toos ahayn si aad ugaheho jawaab celin ku saabsan heerarka fahamkooda ee cinwaanka. Waxaad u ogolaan kartaa in ay sawiraan noocyada kala duwan ee geesooleyaasha tuurta leh iyo geesooleyaasha golxaha leh.

Jawaabaha laylis 5.4

1. Laydi

2. b) golxoleh t) golxleh j) tuurleh x) golxoleh

3. x

4. j

5. Toban iyo laba geesle

6. b

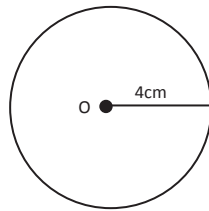
5.1.3 Goobooyin

Fursad u sii ardayda si casharka ugabilaabmoshaqada hawlgalka 5.6 ee lagugu siiyey buugga ardayga. Sii ilaa 15 daqiiqo si ay ugaga shaqeeyaan islamarkaana u falanqeeyaan su'alaha hawlgalka. Dhiirigali kana gacansii ardaydu inay soocaan xuddunta, gacanka, dhexroorka, boqonka iyo qaansada goobo. Tani waxay siin doontaa ardaydu fursad ay ku qeexaan goobo.

Jawaabaha hawlgalka 5.6

1. Waxay u jiraan fogaan isle'eg barta maguuraanka ah ee 0.

2.



3. j. waxayu jiraan fogaan isku mida xuddunta 0.

x. Gacamada goobada (waa jamaca gacan)

kh. Boqonka goobada

d. Dhexroorka goobada

r. i) $Ad = 2AO$ ama $AO = \frac{1}{2}AD$

ii) Qaansooyinka goobada

4. b. Barta maguuraanka ah ee 0, waa barta ay baraha goobadu fogaan simanu wada jiraan bartaa.

t. Xariijinta ka timaad xuddunta ilaa bar kastoo goobada ah.

j. Xariijinta isku xidha laba barood kastoo goobada dul ah.

x. Boqonka ugu dheeri waa boqonka ka gudba xuddunta goobo

kh. Qaanso waa qayb kastoo goobada ah ama qaybta meeriska goobo ah.

Kadib ardaydu kolka ay ka shaqeeyaan su'alaha hawlgalka 5.6 ku keen inay u falanqeeyaan xidhiidhka ka dhexeeya dhexroorka iyo gacanka, dhexroorka iyo

boqonka gooba la ogyahay. Si fahanku ugu goto dheeraado ugu dir shaqo guri ahaan laylis 5.5 ee buugga ku qoran.

Qiimeyn

Si aad u qiimeyso fahanka ardayda waxaadu isticmaali kartaa nidaamyada badanee qiimayaal kala duwan ee soo socda. Waxaad siin kartaa su'aalo been iyo rur ah, su'aalaha jawaabtaay doortaan, masalooyin ay ka shaqeeyaan waxaa kaloo aad siin kartaa ardayda laylisyo ama shaqo kooxeed.

Jawaabaha laylis 5.5

1. b. Run t. Run j. Been x. Run
kh. Run d. Run r. Run
2. b. Dhexroor
j. Suuragal ma'aha, waayo boqonka ugu dheer waa dhexroorka

5.2 ARAGTIINNADA SADDEXAGALADA

Qoondaha: 11 xiso

Waxa ardayda laga rabo:

Dhammaadka cutubkani, ardaydu waxay awoodi doonaan inay:

- *Sheegaan aragtiinka wadarta xaglaha saddexal*
- *Caddeeyaan wadarta cabbirada xaglo-gudeedyada saddexagal aytahay 180°*
- *U adeegsadan aragtiinka wadarta xaglaha saddexagal furfurida masalooyinka la xidhiidh*
- *Sharaxaan xidhiidhka ka dhexeeya xagal dibadeedka iyo labada xagal gudeed ee ka durugsan ee saddexagal.*
- *Caddeeyaan in xagal dibadeedka saddexagal u le'eg yahay wadarta labada xaglood ee ka durugsan ee saddexagalkaa.*
- *U adeegsadaan aragtiin ka xagal-dibadeedka saddexagalku furfuridda masalooyinka la xidhiidha.*
- *U soo diraan jidka wadarta xaglo gudeedyada geesoolaha tuurle ee n-dhinac leh.*

Erayo

xagal, saddexagal, xagal-gudeed, xagal-dibadeed, xagal-gudeedyo durugsan, xagal toosan, gees, geesoole tuur leh.

Hordhac

Hawsha u wayn cutub-hoosaadkani waa in ardaydu aqoonsadaan wadarta cabbirada xaglaha gudaha ee saddexagal kastaa inay tahay 180° . Cutub hoosaadka waxaa loo kala qayb qaybiyey saddex cinwaan hoosaad oo muhiimah. Cinwaan hoosaadka u horeeya wuxu sharaxayaa wadarta xaglaha gudaha saddexagal. Cinwaan hoosaadkani waxaad ku sheegi doonta, oonaad ku caddeyn doonta aragtiinka wadarta xaglaha saddexagal. Cinwaan hoosaadka labaad wuxu ka hadlayaa xaglo dibadeedyada saddexagal. Cinwaan hoosaadkani waxaad ku sheegi aanad ku caddeyn doontaa aragtiin ka xagal dibadeed. Cinwaan hoosaadka wuxu ka hadlayaa xaglo dibadeedyada saddexagal. Cinwaan hoosaadkani waxaad ku sheegi aanad ku caddeyn doontaa aragtiin ka xagal dibadeed. Cinwaan hoosaadka saddexaad wuxu ku lug leeyahay wadarta xaglo gudeedyada geesoole tuur leh.

Fikradda Barista

Cutub-hoosaadkani oo ku tacaluga aragtiinada saddexagal wuxu ka kooban yahay cinwaan hoosaadyo badan oo kala duwan. Cinwaan hoosaad kastaa waxa lagu isticmaalay shaqo kooxeed hawlgalo, aragtiino iyo tusaalooyin nuujisan.

5.2.1 Wadarta xaglo gudeedyada saddexagal

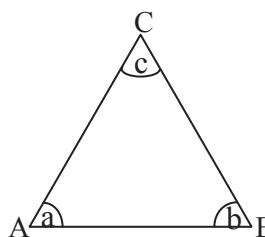
Si aad u bilowdo casharka ardayda u qaybi afar kooxood. Koox kastaa waa inay sawiraan saddexagal kala duwan.

Qalabka loo baahan yahay: Maqas, warqadadag dhuuban, mastarad.

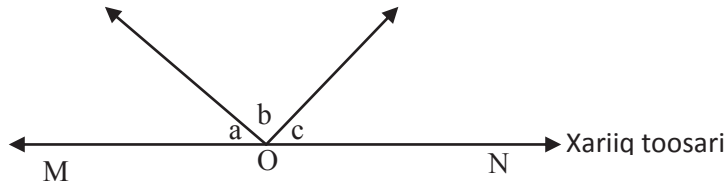
Ujeedada hawlgalku waa tusidda ardayda in wadarta cabbirada saddexda xagal gudeed ee saddexagal tahay 180° .

Ogow: Hawgalkani wuxu la mid yahay shaqo kooxeed 5.2 ee buugga ardayga.

- Sawir saddexagal nooc kasta
- Uga jar si digtoonaan leh



- Ka jeex geesaha oo u saardhamaan geerka miiska (ama geerka mastaradda) sidahoos lagugu tusay.



- Waa maxay wadarta cabbirada xaglaha a, b iyo c?
Waa imisa cabbirada xaglo gudeedyada $\triangle ABC$?

Jawaabaha shaqo kooxeed 5.2

1. $x - 180^\circ$
 $kh - 180^\circ$
 $d - 180^\circ$

Jawaabaha hawlgal 5.7

1. Haa, way isku sargo'an yihiin.
2. Hal xariiq gudha.

Kadib ardaydu kolkay ka shaqeeyaan su'aalaha shaqo kooxeed 5.2 iyo hawlgal 5.6, waa inay falanqeeyaan ayna caddeeyaan aragtiinka wadarta xaglaha saddexagal islamarkaa u adeegsadaan aragtiinka wadarta xaglaha ku furfuridda masalooyinka ku lug leh.

Qiimeyn

Isticmaal tabaha qiimeynta kala duwan ee tooska iyo kuwa dadbanba si aad u hubiso fahanka ardayda ee furfuridda masalooyinka loo adeegsaday aragtiinka wadarta xaglaha saddexagal.

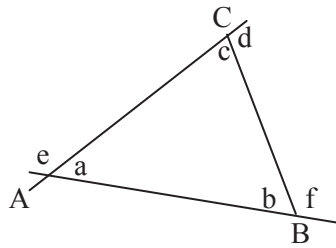
Jawaabaha laylis 5.6

1. $75^\circ, 21^\circ, 84^\circ$
2. $40^\circ, 60^\circ, 80^\circ$
3. Saddexagal xagal quman

4. b. 25° t. 20°
5. $x = 50^\circ, y = 60^\circ, z = 70^\circ$
6. $18^\circ, 72^\circ, 90^\circ$
7. $50^\circ, 50^\circ, 80^\circ$
8. b. $5x - 20$ t. 40° j. saddexagal labaale ah

5.2.2 Xagal Dibadeedka saddexagal

Si aad u bilowdid casharkan, sawir saddexagal kasta oo dhinacyada la fidiyey sida shaxanku u ku tusayo.



Kadib, waydii ardayda su'aalaha soo socda.

1. Qor dhammaan xaglo gudeedyada $\triangle ABC$.
2. Qor dhammaan xaglo dibadeedyada $\triangle ABC$.
3. Soo saar wadarta xaglaha gudaha iyo xaglaha dibadda $\triangle ABC$ ee gees kasta.
4. Imisa xagal dibadeed ayaad ka heli kartaa gees kastoo $\triangle ABC$ ah.
5. Sidee ayaad u soo saari lahayd xagal dibadeedka saddexagal lagu siiyey.

Ku dhiirigeli kuna gacan sii ardaydu si ay uga jawaabaan su'aalaha sare islamarkaakayeel iyagu inay arkaan xidhiidhka ka dhexeeya xagal gudeedka iyo xagal dibadeedka $\triangle ABC$. Hawlgal 5.8 ayaa gargaar wayn uga gaysanay ardayda si ay ugu awoodaan hanashada aqoon qoto dheer xaglo dibadeedyada saddexagal iyo xidhiidhka ka dhexeega xaglaha gudaha iyo xaglaha dibadda ee saddexagal kasta.

Jawaabaha hawlgal 5.8

1. b) xaglahalagu qoray a, b, c.
t) xaglaha lagu qoray d, e, f
j) 180° x. laba kh. 360°
2. b. run x. run j. run x. run
3. b. Fidinta dhinacyada saddexaglka, xaglaha ay sameeyaan dhinacyadaderiskaah ee saddexagalkaayaa la yidhaa xaglo dibadeedyada saddexaglka.
t. la mid ah “b”

Furfuridda su'aalaha hawlgal 5.8 kadid, waa inay ardaydu sheegaan islamarkana isku dayaan inay caddeeyaan aragtiinka xagal dibadeed ayna u adeegsadaan aragtiinka ku furfuridda masalooyinka khuseeya.

Qiimeyn

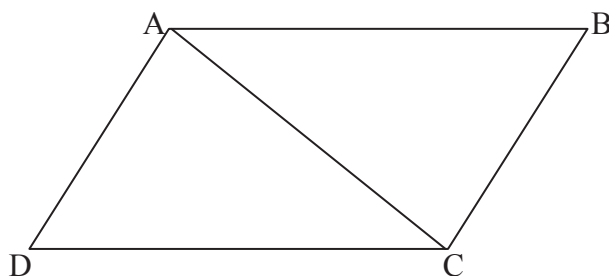
Siinta laylisyo kala duwan sida laylis 5.7 ee buugga ardayga, ayaad ku qiimeyn karta fahamka adeegsashada aragtiinka xagal dibadeed.

Jawaabaha laylis 5.7

1. 10 2. 25° 3. b) $x = 18$ t) sdddexagal
xagal quman
4. 70° 5. b) 100° t) 130° j) 150°
x) 20°
6. b. 20° t. 100° j. 140° x. 90°

5.2.3 Wadarta xaglo gudeedyad Geesoole Tuur leh

Si aad u bilowda casharkani ku sawir sabuuradda geesoole leh dhinacyo ka badan saddex dhinac, tusaale ahaan, sawir afardhinacle u hal gees, ka soo jeedo xaglagooyaha \overline{AC} .



Xaglogooyaha \overline{AC} wuxu u qaybinayaa afardhinaclaha laba saddexagal, haddaba aragtiinka wadarta xaglaha saddexagal wadarta cabbirada xaglo gudeedyada afardhinaclaha waa wadarta cabbirada xaglo gudeedyada labada saddexagal. Tabtani ugu sii wada shangeesle, lixgeesle, todobageesle, oo isku day inaad jid ugu heshid geesoolaha tuurleoo n dhinac leh ujeedadani darteed hawlga 5.9 ee buugga ardayga ayaa xog ka badan kaa siinaya. Ku dhiirigeli kana gacan sii ardaydu inay iskugu dayaan tabtaa geesooleyaal badan oo dhinacyo kala duwan leh, oo ay ku gaadhaan gunaanadka ah in wadarta cabbirada xaglo gudeedyada geesoolaha tuurta leh yahay $(n - 2) 180^\circ$.

Jawaabaha Hawlga 5.9

- | | | | | | | |
|----|----|--------|----|--------|----|----------------------------------|
| 1. | b. | mid | t. | laba | j. | $2 \times 180^\circ = 360^\circ$ |
| 2. | b. | laba | t. | saddex | j. | $3 \times 180^\circ = 540^\circ$ |
| 3. | b. | saddex | t. | afar | j. | $4 \times 180^\circ = 720^\circ$ |

Qiimeyn

Waxaad ku qiimeyn kartaa fahamka ardayda cinwaan hoosaadkan, adiga oo siiya laylisyoo kala duwan oo la mid ah laylis 5.8 ee buugga ardayga ku qoran.

Jawaabaha laylis 5.8

- | | | | | | | | | |
|----|----|-------------------------------------------------------|----|--------------|----|--------------|----|--------------|
| 1. | b. | 1080° | t. | 1800° | j. | 2340° | x. | 3240° |
| 2. | | 120° | | | | | | |
| 3. | b. | 10 | t. | 24 | j. | 12 | x. | 17 |
| 4. | b. | 4 | t. | 6 | j. | 12 | x. | 8 |
| 5. | | $80^\circ, 160^\circ, 110^\circ, 70^\circ, 120^\circ$ | | | | | | |
| 6. | b. | Malaha xaglagooye | t. | 7 | j. | 97 | x. | $n - 3$ |
| 7. | | $65^\circ, 90^\circ, 95^\circ, 110^\circ$ | | | | | | |

8. $20^\circ, 120^\circ, 140^\circ, 80^\circ$
9. Maya
10. $80^\circ, 80^\circ, 80^\circ$

5.3 CABBIRAAD

Xisaska qoondaha: 17 xiso

Waxa ardayda laga rabo

Dhammaadka cutubhoosaadkan, ardaydu waxay awoodi doonaan inay:

- *Soo diiraan jidka bedka saddexagal*
- *Sheegaan ayna adeegsadaan ku xisaabinta jidka bedka saddexagal*
- *Furfuraan masalooyinka noolasha runta ahiyagoo adeegsanyaqaacidada.*
- *Soo saaraan wareegga koor.*
- *Soo diiraan jidka bedka koorka*
- *Soo saaraan bedka koor.*
- *Xisaabiyaan wareegga barbaaroole*
- *Soo diiraan jidka bedka barbarroole*
- *Xisaabiyaan bedka barbaaroole*
- *Soo saaraan meeriska iyo bedka goob*
- *Soo saaraan bed-duleedka iyo mugga biriisam.*
- *Xisaabiyaan bed-duleedka iyo mugga dhululbo.*

Erayo: Wareeg, bed, meeris, bed-duleedka, bedka dadabta, wadarta bed-duleed, mug.

Qalabyada loo baahan yahay Mastarad, xaglo-beege, goobeeye, maqasyo, midaalo biriisamyo iyo dhululubooyin.

Hordhac

Ujeedada aasaasiga ah ee cutubkani waa inay dib ugu kabtaan xusuusta nuxurada ay hore u soo barten islamarkaa ugu horumaraan si aljabro ahaan u hormarsan qaabqabashada helidda wareegyada, bedadkaiyo mugagga.

Cutub-hoosaadkani waxa loo sii kalaqaybiyey todoba cinwaan hoosaad: Bedka saddexagal, wareega iyo bedka koorta iyo barbaroolaha, meeriska goobo, bedka goobo, bed-buleedka biriisam iyo dhululbo iyo mugagga biriisamyada iyo dhululubooyinka. Cinwaan-hoosaad kasta dhexdiisa, waxaa lagaa filayaa inaad ku dhiirigeliso ardaydu inay soo diiraan ama ay fahmaan jidadka kadibna u adeegsadaan jidadka ku furfurista masalooyinka nolosha xaqiiqada ah.

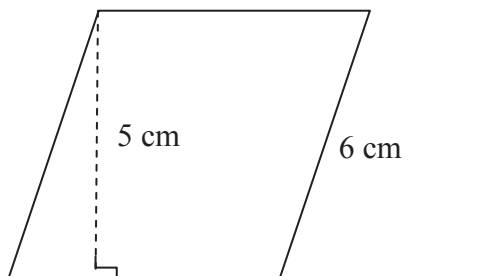
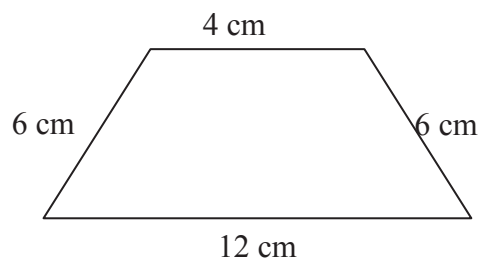
Fikradaha barista

Cutub- hoosaadkani, waxay ardaydu ku falanqayn doonaan bedadka saddexagalada, wareega iyo bedka koor iyo barbaroolaha meeriska iyo bedka goobo ugu dambayna bed-duleedka iyo mugga biriisamyada iyo dhululbooyin.

Si aad ugu fududeyso nuxurka cabbiraadaha, waxaad ku bilaabi kartaa casharkaaga adoo ugu hormarinaya su'aalaha sida kuwa hoos lagu magacaabay:

Wareeg

Ka soo qaad inaad leedahay dhul leh muuqa koorta. Haddaba, si aad uga xafiddo xayawaanka, ayaad waxaad u rabtaa inaad ka soo ijaarto ama aad waayiro ku soo wareejiso kolkaana waa inaad cabbirto wadarta fogaanta ku xeersan soohdinta dhulka oo la yidhaa wareeg. Si aad u ogaato inta looga baahan yahay inta waayir lagu soo wareejiin karo.



Bed

Ka soo qaad inaad dhul yar leedahay, sida sawirka bidix. Haddii aad rabto inaad bacarimin ku shubto dhulka, waxaad u baahan tahay xaddiga dushu inta ay tahay oo la yidhaa bed, si aad u ogaato inta bacarimin loo baahan yahay waa maxay bedka dhulku.

Mug 7 cm

walaxdee u qaad wayn? Mug waa xaddiga walax meel ay ka qaado.

Ka Fekar

Ka fekar sida nidaamka qaar ah ay dadkani ugu adeegsadaan wareegga, bedka ama mugga shaqadooda.

Kimist/Farmasiistfarsameeye qaboojiye, tarashleyaal,

Muhandaso /Injineer, Furun moofeeye, Najaaro, kaarbet soo saare, ubax-beerayaal, beeraley, horjoogayaal dhismo

5.3.1 Bedka saddexagal

Ardayda waxa laga filayaa inay dib u xusuustaan jidka bedka saddexagalxagal qumaniyo laydiyada ay ku soo barten fasalkii 6^{aad}. Si loo kabo, u kooxee ardayda si tiro ku habboon oo u sheeg inay qabtaan hawlgalka 1. Hawlgalkani wuxu ka gargaarayaa dib u xusuusinta waxay sannadkii hore soo qabteen islamarkaa inay soo diiraan jidka lagu raadiyo bedka nooca saddexagalka kasta ah.

Jawaabaha Hawlgal 5.10

1. b) waxay leeyihiin bed isku mida
 t) Bedka laydigu = $b \times h = 10 \text{ cm} \times 8 \text{ cm} = 80 \text{ cm}^2$
 Bedka saddixagal PSR = $\frac{1}{2} \times 80 \text{ cm}^2 = 40 \text{ cm}^2$
 j) $B = \frac{1}{2} bh$.
2. b) $B(\triangle APS) = B(\triangle ABS)$ islamarkaa $B(\triangle ABR) = B(\triangle AQR)$
 t) = $\frac{1}{2}$
 j) Waxay leeyihiin dherer isku mid ah
 x) $10 \text{ cm} \times 8 \text{ cm} = 80 \text{ cm}^2$
 kh) $\frac{1}{2} \times 80 \text{ cm}^2 = 40 \text{ cm}^2$
 d) $B(\triangle ARS) = \frac{1}{2} \times b \times h$

$$3. \quad b) B(\Delta PRS) = \frac{1}{2} \times 10 \text{ cm} \times 8 \text{ cm} = 40 \text{ cm}^2$$

$$B(\Delta PTS) = \frac{1}{2} \times 4 \text{ cm} \times 8 \text{ cm} = 16 \text{ cm}^2$$

$$t) B(\Delta PRT) = B(\Delta PRS) - B(\Delta PTS) = 40 \text{ cm}^2 - 16 \text{ cm}^2 = 24 \text{ cm}^2$$

j) Haa!

$$4. \quad B = \frac{1}{2} bh$$

Hubi inuu arday kasta fahmay mid kasta saddexda nooc ee saddexagalada kala duwan (Saddexagal xagloFiiqan, saddexagal quman iyo saddexagal xagal furan) loo arkay in jid isku mid ah loo adeegsado. Haddana, tasaaleyaasha ku qaba fasalka oo u sii ardayda laylis 5.3.1 shaqo fasal ama shaqo guri.ahaan

Jawaabaha Laylis 5.9

$$1. \quad b) 12 \text{ cm}^2 \quad t. 400 \text{ inch}^2 \quad j. 10 \text{ cm}^2 \quad x. 18 \text{ cm}^2$$

$$2. \quad h = 10 \text{ cm}$$

$$3. \quad b = 24 \text{ cm}$$

$$4. \quad b. 140 \text{ m}^2 \quad t. 104.5 \text{ cm}^2 \quad j. 239 \text{ cm}^2 \quad x. 70 \text{ cm}^2$$

$$5. \quad b. 80 \text{ cm} \times 160 \text{ cm} = 12800 \text{ cm}^2$$

$$t. B(\Delta APQ) + B(\Delta DCB) = \frac{1}{2} \times 80 \times 40 + \frac{1}{2} \times 80 \times 160 = 8000 \text{ cm}^2$$

$$j. 12800 \text{ cm}^2 - 8000 \text{ cm}^2 = 4800 \text{ cm}^2$$

$$x. 12800 \text{ cm}^2 = 1.28 \text{ m}^2$$

$$\text{Birr } 1.28 \times 64 = \text{Birr } 81.92$$

$$6. \quad b. 750 \text{ m}^2$$

$$t. B(\Delta ADC) = \frac{1}{2} bh = \frac{1}{2} \times 65 \times h \Rightarrow bh = 65 \times h \text{ (ku dhuto 2 mid kasta)}$$

$$750 = 65 \times h \Rightarrow h = \frac{750}{65} \text{ m}$$

$$7. \quad 24 \text{ cm}^2$$

5.3.2 Wareegga iyo Bedka koor

Hawlgal 2 ayaa kaa caawin doona u xiisagalinta ardayda si casharkan loo bilaabo. Haddaba ku dhiirigali ardayda inay falanqeyaan una wada keenaan gunaanadka jidka lagu helo bedka koor.

Jawaabaha Hawlgal 5.11

2. b. BF t. AE or BF

$$j. AE=BF \quad x. B(\triangle ABD)=\frac{1}{2} \times AB \times BF, \quad B(\triangle BCD)=\frac{1}{2} \times DC \times BF$$

$$\begin{aligned} kh. B(\triangle ACD) &= B(\triangle ABD)+B(\triangle BCD) \\ &= \frac{1}{2} \times AB \times BF + \frac{1}{2} DC \times BF \\ &= \frac{1}{2} \times (AB+DC) \times BF \end{aligned}$$

Qiimeyn

Falanqeynta habka sida loo soo saaro wareegga iyo bedka koor kolk aad wada yeelataan ka dib, u sii su'aalaha qaarkood shaqofasal ahaan islamarkaa kuwa hadhayna shaqo-guri ahaan.

Jawaabaha Laylis 5.10

1. 17 m
2. 68 cm²
3. b. p=27.6 cm² t. 45.5 cm² J. 91 cm² x. 78 cm²
4. 9 cm
5. b. 45.5 m² t. Birr 136.5
6. Wareeg = 300 m
Bed = 4200 m²

5.3.3 Wareegga iyo Bedka Barbaroole

Ardaydu waxay aqoonta dhismaha waayo-aragnimo fiican hore ugu yeesheen astaamaha iyo bedadka laydiga iyo barbaroolaha, sidoo kale, si loo xisaabiyo bedka layiga iyo barbarrooleyaasha. Sidaa awgeed, ku dhiirigali oo ka gacan sii ardayda si ay ugu qabtaan kooxo shaqo-kooxeed 1. Tani waxay ka caawin doontaa inay ku hormaraan jidka lagu helo bedka barbaroole.

Qiimeyn

- Canjeeradu waa goobo
- CD waa goobo.

Waxad ogaataa kolka aan leenahay walxaha sare waaqaab goobo waxan u jeednaain dusha walaxdu leedahay muuq goobo ee looma baahna inay yihiin 3-wajiile oo aan noqonayn goobooyin.

Eegga ka same kooxo isku tiro ah oo ku dhiiri gali inay ka shaqeeyaan hawlgalka 2.00 awoodsiinaya iyaga inay arkaan xidhiidhka ka dhexeeya meeriska goobada iyo dhexroorka. Ka dib kolka aad falanqeyso tusaalooyinka lagu siiyey buuggooda uga dir laylis 5.3.4 shaqo fasal iyo shaqo guri ahaan.

Jawabaha laylis 5.12

1. b. $8\pi\text{cm}$ t. $8\pi\text{cm}$ j. $(4+\pi)\text{cm}$
2. 100cm
3. 4
4. $100\pi\text{cm}$
5. Meerisku isna wuu labanlaabmi doonaa

5.3.5 Bedka Goobo

Ka bilow casharka si ardaydu uga shaqeeyaan shaqo-kooxeed 3 ee buugga ardayga lagu siiyey. Shaqo-kooxeedkani wuxu ardayda fursad u siin doonaa inay fahmaan sida jidka lagu helo bedka goobo loosoo dhirandhiriyey.

Qiimeyn

Si haddaba loo qiimeeyo tirada ardayda fahamtay nuxurka, waxad u siin kartaa ardayda dhawr laylis oo ay ku jiraan su'aalaha 7 iyo 8 ee laylis 5.3.5 laylis diraalahaan shaqo guri ka dibna waa inay fasalka kuwada falanqeyaan.

Jawaabaha Laylis 5.13

1. b) $1600\pi\text{cm}^2$ t) $\pi^3\text{cm}^2$
2. 16cm.
3. b) $100\pi\text{cm}^2$
4. b) $28\pi\text{cm}^2$
5. b) $(100-25\pi)\text{cm}^2\text{t}$ $(49-\frac{49}{4}\pi)\text{cm}^2$ j) πcm^2
 x) $(64-16\pi)\text{cm}^2\text{kh}$ $(49+\frac{49}{2}\pi)\text{cm}^2$ d) $(96-8\pi)\text{cm}^2$
 r) $(25-\frac{25}{4}\pi)\text{cm}^2\text{s}$ $(1024-256\pi)\text{cm}^2\text{sh}$ $(1024-256\pi)\text{cm}^2$
6. $B=(9900+2025\pi)\text{m}^2$
 $W=(220+90\pi)\text{m}^2$
7. $M=18\pi\text{cm}$ iyo $B=81\pi\text{cm}^2$
8. Waxay u waynaan doontaa afar lab ama.
 (waxay ka waynaan afar jeer).
Ka shaqee haddaad u xiiso qabto su'aasha 9:
9. Saddex xabboo Biisaa(Pizza) leh baaxadaha mid yar, dhexdhexaad iyo mid wayn ah ayaa gacannadoodu kala yihiin 20cm,30cm iyo 40cm siday u kala horeeyaan.
 - b. soo saar mid kasta bedkeeda
 - t. Midkee ayaad soo iibsan lahayd haddii labadiiba mid aad ka dooranayso kuwa soo socda:
 - i. 1 Biisaa wayn ama 2 dhexdhexaad ah.
 - ii. 1 Biisaa wayn ama 3 yar-yar.

F.G:(pizza waa wax moofaysan oo dida sabaayadda khudrad la korsaaro laguna gado huteelada waawayn).

5.3.6 Bed-Duleedka Biriisamyo iyo Dhululubooyin

Maadaama ardaydu ay aqoon u leeyihiin nuxurada iyo eraybixinada la xidhiidh biriisam iyo dhululubo, waxaad ku bilaabi kartaa casharka siay ugaga shaqeeyaan 10 daqiiqo howlgal 3 ee lagu siiyey buuggooda. Hawlgalkani wuxu nasiib ugu yeelan doonaa naqtiimista qeexaha biriisamka, dhululubada iyo bed-duleedka adkeyaashan. Marlabaad ku dhiirigali oo ka yeel ardaydu inay ka shaqeeyaan shaqo-kookeed 4 oo si heer sare uga caawinaya inay fahmaan, sida bed-duleedyada biriisamyada iyo dhululubooyinka lagu soo saaro.

Si wanaagsansi ay ugu fahmaan, waa inay ka shaqeeyaan tusaalooyinka buugga lagu siiyey iyo kuwaad u bandhigto labadaba.

Qiimeyn

Waxaad u adeegsan kartaa tabaha qiimeynta tooska ah iyo kuwa dadban oo kala duwan si aad ugu hesho heerka faham ee cinwaanka. Hawsha u sii ballaadhi si lamida ah si looguga shaqeeyo masalooyinka nolosha runta ah sida cabbiridda dhinacyada darbiyada iyo bedka dhulka fasalka/qolka islamarkaana qiimeeyaan bedka dusha (bed-duleedka).

Laylis 5.14

1. b) $B_d=100\text{cm}^2$ t) $B_d=128\text{cm}^2$ j) $B_d=100\text{cm}^2$
 $B_{dl}=112\text{ cm}^2$ $B_{dl}=152$ $B_{dl}=150\text{ cm}^2$
2. 96 cm^2 .
3. 9 cm^2 , 3 cm.
4. 404 cm^2
5. 28 cm^2 .
6. 4.7 litiro.

Laylis 5.15

1. b) $B_{dl}=32\pi\text{cm}^2$ b) $B_d=84\pi\text{cm}^2$ b) $B_d=30\pi\text{cm}^2$
 $B_{dl}=160\pi\text{cm}^2$ $B_{dl}=156\pi\text{cm}^2$ $B_{dl}=48\pi\text{cm}^2$
2. $120\pi\text{cm}^2$
3. 7cm

Jawaabaha Laylis Guud

1. $80^\circ, 80^\circ, 100^\circ, 100^\circ$
2. $65^\circ, 115^\circ$
3. 70°
4. $72^\circ, 144^\circ, 48^\circ, 96^\circ$
5. $30^\circ, 90^\circ, 60^\circ, 180^\circ$
6. b. 1620° t. 1260° j. 5040°
x. 6120° kh. 15840° d. $180,000^\circ$
7. b. Maya, majirogeesoole t. 15
j. Maya, majirogeesoole x. 22
8. b. 2160° t. 144°
9. $X = 36^\circ \Rightarrow$ b. $A = 41^\circ, C = 120^\circ, D = 139^\circ$
 $X = 10^\circ \Rightarrow$ t. $A = 50^\circ, B = 50^\circ, C = 130^\circ = D$
10. b. 12° t. 12° j. 168° x. 168°
11. $42^\circ, 138^\circ$
12. $AB = CD = 12$ halbeeg $DA = BC = 8$ halbeeg
13. 24 halbeeg
14. Dhisitaan la mid ah ayaa la samayn sida kuwa hawlgalada.
15. b) $20^\circ, 60^\circ, 100^\circ, 160^\circ$ haa, waa barbarroole, waayo xaglaha isku xiga labada dhinac way isku
t) Sidkan yihiin.

Muqararka Xisaabta

Fasalka 7^{aad}

Muqararka xisaabta

Fasalka 7^{aad}

(mathematical syllabus – grade 7)

Waxaa tarjumay

Mr. Cabdi salaad max'ed

Diqimti 2002 e.c

Hordhac

Xisabta fasalka 7aad ardaydu waxay si qoto dheer ugu sii baran ddoonaan mawduucyo farabadan oo ay ku soo barten fasalladi hore ee kan ka horreeyey sida xisaab fallada tirooyinka doorsoomeyaasha, isle'egyada iyo dheelliyada, saamiga saamigallada, iyo boqolleyda, cabbiraaddaha, joomateriga iyo ururinta iyo habaynta xogaha. Ardayda fasalka 7aad waxaa kale oo ay ku baran doonaan fikrado cusub oo ay kamid yihiin ururka tirooyinka lakabka leh soo ururinta xogaha fudud iyaga oo adeegsanaya isbaarooyin (tally marks) dhisidda iyo sharrax-ka bixinta noocyada kala duwan ee garaafyada, soo saarista miinka, moodhka mediyaanka iyo reejioga xogaha lasiiyey. Iwm

Barashada xisaabta heerka fasalkan waa in ay ardaydu ku qaataan ama ka dhex helaan waxyaabaha lagama maarmaanka u ah barashada maaddooyinka kale sida fiisikiska, kemisteriga, bayolojiga farsamada casriga ah (information technology) iwm si loogu gogolsaaro ama loogu fududeeyo garashada iyo saafissa xeerarka iyo qaab-dhaqanka tiro ahaaneed (regularities and quantitative treatment) ee dhacdooyinka ama mucjisooyinka iyo geeddi-socodka horumarinta sayinka ama farsamada casriga ah iyo bay'adda dunida. Arimaha la xidhiidha dadweynaha cashuur-bixinta wax kaydsiga maaliyada dheefta maalgelinta iwm. Waa in lagu dhexodaro lagu sharraxo lagunta faaqido mawduucyada (cashrrada) ku habboon. Sidaas oo kale tusaaleyaal muujineyay nolosha dhabta ah iyo mas'looyinka lagu dabbakhayo waa in la adeegsadaa hadba inta la awoodi karo ama suurgalka ah.

Ardaydu ka shaqayntooda saamiga saamigallada iyo boqolleyda oo ay sii xoojinayaan ayaa waxay ku gaadhaysab kobcinta fahamkooda ku wajahan saamigelimada, kaas oo ay ku dabbakhayaan furfurista mas'alooyinka qaybo badan. Saamiga iyo saamigalinada waxay u adeegsanayaan furfurista mas'alooyinka boqolkiiba oo aad u kala duwan isla markaana ay ku jiraan mas'alooyin ku saabsan sicir dhimista dheefta, cashuuraha iwm.

Ardaydu, iyaga oo walxaha qaabkoodu yahay laba-addimoole (shaxannada sallaxa) iyo kuwa qaabkoodu yahay saddex-addimoole (shaxannada adkaha ah) u kale googoynaya qaybo yar-yar ayaa waxay raadinayaan bed-duleedka biriisamka iyo dhululubada waxayna soo dhiraandhirinayaan qaaciidooyinka lagu helo bed-duleedka biriisamka iyo dhulubada. Sidaa oo kale ardaydu oo biriisamka iyo dhulubada.

Ardaydu, fahamka aqoonta iyo xirfaddaha ay u leeyihiin xisaab fallada abyooneyaasha ee isugey kalagoynta isku dhufashada iyo isugeybinta iyo astaamahoodaba ayaa waxay ku sii fidinayaan dhammaan tirooyinka lakabka leh yinkaku shqaynta xisaabfallada tiryinka lakabka lehna waxay u adeegsanayaan qaabynta (dhisidda) iyo furfurista isle'egyada toosan ee hal doorsoome leh. Isla mar ahaan taasna isle'egyadaas waxay iyagana u deegsanayaan furfurista mas'alooyinka ama xallinta dhibaatooyinka ka jira degaankooda.

Ujeeddoyinka barashada xisaabta fasalka 7aad

Xisaabta fasalka 7aad marka ay dhammaato, ardaydu waxay awood u yeelanayaan:-

- Qeexidda tirooyinka lakabka leh iyo ku muujinta xarriiqda dudheeda da dudheeda.
- Soo saaridda qiimaha sugan ee tirooyinka lakabka leh
- Furfurista isle'egyada fudud ee leh qiimaha sugan
- Isugeynta, kalagoynta, iskudhufashada iyo isuqaybinta tirooyinka lakabka leh.

-
- Furfurista isle'egyada iyo dheelliyada toosan ee horgalana doorsoomaha ku jiraa uu togan yahay iyaga oo adeegsanaya xeerarka isudhiganka
 - Xallinta mas'alooyinka la xidhiidha boqolleyda oo ay ku jiraan mas'alooyinka ku saabsan macaashka, khasaaraha iyo dheefta fudud.
 - Soo ururinta mac;uumaadka iyo dhisidda garaaf xariiqeedka iyo garaaf-goobeedka fudud ee xogta la siiyey
 - Soo saarista miinka moodhka mediyaanka iyo reenjiga xogaha la siiyey
 - Dhisidda iyo saafidda astaamaha afargeeleyaasha sida koorta iyo barbaroolaha
 - Raadinta wadarta cabbirka xoglaha guduha ee geesoolaha firdhisan (convex polygon)
 - Soo saarista wareegga iyo bedka saddexagallada koortllada koorta barbaroolaha iyo goobooyinka
 - Soo saarista bed-duleedka iyo mugga biriis barbaroolaha iyo goobooyinka
 - Soo saarista bed-duleedka iyo mugga biriisamka iyo dhulubada.

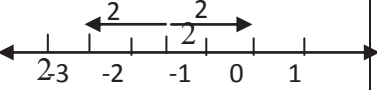
Cutubka: 1^{aad} tirooyinka lakabka leh (32 xiso)

Ujeeddooyinka guud ee cutubkan:

Cutubkani marka uu dhammaado kadib ardaydu waxay awood u yeelan (awood u yeelan karaan)

- Qeexidda tirooyinka lakabka leh iyo u qoridda sansaanta jajayada
- Muujinta xidhiidhka ka dhexeeya tirooyinka idil (W) abyooneyaasha (Z) iyo tirooyinka lakabka leh (Q)
- Horsanaanta tirooyinka lakabka leh
- Xisaabfallada tirooyinka lakabka leh

Ujeeddooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada barishada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<p>Casharkani marka uu dhammaado kadib ardaydu waa in a:-</p> <ul style="list-style-type: none"> • Tirooyinka lakabka leh u tibaaxi karaan jajabyo • Tirooyinka laabka leh ku muujin karaan xarriiqda tirada iyaga ku muujinaya ururka jajabyada • Sharxi karaan xidhiidhka ka dhexeeya “W”, “Z” iyo “Q” • Soo saari karaan qiimaha sugan ee tirooyinka lakabka leh • Xallin karaan isle’egyada fudud ee u ku jiraa qiimaha sugan 	<p>1. Tirooyinka lakabka leh</p> <p>1.1 macnaha tirooyinka lakabka leh (9 xiso)</p> <ul style="list-style-type: none"> • ku muujinta xarriiqda tirada tirooyinka lakabka leh • xidhiidhka ka dhexeeya “W”, “Z” iyo “Q” • qiimaha sugan ee tirooyinka lakabka leh 	<ul style="list-style-type: none"> • u ogolow ardayda in ay naqtiin ku sameeyaan horsanaanta iyo astaynta (xarafka lagu asteeyo) abyooneyasha • ku hoggaami ardayda in ay qeexaan tirooyinka lakabka leh in ay yihiin ururka jajabyada. • Ka caawi ardayda in ay tiryoonka lakabka leh qaar ka mid ah ku muujiyaan xarriiqda tirada dusheeda • ku hag ardayda aqoonsiga in “Q” ay u taagan tahay ururka tirooyinka lakabka leh • ku gacansii ardayda in ay muujiyaan xidhiidhka ka dhexeeya ururka tirooyinka idil (W), ururka abooneyaasha (Z) iyo ururka tirooyinka lakabka leh (Q) sida $W \leq Z$; $W \leq Q$; $Z \leq Q$ • ku hoggaami ardayda qeexidda iyo barashada macnaha qiimaha sugan ee tirooyinka 	<ul style="list-style-type: none"> • Sii ardayda laylisa ka kooban mas’alooyin kala duwan oo kusaabsan horsaanta tirooyinka lakabka leh • Weydii ardayda una ogolow qaar ka mid ah in ay saxaariqada tirada muujiyaan tirooyinka lakabka leh ee la siiyey, iyaga oo adeegsanaya sabuuradda • Weydii ardayda in ay muujiyaan xidhiidhka ka dhexeeya “W”, “Z” iyo “Q” iyaga oo adeegsanaya jaatuska feer • Sii ardayda layliso shaqo fasal iyo shaqo guri ah oo ku saabsan soo saaridda qiimaha sugan ee tirooyinka lakabka leh

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada barishada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		lakabka leh “a” • $ a = \begin{cases} \text{“a”} & \text{haddii } a \geq 0 \\ \text{“-a”} & \text{haddii } a < 0 \end{cases}$	
		• Ku joosi ardayda in ay sharrax ka bixiyaan macnaha qiimaha sugan ee tirooyinka lakabka leh iyaga oo u adeegsanaya joomateri ahaan Tusaale ahaan $ 2 = 2$ isla markaana $ -2 = 2$ taas macnaheedu waxaa weeye xarriiqda tirada dusheeda fogaanta u dhexaysa ‘2’ iyo ‘0’ waa “2”, sidaas oo kale fogaanta u dhexaysa “-2” iyo “0” waa 2  • Ka gacansii ardayda in ay xalliyaan isle’egyada fudud ee qiimaha sugan sida isle’egyada $ X = 3$	
Casharkani marka uu dhammaado kadib ardaydu waa in a:- • Isbarbardhigi karaan tirooyinka lakabka leh • Horsanaan u qori karaan tirooyinka lakabka leh iyaga oo ku muujinaya	1.2 isbarbardhigidda iyo horsanaanta tirooyinka leh (7 xiso)	• Ka caawi ardayda in ay isbarbardhigaan, isla markaana u qoraan horsanaan tirooyinka lakabka leh ee xarriiqda tirada dusheeda iyaga oo jajabyada u bedelaya jajabyada u dhigma ee hooseeyeyaashoodu isku mid yihiin. • Ku hoggaami ardayda in ay soo gunaanadaas xaqiiqada ah in laba tiro oo kasta oo tirooyin	• Sii ardayda laylisyo ka kooban maslalooyin kala duwan oo ku saabsan isbarbardhigidda tirooyinka lakabka leh, iyaga oo adeegsanaya sumaddaha dheeliga sida “>” iyo “<”. Adiguna ka

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada barishada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
xarriiqda tirada dusheeda		lakab leh ah ooo ku muujisan xarriiqda tirada ay weyn tahay tirada xigta dhinaca midigayna yar tahay tirada xigta dhinaca bidix ee xarriiqda tirada	hubi shaqadooda
<p>Casharkani marka uu dhammaado kadib ardaydu waa in a:-</p> <ul style="list-style-type: none"> • Isugeyn karaan tirooyinka lakabka leh • Dabbakhi karaan astaamaha kala hormarinta iyo hormogelinta isugeynta ee tirooyinka lakabka leh 	<p>1.3 xisaabta fallada tirooyinka lakaabka leh</p> <p>1.3.1 isugeynta tirooyinka lakabka leh</p>	<ul style="list-style-type: none"> • U ogolow ardayda in ay naqtiin ku sameeyaan isugeynta abyoooneyaasha iyaga oo adeegsanaya xarriiqda tirada. • Ku hogsaami ardayda in ay falanqeeyaan qeexaan, isla markaana muujiyaan xeerka isugeynta laba tiro oo ah tirooyinka lakabka leh, iyaga oo adeegsanaya lakabka leh, iyaga oo adeegsanaya tusaaleyaal, sida. <ol style="list-style-type: none"> 1. Haddii calaamaddaha biirooyink ay kala duwan yihiin (mida tahay togane, midda kalena tahay tabane) markaa. <ol style="list-style-type: none"> i. Qaado qiimaha sugan ee labada biiroba (labada tiroba) kadibna qiimaha sugan ee biirada weyn kagoo qiimaha sugan ee biirada yar ii. Qaado calaamadda ay wadato biirada leh qiimaha sugan ee weyn, taas oo ah calaamadda wadarta. Tusaale ahaan: $- 6 + = - 4$ 	<ul style="list-style-type: none"> • Sii ardayda layliso ka kooban mas'alooyinka kala duwan oo ku saabsan isugeynta tirooyinka lakabka leh, kadibna ka hubi shaqadooda • Sii ardayda layliso ka kooban mas'alooyinka kala duwan oo ku saabsan adeegsiga astaamaha kala hormarinta isugeynta tirooyinka lakabka leh. Adiguna dabagal ku samee waxqabadka ardayda

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada barishada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>2. Haddii calaamaddaha biirooyin ku ay isku mid yihiin (labada biiroba wada yihiin togane ama wada yihiin tabane) markaa:-</p> <p>i. Qaado wadarta qiimaha sugan ee labada biiroba, adiga oo isugeynaya labada biiroba</p> <p>ii. Calaamadda wadartana u qaado calaamaddaha ay wataan labada biiroba</p> <p>Tusaale ahaan: $3 + 5 = 8$ $-3 + (-5) = -8$</p> <ul style="list-style-type: none"> • u ogolow ardayda in ay si cad u muujiyaan runnimada astaanta kala hormarinta iyo astaanta hormogelinta isugeynta tirooyinka lakabka leh. • Ka caawi ardayda in ay astaamahaas u soo gabagabeeyaan sidan:- haddii 'a', 'b' iyo 'c' ay u taagan yihiin tirooyinka lakabka leh oo kasta, markaa:- <ul style="list-style-type: none"> i) $a + b = b + a$..... astaanta kalahor isugeynta marinta ii) $(a + b) + c = a + (b + c)$ --- astaanta hormogelinta isugeynta 	

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada barishada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<p>Casharkani marka uu dhammaado kadib ardaydu waa in ay hal tiro oo la kab leh kagoyn karaan tiro kale oo lakab leh</p>	<p>1.3.2 kalagoynta tirooyinka lakabka leh</p>	<ul style="list-style-type: none"> •Ka gacansii ardayda in ay kalagoynta tirooyinka lakabka leh u tibaaxaan isugeynta ay biirooyinkeedu leeyihiin calaamaddo kala duwan ama isku lid ah (isugeynta ka kooban biiro togan iyo biiro taban) <p>Tusaale ahaan: $4 - 3 = 4 + (-3) = 1$</p> <ul style="list-style-type: none"> •Ku hoggaami ardayda in xeerkaa ay ku soo barten isugeynta tirooyinka lakabka leh lagu dabbakhi karo soo saarista farqiga tirooyinka lakabka leh <p>Tusaale ahaan</p> $4 + (-3) = 1$ $2 - (-5) = 2 + 5 = 7$	<ul style="list-style-type: none"> • Sii ardayda laylisyo ka kooban nqas'alooyin kala duwan oo ku saabsan kalagoynta tirooyinka lakabka leh
<p>Casharkani marka uu dhammaado kadib ardaydu waa in ay:-</p> <ul style="list-style-type: none"> • Soo saari karaan taranta tirooyinka lakabka leh • Dabbakhi karaan xeerarka isku dhufashada tirooyinka lakabka leh. • Adeegsan karaan astaamaha kala hormarinta iyo hormigelinta isku dhufashada tirooyinka 	<p>1.3.3 isku dhufashada tirooyinka lakabka leh</p>	<ul style="list-style-type: none"> •Ku hoggaami ardayda in ay casharkan ku bilaabaan barishada xeerarka isku dhufashada tirooyinka lakabka leh. Iyaga oo u soo bandhigaya sidan:- <p>i) La isku dhufto laba tiro oo tirooyin lakab leh ah calaamaddo kale duwan (midi tahay togane, tankalena tabane) taranta calaamaddeedu kala duwan (midi tahay toganne, tankalena tabane)</p> <p>b) calaamaddeedu waa tabane “-“ markasta</p> <p>t) qaado qiimaha sugan</p>	<ul style="list-style-type: none"> • Sii ardayda laylisyo ka kooban mas'alooyin kala duwan oo ku saabsan xeerarka isku dhufashada tirooyinka lakabka leh kadibna ka hubi shaqada arday kasta adiga oo siinaya tallaabooyinka kabis waxbarsho ah marka aad ogaato xaaladdooda • Sii ardayda laylisyo ka kooban mas'alooyin kala duwan oo ku saabsan adeegsiga

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada barishada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<p>lakabka leh iyo weliba astaanta kala dhigiddo isku dhufashada ee isugeynta tiryooyinka lakabka leh</p>		<p>ee tartanta labadaas tiro tusaale :-</p> $- 3 \times 4 = (1 - 3 \times 4)$ $= (3 \times 4)$ $= - (12) = - \underline{12}$ <p>ii) Haddii la isku dhufto laba tiro oo tirooyin lakab leh ah oo leh calaamaddo isku mid ah (wada togane ama wada tabane) markaa</p> <p>b) tartanta calaamaddeedu waa togane (+) markasta</p> <p>t) qaado qiimaha sugan ee labadaas tiro kadibna iskudhufo</p> <p>tusaale:-</p> $(- 3) \times (-4) = -3 \times -4 $ $= 3 \times 4$ $= \underline{12}$ <p>•Ka gacansii ardayda in ay soo bandhigaan (soo gabagabeeyaan) runnimada astaamaha kala hormarinta hormogelinta iyo kala dhigsidda isku dhufaashada tirooyinka lakabka leh</p>	<p>astaamaha kala hormarinta, hormogelinta, iyo kala dhigidda iskudhufashada tirooyinka lakabka leh</p>
<p>Casharkani marka uu dhammaado kadib ardaydu waa in ay:-</p> <ul style="list-style-type: none"> • Hal tiro oo lakab leh u qaybin karaan tiro kale oo lakab leh oo 	<p>1.3.4 isuqaybinta tirooyinka lakabka leh</p>	<p>•Ka gacansii ardayda in ay falanqeeyaan xeerarka isuqaybinta laba tiro tirooyinka lakabka leh iyaga oo adeegsanaya tusaaleyaal. Isla markaana u ogolow ardayda in ay ku soo gunaanadaan xaqiiqooyinkan soo</p>	<p>•Sii ardayda layliso ka kooban mas'alooyinka kala duwan oo ku saabsan isuqaybinta tirooyinka lakabka leh kana hubi shaqadooda</p> <ul style="list-style-type: none"> • Sii ardayda hal-xiraaleyaal

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada barishada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
aan ahayn “0”		<p>socda:-</p> <p>1) Go’ aaminta calaamadda qaybta isuqaybinta laba tiro oo lakab leh</p> <p>b) haddii calaamaddaha laqaynbshada iyo qaybshuhu ay isku mid yihiin markaa calaamadda qaybta waa togane “ + “ – tusaale ahaan waxa aad qaadan kartaa tusaaleyaa la mid ah kan soo socda</p> $(-8) \div (-4) = (8) \div (4) = 2$ <p>t) haddii calaamaddaha laqaybshaha iyo qaybshuhu ay kala duwan yihiin markaa calaamadda qaybtu waa tabane “-“ sida</p> $(-8) \div 4 = 8 \div (-4) = -2$ $(-9) \div 3 = 9 \div (-3) = -3$ <p>Kuna ardayda in ay xafeigsaan in</p> <p>2. soosaarita tiradaqaybta nogonayso oo lagu helayo oo qiimaha iyey qllmaha sugan ee qaybshaha .</p> <ul style="list-style-type: none"> • kaa caawiardayda in ay xaquq sadaan isuqay binta tiro lakab leh iyo eber {0} in ay qaybtoodu tahay waxaan qeexnayn ama ma-daaam maato [ma- qeexne] oo loo soo gaabiyo ∞ sida $2 \div 0 = \infty$	<p>ku saabsan cutubka matijada kaaga soo baxdana kaqaado tallaabooyinka ku habboon oo ah kabis waxbarasho</p>

Cutubka: 2^{aad} isle'egyada iyo dheelliyada toosan (25 xisaddod)

Ujeeddooyinka guud ee cutubkan:

Cutubkani marka uu dhammaado kadib ardaydu waxay awood u yeelan (awood u yeelan karaan)

- Furfurista (xallinta) isle'egyada toosan iyaga oo adeegsanaya xeerarka islegyada isudhigma (isu dhiganka isle'egyada)
- Xallinta (furfurista) dheelliyada toosan iyaga oo adeegsanaya xeerarka dheelliyada
- Isu dhigma (isudhiganka dheelliyada)

Ujeeddooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada barishada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<p>Qaybtani marka uu dhammaado kadib ardaydu waa in ay:-</p> <p>Furfuri karaan isle'egyada toosan iyaga oo adeegsanaya xeerarka isku bedelidda isle'egyada isudhigma (doorsoomaha leh horgale togan)</p>	<p>2. Isle'egyada iyo dheelliyada toosan</p> <p>2.1 furfurista isle'egyada toosan (13 xiso)</p>	<p>* u ogolow ardayda in ay falanqeeyaan isla markaana baqtiimaan xeerarka isku bedelidda isle'egyada isudhigma sida:-</p> <p>1. isle'egta labadeeda dhinac oo loo geeyo ama laga gooyo tiro isku mid ah</p> <p>2. is le'egta labadeeda dhinac oo lagu dhufto ama loo qaybiyo tiro isku mid ah oo aan hayn eber (0)</p> <p>* ka caawi ardayda in ay sabab ee yaan tallaabo kasta oo ka mid ah tallaabooyinka furfurista.</p> <p>Waxa aad adeegsan kartaa tusaalahan soo socda:-</p> <p>Tusaale:- furfuri $\frac{3}{4}x - 2 = 1$</p> <p>$\frac{3}{4}x - 2 = 1$ isle'egta labadeeda dhinac ugee 2</p> <p>$\frac{3}{4}x - 2 + 2 = 1 + 2$ isugee ama kalagoo kuwa isku midka ah</p> <p>$\frac{3}{4}x = 3$ isle'egta labadeeda dhinac ku dhufo 4</p> <p>$4(\frac{3}{4}x) = (3 \times 4)$</p>	<ul style="list-style-type: none"> • Sii ardayda hawlgallo kala duwam oo ay ku furfuryaan isle'egyada toosan ee fudud isla markaa ka hubishaadooda • Si ardayda su'aalo afkaah iyo laylis ka kooban mas'alooyin kala duwan oo shaqp fasal iyo shaqo guri ah

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada barishada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		iskudhufo $3x = 12$ isle'egta labadeeda dhinac u qaybi 3 $\frac{3}{3}x = \frac{12}{3}$ isuqaybi $X = 4$ furfuristiila doonayey	
Qaybtani marka ay dhammaato ardaydu waa in ay furfuri karaan dheelliyada toosan iyaga oo adeegsanaya xeerarka iskubedelidda dheelliyada is dhigma (doorsoomeyaasha leh horgale togan)	2.2 furfurista dheelliyada toosan (12 xiso)	* u ogolow ardayda in ay naqtiin ku sameeyaan, isla markaana falanqeyaan xeerarka iskubedelidda dhelliyada isudhigma sida 1. Dheelliyada labadiisa dhinac haddii tiro isku mid ah loo geeyo ama laga gooyo, markaa dheelligii waxba iskama bedelayaan. 2. Haddii dheelliga labadiisa dhinac lagu dhufto ama loo qaybiyo tiro isku mid ah oo tagan, markaa dheelligii waxba kartaa tusaaleyaal la mid ah tusaalahan $4 > 2$ labada dhinac kaga dhufo 3 waxa aad helayaa. $4 \times 3 > 2 \times 3 = 12 > 6$ • Ka gacansii ardayda in ay soo bandhigaan habka loo furfuro dheelliga toosan ee furfuristiisa lagu heli karo hal tallaabo ama ka badan oo ah isku bedelidda dheell iyo isu dhigma <u>Tusaale:</u> furfur $2x + 1 > 3$	<ul style="list-style-type: none"> Weydii ardayda su'aalo afka ah oo kala duwan kadibna sii ardayda laylisyo shaqo fasal iyo shaqo guri ah Qaar ka mid ah ardayda weydii in ay sabuuradda kaga shaqeeyaan furfurista dheelliyada Weydii ardayda in ay furfuraan dheelliyada toosan

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada barishada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p><u>Furfuris</u>:- $2x + 1 > 3$ dheelliga labadiisa dhinac ka goo 1 $(2x + 1) - 1 > 3 - 1$ $2x > 2$ dheelliga labadiisa dhinac u qaybi 2 $2x/2 > 2/2$ $x > 1$</p> <ul style="list-style-type: none"> • Ku hoggaami ardayda in ay ururka furfurista ee dheelliga la siiyey ka dhex doortaan urur tirooyin ah oo la siiyey (urur guud) 	

Cutubka: 3^{aad} saami, saamigal iyo boqolley (24 xisadood)

Ujeeddoooyinka guud ee cutubkan:

Cutubkani marka uu dhammaado kadib ardaydu waxay awood u yeelan (awood u yeelan karaan)

- Fahamka fikraddaha saamiga iyo saamigallada
- Xallinta mas’alooyinka la xidhiidha boqolleyda
- Adeegsiga fikradda boqolleyda iyaga oo u adeegsanaya xallinta mas’alooyinka ku saabsan macaashka khasaaraha iyo dheefta fudud.

Ujeeddoooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada barishada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<p>Casharkani marka uu dhammaado kadib ardaydu waa in ay:-</p> <ul style="list-style-type: none"> • sharxi karaan macnaha saami iyo saamigal • furfuri karaan mas’alooyinka fufud ee saamiga • furfuri karaan mas’alooyinka saamigalka 	<p>3. saami saamigal iyo boqolley</p> <p>3.1 saami iyo saamigal (6 xiso)</p>	<ul style="list-style-type: none"> • u ogolow aedayda in ay soo bandhigaan qeexidda saamiga laba xaddi iyaga oo adeegsanaya tusaaleyaal kala duwan sida:- “saamiga wiilasha iyo gabdhaha fasalkooda ka soo qaad waa 20:40, waa in ay jawaabta ugu dambaysa u qoraan habka ugu fudud sida 1:2 • ku dhiirigeli ardayda in ay khariiddada fasalkooda ku muujiyaan qiyaaso qoran sansaanta saamiga • fursad u ii ardayda in ay naqtiin ku saamigal rogaal iyo isirka (madoorsoomaha) saamigalnimada • ka gacansii ardayda in ay saamigalka u qeexaan in uu yahay isle’ekaanshada laba saami 	<ul style="list-style-type: none"> • weydii ardayda su’aalo afka ah, isla markaana sii hawlgallo iyo mas’alooyin shaqo fasal iyo shaqo guri ah.
<p>Casharkano marka uu dhammaado kadib ardaydu waa</p>	<p>3.2 boqolley (7 xiso)</p>	<ul style="list-style-type: none"> • fursad u sii ardayda iyaga oo adeegsanaya machaha saamigalka, in ay si fiican u dhuuxaan 	<ul style="list-style-type: none"> • Weydii ardayda in ay soo saaraan boqolleyda tirada sal ka ah ee la

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada barishada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<p>in ay:-</p> <ul style="list-style-type: none"> • soo saari karaan (xisaabin karaan) boqolleyda xaddiga (tirada) la siiyey • furfuri karaan mas'alooyinka la xidhiidha boqolleyda 		<p>fikraddaha (macneyaasha) iyo tibxaha (ereryada) kala ah “sal”, “dulsaar”, “boqolley” iyo “boqolkiiba” ee tirada salka ah ee la siiyey. Iyaga oo adeegsanaya tusaaleyaal sida:- waa maxay tirada 30% ay ka noqonayso 600 birr?</p> <ul style="list-style-type: none"> • Ka gacansii ardayda in ay xaqiiqsadaan isla markaana muujiyaan xidhiidhka ka dhexeeya boqolley, xidhiidhka ka dhexeeya boqolley, sal, dulsaar iyo boqolkiiba sida: $\frac{\text{Boqolley}}{100} = \frac{\text{dulsaar}}{s} \times \frac{100}{100}$ <p>ama $B = \frac{dSal}{s} \times 100$</p> • Ka caawi ardayda in ay soo saaraan boqolleyda xaddiga la siiyey. Waxaad adeegsan kartaa tusaalaha “bare ayaa 5% birr oo ka mid ah mushaharkiisa u istimaalay noolo bistii haddii mushaharkiisu yahay 3000 birr bishiiba markaa waa immisa cadadka lacagta uu ku bixiyey nooliga • Ku hoggaami ardayda in ay si ficil ah u muujiyaan furfurista weedh xisaabeedyo kala duwan oo ku saabsan wax soosaarka, cashuurha, caymiska caafimaadka, maalgelinta 	<p>cayimay sida 10%, 25%, 50%, 150% ka mid ah 50kg.</p>

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada barishada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<ul style="list-style-type: none"> Fikraddaha (macnaha) boqolleyda ku dabbakhi karaan furfurista mas'alooyinka ku saabsan macaashka iyo khasaaraha 	<p>3.3 dabbakhaada boqolleydo (11 xiso)</p> <p>3.3.1 soo saarista macaashka iyo khasaaraha iyada oo la adeegsanayo</p>	<ul style="list-style-type: none"> U fufudee ardayda in ay falanqeeyaan fikraddaha (macnaha) macaash iyo khasaate Ku dhiirigeli ardayda in ay adeegsadaan qaacidooyin fudud sida $\% \text{ macaash} = \frac{\text{macaashka}}{\text{Sicirka iibka}} \times 100$ $\% \text{ khasaare} = \frac{\text{khasaaraha}}{\text{Sicirka iibka}} \times 100$ Isla markaana ay soo saaraan boqolkiiba inta la macaashay iyo boqolkiiba inta la khasaaray 	<ul style="list-style-type: none"> Sii ardayda mas'alooyin kala duwan oo ay ku dabbakhayaan macaashka iyo khasaaraha Hawlgallo uu baruhu diyaariyey, kadibna ardaydu ay fulinayso iyada oo baruhu qiimeynayo qaabka ay ardaydu u fulinayaan hawlgalladaas.
<ul style="list-style-type: none"> Macnaha boqolleyda (boqolkiiba) ku dabbakhi karaan furfurista mas'alooyinka ku saabsan dheefta fudud 	<p>3.3.2 dheegta fudud</p>	<ul style="list-style-type: none"> Ka gacansii ardayda in ay falanqeeyaan macnaha dheefta fudud isla markaana ay bartaan qaaciidada dheefta fudud, oo ah sidan:- $I = RdT, \text{ halka}$ $I = \text{dheefta fudud}$ $R = \text{raasamaalka}$ $d = \text{dulsaarka dheefta ee xilligo'an}$ $t = \text{waqtiga}$ 	<ul style="list-style-type: none"> Sii ardayda mas'alooyin kalla duwan oo ku saabsan dheefta fudud kana hubi shaqadooda

Cutubka 4^{aad} ururinta iyo habaynta xogaha (20 xisadood)

Ujeeddoyinka guud ee cutubkan:

Cutubkani marka uu dhammaado kadib ardaydu waxay awood u yeelan (awood u yeelan karaan)

- Ururinta xogaha iyo dhisidda garaaf- xarriiqeedka iyo garaaf goobeedka ee xogaha la siiyey
- Soo saarista miinka moodhka iyo mediyaanka xogaha la siiyey
- Raadinta tooxda (range) xogaha la siiyey

Ujeeddoyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo casharrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<p>Casharkani marka uu dhammaado kadib ardaydu waa in ay:-</p> <ul style="list-style-type: none"> • Uruin karaan xogaha fudud ee degaankiida iyaga oo adeegsanaya isbaarooyin 	<p>4. Uruinta iyo habaynta xogaha</p> <p>4.1 ururinta xogaha iyada oo la adeegsanayo isbaarooyin (tally marka) (5 xiso)</p>	<ul style="list-style-type: none"> • Ka gacansii ardayda in ay naqtiin ku sameeyaan sida loo ururiyo xogaha • Ka caawi ardayda in ay so ficil ah ugu celceliyaan soo ururinta xogaha fudud ee waxyaalaha la siiyey iyaga oo adeegsanaya isbaarooyin dabadeedna tilmaan ka sii habka loo diyaariyo shaxda isbaarooyinka. Tusaale ahaan: Tirada ardayda ku jirta fasalka ee bilkasta dhacatay 	<ul style="list-style-type: none"> • Sii ardyda hawlgallo ay ku soo uturinayaan xogaha fudud kadibna qiimee sida ay xogahaas u soo ururiyeen
<ul style="list-style-type: none"> • Dhisi karaan garaaf xarriqeedyada xogta la siiyey • Dhisi karaan garaaf xarriqeedyada xogaha ay ka soo ururiyeen degaankooda • Sharxi karaan garaaf xarriqeedyada fudud 	<p>4.2 dhisidda iyo sharraxidda garaaf xarriqeedyada iyo garaaf-goobeedyada (10 xiso)</p>	<ul style="list-style-type: none"> • Marka aad tusto ardayda qaababka loo dhiso garaaf-xarriqeedyada iyo garaaf-goodeedyada kadib kacaawi ardayda in ay dhisaan garaaf-goobeedyada iyaga oo adeegsanaya xogaha la siiyey • Ku dhiirgeli ardayda in ay xogo ka soo ururiyaan degaankooda, ka 	<ul style="list-style-type: none"> • Sii ardayda layliso ka kooban mas'alooyin kala duwan oo ku saabsan sawiridda ama dhisidda garaafyada isla markaana hubi oo ku qiimee shaqada arday kasta • Sii ardayda hawlgallo ay ku

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<ul style="list-style-type: none"> • Dhisi karaan garaaf-goobeedyada xogta la siiyey. • Dhisi karaan garaaf-goobeedyada xogaha ay ka soo uruiyeen degaankooda • Sharxi karaan garaaf-goobeedyada fudud 		<p>dibna ay dhisaan garaaf-xarriiqeedyada iyo garaaf-goobeedyada muujinaya xogahaas ay soo ururiyeen</p> <p>Tusaale ahaan:- tirada bareyaasha dugigooda ee maaddo kasta dhiga.</p> <ul style="list-style-type: none"> • Ka gacansii ardayda in ay sharrax ka bixiyaan gataaf-xarriiqeedyada iyo garaaf goobeedyada ay dhiseen 	<p>soo ururinayaan xogaha degaankooda ka dibna ay sawiraan garaafyada xogahaas</p> <ul style="list-style-type: none"> • Weydii ardayda in ay shatrax ka bixiyaan garaafyada xogaha ee aad siisay.
<ul style="list-style-type: none"> • Sharxi karaan tibxaha “miin”, “moodh”, “mediyaan” iyo “reenji” ee xogta • Soo saari karaan miinka xogaha • Soo saari karaan moodhka xogaha • Soo saari karaan medigaanka xogaha • Soo saari karaan reenjiga xogaha 	<p>4.3 miinka, moodhka, mediyaanka iyo reenjiga xogaha (5 xiso)</p>	<ul style="list-style-type: none"> • Marka ardaydu ay naqtiin ku sameeyaan habka loo raadiyo celceliska xogo la siiyey kadib, ardayda in soo saarista miinka xoguhu ay la mid tahay soo saarista celceliska xogaha la siiyey • Ka caawi ardayda in ay soo saaraan miinka, moodhka, mediyaanka iyo reenjigaa xogha la siiyey. • U ogolow ardayda in ay sidhabah u caddeeyaan farqiga u dhexeeya miinka, moodhka, mediyaanka ee xogta iyaga oo adeegsanaya tusaaleyaal kala duwan 	<ul style="list-style-type: none"> • Sii ardayda hawlgallo iyo mas’alooyin laylis ah oo ku saabsan soo saarista iyo raadinta miinka, moodhka, mediyaanka, iyo reenjiga xogaha la siiyey, dabadeedna hubi oo qiimee waxqabadkooda ama shaqadooda.

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<ul style="list-style-type: none"> • Ku hoggaami ardayda in ay adeegsadaan aqoonta ay ka helaan soosaarista miinka, moodhka, mediyaanka iyo reenjiga xogaha la siiyey. <p><u>Tusaale ahaan:</u> weydii arday kasta in uu soo saaro miinka, moodhka, medigaanka iyo reenjiga natiijada uu ka keenay imtixaanadii laga qaaday teeramka laad.</p>	

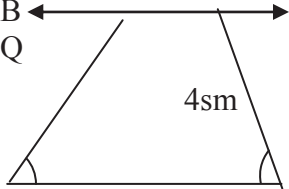
Cutubka: 5^{aad} shaxannada joomateriga iyo cabbiraadda (40 xisadood)

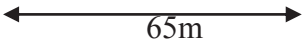
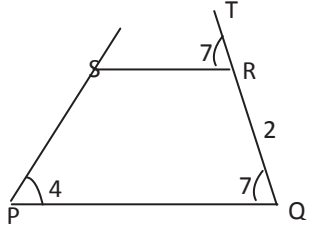
Ujeeddooyinka guud ee cutubkan:

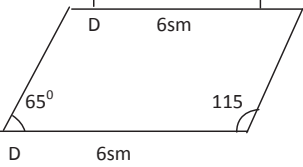
Cutubkani marka uu dhammaado kadib ardaydu waxay awood u yeelan (awood u yeelan karaan)

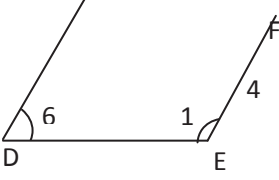
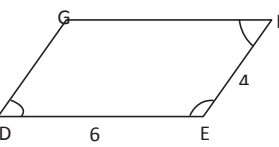
- Soo soocidda, dhisidda iyo sharraxidda astaamaha afargeesleyaasha sida koorta iyo barbaroolaha
- Soo soocidda farqiga u dhexeeya geesooleyaasha urursan (concave polygons) geesooleyaasha firdhisin (convex polygons)
- Raadinta wadarta cabbirka xoglaha guddaha ee geesoolaha firdhisin (interior angles of a convex polygons)
- Soo saarista wareegga iyo bedka saddexgallada iyo koorta/kooraha.

Ujeeddooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<p>Casharkani marka uu dhammaado kadib ardaydu waa in ay:-</p> <ul style="list-style-type: none"> • Sharxi karaan macnaha afargeesle • Kala sooci karaan qaybaha afargeelaha • Sharxi karaan qaybaha koorta • Dhisi karaan koorta cabbirkeedala siiyey • Qeexi karaan astaamaha koorto 	<p>5. Shaxannada joomateriga iyo cabbiraadda</p> <p>5.1 afargeesleyaasha, geesooleyaasha iyo goobooyinka (12 xiso)</p> <p>5.1.1 afargeelayaasha</p> <p>astaamaha koorta iyodhisidda koorta</p>	<ul style="list-style-type: none"> • u fufudee ardayda in ay falanqeeyaan macneyaasha “ xagaal- gooyeyaasha” , “xoglaha gudaha” “dhinacyada deriska ah iyo dhinacyada iska soo horjeeda” ee afargeeslaha. • Fursad u sii ardayda in ay sharraxaad ka bxiyaan ereyga “ koor” isla markaana ay kala soocaan “salalka” “adimada” iyo joogga koorta. • Ka gacansii ardayda in ay dhisaan koortala siiyey iyaga oo adeegsanaya mastarad, xagal-beeg <p><u>Tusaale ahaan:</u> dhis koorta BQRS, haddii $RS \parallel BQ$, isla markaana $QR=25m$, $BQ = 45m$, $M(B) = 45^0$ iyo $m(Q) =$</p>	

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>70⁰</p> <p>Talaabooyinka dhisidda</p> <ol style="list-style-type: none"> 1. Sawir xarriijinta BQ oo dhererkeedu yahay 48m (BQ = 45m)  <ol style="list-style-type: none"> 2. Dhis xagasha B iyo xagasha "Q" ee leh cabbirada lagu siiyey 3. Muuji barta "R" oo ah bar 25m u jirta barta "Q" isla markaana QR= 25m 4. Cabbir oo dhis xagal geeskeedu yahay "R" dhinacyadeeduna yihiin RT iyo RS oo $m(\text{TRS}) = 70^0$ 5. Haddaba shaxanka BQRS waa koortii la raadinayey oo la dhisay <ul style="list-style-type: none"> • Ku dhiirigeli ardaya in ay u soo afargeesle khaas ah oomid ka mid ah labadeeda dhinac ee iska soo horjeeda (labadeeda sal) ay yihiin barbarro. 	

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<ul style="list-style-type: none"> • Sharxi karaan macnaha barbarroole • Dhisi karaan barbaroolaha cabbirkiisa la siiyey • Qeexi karaan astaamaha barbaroolaha 	<ul style="list-style-type: none"> • Dhisidda iyo astaamaha barbaroolaha 	<ul style="list-style-type: none"> • U ogolow ardayda in ay sharraxaan ereyga “barbarroole” iyo qaybihiisa • Ka gacansii ardayda in ay dhisaan barbaroolaha cabbirkiisa la siiyey iyaga oo adeegsanay mastarada, xagal beeg iyo goobo-beeg <p>Tusaale ahaan: dhis barbaroolaha DEFG, haddii $DE = 65\text{m}$, $EF = 45\text{m}$, $m(D) = 65^\circ$ iyo $m(E) = 115^\circ$</p> <p>Tallaabooyinka dhisidda</p> <ol style="list-style-type: none"> 1. Sawir xarriijinta DE oo dharekeeda yahay 65m ($DE=65\text{m}$)  <ol style="list-style-type: none"> 2. Dhis $m(D) = 65^\circ$ iyo $m(E) = 115^\circ$ 3. Muuji barta “F” oo ah bar fogaan dhan 45m u jirta barta “E” ($EF = 45\text{m}$) 	<ul style="list-style-type: none"> • Weydii ardayda su’aalo afka ah oo ku saabsan sharraxaadda ereyga barbarroole iyo qaybihiisaba • Sii ardayda hawlgallo ku saabsan dhisidda barbaroolaha cabbirkiisa la siiyey ka dibna ka hubi oo ku qiimee waxqabadka arday kasta • Sii ardayda laylisyo ka kooban mas’alooyin kala duwan oo ku saabsan dhisidda barbaroolaha iyo sharraxidda astaamaha barbaroolaha
		 <p>4) Dhis $m(\angle TRS)$ ee $\angle QT$.</p>	<ul style="list-style-type: none"> •

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>Haddaba BQRS waa kortii la Raadinayey.</p> <ul style="list-style-type: none"> Ku dhiirigeli Ardayda in ay Taas ku soo Gabagabeeyaan Qeexiddan “Koortu waa Nooc khaas oo Afargeesle ah oo ay Barbarro yihiin mid ak mid ah dhinacyadeeda iska soo horjeeda. 	
<ul style="list-style-type: none"> Sharxidda macnaha Barbarroole. Dhisidda Barbarroole leh cabbirka la siiyey. Sharxidda Astaamaha Barbarroolaha. 	<ul style="list-style-type: none"> Dhisidda iyo Astaamaha Barbarroolaha khaas ah iyo Astaamahooda 	<ul style="list-style-type: none"> U ogolow Ardayda in ay sharrax ka bixiyaan Ereyga “Barbarroole” Ka Taageer ardayda in ay dhisaan Barbarroolaha leh cabbirka la siiyey, iyaga oo adeegsanaya mastarad, xagal-Beeg iyo Goobo-Beeg. <p>Tusaale:- Dhis Barbarroolaha DEFG ee $DE = 6\text{sm}$, $EF = 4\text{sm}$, $m(D) = 65^\circ$</p> <p>1) Sawir xarriijinta DE ee Dhererkeedu yahay 6sm ($DE = 6\text{sm}$)</p>  <p>2) Dhis $m(D) = 65^\circ$ iyo $m(E) = 115^\circ$</p> <p>3) Sawir Barta “F” oo</p>	<ul style="list-style-type: none"> Sii Ardayda Hawlgallo ku saabsan Dhisidda Barbarrooleyaasha iyo sharraxidda Astaam. Hiisa kadibna ka Hubi shaqadooda.

Ujeeddooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<ul style="list-style-type: none"> ▪ Dhisidda Laydiga, Labajibbaaranaha iyo qardhaasta. ▪ Sharraxidda Astaamaha Laydiga. ▪ Sharraxidda Astaamaha Labajibbaaranaha. ▪ Sharxidda Astaamaha Qardhaasta. 		<p>5sm u jirta Barta E, Taas oo ah $EF = 4sm$</p>  <p>4) Dhis xagasha EFG ee cabbirkeedu yahay 65 (Halka G tahay isgoyska DG iyo FG, Haddaba DEFG waa Barbaroolihiila raadinayey</p>  <ul style="list-style-type: none"> ▪ Ka caawi Ardayda in ay u soo Gabagabeeyaan sedan soo socota:- <ul style="list-style-type: none"> → Barbaroolaha dhinacyadiisa iska soo horjeeda way Isle'eg yihiin waana Barbaarro. → Barbaroolaha xaglihiisa iska soo horjeeda way Isle'eg yihiin. → Barbaroolaha xaglihiisa Deriskaah waa xaglo is dhammayshra. → Xaglo-Gooyeyaasha Barbarooluhu waa is kala badhaan midba kan kale. ▪ Ka Taageer 	<ul style="list-style-type: none"> ▪ Sii Ardayda hawlgallo ku saabsan Dhisidda Laydiga, Labajibbaaranaha iyo qardhaasta isla markaana ay ku sawiraan sabuuradda. ▪ Sii Ardayda Laylisyo kala duwan oo shaqo-Fasal iyo shaqo-Guri ah kadibna ka hubi shaqadooda.

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<ul style="list-style-type: none"> ▪ Soo xidhiidhka dhexeeya Barbaroolaha, laydiga Qardhaasta. 		<p>Ardayda in ay Qeexaan Qardhaasta, Jaantuskeedana ay ku sawiraan sabuuradda, kadib marka ay Naqtiin ku sameeyaan Qeexidda Laydiga iyo Labajibbaaranaha.</p> <ul style="list-style-type: none"> ▪ Ka caawi Ardayda in ay Dhisaan Laydiga, Labajibbaaranaha iyo Qardhaasta, iyaga oo naacaya Tallaabooyin kii ay ku soo dhiseen Barbaroolaha. ▪ Ku hoggaami Ardayda in ay gaadhaan Go'aankan ah. <p>→ Xaglo-Gooyeyaasha laydiga dhererkoodu wuu isle'eg yahay.</p> <p>→ Xaglo-Gooyeyaasha Qardhaastu way isku Qotomaan.</p> <p>→ Xaglo-Gooyeyaasha labajibbaaranuhu dhererkoodu wuu isle'eg yahay waana isku Qotomaan.</p> <ul style="list-style-type: none"> ▪ Fursad u sii Ardayda in ay soo soocaan xidhiidhka ka dhexeeya Barbaroolaha, Laydiga, Qardhaasta iyo Labajibbaaranaha. 	
<ul style="list-style-type: none"> ▪ Qeexidda Geesoole ▪ Soo soocidda Farqiga u dhexeeya 	5.1.2. Geesooley aasha.	<ul style="list-style-type: none"> ▪ Adiga oo siinaya Tusaaleyaal Fudud sida saddexagallada, 	<ul style="list-style-type: none"> ▪ Sii ardayda laylisyo ku saabsan Geesooleyaasha oo

Ujeeddooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<p>Geesoolaha urursan iyo Geesoolaha Firdhisn.</p> <ul style="list-style-type: none"> ▪ Magacaabidda Geesooleyaasha leh ilaa Toban dhinac, iyaga oo ka duulaya Tirada dhinacyadooda. ▪ 		<p>Afargeesleyaasha Fursad u sii Ardayda in ay dhuuxaan macnaha Geesooleyaasha, isla markaana ay u qeexaan sedan “Geesoole waa Marin oodanoo Fudud oo ka sameeysan xarriijimo.</p> <ul style="list-style-type: none"> ▪ Ku hoggaami Ardayda in ay soo can Farqiga u dhexeeya Geesooleyaasha urursan (Qumman) iyo Geesooleyaasha Firdhisn iyaga oo adeegsanaya moodheelladooda kala duwan. ▪ Ka caawi Ardayda in ay Geesooleyaasha ku kala soocaan Tirada dhinacyadooda sida saddexagal (3-Dhinac) Afargeesle (4-Dhinac), shangeesle (5-Dhinac) islaa Toban – Geesle (10-Dhinac). 	<p>shaqo Fasal iyo shaqo Fasal iyo shaqo Guri ah, kana hubishaga dood.</p>
<ul style="list-style-type: none"> ▪ Qeexidda Goobo. ▪ Soosoocidda xuddunta, Gacanka, Dhexroorka, Boqonka iyo Qaansada Goobada. ▪ Sharxidda xidhiidhka ka dhexeeya 	<p>5.1.3. gobo</p>	<ul style="list-style-type: none"> ▪ ka Taageer Ardayda in ay Goobada u Qeexaan sedan “Goobo waa urur Baro ah oo Fogaan Isle’eg u wada Jira hal Bar oo la yiraahdo xuddunta Goobada iyaga oo 	<ul style="list-style-type: none"> ▪ Sii Ardayda Hawlgallo ku saabsan sawiridda Goobada iyo Go’aaaminta in $d = 2r$.

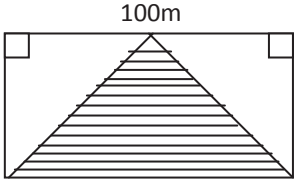
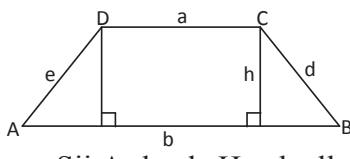
Ujeeddooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
Gacanka, Dherxoorka iyo Boqonnada Goobada.		<p>Furinaya Jaacuska Goobada.</p> <ul style="list-style-type: none"> ▪ U Fududee Ardayda in ay sawiraan Goobada, isla markaana ay muujiyaan xuddunta, Gacanka, Dhexroorka, Boqonka iyo Qaansada Goobada. ▪ Ku hoggaami ardayda in ay Gaadhaan Go'aankan ah:- <ul style="list-style-type: none"> → Dhexroorku waa laba Gacan (d = 24) → Dhexroorku waa Boqonka ugu dheer Boqonnada Goobada. 	
<ul style="list-style-type: none"> ▪ Sheegidda (Qoridda) Aragtiinka wadarta xaslaha ee saddexagalka. ▪ Caddaynta in wadarta cabbirka xaglaha Gudaha ee saddexagalku ay tahay 180⁰. ▪ Dabbakhidda Aragtiinka Wadarta 	<p>5.2. Aragtiinada saddexagalada.</p> <p>(11 Xiso)</p> <ul style="list-style-type: none"> ▪ Wadarta saddexda xaglood ee saddexagalku waa 180⁰. 	<ul style="list-style-type: none"> ▪ Ku hoggaami Ardayda, iyaga oo kooxkoox u shaqaynaya, in ay sawiraan saddexagal (sida ay doonaan) si Taxdar leh u kala googooyaan, ka Jeexaan Geesaha, kadibna ay isku rakibaan. Natiijadaas iyada oo laga duulayo Fursad u sii Ardayda in ay male-Awaalaan in wadarta cabbirrada xagalaha Gudaha ee saddexagal kasta ay tahay 180⁰. ▪ Adiga oo Ardayda 	<ul style="list-style-type: none"> ▪ Si Ardayda iyaga oo koox-koox ah, Hawlgallo ay ku caddaynayaan Aragtiinka wadarta xaglaha ee saddexagalka ka dibna Hubi oo ku Qiimee shaqadooda. ▪ Sii Ardayda laylisyo ay ku Raadiyaan cabbirka xagsaha magan ee saddexagallo kala duwan, kana hubi oo ku Qiimee shaqadooda.

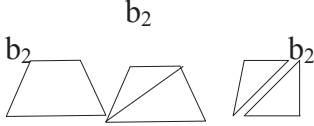
Ujeeddooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<p>xaglaha ee Saddexagalka si ay ugu Furfuraan Mas'alooyinka la xidhiidha.</p> <ul style="list-style-type: none"> ▪ Sharxidda xidhiidhka ka dhexeeya xagal-Dibadeedka iyo labada xaglo-Gudeed ee ka Fog ee saddexagalka. ▪ Caddaynta in cabbirka xagal Dibadeedka Saddexagalku ay le'egtahay wadarta Labada xaglo-Gudeed ee ka Fog ee saddexagalkaas. ▪ Dabbakhidda Aragtiinka xagal-Dibadeedka saddexagalka si ay ugu furfuran Mas'alooyinka la xidhiidha. ▪ Soo dhiraandhirinta Jidka (Qaacidada) lagu helo wadarta xaglaha Gudaha ee Geesoolaha Qumman eel eh n-Dhinac ▪ Furfurista mas'alooyinka la xidhiidha Jidka lagu helo wadarta xaglaha 	<ul style="list-style-type: none"> ▪ Cabbirka xagal Dibadeedka Saddexagalku waxay Le'eg tahay wadarta Labada xaglo-Gudeed ee ka Fog. 	<p>ku xiisagelinaya, kana caawinaya in ay Naqtiinka sameeyaan Macnaha xaglo-Gudeed Talantaali ah Xusuusi Ardayda xaqiiqada ah in cabbirka xagal Toosan uu yahay 1800.</p> <ul style="list-style-type: none"> ▪ Fursad u sii Ardayda in ay caddeeyaan in wadarta cabbirka xaglaha Gudaha ee saddexagalku ay tahay 1800, iyaga oo ka duulaya Aqoonta xaglo-Gudeed Tallantaalli iyo cabbirka Xagasha Toosan. ▪ Tursad u sii Ardayda in ay raadiyaan cabbirka xagasha maqan ee saddexagalka, iyaga oo ku dabbakhaya Aragtiinka wadarta xaglaha ee Saddexagalka. ▪ Ku dhiirigeli Ardayda in ay caddeeyaan Aragtiinka xaglo-Debadeedka Saddexagalka, iyaga oo adeegsanaya 	<ul style="list-style-type: none"> ▪ Sii Ardayda Laylisyo ka kooban masalooyinka kala duwan, ka dibna ka Hubi shaqadooda.

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
Gudaha ee Geesoolaha Qumman eel eh n-Dhinac.	<ul style="list-style-type: none"> ▪ Wadarta xagto-Gudeedka Geesoolaha Qumman eel eh “n” dhinac waa $(n-2) \times 180^0$. ▪ 	<p>Aqoonta Aragtiinka wadarta xaglaha saddexagalka iyo cabbirka xagasha Toosan.</p> <ul style="list-style-type: none"> ▪ Ku hoggaami Ardayda in ay soo saaraan cabbirka xagal-Gudeedka ama xagal-Dibadeedka maqan ee saddexagalka, iyaga oo ku Dabbakhaya Aragtiinka xagal-Dibadeedka saddexagalka. ▪ U Fudee Ardadya in ay Falanqeeyaan isla markaana muujiyaan in Nadarta xaglaha Afargeeshuhu ay tahay 3600. kadibna u ogolow Ardayda in ay sawiraan hal Afargeesle (kii ay doonaan) kana doortaan hal Gees. Dabadeedna Fursad u sii in ay Geeskaas ka sawiraan xagal-Gooye kasta oo suuragalah (Hal keliya ayaa suurtagal ah). <ol style="list-style-type: none"> 1) Weydii Ardayda Tirada saddexagallada sameysmay in ay Tiriyaan. 2) Ku hoggaami Ardayda in ay Dabbakhaan 	<ul style="list-style-type: none"> ▪ Qiimee Afkaaraha Ardayda inta ay ku dhex jiraan falanqaynta, isla markaana weydii su'aalo Afka ah oo aad ku Qiimeynayso waxqabadka Ardayda. ▪ Weydii Ardayda in ay soo saaraan wadarta xaglaha Gudaha ee Geesooleyaal kala duwan.

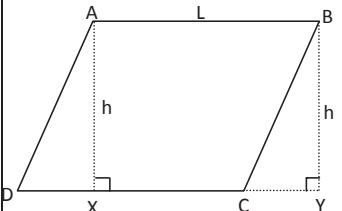
Ujeeddooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>Aragtiinka wadarta xaglaha saddexagalka oo ah 180^0, isla markaana aay ku soo Gabagabeeyaan in wadarta xaglaha ee Afargeeluhu ay tahay $2 \times 180^0 = 360^0$.</p> <ul style="list-style-type: none"> ▪ Ku hoggaami Ardayda, iyaga oo soo qaadanaya Geesooleyaasha leh shan (5) Dhinac iyo kuwa leh 6-dhinac, in ay soo Gunaanadaan wadarta cabbirka xaglaha ee Geesoole kasta oo Qumman oo leh n-Dhinac in ay tahay $(n-2) \times 180^0$. ▪ Ka caawi Ardayda in ay u Adeegsadaan Jidkan $(n-2) \times 180^0$. Furfurista mas'alooyinka la xidhiidha xaglaha Gudaha ee Geesooleyaasha Qumman. 	
<ul style="list-style-type: none"> ▪ Soo dhiraan dhirinta Jidka lagu helo Bedka saddexagalka. ▪ Sheegidda iyo Adeegsiga Jidka lagu helo Bedka saddexagalka. ▪ Furfurista 	<p>5.3. Cabbiraadda (17 Xiso)</p> <p>5.3.1. Bedka Saddexagalka.</p>	<ul style="list-style-type: none"> ▪ Fursad u sii Ardayda in ay Naqtiin ku sameeyaan macnaha Bedka saddexagalka Qumman, laydiga iyo labajibbaaranaha. 	<ul style="list-style-type: none"> ▪ Sii Ardayda Hawlgallo ay ku soo dhiraandhirinayaan jidka lagu helo Bedka saddexagalka Qumman, kadibna Hubi oo ku Qiimee waxqabadkooda.

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<p>mas'alooyinka Nolosha dhabta iyaga oo adeegsanaya Jidkaas.</p>		<p>▪ Ku hoggaami Ardayda in ay Adeegsadaan Jidka lagu helo bedka Laydiga, isla markaana ay ka soo dhiraan dhirigaan Jidka lagu helo Bedka saddexagalka Qumman. Kadibna ay Jidkaas u adeegsadaan saddexagallada kale Tusaale ahaan Fiiri laydiga ABCD.</p> <p>Bedka (ABCD)</p> $= AB \times BC$ <p>Bedka $\triangle ABE =$ Bedka $\triangle AFE -$ Bedka $\triangle BFE = \frac{1}{2} (AF \times EF) - \frac{1}{2} (BF \times EF) = \frac{1}{2} EF (AF - BF) =$ Laakiin $AF - BF = AB$</p> $= \frac{1}{2} EF \times AB$ <p>Laakiin $EF = BC$</p> $= \frac{1}{2} BC \times AB$ <p>\therefore Bedka $\triangle ABE = \frac{1}{2} BC \times AB$</p> <p>Bedka $\triangle ABE = \frac{1}{2}$ Bedka ABCD</p> <p>Bedka $\triangle ABE = \frac{1}{2} (AB \times BC)$</p> $A = \frac{1}{2} (S \times J)$ <p>Bedka Saddexagal ku = $\frac{Sal \times Joog}{2}$</p> $A = \frac{1}{2} (S \times J)$ <p>A=Bedka Saddexagalka</p> <p>S = dhererka salka Saddexagalka</p> $J = Joogga Saddexagalka$	<p>▪ Sii Ardayda laylisyo kala duwan oo ku saabsan Dabbakhidda Jidka lagu helo Bedka saddexagalka Qumman.</p> <p>▪ Sii Ardayda Hawlgallo ku saabsan Adeegsiga Jida Lagu helo Bedka saddexagallada.</p>

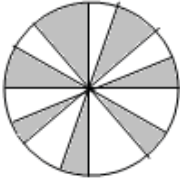
Ujeeddooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<ul style="list-style-type: none"> ▪ Ka caawi Ardayda in ay Caadaystaan soo saaridda (Raadinta) Bedka saddexagallada iyaga oo adeegsanaya Jidka lagu helo Bedka saddexagalka. ▪ Ka Taageer ardayda in ay si Ficil ah ugu celceliyaan Dabbakhaadda Jidka lagu helo Bedka Saddexagalka ee xaaladda Noloshooda dhabta ah. <p>Tusaale :- Raadi Bedka Qaybta Xardhan ee Jaantuskan hoos lagugu siiyey.</p>	
<ul style="list-style-type: none"> ▪ Soo saaridda wareegga koorta. ▪ Soo dhiraandhirinta Jidka lagu helo Bedka koorta. ▪ Soo saaridda Bedka koorta. 	5.3.2. Wareegga iyo Bedka Koorta.	<ul style="list-style-type: none"> ▪ Ku dhiirigeli Ardayda in ay Naqtiin ku sameeyaan Astaamaha koorta. ▪ Sida ka muuqata Jaantuskan hoose sii Ardayda koorta ABCD oo dhinacyadeeda \overline{AB} iyo \overline{DC} ay yihiin Barbarro, Dhinacyadeeda \overline{AD} iyo \overline{BC} aanay ahayn Barbarro Jooggeeduna yahay "h". <p>i) Ka Taageer Ardayda in ay soo dhiraandhiriyaan Fikradda aasaasiga u ah wareegga koorta.</p>	<ul style="list-style-type: none"> ▪ Sii Ardayda Hawlgallo ay ku xisaabinayaan (ku soo saarayaan) wareegga koorta kuna Qiimee waxqabadkooda.  <ul style="list-style-type: none"> ▪ Sii Ardayda Hawlgallo ay kaga shaqaynayaan sabuuradda oo ku saabsan Qaabka koorta oo ay u kala goynayaan Laba saddexagal isla markaana ay soo dhiraandhirinayaan Jidka lagu helo Bedka koorta.


Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>Tusaale ahaan wareegga (W) koortu waa wadarta dhererka</p> <p>Dhinacyada koorta:</p> $W = AB + BC + DC + AD$ $W = b + d + a + c$ <p>jj) Ka Taageer Ardayda in ay soo dhiraan dhiriyaan Jidka lagu helo Bedka koorta.</p> <ul style="list-style-type: none"> Waxay Adeegsan karaan soo socda <p>Koorta = kakalgoo Dhinaca = Labasadde</p> <p>dheer ee xagal-ayaad exagal</p> <p>Gooyaha helaysaa</p>  <p>Bedka koortu = Wadarta Bedka Saddexagallada</p> $A = \frac{1}{2} b_1 h + \frac{1}{2} b_2 h$ $A = \frac{h}{2} (b_1 + b_2)$ <ul style="list-style-type: none"> Bedka koortu waa naska wadarta dhererka Dhinacyada Barbarrada ah oo lagu dhuftay Fogaanta u dhexaysa (h) Ka caawi ardayda in ay soo saaraan wareegga iyo 	<ul style="list-style-type: none"> Sii Ardayda Laylisyo ka kooban mas'alooyin kala duwan oo ku saabsan Dabbakhaadda Jidka lagu helo Bedka koorta. Ka dibna Hubi shaqadooda kuna Qiimee waxqabadkooda.

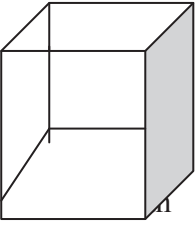
Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>Bedka koorta.</p> <ul style="list-style-type: none"> ▪ Ka Taageer Ardayda in ay sii ficil ah ugu celceliyaan in ay xaaladda Noloshooda dhabta ku dabbakhaan Jidka lagu helo wareegga iyo Bedka koorta. <p>Tusaale :- Muuse ayaa doonaya in uu ogaado Bedka iyo wareegga Beertiisa oo Qaabkeedu yahay koor Addimadeedu yihiin 40m iyo 50m labadeeda dhinac ee barbarrada ahna uu dhererkoodu kala yahay 90m iyo 120m., Jooggeeduna yahay 40m. Haddaba soo saar (Raadi) wareegga iyo bedka Beertaas muuse?</p>	
<ul style="list-style-type: none"> ▪ Soo saaridda wareegga Barbarroolaha. ▪ Soo dhiraandhirinta Jidka lagu helo Bedka Barbarroolaha. ▪ Soo saaridda Bedka Barbarroolaha. 	<p>5.3.3. wareegga iyo bedka Barbarroolaha.</p>	<ul style="list-style-type: none"> ▪ Fursad u sii Ardayda in ay Naqtiin ku sameeyaan Astaamaha Barbarroolaha. ▪ Ku hoggaami Ardayda in ay Falanqeeyaan Jidka lagu helo wareegga Barbarroolaha kadibna ay Raadiyaan wareeggiisa. ▪ Ku dhiirigeli Ardayda in ay soo dhiraandhiriyaan Jidka lagu helo Bedka 	<ul style="list-style-type: none"> ▪ Sii Ardayda layliso, ka kooban mas'alooyin kala duwan oo ku saabsan Raadinta wareegga iyo bedka Barbarroolaha. Ka dibna ka hubi Shaqadooda.

Ujeeddooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>Barbaroolaha.</p> <ul style="list-style-type: none"> Waxay u soo dhiraan dhirin karaan Habkan soo socda.  <p>→ $\triangle AXD$ iyo $\triangle BYC$ waa laba saddexagal oo isku sargo'an.</p> <p>→ Haddii $\triangle AXD$ laga gooyo Barbaroolaha ABCD, lana dhigo Booska $\triangle BYX$</p> <p>→ Bedka Laydiga $ABYX$ = Bedka Barbaroolaha ABCD</p> <p>→ Bedka laydiga $ABYX = dh \times h$</p> <p>→ Bedka Barbaroolaha ABCD = $dh \times h$</p> <p>→ Bedka Barbarooluhu wuxuu legeg yahay dhererka salkiisa (s) oo lagu dhuftay Joogga ku Qofoma salkiisa</p> <p>Bed (A) = Sal (S) x Joog (h)</p> $A = S \times h$ <ul style="list-style-type: none"> Ku dhiirigeli Ardayda in ay si Ficil ah ugu celceliyaan in Jidkaas lagu helo Bedka Barbaroolaha ay ku dabbakhaan Furfurista 	

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		mas'alooyinka la xidhiidha.	
<ul style="list-style-type: none"> ▪ Soo saaridda Qaybta meeris loo Qaybiyey Dhexroorka Goobada. ▪ Sharxidda Tirada “π” in ay tahay Isirka samigalnimada. ▪ Soo saaridda Meeriska (Wareegga) Goobada. ▪ 	5.3.4. Meeriska (wareegga) Goobada.	<ul style="list-style-type: none"> ▪ Fursad u sii Ardayda in ay Naqtiin ku sameeyaan xuddunta, Gacanka iyo Dhexroorka Goobada. ▪ Ku dhiirigeli Ardayda in ay cabbiraan Qaar ka mid ah walxaha leh Qaabka Goobada isla markaana ay soo saaraan wareegooda (meeriskooda) iyo Dhexroorkooda. ▪ Ka caawi Ardayda in ay walax kasta wareeggeeda u qaybiyaan Dhexroorkooda, ayna soo saaraan qaybtooda kadibna ku hoggaami in ay u soo Gabagabeeyaan sedan:- $\frac{\text{WareeggaGoobada}}{\text{DhexroorkaGoobad}} = \frac{W}{d} = \frac{22}{7}$ ≈ 3.14 <p>(Una sharrax in $\pi = \frac{22}{7}$ ≈ 3.14) lagugu siiyey wareegga (W) iyo Dhexroorka (d) Afar Goobo. Haddaba Raadi saamiga wareegga iyo dhexroorka ($\frac{W}{d}$) Goobo kasta Adiga oo u qoraya</p>	<ul style="list-style-type: none"> ▪ Sii Ardayda Laylisyo ka kooban mas'alooyinka kala duwan iyo Hawlgallo ku saabsan soo saaridda wareegga Goobada, kana Hubi shaqadooda kuna Qiimee.

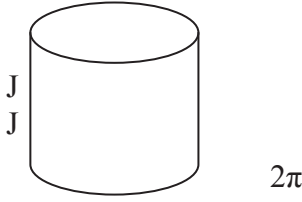
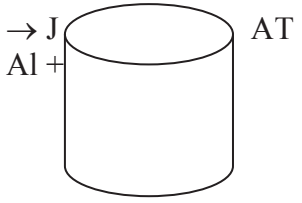
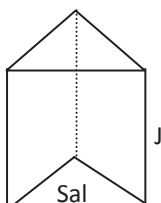
Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta												
		<p>Jajab-Tobanle leh laba God oo midig ka xiga Barta Jajab-Toban laha.</p> <table border="1" data-bbox="770 533 1091 757"> <tr> <td>W</td> <td>22sm</td> <td>11sm</td> <td>44sm</td> </tr> <tr> <td>D</td> <td>7sm</td> <td>3.5sm</td> <td>14sm</td> </tr> <tr> <td>$\frac{W}{d}$</td> <td></td> <td></td> <td></td> </tr> </table> <ul style="list-style-type: none"> Fursad u sii Ardayda in ay si Ficil ah ugu celceliyaan soo saaridda Wareegga (W), Dhexroorka (d) iyo Gacanka (r) Goobada, iyaga oo adeegsanaya Jidkan. <p>$W = \pi d$ laakiin $d = 2r$ $W = 2\pi r$</p>	W	22sm	11sm	44sm	D	7sm	3.5sm	14sm	$\frac{W}{d}$				
W	22sm	11sm	44sm												
D	7sm	3.5sm	14sm												
$\frac{W}{d}$															
<ul style="list-style-type: none"> Soo dhiraandhirinta Jidka lagu helo bedka Goobada. Raadinta ama soo saarista Bedka Goobo kasta. 	5.3.5. Bedka Goobada.	<ul style="list-style-type: none"> Ka dhaadhici Ardayda macnaha Bedka Goobada, adiga oo ka caawinaya in ay sawiraan hal Goobo oo Gacankeedu yahay 10sm. Kadibna Goobadaas u qaybinaya 16 Qaybood oo Isle'eg, isla markaana ka soo dhiraan dhirinaya Jidka lagu helo Bedka Goobada. 	<ul style="list-style-type: none"> Sii Ardayda Hawlgallo ku habboon oo ka caawinaya in ay soo dhiraan dhiriyaan Jidka lagu helo Bedka Goobada. Sii Ardayda Laylisyo ka kooban mas'alooyin kala duwan oo ku saabsan Raadinta Bedka Goobada. 												

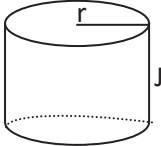
Ujeeddooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<ul style="list-style-type: none"> ▪ Ka Caawi Ardayda in Qaybaha ay u kala Qaybiyeen Goobadaas ay u kala gooyaan si ay u sameeyaan Qaab Laydi. Hala Qaybna kala badhaya si ay u sameysamaan Dhammaadyada. ▪ Fursad u sii Ardayada in ay meeriska (wareegga) Goobada u habeeyaan korka iyo Hoosta Laydiga. Sida ka muuqata Jaantuskan soo socda.  <ul style="list-style-type: none"> ▪ U Fiirso Dhererka Laydigu = $\frac{1}{2} W$ ▪ Ballaca Laydiguna = r ▪ Bedka Laydigu = Dherer x ballac $= \frac{1}{2} W$ $\times r$ $= \frac{1}{2}(2\pi r)$ $\times r \text{ Waayo } W = 2\pi r$ $= \pi r \times r$ $= \pi r^2$ $\therefore A = \pi r^2$ Waa Jidka lagu helo Bedka Goobada. ▪ Fursad u sii 	

Ujeeddooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta				
		<p>Ardayda in ay sii Ficil ah ugu celceliyaan in ay Jidka lagu helo Bedka Goobada ku dabbakhaan Furfurista Mas'alooyinka la xidhiidha.</p>					
<ul style="list-style-type: none"> ▪ Sharraxidda Jidka lagu helo Bed-duleedka Biriisamka. ▪ Raadinta Bed-duleedka Biriisamka iyaga oo adeegsanaya Jidkaas. ▪ Sameynta Moosheelka Biriisamka Qumman. ▪ Sharraxidda Jidka lagu helo Bed-duleedka Dhululubada. ▪ Raadinta (soo saarista bedduleedka Dhululubada iyaga oo adeegsanaya Jidkaas. ▪ Sameynta Moodheelka Dhululubada. 	<p>5.3.6. Bed-duleedka Biriisamka iyo dhululubada.</p>	<ul style="list-style-type: none"> ▪ Ku hoggaami Ardayda in ay soo dhiraandhiriyaan Jidka lagu helo Bed-duleedka Biriisamka Qumman iyaga oo adeegsanaya Qaybaha Biriisamka. <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <tr> <td style="width: 50px; height: 50px; text-align: center; vertical-align: middle;">Derbiga Midig</td> <td style="width: 50px; height: 50px; text-align: center; vertical-align: middle;">Wejiga Hore</td> <td style="width: 50px; height: 50px; text-align: center; vertical-align: middle;">Derbiga Midig</td> <td style="width: 50px; height: 50px; text-align: center; vertical-align: middle;">Wejiga Hore</td> </tr> </table> <p style="text-align: center; margin: 10px 0;">Salka</p> <p>Tusaale ahaan u Fiirso Biriisam Laydiyeedkan iyo Qaybihiisa.</p> <div style="text-align: center; margin: 10px 0;">  </div> <ul style="list-style-type: none"> ▪ kore waxaynu ka Arki karnaa in Biriisam – Laydiyeedku ka sameysan yahay lix (6) Laydi. 	Derbiga Midig	Wejiga Hore	Derbiga Midig	Wejiga Hore	<ul style="list-style-type: none"> ▪ U Qorshee oo sii Ardayda Hawlgallo ay ku Adeegsanayaan Qaybaha Biriisamka isla markaana ay ku Raad in ay aan Jidka lagu helo Bed-duleedka Biriisamka iyo weliba Bed-duleedka Dhululubada. ▪ Sii ardayda layliso ka kooban mas'alooyinka kala duwan oo ay ku Raadinayaan Bed-duleedka Biriisamka iyo Bed-duleedka Dhululubada.
Derbiga Midig	Wejiga Hore	Derbiga Midig	Wejiga Hore				

Ujeeddooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>▪ Kaydiyada wejiga Hore iyo wejiga dambe waa isku mid, Laydiyad Derbiga (wejiga) bidix iyo Derbiga (wejiga) midigna waa isku mid. Sidaas oo kale salka Hoose iyo saqafka sare waa isku mid. Sidaas Awgeed:-</p> <p>Bedka wejiga hore = Bedka wajiga dambe = $dh \times J$</p> <p>Bedka Derbiga bidix = Bedka Derbiga midig = $b \times J$</p> <p>Bedka Salka Hoose = Bedka saqafka sare = $dh \times b$</p> <p>Bedka Dadabtu (Ae) = Wadarta Bededka</p> <p>Wejiyada Dadabta = Bedeka Wejigabidix = Bedka wajiga hore + Bedka wejiga midig + Bedka wajiga Dambe = $(dh \times J) + (dh \times J) + (b \times J) + (b \times J)$ = $2(dh \times J) + 2(b \times J) = 2J(dh + b)$ ama = $J \times 2(dh + b)$ = $J \times W$ ----- (W = Wareegga dadabta)</p> <p>Bed- duleedku(A_T)=Bedka Dadabta+ Bedka</p>	

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>Salalka</p> $= (J \times W) + 2 (dh \times b)$ $A_T = A_l + A_b$ <ul style="list-style-type: none"> ▪ Ku hoggaami Ardayda in ay Raadinta Bed-duleedka (AT) Biriisam – Saddexagaleedka u adeegsadaan Jidkaas kore mid la mid ah. ▪ Ka Taageer Ardayda in ay Jidka lagu helo Bed-duleedka Biriisamka ku dabbakhaan Raadinta (soo saarista) Bed-duleedka Biriisamyo kala duwan. ▪ Ku hoggaami ardayda in Jidka lagu helo Bed-duleedka Dhululubada ay u soo dhiraandhiriyaan sedan soo socota. <p>→ Marka ugu horraysa ka caawi Ardayda in ay si Qumaati ah u kala gooyaan Dhululubada. Kadibna ay muujiyaan in Bedka Dadabta Dhululubadu ay tahay laydi dhererkiisu yahay wareegga Dhululubada ($2\pi r$),</p>	

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>Ballaciisuna yahay Joogga Dhululubada (J).</p>  <p>→ $Al = 2\pi r \times J$ $= 2\pi rJ$</p>  <p>→ J $Al +$ $AT =$</p> <p>$AT = (\text{Wareegga Joogga}) + 2(\text{Bedka Salka})$ $AT = (2\pi r \times J) + 2(\pi r^2)$ $AT = 2\pi r (J + r)$</p> <ul style="list-style-type: none"> ▪ Ka caawi Ardayda in Jidka lagu helo Bedduleedka Dhululubada ay ku dabbakhaan ama u adeegsadaan Raadinta Bedduleedka Dhululubada. 	
<ul style="list-style-type: none"> ▪ Sharxidda Jidka lagu helo Mugga Biriisamyada. ▪ Raadinta (saaridda) Mugga Biriisamyada. ▪ Sharxidda Jidka lagu helo Mugga Dhululubada. ▪ Raadinta (Soo Saaridda) Mugga Dhululubada . 	<p>5.3.7. Mugga Biriisamka iyo Dhululubada.</p>	<ul style="list-style-type: none"> ▪ Faahfaahin dheer ka sii Ardayda Jidka ay wadaagaan ee lagu wada helo Mugga Biriisamyada Qumman. 	<ul style="list-style-type: none"> ▪ Sii Ardayda Hal-Xiraaleyaal aad sifiican u soo Qorshaysay oo ku saabsan Mugga iyo Halbeegsa mugga ee Biriisamyada Qumman.

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>Mug = Bedka Salka x Joog</p> $V = Ab \times J$ <ul style="list-style-type: none"> Ku hag ardayda in ay Gaadhaan Biriisam – Goobeed. Isla markaana muggeeda lagu heli karo Jidka lagu helo Mugga Dhammaan Biriisamyada. Sidaas awgeed Mugga Dhululubadu waa Bedka salkeeda oo lagu dhuftay Joogga Dhululubada. <p>$V = \text{Bedka salka} \times \text{Joog}$</p> $V = Ab \times J$  <p>Laakiin salka Dhululubadu waa Goobo.</p> <p>Sidaas awgeed Bedka Salkeedu waa Bedka Goobada $A = \pi r^2$</p> $\therefore V = \pi r^2 \times J$ <ul style="list-style-type: none"> Ka caawi Ardayda, iyaga oo ku dabbakhaya Jidka lagu helo Mugga, in ay soo saaraan Mugagga, in ay soo saaraan mugagga Biriisamyada. 	

Ujeedooyinka gaarka ah ee casharka	Ciwaannada cutubka, qaybaha iyo cashaarrada	Waxqabadayada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>Xusuusin:- Mas'aalooyinka ku saabsan Bedka iyo Mugga Dhululubada ee la siinayo Ardayda kuma Jiraan kuwa ku saabsan Raadinta (soo saarista) Gacanka (r) Dhululubada.</p>	