XISAAB

BUUGGA ARDAYGA

Fasalka 7aad

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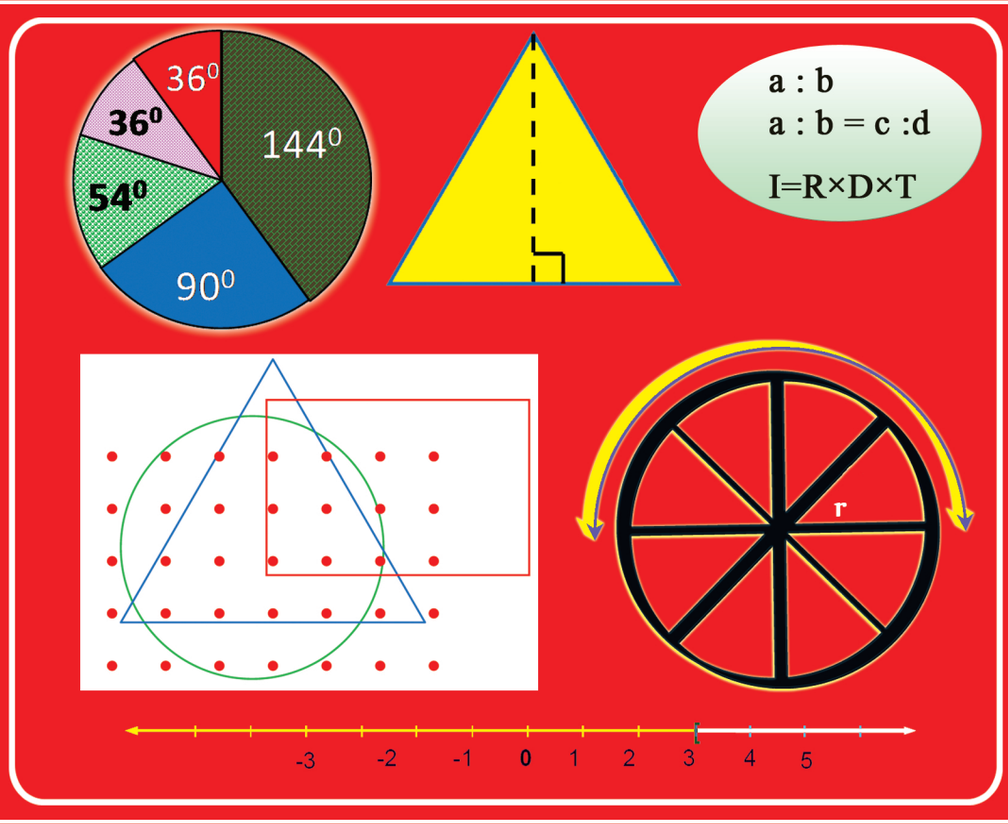


ISBN 978-99944-2-196-1

XISAAB BUUGGA ARDAYGA Fasalka 7aad

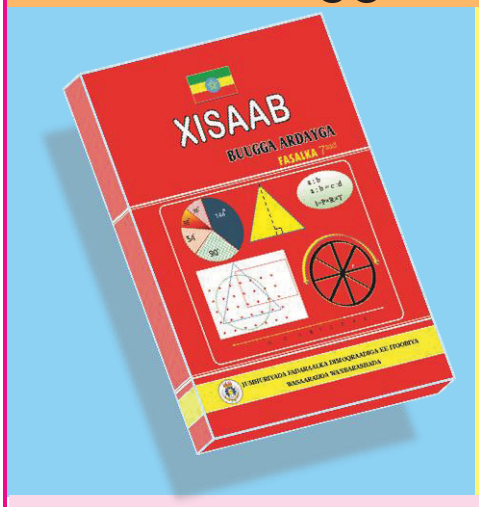
JAMHURIYADA DIMOQRAADIGA FADARAALKA ITOOBIYA
WASAARADDA WAXBARASHADA

MOE

Birr 68.00

JAMHURIYADA DIMOQRAADIGA FADARAALKA ITOOBIYA
WASAARADDA WAXBARASHADA

Buuggan Ilaali oo daryeel



Buuggani waa hantida Dugsigiina Daryeel si aynan waxyeelo u gaadhin ama u lumin Hoos waxa kuxusan 10 fikradood oo ah talooyin kaa caawinaya sidaad buugga u ilaa linaysid una daryeelaysid.

1. Buugga ku jaldiyee jaldi ku haboon dhawrista sida Balaastiga waraqad adag sida magaasinada la akhristoy.
2. Markasta meeshaad buuga dhigaysaa waa in ay ahaataa meel nadiif ah oo engagan.
3. Buugga marka aad isticmaalaysid waa in ay gacmahaagu nadiif ahaadaan.
4. Waxna ha ku qorin buugga jaldigiisa ama boggaga dhaxdiisa.
5. Isticmaal waraaqad yar ama kaardi yar markaad bog calaamadaysanaysid.
6. Waligaa ha ka jeexin ama haka gooynin sawir ama bog.
7. Boggaga jeexma ku kab. Xabag ama balastar.
8. Buugga markaad dugsiga u qaadanaysid boorsada ama shayga aad ku qaadanaysid qumaati u dhaxdhig si uunan u jacdadin ama u jajabin.
9. Buugga markaad qof kale u dhibaysid si taxadar leh ugu dhiib.
10. Buugga cusub marka ugu horeysa ee aad isticmaalkiisa bilaabaysid dhinicisa ay boggagiisa u dan beeya ay ku yaaliin u jiifi kadibna markiiba dhawr bog fur ama bannee. Marka aad bog rogaysid, Cidhifka uu ka taxan yahay gacanta kale ku yar xaji. sidaasina daryeelka jaldiga buugga ayey u wanaagsan tahay.

XISAAB

BUUGGA ARDAYGA

Fasalka 7^AAD

Qorayaal, Tafatirayaal, Ansixiyayaal

Maxaamad Qaalib

Axmad Saalax

Qiimeeyayaal

Maxamuud Cabdulahi Ibraahim

Khadar Budul Muxumud

Xasan Axmed Yuusuf(Muslim)

Jumhuriyada Dimoqraadiga Fadaraalka Itoobiya

Wasaarada Waxbarashada

Buugga waxa la daabacay 2002 E.C, Dajinta iyo soo saaridda buuggan waxa fuliyay wasaarada waxbarashada ee jumhuriyada Dimoqraadiga Federaalka Itoobiya mashruuca hoos yimaad ee uqaybsan kor u qoodista 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.

Developed and Printed by

STAR EDUCATIONAL BOOKS DISTRIBUTORS Pvt. Ltd.

24/4800, Bharat Ram Road, Daryaganj,

New Delhi – 110002, INDIA

and

ASTER NEGA PUBLISHING ENTERPRISE

P.O. Box 21073

ADDIS ABABA, ETHIOPIA

under GEQIP Contract No. ET-MoE/GEQIP/IDA/ICB/G-07/09.

ISBN 978-99944-2-196-1

TUSMADA BUUGGA

CUTUBKA 1AAD

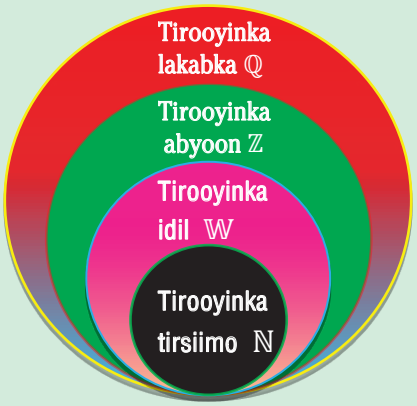
CUTUBKA 2AAD

CUTUBKA 3AAD

CUTUBKA 4AAD

CUTUBKA 5AAD

CUTUBKA 1 AAD



TIROOYINKA LAKAB

Ujeedooyinka cutubka

Cutubkani marka uu dhamaado kadib,waxaad awood u yeelan doontaa inaad:

- *Qeexdo, una muujisidna tirooyinka lakab si jajab ahaana.*
- *Tusto xidhiidhka ka dhexeeya 𝕎,ℤ iyo ℚ*
- *Qorto siday u kala horeeyaan tirooyinka lakab*
- *Ku xisaabiso tirooyinka lakab*

Tusmooyinka muhiimka ah

HORDHAC

Fasaladii hore waxaad ku soo baratay abyooneyaasha iyo jajabyada, siday doonto hanoqoto ee abyoonayaashu ma faahfaahin karaan dhamaan xaaladaha nolosha dhabta ah.

Tusaale ahaan:-

Dhererka arday ayaa wuxuu noqon karaa ½ mitir ama qiimaha buuga wax lagu qoro ayaa suurogal ah inuu noqdo Birr 3.25. Si loo qeexo xadiyadan ayaa waxaad u baahan tahay in jajabyo loo tibaaxi karo qaybta abyoonayaasha $\frac{a}{b}$ oo $b \neq 0$.

Cutubkani ayaad ku baran doontaan nuxurada tirooyinka lakab, isbarbardhigga iyo horsanaanta tirooyinka lakab iyo xisaabfalada tirooyinka lakab.

1.1 NUXURKA TIROOYINKA LAKAB

1.1.1 B Naqtiinka Ururka Tirooyinka Abyoone

Xisaab falada, waxaad kusoo baratay inaad ku furfurto masalooyinka xaqiiqada nolosha ee ku lug leh ku shaqeynta tirooyinka. Fiiri ururada tirroyinka muhiimka ah qaarkood. Tirooyinka tirsiimo waa dhammaan tirooyinka lagu tirsado ee 1, 2, 3, 4, ... Ururka tirooyinka tirisiimo waxaa loo qoraasida.

$\mathbb{N} = \{1, 2, 3, 4, \ldots\}$

Tirooyika idil waa tirooyika tirisiimo oo u eber lajiro. Ururka tirooyika idil waxaa u taagnaada.

$\mathbb{W} = \{0, 1, 2, 3, 4, \ldots\}$

Intaynaan qeexin ururka tirooyinka lakab, aan ku naqtiino nuxurka abyoone yaasha hawlgal ka soo socda dhexdiisa.

Hawlgalka 1.1

1 sharax mid kasta kuwa soo socda

b ururka tirooyinka idil

t ururka tirooyinka abyoone

2 ka jawaab mid kasta kuwa soo socda

b ma sheegi kartaa abyoone aan ahayn tiro idil?

t ma sheegi kartaa tiro aan ahayn abyoone?

3 Ku muuji abyoonayaasha soo socda xariiq tiro korkeed. –4, –3, –2, 0, 1, 2, 3, 4.

4 U kala saar mid kasta tirooyinka soo socda tirooyin idil, abyooneyaal ama midnaba. 3, $\frac{1}{5}$, −5, 2.5, $\frac{2}{3}$, −3.5, $\frac{-1}{5}$ 100, 0, $\frac{-18}{6}$

5 ka soo qaad in n tahay tiro idil kolkaa tax qiimayaasha doorsoomaha u taagnaan karo xaalad walba

b	$n < 1$	**t**	$3 \le n < 9$
j	$n > 10$	**x**	$17 < n < 27$

6 Ma jirtaa tiro tirsiimo ugu yar? Haday jirto waa tee?

7 Ma jirtaa tiro ugu yar tirooyinka idil? Haddii ay jirto waa tee?

8 Miyey jirtaa tiro tirsiimo ugu wayni?

Qeex 1:1: Ururka tirooyinka ka kooban, ururka tirooyinka tirsiimo, lidkooda iyo 0 ayaa loo yaqaanaa ururka Abyooneyaasha. Waxana loo qoraa

$\mathbb{Z} = \{\ldots, -3, -2, -1, 0, 1, 2, 3, 4, \ldots\}$

$\mathbb{N} = \{1, 2, 3, \ldots\}$ ururuka tirooyinka tirsiimo

$\mathbb{W} = \{0, 1, 2, 3, \ldots\}$ ururuka tirooyinka idil

$\mathbb{Z} = \{\ldots, -3, -2, -1, 0, 1, 2, 3, \ldots\}$ ururka abyoonayaasha .

Haddaba waxan helaynaa $\mathbb{N} \subseteq$ iyo $\mathbb{W} \subseteq \mathbb{Z}$

Xusuus: Hawl galka 1.1 iyo qeexda 1.1 ee sare waxaad ku soo koobi kartaa:

i Ururka tirooyinka tirsiimo waxay ku jiraan ururka tirooyinka idil

ii Ururka tirooyinka idil wuxu ku jiraa ururka Abyoonayaasha.

Ururuka abyoonayaasha waxaa lagu muujin karaa xariiqda tirada korkeeda sida hoos lagugu tusay:-

Jaan. 1.1

Xusuus: Siinta laba abyoone kasta oo xariiq tiro korkeed ah tirada midigta xigta ayaa mar kasta wayn, ma khusayso summadooda.

Tusaale 1: Adeegso xariiq tiro korkeed oo ku buuxi meelaha banaan summadda dheeliga < ama>

b 5 ____ 0 t –5 ____–3

j –2 ____–4 x –3 ____1

Furfuris: Ugu horayn sawir xariiqda tirada sida uu ku tusayo jaantuska 1.2

Jaan. 1.2

b 5 > 0 waayo 5 midig ayey ka xigtaa 0

t –5 < –3 waayo –5 bidix ayey ka xigtaa –3

j –2 > –4 waayo –2 midig ayey ka xigtaa –4

x –3< 1 waayo –3 bidix ayey ka xigtaa 1

Ogow markii aad uga dhaqaaqdid tiro xariiq dusheeda min bidix ilaa midig qiimeyaasha tirooyinka waxaa kordhi doona tirada xariiqda dusheeda.

1.1.1 T Ururka Tirooyinka Lakab

Fasalkii 6aad waxaad ku soo shaqeyseen jajabyada. Eegga ka hor qeexista ururka tirooyinka lakab waxaa lagaa rabaa inaad ka shaqaysid hawlgalkan soo socda.

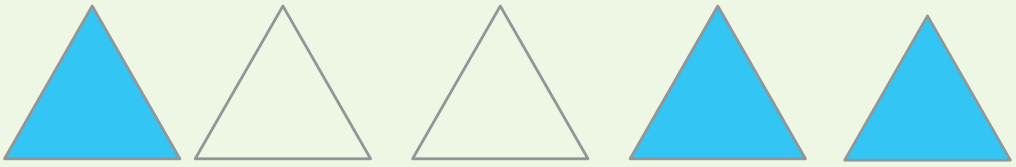
Hawlgal 1.2

1 U qor tirooyinka soo socda saansaanta $\frac{a}{b}$

b 3.25 t $1\frac{1}{2}$ j −1.6 x 4 kh $\frac{1}{2}+0.6$

2 Ma u qori kartaa abyoone kasta saansaanta $\frac{a}{b}$

3 Fiiri saddex xagalada soo socda



Jaan. 1.3

b jajab intee ah ayaa dhamaan saddexagalada hadheysan?

t jajab intee ah ayaan saddexagalada hadheysnayn

Tiro kastoo aad kula kulantay cutubkani waxaa loo qoran karaa jajab ahaan. Tusaale ahaan, – 3 waxa loo qori karaa $\frac{-3}{1}$, $3\frac{1}{8}$ waxa loo qori karaa $\frac{25}{8}$, -1.6 waxa loo qori karaa $\frac{-8}{5}$ ama 2 oo aad u qori kartaa $\frac{2}{1}$

Tirooyinka sidan ah ayaa loo yaqaanaa tirooyin lakab. Magaca lakab waxaa looga jeedaa in tiro loo qori karo saamiga ama jajabka laba abyoone ah.

Qeex 1:2 Tiro lakab waa tirada loo qoran karo $\frac{a}{b}$; $b \neq 0$, halka a iyo b ay yihiin tirooyin abyoon. Ururka tirooyinka lakab oo ay u taagan tahay $\mathbb{Q}$, waxa loo qeexaa sida soo socota:

$$\mathbb{Q} = \left\{ \frac{a}{b}; b \neq 0, a, b \in \mathbb{Z} \right\}$$

Tusaale 2:

b Kuwa soo socdaa waa tusaalayaasha tirooyin lakab, $\frac{2}{3}, \frac{-3}{4}, \frac{23}{10}, 6$

t Abyoone kasta oo ah a waa tiro lakab maadaama a, loo qori karo sida $a = \frac{a}{1}$

OGOW: *Ogosoonaw shardiga in $b \neq 0$ gudaha qeexda tiroo lakabka $\frac{a}{b}$. Tani waxa loogu baahday si looga reebo qaybinta 0, oo aan macno lahayn. Xeerka in markasta la xusuusnaado ahi waa:* ***WALIGAA HA U QAYBIN EBER.***

1.1.2 Ku Meelaynta Tiro Lakab Xariiq Tiro Korkeed

Fasaladdii hore waxaad ku soo aragteen sida loogu muujiyo abyooneyaasha xariiqda tirada korkeeda. Halkani waxaad ku arki doontaa sida loogu meeleeyo tirooyinka lakab xariiqda tirada korkeeda.

Hawlgal 1.3

1 Fiiri xariiqda tirada

Jaan. 1.4

U qaybi xariijinta OA

b laba qaybood oo isle'eg **t** saddex qaybood oo isle'eg

j shan qaybood oo isle'eg **x** sagaal qaybood oo isle'eg

2 Xariijimaha aad qaybqaybisay korkooda ku qor (muuji) tirooyinka lakab ee soo socda.

b $\frac{1}{2}$ **t** $\frac{1}{3}, \frac{2}{3}$ **j** $\frac{2}{5}, \frac{3}{5}, \frac{5}{5}$ **x** $\frac{1}{9}, \frac{5}{9}, \frac{8}{9}$

3 Adigoo isticmaalaya tabaha waydiimaha **1** iyo **2** ku muuji tirooyinka lakab ee soo socda xariiqa tiro korkeed.

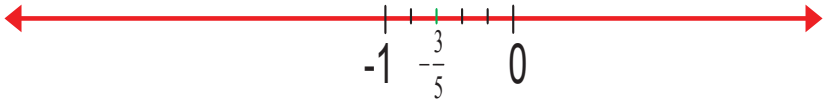
b $-\frac{1}{2}$ **t** $\frac{-3}{7}$ **j** $\frac{-7}{9}$

4 Ka dooda sida loogu meeleeyo tiro lakabka $\frac{a}{b}$ xariiq tiro korkeed

hawlgalka kore waxaad ku aragtey sida loogu muujiyo jajab qumane xariiq tiro korkeed. Hadda aynu dhawro sida loogu muujiyo jajab qumane iyo jajab ma qumane labadaba xariiq tiro korkeed.

Tusaale 3: Ku qor $-\frac{3}{5}$ xariiq tiro korkeed

Furfuris: Xariijinta 0 iyo -1 inta u dhaxeysa u qaybi 5 qaybood oo isle'eg. Ka dib ku qor $-\frac{3}{5}$ xariijinta u dhaxaysa 0 iyo –1 sida hoos lagu tusay.



Jaan. 1.5

Tusaale 4: Ku qor $\frac{37}{11}$ xariiq tiro korkeed

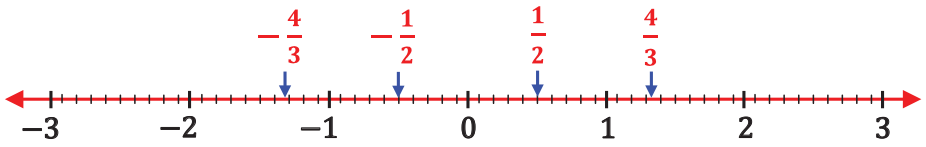
Furfuris: U rog $\frac{37}{11}$ Tiro dhafan, taas oo ah $\frac{37}{11} = 3\frac{4}{11} = 3 + \frac{4}{11}$.

Kolka lagu muujinayo $3\frac{4}{11}$, u qaybi xariijinta u dhaxeysa 3 iyo 4 ee xariiqda tirada 11 qaybood oo isle'eg. Ka dib $3\frac{4}{11}$ ku dhig xariijinta u dhaxaysa 3 iyo 4 korkeeda sida lagugu tusay hoos :-

Jaan. 1.6

Tirooyinka lakab waxa u taagnaan kara baraha xariiq tiro korkeed. Dib ugu celi in xariiq tiro tahay xariiq tiro jahaysan oo la kala siiyey jaho togan iyo jaha taban, xariiqdani korkeeda bar u door 0. Waxaan odhanaynaa barta 0waa unugga kolkaa baraha si isle'eg ayaa loogu calaamadeyn midigta unugga abyooneyaasha togan isla markaana abyooneyaasha taban bidixda unnugga.

Tirooyinka lakab ee kale waxaa lagu dhigi abyooneyaasha inta u dhaxaysa.

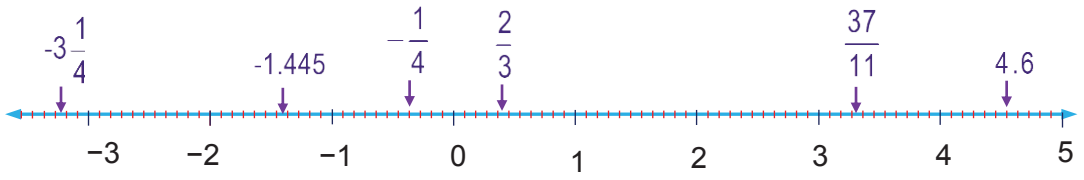


Jaan. 1.7

Tusaale 5: Ku muuji mid kasta tirooyinka lakab ee soo socda xariiq tiro korkeed

$\frac{2}{3}, -3\frac{1}{4}, -1.445, \frac{37}{11}, \frac{-1}{4}$ iyo 4.6.

Furfuirs:



Jaan. 1.8

1.1.3 Xidhiidhada Ka Dhaxeeya $\mathbb{W}$, $\mathbb{Z}$ iyo $\mathbb{Q}$

Hawlgal 1.4

1 Tirooyinka idil ee soo socda mid kasta u qor saamiga laba abyoone.

b 0 t 2 j 5

x 8 kh 11 d 15

2 Abyooneyaasha soo socda mid kasta u qor saamiga laba abyoone.

b –8 t –3 j –13 x 3

3 Tilmaan tirooyinkan soo socda kuwa aan ahayn abyooneyaal

b 3 t 1 j –5 x 0

kh 2.5 d $-3\frac{1}{2}$ r $\frac{33}{7}$ s 6.04

Falaqaynadii hore, waxaad ku soo aragtay tirooyinka idil in ay yihiin abyooneyaal islamarkaana abyooneyaashu ay yihiin tirooyin lakab.

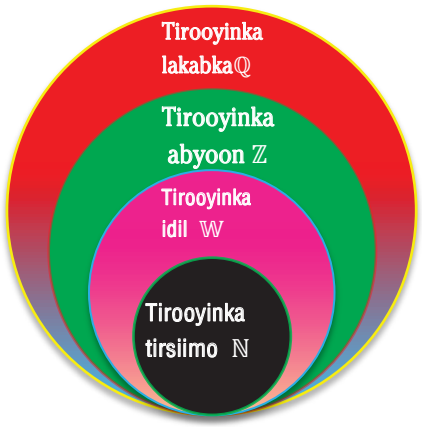
Haddaba, urrurka tirooyinka tirsiimmo $\mathbb{N}$, tirooyinka idil $\mathbb{W}$ iyo abyooneyaasha $\mathbb{Z}$ waxay u yihiin Hormo urruro ururka tirooyinka lakab $\mathbb{Q}$.

taas oo ah,

$\mathbb{N} \subseteq \mathbb{W}$, $\mathbb{W} \subseteq \mathbb{Z}$, $\mathbb{Z} \subseteq \mathbb{Q}$

Sidoo kale, $\mathbb{N} \subseteq \mathbb{Z}$, $\mathbb{N} \subseteq \mathbb{Q}$, $\mathbb{W} \subseteq \mathbb{Q}$

Xidhiidhada ka dhexeeya ururka tirooyinka tirsiiimo $\mathbb{N}$, tirooyinka ididl $\mathbb{W}$, abyooneyaasha $\mathbb{Z}$ iyo tiroooyinka lakab ee $\mathbb{Q}$ ayaa waxa lagu tusi karaa u adeegsashada tusaha feyn ee sida soo socota:



Jaan. 1.9

Laylis 1.1

1 Ku muuji kooxda tirooyin kasta xariiq tiro korkeed u gaar ah.

b –2, 0, 6, 1.2 **t** 0.5, 1.0, –2.5

j $\frac{-1}{3}, \frac{2}{3}, \frac{-7}{3}, 1$ **x** $\frac{1}{2}, \frac{-1}{4}, 1\frac{1}{2}, -3\frac{1}{2}, \frac{1}{8}$

2 Tusaale ka bixi mid walba kuwa soo socda haddii ay suurogal tahay.

b tiro ah tiro lakab islamarkaana ah abyoone.

t tiro ah tiro lakab laakiin aan ahayn abyoone

j tiro ah abyoone laakiin aan ahayn tiro lakab

x tiro ah tiro lakab laakiin aan ahayn tiro tirsiimo

3 Tirooyinka soo socda u kala sheeg –0.25, 2, 1.8, 0, –5, $\frac{-4}{3}$, -2, $\frac{1}{8}$ iyo 15, kuwa ay yihiin

b tirooyinkee ayaa ah tirooyin tirsiimo?

t tirooyinkee ayaa ah abyooneyaal?

j tirooyinkee ayaa ah tirooyin lakab?

x tirooyinkee ayaan ahayn abyooneyaal?

4 Sharax faraqa u dhaxeeya tirooyinka lakab ee togan iyo tirooyinka lakab ee aan tognayn?

5 Sug qiimaha x haddii;

b $-\left(-\frac{4}{5}\right) = x$ **t** $-x = 12.25$

j $-\frac{2}{3} = -x$ **x** $1.5x = -3.0$

kh $-3 < x < 2$, halka $x \in \mathbb{Z}$ **d** $-1 < x < 0$ halka $x \in \mathbb{W}$

6 Jajab ahaan qaybtee ayey ka tahay dhibicuhu shaxanka hoose waa

b saddexagalka dhexdiisa ?

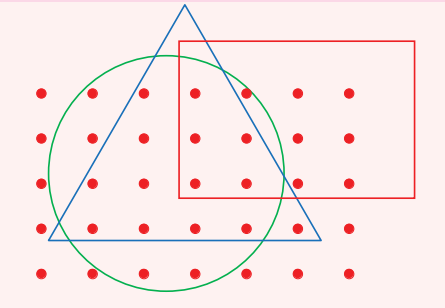
t laydiga dhexdiisa ?

j goobada dhexdeeda?

x saddexagalka iyo laydiga dhexdooda?

kh laydiga iyo goobada dhexdooda?

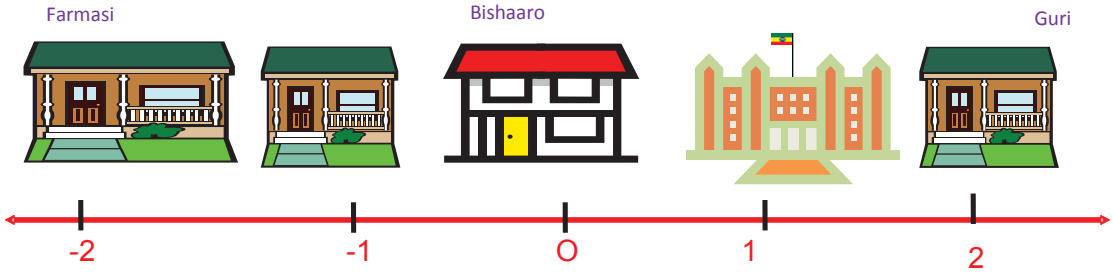
d gudaha saddexagalka,goobada iyo laydiga?



Jaan. 1.10

1.1.4 Qiimaha Sugan Ee Tirooyinka Lakab

Waxaa muhiim ah mararka qaarkood in la ogaado fogaanta u dhaxaysa bar iyo unugga xariiq tiro korkeed, haseyeeshee jahadu malaha muhiimad. Fiiri sawirada soo socda oo dhinaca kaliya kaga wada yaal jidka wayn.

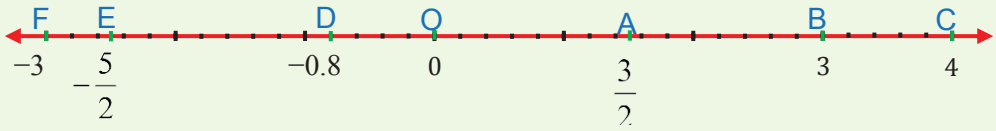


Jaan. 1.11

Farmasigu wuxuu ku yaal barta –2, bishaaraduna unnugga, islamarkaa guriguna barta +2, fogaanta u dhaxaysa barta farmasigu yahay iyo bishaaradu waa 2 halbeeg,taas oo la mid ah fogaanta u dhaxaysa baraha bishaarada iyo gurigu ku yaalaan.

Hawlgal 1.5

1 Fiiri xariiq tireedka soo socda?



Jaan. 1.12

Adoo ku salaynaya xariiqda tirada ee kore, raadi fogaanta baraha soo socda ay u jiraan unnugga O.

b A **t** C **J** E **x** O **kh** F

2 Raadi baraha 8 halbeeg u jira 0

3 ka soo qaad a inay tahay tiro lakab kasta. Waa maxay qiimaha sugan ee a haddii

i a tahay tiro lakab togan ? **ii** a tahay tiro lakab taban?

iii a = 0 ?

4 Tiro lakab kasta sidee ayaad ula barbardhigi o qiimaha sugan ee *a*?

Summadda, qiimaha sugan loo qaato waa laba jiitimood oo qotoma, 11.

Haddaba $|-8|$ waxaa loo aqriyaa qiimaha sugan ee tabane 8

Tusaale 6: **b** qiimaha sugan ee +3 waa 3

t qiimaha sugan ee –8 waa 8

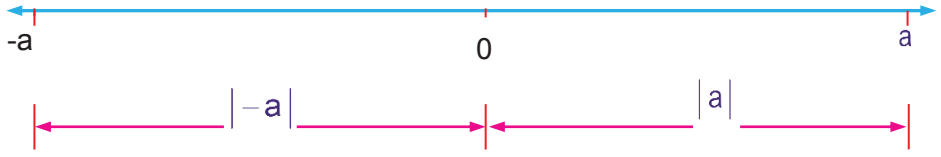
Ogow in haddii laba tirooyin lakab ay isku lid yihiin kolkaa waxay leeyihiin qiimo sugan oo isku mid ah, tusaale ahaan–12 iyo 12 waa isku lid. Haddaba

$|-12|=12$ islamarkaana $|12|=12$.

Qeex 1.2: Qiimaha sugan ee tiro lakabka *a* waa fogaanta u dhaxaysa o iyo barta a oo xariiqda tiro korkeeda. Waxaa loo qoraa $|a|$

Sikooban, $|a|=\begin{cases} a, & \text{haddii } a \geq 0 \\ -a, & \text{haddii } a < 0 \end{cases}$

Joomateri ahaan, qiimaha sugan ee tiro lakabka a waxaa loogu muujin karaa xariiqda tiro korkeed sida jaantuska 1.11 ee hoose uu ku tusayo.

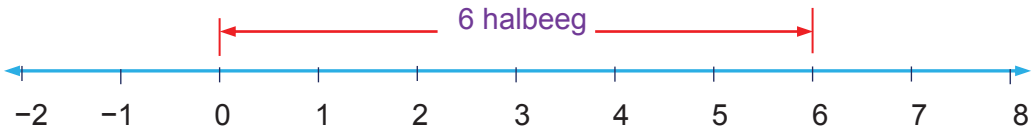


Jaan. 1.13

Tusaale 7: Raadi qiimaha sugan ee

b 6 **t** – 6

Furfuris: **b**



Jaan. 1.14

Xariiqda korkeeda, 6 waa 6 halbeeg laga soo bilaabo 0. Tani oo la macno ah $|6|=6$.

t

Jaan. 1.15

Xariiqda tiro korkeeda –6 waa 6 halbeeg laga soo bilaabo 0. Tani waxay la macno tahay $|-6|=6$.

Tusaale 8: Raadi qiimaha sugan ee tirooyinka soo socda:-

b $\dfrac{-11}{23}$ **t** -1.05 **j** 0 **x** $-3\dfrac{1}{2}$

Furfuris: **b** $\left|\dfrac{-11}{23}\right|=\dfrac{11}{23}$ **t** $|-1.05|=1.05$

j $|0|=0$ **x** $\left|-3\dfrac{1}{2}\right|=3\dfrac{1}{2}$

Tusaale 9: Furfur mid kasta kuwa soo socda.

b $|x|=12$ **t** $|x|=-5$ **j** $|3x|=15$

x $|x|=0$ **kh** $|x|=\dfrac{2}{5}$ **d** $|x|=1.2$

Furfuris: **b** $x=12$ ama $x=-12$

Hubin: $|12|=12$ islamarkaana $|-12|=12$

t dib u xusuuso in tiro x oo kasta, $|x|\geq 0$, sidaa darteed, ma jirto tiro x ah oo ay $|x|=-5$

j $3x=15$ ama $-3x=15$

Haddaba $x=5$ ama $x=-5$

x $x = 0$ waayo $|0| = 0$.

kh $x = -\frac{2}{5}$ ama $x = \frac{2}{5}$

Hubin: $\left|\frac{-2}{5}\right| = \frac{2}{5}$ iyo $\left|\frac{2}{5}\right| = \frac{2}{5}$

d $x = -1.2$ ama $x = 1.2$

Laylis 1.2

1 Soo saar dhamaan tirooyinka lakab ee qiimahooda sugan hoos lagugu siiyey.

b 8 **t** 3.5 **j** $\frac{12}{17}$ **x** $4\frac{2}{5}$

2 Qiimee mid kasta kuwa soo socda.

b $\left|3\frac{1}{4}\right|$ **t** $\left|\frac{-24}{53}\right|$ **j** $|0|$ **x** $|-26|$

kh $|-201|$ **d** $|-12|+|-13|$ **r** $|-33|-|15|$

s $|-4-6|$

3 Guuri oo dhameystir shaxda.

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

4 Isbarbardhig tirooyinka lammaanaha ee soo socda tii oo lagu qorayo summadahan midkood:- <,> ama =

b $|12|$ _____ 12 **t** $|3|$ _____ $|4|$

j $|18-12|$ _____ $|18|-|12|$ **x** $|6-8|$ ____ $|6|-|4|$

5 U qor tirooyinka soo socda horsanaan ta ugu yar ilaa ugu wayn

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

6 Tibaax kasta ku qiimee qiimayaasha lagu siiyey.

b $4|x|, x = -5$ **t** $32-|b|, b = -9$

j $15+|2t|, t = 5$ **x** $|3m|+|n|$, $m = 5.2$ iyo $n = -4.5$

kh $6|m|-3|r|$, $m=-1.2$ iyo $r=0.5$

d $12|x|.|y|$, $x=-1$ iyo $y=-2$

7 Soo saar furfurista isle'eg kasta

b $|x|=24$ t $|x|=0.4$ j $|-x|=\frac{1}{5}$

x $|x|=-12.05$ kh $|x|=-\left|\frac{-3}{4}\right|$

8 Ka dhig in a iyo b ay yihiin tirooyin lakab oo ay $|a|>|b|$, maxaad ka odhan kartaa a iyo b?

9 Sii laba tirooyin lakab kasta x iyo y si ay u caddeeyso in

b $|x+y| \le |x|+|y|$ t $|x-y| \ge |x| - |y|$

10 Haddii $x=-3$ islamarkaa $y=5$, kalkaa qiimee.

b $|x+2y|$ t $|3-xy|$ j $\left|\frac{x}{y}\right|$ x $|x|\,|x-y|$

1.2 ISBARBARDHIGIDDA IYO HORSANAANTA TIROOYINKA LAKAB

Hawlaheena maalinle, waxaan caadi ahaan ugula kulanaa cabbiraado aan ku habooneyn abyoonayaasha. Halkoodana aan uga isticmaalno jajabyo. Tusaale ahaan, kolkaan cabbiro dhererka arday fasalkiina ah waxay noqon karaan $1\frac{1}{4}$ mitir, $1\frac{1}{2}$ mitir ama $1\frac{6}{10}$ mitir iyo sidaas oo kale. Haddaba, kolkaan isbarbardhigayno dhererka ardayda waxaan adeegsanaa weedhaha furan sida ka gaaban, ka dheer u dheer sida si loo tibaaxo dhereradooda si la mid ah waxaan horsiimo cabbirka dhererkooda u sameynaa inagoo isticmaaleyna summad xisaabeedka sida $>$, $<$ ama $=$. Eegga qaybtani waxaa lagaga hawlgalayaa nuxurka isbarbardhiga iyo horsanaanta tirooyinka lakab ee la ogyahay.

Hawlgal 1.6

1 Jajabyada soo socda kuwee ayaa u dhigma $\frac{3}{5}$?

b $\frac{4}{5}$ t $\frac{6}{10}$ j $\frac{9}{10}$ x $\frac{9}{15}$

2 U qor tirooyinka soo socda sida horsanaata ugu yar ilaa ta ugu wayn?

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

3 U qor laba jajab oo u dhigma mid kasta tirooyinka lakab ee soo socda?

b $\frac{1}{4}$ **t** $\frac{2}{3}$ **j** $\frac{-4}{5}$ **x** -1.5

4 Meel banaan kasta ku buuxi $<$, $>$ ama $=$ si ay weedh kasta u noqonto run.

b $\frac{3}{8}\_\_\_\frac{5}{8}$ **t** $\frac{4}{5}\_\_\_\frac{4}{6}$ **j** $\frac{2}{3}\_\_\_\frac{3}{4}$ **x** $\frac{5}{7}\_\_\_\frac{20}{28}$

Nuxurka ka yar ee tirooyinka lakab wuxuu la mid yahay tii abyooneyaasha. Haseyeeshee, halkan waxaan ula soconaynaa laba hab oo kala duwan isbarbardhigyadda laba tiro lakab iyadoo la adeegsasnayo xariiq tiro iyo u rogidda tirooyinka lakab oo la ina siiyey oo loo rogayo jajabyo isku dhigma oo leh hooseeye mid ah

Ogow: 1 Tirooyinka lakab ee a, b, c, iyo d, haddii $\frac{a}{b} = \frac{c}{d}$, kolkaa $ad = bc$.

2 Tirooyinka lakab ee a,b iyo c, $\frac{a}{b} = \frac{ac}{bc}$, $b \neq 0$, $c \neq 0$

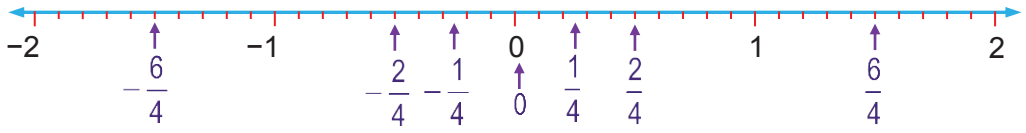
Tusaale 10: Isbarbardhigga iyo horsanaanta tirooyinka lakab ee soo socda u adeegso xariiq tiro.

$\frac{-3}{2}, \frac{-1}{2}, 0, \frac{1}{4}, \frac{1}{2}, \frac{-1}{4}, \frac{3}{2}$

Furfuris: Ugu horaan u qor jajab walba sida jajabyo isku dhigma oo leh hooseeye isku mid ah

$\frac{-3}{2} = \frac{-6}{4}$; $-\frac{1}{2} = -\frac{2}{4}$; $0 = \frac{0}{4}$; iyo $\frac{3}{2} = \frac{6}{4}$

Eegga ku muuji tirooyinka lakab xariiq tiro korkeeda sida jaan 1.16 ee hoose ku tusayo:



Jaan. 1.16

Haddaba, $\frac{-6}{4}$ bidix ayuu ka xigaa $\frac{-2}{4}$, kolkaa $\frac{-6}{4} < \frac{-2}{4}$.

$\frac{-2}{4}$ bidix ayuu ka xigaa $\frac{-1}{4}$, kolkaa $\frac{-2}{4} < \frac{-1}{4}$

$\frac{-1}{4}$ bidix ayuu ka xigaa 0,kolkaa $\frac{-1}{4} < 0$

0 bidix ayuu ka xigaa $\frac{1}{4}$ kolkaa $0 < \frac{1}{4}$.

$\frac{1}{4}$ bidix ayuu ka xigaa $\frac{2}{4}$, kolkaa $\frac{1}{4} < \frac{2}{4}$

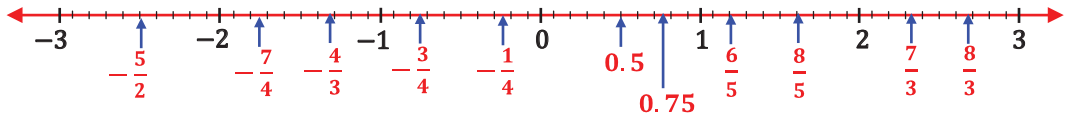
$\frac{2}{4}$ bidix ayuu ka xigaa $\frac{6}{4}$, kolkaa $\frac{2}{4} < \frac{6}{4}$.

Dhamaan jajabyadani waxay leeyihiin hooseeye mida oo ah 4 waxayna inoo keenaysaa in $-6 < -2 < -1 < 0 < 1 < 2 < 6$.

Sidaas darteed, tani waxay kuu hogaamineysaa gunaanadka in

$$\frac{-3}{2} < \frac{-1}{2} < -\frac{1}{4} < 0 < \frac{1}{4} < \frac{1}{2} < \frac{3}{2}$$

Tusaale 11: Fiiri xariiqda tirada korkeeda sida tirooyinka lakab loogu muujiyo ee u ku tusayo jaan 1.17.



Jaan. 1.17

Haddaad fiiriso xariiqda tirarda, ee jaan. 1.17 waxaadku arki kartaa in

$$0 < \frac{1}{2} < 0.75 < 1 < \frac{6}{5} < \frac{8}{5} < 2 < \frac{7}{3} < \frac{8}{3} < 3$$

Horsanaanta laba tiro lakab togan waxaa loo sameeyaa sida nidaamka in ta ugu yari ay ku dhaco bidixda midda ka wayn xariiqda tirada korkeeda.

Si mida, $-3 < \frac{-5}{2} < -2 < \frac{-4}{3} < \frac{-3}{4} < -\frac{1}{2} < 0$

Si la mid ah sida kore, waxaan u dhigi karnaa horsanaanta tirooyinka lakab ay leeyihiin si tirada lakabka u yar markasta ugu xigo bidix midkaka wayn oo waxaan u qori karnaa horsanaanta soo socota.

$$-3<\frac{-5}{2}<-2<\frac{-4}{3}<\frac{-3}{4}<-\frac{1}{2}<0<\frac{1}{2}<0.75<1<\frac{6}{5}<\frac{8}{5}<2<\frac{7}{5}<\frac{8}{3}<3$$

Haddaba, sida guud, laba tiro lakab kastoo lagugu siiyey xariiq tiro korkeed, ta ku dhacda dhinaca midig ayaa ka wayn tirada kale ee bidixda ka xigta.

Taas waxay tahay, xariiq tiro korkeed, haddii X ay midig ka xigto Y kolkaa X >Y.

Tusaale 12: Isbarbardhig tirooyinka lakab ee soo socda iyagoo loo bedelayo jajabyo isku dhigma oo leh hooseeye isku mid ah $\frac{2}{3}$, $\frac{5}{6}$ iyo $\frac{3}{4}$

Furfuris: $\frac{2}{3}=\frac{8}{12}$, $\frac{5}{6}=\frac{10}{12}$ and $\frac{3}{4}=\frac{9}{12}$

Waxaan arki karnaa in jajabyada $\frac{8}{12}$, $\frac{10}{12}$ iyo $\frac{9}{12}$ ay wadaagaan hooseeye isku mida ah. Sida xigta, waxaan helaynaa: $\frac{8}{12}<\frac{9}{12}<\frac{10}{12}$ taas oo malagalinaysa $\frac{2}{3}<\frac{3}{4}<\frac{5}{6}$.

Laylis 1.3

1 Tee ayaa galaysa < ama > laydiga?

b $-1.5 \square 0$

t $-20 \square -10$

j $-10 \square \frac{-15}{2}$

x $\frac{2}{3} \square \frac{3}{4}$

kh $\frac{-1}{2} \square \frac{-1}{3}$

d $2.13 \square 2.1333$

r $-0.5 \square \frac{-1}{2}$

s $\frac{-3}{4} \square -2$

sh $-0.9 \square 0.89$

dh $\left|\frac{-6}{5}\right| \square \frac{6}{5}$

2 Ku muuji ururka tirooyin kasta xariiq tiro u gaar ah korkeeda

b $-2, 0, 6$ **t** $0.5, 1.0, 2.5$

j $\frac{-3}{3}, \frac{2}{3}, -0.025, \frac{-7}{3}$ **x** $\frac{1}{4}, 1\frac{1}{2}, 3\frac{1}{4}, \frac{7}{8}$

kh $\frac{7}{8}, -1\frac{5}{6}, \frac{35}{14}, -5.156$ **d** $\frac{3}{5}, 1\frac{1}{8}, \frac{-17}{8}, 3.165$

r $\frac{3}{4}, -1\frac{1}{4}, \frac{32}{13}, -4.335$ **s** $\frac{2}{3}, -2\frac{1}{3}, \frac{15}{7}, 4.156$

3 U habee tirooyinka lakab ee soo socda horsanaan kordhaysa

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

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

4 Isku barbar dhig tirooyinka lakab ee soo socda iyagoo loo bedelayo jajabyo isku dhigma oo leh hooseeye isku mid ah

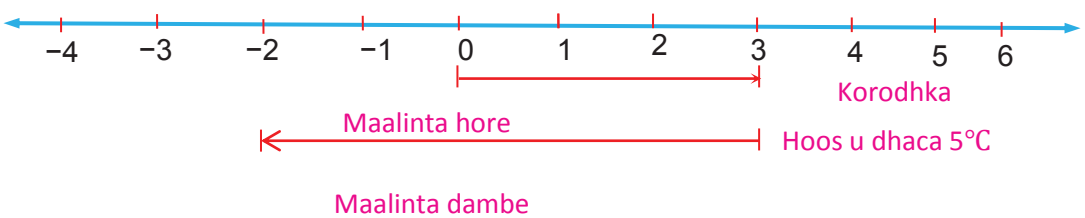
b $\frac{5}{7}, \frac{6}{8}$ **t** $\frac{-2}{5}, \frac{-1}{5}, \frac{2}{3}, \frac{4}{5}$

j $\frac{3}{5}, \frac{4}{7}, \frac{9}{10}$ **x** $-1, -0.7, \frac{-3}{4}$

1.3 XISAABFALLADA TIROOYINKA LAKAB

Cutubka 4aad ee fasalka lixaad, waxaad ku soo baratey, sida la isugu geeyo loona kala gooyo abyooneyaasha. Naqtiin ahaan u fiiri tusaalaha soo socda:-

Tusaale 1: Heerkulka figta saree buur wayn ayaa ahaa maalin 3°C. Kadibna maalintii labaad waxay hoos u dhacday 5°C. Waxaad u adeegsan kartaa muujinta heerkulka maalinle ee buurta xariiqda tiro sida jaan. 1.18 ee hoose u u tusayo.



Jaan.1.18

Xariiqda tiradu waxay tustaa 3 + (–5) = –2, heerkulka 0°C ayuu ka hoosmaray 2°C. Haddii heerkulku u kordho 9°C oo kadibna hoosu ugu dhaco 9°C, wuxuu ku soo noqoday bar bilawigiisii, 9 – 9 = 0.

Hawlgal 1.7

1 U adeegso xariiq tiro soo saarista wadar kasta

b –12 + 8 **t** 6 +(–7) **j** –3 + (–15) **x** $\frac{3}{2}+\frac{1}{2}$

2 Kala goo

b 29 ka goo 17 **t** -32 ka goo -15

j 23 ka goo 38 **x** 12 ka goo -23

3 Heerkulka duhur wuxuu ahaa 112°F. Saacad ka dib heerkulka wuxuu hoos ugu dhacay 19°F. Imisa ayuu ahaa heer kulka 1:00 galabnimo?

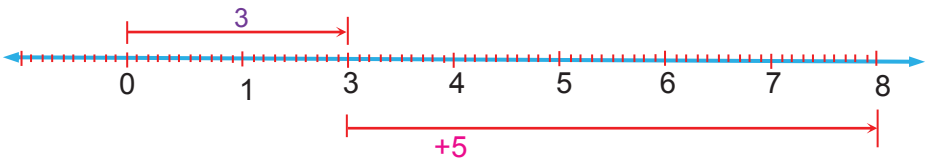
4 Sallaan ayaa ka dhaqaaqay dabaqa 5aad wuxu kor u socoday 3 dabaq, islamarkaa hoos u socoday 6 dabaq, kor 9 dabaq, kor 3 dabaq, hoos 2 dabaq, hadana hoos 3 dabaq. Ugu dambayn dabaqee ayuu sallaanku istaagay?

Tusaale 2: U adeegso xariiq tiro helista wadar kasta .

b $3+5$ **t** $-2+(-7)$ **j** $9+(-5)$ **x** $-8+5$

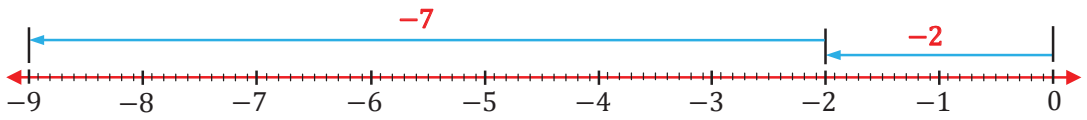
Furfuris: **b** si aad isugu geyso 3 iyo 5 xariiqda tirada korkeeda,0 ka bilow oo u soco midig saddex halbeeg ilaa 3, hadana u sii wad shan halbeeg oo dheeraad ah midig. Tani waxay ku keenaysaa 8

kolkaa 3 + 5 = 8 sida uu muujiyey jaan.1.19.



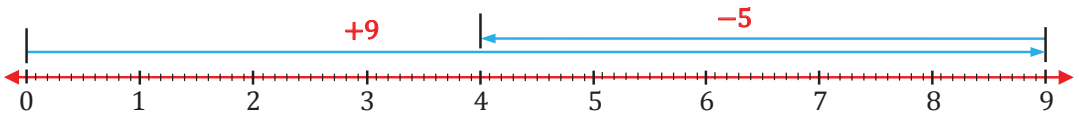
Jaan. 1.19

t ka bilow barta eber oo u sii wad laba halbeeg ilaa –2 bidixda si aad –7 ugu geyso –2, adoo ka bilaabaya –2 u dhaqaaq 7 halbeeg bidix, haddaba,waxaad ku dhammaynaysaa barta –9 halkaa, –2 + (–7) = –9 sida u muujiyey Jaan.1.20.



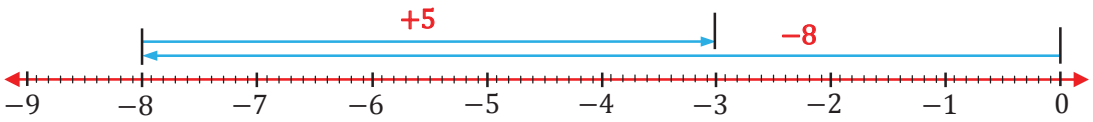
Jaan 1.21

j 0 ka bilow oo u soco midig 9 halbeeg ilaa barta 9. Si aad isugu geyso 9 iyo −5 uga dhaqaaq 5 halbeeg bidix barta 9 waxaad ku joojin 4. Kolkaa 9 + (−5) = 4; sidaa u tilmaamayo jaan.1.21



Jaan. 1.21

x Si aad isugu geyso −8 iyo 5, ka bilow o, ugu soco 8 halbeeg bidix ilaa barta −8, −8 ka bilow oo uga soco 5 halbeeg midig waxaad ku joogsan barta −3. Kolkaa −8 + 5 = −3 sida lagu muujiyey jaan. 1.22.



Jaan. 1.22

Waxa kuu suurtagashay inaad naqshadaho qaar ah ku ogaatay tusaalaha 14aad. Naqshadahani waxay kuu saamaxayaan inaad isu geynta wax badan maskaxda kaga Furfurto.

1.3.1 Isu Geynta Tirooyinka Lakab

Dib u xusuuso ka hor inta aan jajabyada la isu geyn ama la kala goyn, in ay labaduba yeeshaan hooseeye mid ah (loo yaqaan hooseeye ay wadaagaan). Waxaa jira laba xeer oo guud ahaan ay u leedahay isu geynta tirooyinka lakab. Xeerka loo adeegsado qiimaha sugan.

Xeer 1: Kolka biirooyinku leeyihiin summada mid ah:-

- wadarta laba tiro lakab togani way togan tahay
- wadarta laba tiro lakab tabani way taban tahay

Tusaale 3: Soo saar wadar kasta

b 12 + 7

t $\frac{-7}{4} + \left(\frac{-13}{8}\right)$

Furfuris: **b** Si aad u soo saarto wadarta laba tiro lakab, si fudud isugu gee iyaga 12 + 7 = 19.

Waa in ay tognaataa wadarta laba tiro lakab togan

t Si loo soo saaro wadarta laba tiro lakab taban sida

$$\frac{-7}{4} + \left(\frac{-13}{8}\right)$$

Soo saar wadarta qiimaha sugan

$$\left|\frac{-7}{4}\right| + \left|\frac{-13}{8}\right| = \frac{7}{4} + \frac{13}{8} = \frac{27}{8}$$

Sii wadarta summadda asalka u ahayd tirooyinka lakab

$$\frac{-7}{4} + \left(\frac{-13}{8}\right) = -\frac{27}{8}$$

Si kooban, $\frac{-7}{4} + \left(\frac{-13}{8}\right) = -\left(\left|\frac{-7}{4}\right| + \left(\left|\frac{-13}{8}\right|\right)\right) = -\left(\frac{7}{4} + \frac{13}{8}\right) = \frac{-27}{8}$

Xeer 2: Kolka biirooyinku leeyihiin summado kala duwan.

- soo saar qiimayaasha sugan ee labada tiro lakab
- Biirada leh qiimaha sugan ee wayn ka goo biirada qiimaha sugan ee yar leh.
- Ku qor summadda faraqa summadda qiimaha sugan ee wayn leedahay

Ogow: **1** $\frac{a}{b} + \frac{c}{b} = \frac{a+c}{b}, b \neq 0$ **2** $\frac{a}{b} + \frac{c}{d} = \frac{ad+bc}{bd}$, $b, d \neq 0$

Tusaale 4: Soo saar wadar kasta

b $-13+8$ **t** $-\frac{5}{6}+\frac{17}{3}$ **j** $12+(17)$ **x** $\frac{13}{21}+\frac{-10}{7}$

Furfuris: **b** $|-13| = 13$ and $|8| = 8$

13–8=5

Kolkaa,–13+8 = –5

t $\left|\frac{-5}{6}\right|=\frac{5}{6}$ iyo $\left|\frac{17}{3}\right|=\frac{17}{3}$

$\frac{17}{3}-\frac{5}{6}=\frac{34}{6}-\frac{5}{6}=\frac{34-5}{6}=\frac{29}{6}$

Haddaba, $\frac{-5}{6}+\frac{17}{3}=\frac{29}{6}$

j $|12|=12$ iyo $|-17|=17$

$17-12=5$

Haddaba, $12+(-17)=-5$

x $\left|\frac{13}{21}\right|=\frac{13}{21}$ iyo $\left|\frac{-10}{7}\right|=\frac{10}{7}$

$\frac{10}{7}-\frac{13}{21}=\frac{30-13}{21}=\frac{17}{21}$

Haddaba, $\frac{13}{21}+\left(\frac{-10}{7}\right)=\frac{-17}{21}$

Tusaale 5: Soo saar wadar kasta

b $\frac{-5}{3}+\left(\frac{-7}{3}\right)$ t $-0.5+(-0.7)$

Furfuris: b $\frac{-5}{3}+\left(\frac{-7}{3}\right)=-\left(\left|\frac{-5}{3}\right|+\left|\frac{-7}{3}\right|\right)=-\left(\frac{5}{3}+\frac{7}{3}\right)=-\frac{12}{3}=-4$

ama $\frac{-7}{3}+\left(\frac{-5}{3}\right)=-\left(\left|\frac{-7}{3}\right|+\left|\frac{-5}{3}\right|\right)=-\left(\frac{7}{3}+\frac{5}{3}\right)=-\frac{12}{3}=-4$

t $-0.5+(-0.7)=-(|-0.5|+|-0.7|)=-(0.5+0.7)=-1.2$

$-0.7+(-0.5)=-(|-0.7|+|-0.5|)=-(0.7+0.5)=-1.2$

Ogow in labada xaaladoodba bedalidda horsanaanta biirooyinka aanay bedelayn wadarta. Astaanta bedalida horsanaanta waxa la yidhaaahdaa kala hormarinta isu geynta.

Astaanta kala hormarinta isu geynta:

Laba tiro lakab kasta $\frac{a}{b}$ and $\frac{c}{d}$, $\frac{a}{b}+\frac{c}{d}=\frac{c}{d}+\frac{a}{b}$.

Waa maxay, markii aynu doonayno inaynu isu geyno in ka badan laba tirooyin lakab ah?

Tusaale 6: Raadi wadarta

$(8 + (-5)) + (-7)$

Furfuris: $8 + (-5) + (-7)$ isu gee labada hore

$= 3 + (-7)$ ka dib wadarta u gee ta saddexaad.

$= -4$

Hadda, waa inaan isku deynaa qaabka labaad.

$8 + ((-5)) + (-7)$ .....*hada isugee ka labaad iyo ka saddexaad.*

$= 8 + (-12)$ .....*markaa wadarta ugee ka hore.*

$= -4$

Habka aan u kooxeyney biirooyinku ma badeleyso wadarta Astaanta kooxeynta ee isugeynta waxa loo yaqaanaa. Astaanta hormagelinta isugeynta

Astaanta hormogalinta ee isu geynta

Tiro kastoo lakab $\frac{a}{b}, \frac{c}{d}$ *iyo* $\frac{e}{f}$, $\left(\frac{a}{b}+\frac{c}{d}\right)+\frac{e}{f}=\frac{a}{b}+\left(\frac{c}{d}+\frac{e}{f}\right)$

Maxaa dhaca kolka aad eber u geyso tiro lakab ama aad tiro lakab u gayso eber?

$\frac{4}{9}+0=\frac{4}{9}$ islamarkaa $0+\frac{4}{9}=\frac{4}{9}$

Haddaba, wadarta tiro lakab iyo eber waa tirada lafteedii. Sababtoo ah xaqiiqadan 0 waxa la yidhaa asalmadoorshaha isu geynta.

Asalmadoorshaha isu geynta

Tiro lakab kastoo ah $\frac{a}{b}, \frac{a}{b}+0=\frac{a}{b}=0+\frac{a}{b}$.

Waxaad ku soo aragtay qaybta 1.1 inuu abyoone kastaa leeyahay lid. Si la mid ah, tiro lakab kastoo ah $\frac{a}{b}$, waxa jirta tiro lakab ah $-\frac{a}{b}$ oo ay $\frac{a}{b}+\left(-\frac{a}{b}\right)=0$. Tiro lakabka $-\frac{a}{b}$ waxa la yidhaa rogaalka isu geynta (ama lidka) $\frac{a}{b}$.

Laylis 1.4

1 Isticmaal xariiqda tiro si, aad u hesho wadarta.

b $-4 + (-7)$ t $-28 + 12$ j $12 + (-9)$

x $\frac{-3}{2} + \left(\frac{-3}{4}\right)$ kh $11 + (-8)$ d $-14 + (-20)$

2 Ka shaqee kuwan soo socda:-

b $\frac{43}{8} + \left(\frac{-25}{8}\right)$ t $\frac{29}{8} + \left(\frac{-17}{8}\right)$

j $\frac{-73}{16} + \frac{119}{16}$ x $4 + (-7) + (-15)$

kh $\frac{-41}{10} + \frac{(-58)}{10}$ d $0 + (-20)$

r $7 + (-8) + (-9) + 10$ s $-395 + 175$

sh $215 + (-117)$ dh $-13.2 + (-11.1) + 13.2$

c $-3.7 + 5.8 + 0.7 + (-0.8)$ g $-3.9 + 0.8 + 0.1 + \left(\frac{-1}{2}\right)$

f $57 + (-22) + (-18)$ q $4\frac{1}{6} + \left(2\frac{1}{5}\right)$

k $3.74 + (-1.24)$

3 Qor oo dhameystir tusaha soo socta.

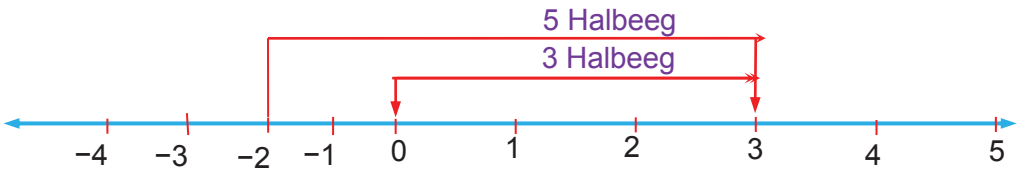
a	b	c	$a + b$	$b + a$	$(a + b) + c$	$b + c$	$a + (b + c)$
3	-4	8					
-1.5	-2.7	3.2					
$\frac{3}{4}$	$\frac{-5}{7}$	-0.5					
-7	-12	-8					

4 Heerkulka maalin axada 4tii galabnimo 41°C ayuu hoos uga dhacay ilaa -11°C habeen badhkii. Haddaba inteebuu heerkulku hoos u dhacay?

1.3.2 Kala Goynta Tirooyinka lakab

Kala qoynta tirooyinka lakab waxay la mid tahay isu geynta tirooyinka lakab

Fiiri xariiqda tiro ee Jaan.1.23



Jaan.1.23

Sidaas darted, 3 – 5 = 3 + (–5)

Kala goynta waxaa loo yaqaanaa xisaabfalka rogaalee isu geynta Taas Macnaheedu waxay tahay masalo kasta oo kala goyn ah waxaa loo qori karaa isugeyn.

Tusaale, fiiri kuwan soo socda:

Kalagoyn	***isugeyn***
12 – 9 = 3	12 + (−9) = 3
14 – (−10) = 24	14 + (10) = 24
−8 – (−15) = 7	−8+ (15) = 7

Lammaane kasta oo masaladani ahi waxay ina tusayaa in ay ka goynta tiro lamid tahay u geynta lidka tiro. Natiijadani waxay inagu hogaamineysaa xeerarka kala goynta ee soosocda.

Xeerka 1: Si loo kala gooyo tirooyinka lakab, isu gee tirada hore iyo lidka tiro lakab ee ah in laga gooyo. Koobnaan, tirooyinka lakab kastoo ah

$\frac{a}{b}$ iyo $\frac{c}{b}, \frac{a}{b} - \frac{c}{d} = \frac{a}{b} + \left(-\frac{c}{d}\right)$.

Tusaale 7: kala goo kawan soo socda.

b	− 8 – 13	t	38 – (−22)
j	$\frac{-1}{2} - \frac{(-3)}{4}$	x	−0.5 – (–0.2)

Furfurris:

b $-8 - 13 = -8 + (-13) = -21$

t $38 - (-22) = 38 + (22) = 60$

j $\frac{-1}{2} - \frac{(-3)}{4} = \frac{-1}{2} + \left(-\frac{3}{4}\right) = \frac{-1}{2} + \frac{3}{4} = \frac{1}{4}$

x $-0.5-(-0.2) = -0.5+0.2 = -0.3$

Xusuusnow: Kala goyntu sax kuma ah Kala hormarinta sidoo kalana sax kuma aha hormogalinta.

Laylis 1.5

1 Isticmaal xariiq tiro si, aad u raadiso faraqa.

b $-6+12$ t $-13-(-8)$

j $\frac{18}{20}-\frac{(-12)}{20}$ x $\frac{13}{7}-\frac{7}{13}$

2 Ka shaqee kuwa soo socda.

b $-7-(-9)$ t $-4.2-(-7.2)+8$ j $-1.5-1.3+(-1.8)$

x $-9-(-5)-7$ kh $\frac{-9}{4}-\left(-\frac{15}{4}\right)$ d $-10-8-(-7)$

r $\frac{13}{4}-\left(\frac{-7}{4}\right)$ s $3\frac{1}{4}-\left(2\frac{1}{5}\right)$

3 Guuri oo dhamaystir tusaha soo socda.

x	y	z	$x-y$	$y-x$	$(x-y)-z$	$y-z$	$x-(y-z)$
8	−5	−10					
−1.5	2.8	−3.5					
$2\frac{1}{3}$	$-1\frac{1}{4}$	$\frac{-1}{4}$					
$\frac{-1}{2}$	−2.8	-1.5					

4 Tusaale ka bixi inayna kala goynta tirooyinka lakab aanay ku sax ahayn.

b Astaanta kala hormarinta. t Astaanta hormogalinta.

5 Raadiyaha, ayaa laga baahiyey saadaasha hawada xiliga jiilaalka uu heerkulku ahaa −8°C. Saadaaliyaha ayaa raaciyey in heerkulku uu hoos ugu dhici doono ilaa 4°C habeenimada Maxay ayuu ahaa heerkulka la filayey subaxdii xigtay?

1.3.3 Iskudhufashada tirooyinka lakab

Waxaad ogtahay in masalada iskudhufashada loo qoro isu geynta soo noqnoqota.

Tusaale ahaan; $5\times 7=7+7+7+7+7=35$

$$4\times\left(-\frac{6}{5}\right)=\left(-\frac{6}{5}\right)+\left(-\frac{6}{5}\right)+\left(-\frac{6}{5}\right)+\left(-\frac{6}{5}\right)=-\frac{24}{5}$$

Hawlgal 1.8

1 U qor isku dhufashada masalo kasta sida isu geynta soo noqnoqota.

b $6\times(-8)$ t $8\times\frac{3}{4}$ j -4×3

2 Raadi taranta.

b $5\times(-16)$ t $(1.5)(-0.3)$

j $\left(-\frac{5}{8}\right)\times\left(\frac{4}{15}\right)$ x $(-0.8)(0.3)$

Guud ahaan, waxaan u isticmaaleynaa laba xeer markaan iskudhufaneyno tirooyinka lakab.

Xeerka 1: Taranta laba tiro lakab oo leh summado kala duwan waxaa lagu helaa laba tallaabo.

Tallabada 1: Gu'aami summadda: summaddu waa "–".

Tallabada 2: Qaado qiimahooda sugan oo iyaga isku dhufo.

Si kale haddaan u nidhaa, tirooyin lakab kastoo a iyo b ah, haddii a iyo b midkood taban yahay, kolkaa $a\times b=-(|a|\times|b|)$

Tusaale 8: Raadi taran kasta.

b $8\times\left(\frac{-17}{16}\right)$ t -12×6

Furfuris: b $8\times\left(-\frac{17}{16}\right)=-\left(|8|\times\left|-\frac{17}{16}\right|\right)=-\frac{17}{2}$

t $-12\times 6=-\left(|-12|\times|6|\right)=-(12\times 6)=-72$

Xeerka2: Taranta laba tiro lakab taban.

Talkabada 1: Gu'aami summadda taranta; summaddu waa " +"

Tallaabada 2: Qaado qiimayaasha sugan ee tiroyinka oo iyaga isku dhufo.

Kolkaan si kale u nidhaa, tirooyin lakab kastoo a iyo b ah, haddi a iyo b ay labaduba taban yihiin, kolkaa, $(-a)\times(-b)=|a|\times|b|$

Tusaale 9: Raadi taran kasta.

b $(-6)\times(-4)$ t $\left(\frac{-12}{7}\right)\times\left(\frac{-21}{4}\right)$

Furfuris: **b** $(-6) \times (-4) = |-6| \times |-4| = 6 \times 4 = 24$

t $\left(-\frac{12}{7}\right)\left(\frac{-21}{4}\right) = \left|\frac{-12}{7}\right| \times \left|\frac{-21}{4}\right| = \frac{12}{7} \times \frac{21}{4} = 9$

Naqshadaha soo socda ayaa waxaa iyana suuragal ah inay kaa caawiyaan inaad aragto sidii aad u sugan kari lahayd summadda taranta.

$3 \times (-2) = -6$

$2 \times (-2) = -4$

$1 \times (-2) = -2$

Ma arkaysaa in tarantu markasta u sii kordhayso 2. Halka tirada hore u sii yaraanayso

$0 \times (-2) = 0$

$-1 \times (-2) = 2$

$-2 \times (-2) = 4$

Tani waxay go'aamisaa in taranta laba tirooyin lakab taban ay tahay tiro lakab togan.

$-3 \times (-2) = 6$

Tusaale 10: Raadi taran kasta:

b $-13 \times (-8)$ **t** $-2.4 \times (3.5)$

Furfuris: **b** $-13 \times (-8) = (-13) \times (-8) = 13 \times 8 = 104$

t $-2.4 \times 3.5 = (-2.4) \times 3.5 = (-2.4 \times 3.5) = -8.4$

Waxaad soo aragtey Astaamaha kala hormarinta iyo hormogalinta isu geyntu. Si la mida ma noqotaa isku dhufashadana?
Kuwa soo socda ugu fiirso tusaale ahaan.

b $(-6) \times 7 = (-6 \times 7)$

$= (-6 \times 7)$

$= -[7 + 7 + 7 + 7 + 7 + 7] = -42$

$7 \times (-6) = (-6) + (-6) + (-6) + (-6) + (-6) + (-6) + (-6)$

Sidaas darted, $(-6) \times 7 = 7 \times (-6) = -42$

t $(-4) \times (-5) = |-4| \times |-5| = |-4| \times |-5| = 4 \times 5 = 5 + 5 + 5 + 5 = 20$

$(-5) \times (-4) = |-5| \times |-4| = 5 \times 4 = 4 + 4 + 4 + 4 + 4 = 20$

markaa, $(-4) \times (-5) = (-5) \times (-4) = 20$

Sidaa awgeed, horsanaanta aan iskugu dhufanayno ma bedaleyso taranta. Horsanaanta isirada sidaniya ayaa waxa la yidhaa astaanta kala hormarinta isku dhufashada.

Astaanta kala hormarinta isku dhufashada tirooyin lakab kastoo a iyo b ah, $a \times b = b \times a$.

Waa maxay nidaarnka aan u kooxayno isku dhufashada tirooyinka lakab?

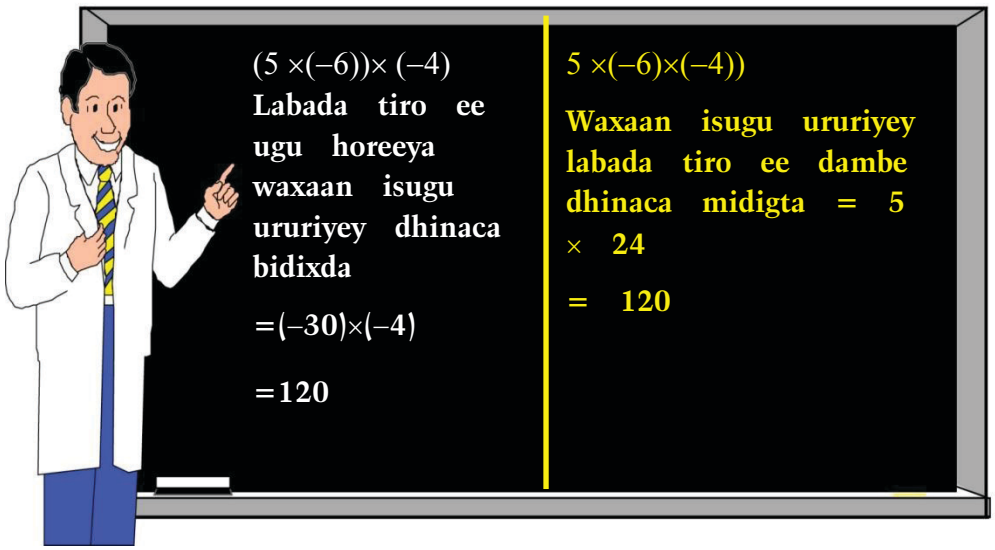
uga fiirso tusaale ahaan kuwa soo socda.

Isku dhufo $(5\times (-6)) \times (-4))$ ama $5 \times ((-6) \times (-4))$

$= (5 \times -6) \times (-4)$ $= 5 \times (-6\times -4)$

$= (-30) \times (-4)$ $= 5 \times 24$

$= 120$ $= 120$



Jaan. 1.24

Ogow in tarantu isku mid tahay labada xaaladoodba. Sidaa darteed, nidaamka aan u kooxeyney isirada aaney taranta bedaleyn. U kooxeynta sidani ah ee isirada waxa la yidhaa astaanta hormagalinta isku dhufashada.

Astaanta hormogalinta isku dhufashada. (Tirooyin lakab kastoo a iyo b iyo c ah, $(a \times b) \times c = a \times (b \times c)$.

Tirada 0 iyo 1 waxay ku leeyihiin astaamo gaar ah iskudhufashada. Maxaa dhaca kolkaad tiro lakab kasta ku dhufato 0?

$6 \times 0 = 0 + 0 + 0 + 0 + 0 + 0 = 0$

Taranta tiro lakab kasta iyo 0 waa 0. Taasoo ah, tiro lakab kastoo a ah, $a \times 0 = 0$.

Maxaa dhaca kolkaad tiro lakab ku dhufato 1?

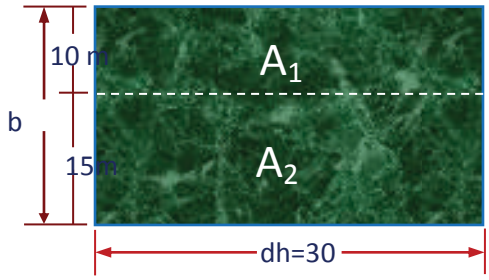
$12 \times 1 = 12$ islamarkaa $1 \times 12 = 12$

Taranta 1 iyo tiro lakab kasta waa tirada nafteeda. Taasoo ah, tiro lakab kasta oo "a", $a \times 1 = a$.

Astaantani waxa la yidhaa astaanta asal-madoorshaha isku dhufashada.

Astaanta kalee muhiimka u ah isku dhufashadu waa astaanta kala dhigga. Astaanta kalee dhiggu waxay ku lug leedahay isugeynta iyo isku dhufashada oo wadajira si astaantani bayaan loogu arko.Dheeho tusaalaha 11aad ee hoos lagugu siiyey.

Tusaale 11: Hana waxay leedahay beer leh qaab laydi taasoo dhererkeedu tahay 30m, ballaceeduna yahay 25m, Haddaba dhulkan waxay u isticmaashaa laba arimood. Hana iyo aabaheed waxay ku kala xisaabiyeen Bedka dhulka jidadka kala duwan ee soo socda.



Jaan. 1.25

Hana

Aabe

Hana waxay iskugu dhufatey dhererka iyo labada balac oo la isku geeyey

$A_T = l \times (b_1 + b_2)$

$= 30 \times (10 + 15)$

$= 30 \times (25)$

$= 750m^2$

Aabahu wuxuu isu geeyey labada bed

$A_T = A_1 + A_2$

$= dh \times b_1 + dh \times b_2$

$= (30 \times 10) + (30 \times 15)$

$= 300 + 450$

$= 750m^2$

Labada xisaabood waa iskumid $30 \times (10 + 15) = (30 \times 10) + (30 \times 15)$

Tani waxay inagu hogaamin astaanta soo socota.

Astaanta kala dhigga

Tirooyin lakab kastoo a, b, c,d,e iyo f ah.

$$\frac{a}{b}\times\left(\frac{c}{d}+\frac{e}{f}\right)=\left(\frac{a}{b}\times\frac{c}{d}\right)+\left(\frac{a}{b}\times\frac{e}{f}\right)$$

$$\left(\frac{c}{d}+\frac{e}{f}\right)\times\frac{a}{b}=\left(\frac{c}{d}\times\frac{a}{b}\right)+\left(\frac{e}{f}\times\frac{a}{b}\right)$$

Tusaale 12: Adigoo isticmaalaya astaanta kala dhiga fududee kuwan soo socda.

b $6\times\left(-\frac{3}{4}+\frac{5}{12}\right)$

t $\frac{-3}{4}\times(9.6+(-4.8))$

Furfuris:

b
$$6\times\left(\frac{-3}{4}+\frac{5}{12}\right)$$
$$=6\times\frac{-3}{4}+6\times\frac{5}{12}$$
$$=\frac{-9}{2}+\frac{5}{2}$$
$$=\frac{-9+5}{2}$$
$$=\frac{-4}{2}=-2$$

t
$$\frac{-3}{4}\times(9.6+(-4.8))$$
$$=\frac{-3}{4}\times(9.6)+\frac{-3}{4}(-4.8)$$
$$=(-7.2)+3.6$$
$$=-3.6$$

Tusaale 13: Bakaal iyo maxamed ayaa la weydiiyey inay fududeeyaan

$$(-2)\times\frac{3}{4}\times(-12)\times\left(-\frac{1}{3}\right).$$

Bakaal:- Maadaama ay 3 tiro taban ka kooban tahay summadda tarantu way taban tahay. Markaa, waan isku dhufan karaa summad la'aan.

$$2\times\frac{3}{4}=\frac{3}{2}\rightarrow\frac{3}{2}\times12=18\Rightarrow18\times\frac{1}{3}=6$$

Jawaabtuna waa −6

Maxamed: Waxaan isugu dhufan karaa tirooyinkaa lammaane laba laba ahaan.

$$2\times\frac{3}{4}=\frac{-3}{2}-\frac{3}{2}\times-12=18 \qquad 18\times\frac{-1}{3}=-6$$

Xusuusnow: Kolka la isku dhufanayo laba ama tiroyin lakab badan oo taban.

i Haddii tirada isirada taban ay dhaban tahay taranta way togan tahay.

ii Haddii tirada isirada taban ay kisi yihiin tarantu way taban tahay.

Laylis 1.6

1 Raadi taranta:-

b $(-8) \times (9)$ t $(-7) \times (-6)$ j $(-10) \times 0$

x $\left(\frac{-7}{10}\right) \times \left(\frac{-5}{14}\right)$ kh $\left(\frac{-5}{8}\right) \times \left(\frac{-4}{15}\right)$ d $(-1.2) \times (1.2)$

r $\left(\frac{-3}{8}\right) \times \frac{4}{9}$ s $\left(\frac{-8}{21}\right) \times \left(\frac{-7}{4}\right)$

2 Xisaabi taranada soo socda.

b $-0.7 \times (0.25)$ t $\frac{-3}{4} \times 0.9 \times \left(-\frac{2}{5}\right)$

j $(-10)^2 \times (-0.001) \times 10$ x $-0.3 \times (-5) \times 2$

kh $-2 \times 6 \times (-50) \times 3$ d $25 \times 7 \times (-4)$

r $-2 \times \frac{3}{7} \times 0.5 \times (-7)$ s $-9.3 \times 7 \times (-1.1) \times (-2) \times (-10)$

3 Sug summadda oo kaliya.

b $-37 \times (-22) \times 0.73 \times (-1)$ t $-2.3 \times 1.7 \times (-1.2) \times (-7) \times (-9)$

j $(-4) \times (-3) \times (-6) \times (-2)$ x $(-2) \times (-5) \times (-3) \times (-6)$

kh $\frac{4}{5} \times 0.4 \times \left(-\frac{1}{2}\right) \times 1.2 \times 20$ d $\frac{-1}{2} \times 0.5 \times (-1) \times (5)$

4 Adigoo isticmaalaya astaanta kala dhigga fududee kuwa soo socda.

b $5(-6 + 9)$ t $-5(-8-6)$ j $-8(-9 + 15)$

x $-7(-2 - 3)$ kh $5(1.8 + 2.2)$ d $\left(\frac{-2}{3} + \frac{5}{4}\right) \times (-12)$

r $5\frac{1}{4}(1.8 + 2.2)$ s $\frac{-3}{4}(0.8 + (-16))$

5 Dhig calaamada saxda ku'ah xidhiidhadan (<, = ama >).

b $\left(\frac{-2}{3}\right)\left(\frac{-2}{3}\right) \_\_\_\_ \frac{4}{9}$ t $-0.1 \times (-0.85) \_\_\_\_ -1$

j $9 \times (-7) \_\_\_\_\_ 63$ x $25 \times 9.8 \_\_\_\_ 98 \times (2.5)$

kh $-27.2 \times 0.192 \_\_\_\_\_ -2$ d $-0.95 \_\_\_\_\_ 0.01 \times (-0.95)$

r $\frac{-2}{3} \times \left(\frac{5}{6} + (-1)\right) \_\_ \left(\frac{-2}{3} \times \frac{5}{6}\right) - \left(\frac{-2}{3} \times 1\right)$

s $\left(-2 \times \frac{-1}{2} \times 4\right) \_\_ -2 \times \left(\frac{-1}{2} \times 4\right)$

6 Guuri oo dhameystir tusaha soo socda.

a	b	c	$a \times b$	$b \times a$	$(a \times b) \times c$	$a \times (b \times c)$
-2	8	-5				
$-\frac{1}{2}$	$\frac{-3}{2}$	4				
-0.5	-0.25	$-\frac{4}{5}$				
$-\frac{3}{4}$	-8	$-\frac{1}{2}$				

7 xisaabi natiijo kasta ka dibna isbarbardhig.

b $(5 + 3) \times 4$ iyo $5 + 3 \times 4$ **t** $(-5 + 3) \times 2$ iyo $-6 + 3 \times 2$

j $(-6 - 7) \times -2$ iyo $-6 \times -2 + (7 \times -2)$

8 ka soo qaad $x = \frac{-1}{2}, y = \frac{7}{6}$ iyo $z = \frac{1}{9}$ markaa caddee kuwan soo socda.

b $x(y + z) = xy + xz$ **t** $x(y - z) = xy - xz$

j $(xy)z = x(yz)$ **x** $xy = yx$

1.3.4 Isu qeybinta Tirooyinka lakab

Xeerarka isu qeybinta laba tiro lakab waxay la mid tahay isku dhufashada laba tiro lakab. Haddaba isuqeybinta iyo iskudhufashadu waa laba xisaabfal oo xidhiidh leh.

Hawlgal 1.9

1 Keebaa weyn marka tiro lakab taban lagu dhufto tiro lakab taban, iyo marka tiro lakab taban lagu dhufto tiro lakab togan.

2 Kooxda fanka ayaa riwaayad ka dhigey dugsi 8 qof oo ay kooxdu ka koobneyd ayaa waxay go'aansadeen iney si isle'eg u qaybsadaan lacag dhan 960 birr Durbaanlihii ayaa wuxuu qaatay qalin iyo warqad. Wuxuu isuqeybiyey $960 \div 8$ sidoo kale waxaa qaatay kalkuleetarkiisii giitaargaraacihii wuxuuna isku dhuftey $960 \times \frac{1}{8}$.

b Miyey heleyaan natiijo isku mid ah?

t Maxaad si guud ugu soo gunaanadi laheyd labada xisaabood?

3 Isu qeybi

b $-\frac{72}{6}$ **t** $\frac{-225}{-25}$ **j** $\frac{0}{-6}$ **x** $\frac{-\frac{5}{4}}{\frac{2}{3}}$

4 Tibixdan $\frac{18}{6}$ waa tiradee la qeybshuhu ama qeybshuhu?

5 Raadi taranta.

b $6 \times \frac{1}{6}$ **t** $(-x)\left(\frac{1}{x}\right)x \neq 0$

j $a \times \frac{1}{a}, a \neq 0$ **x** $\frac{a}{b} \times \frac{b}{a}; a \neq 0, b \neq 0$

Iskudhufashada iyo isuqeybintu waa xisaabfalo isku rogaal ah.

Waxaan u isticmaali karnaa isuqeybinta markaan hal isir raadineyno, oo aan haysano hal isir iyo taranta.

Sidoo kale maadaama $4 \times -2 = -8$ waxa ka iman, $-8 \div 2 = -4$ inagoo tibxahan ka duulayna. Waxaad odhan kartaa isuqeybintu waa u rogaalka iskudhufashada.

Tusaale 14: Isuqeybi mid walba kuwan soo socda.

b $-48 \div -16 = -48 \times \frac{1}{-16} = \frac{48}{16} = 3$

t $\frac{-5}{8} \div \frac{1}{4} = \frac{-5}{8} \times 4 = \frac{-5}{2}$

j $-4.2 \div (-0.6) = -4.2 \times \frac{-10}{6} = \frac{42}{6} = 7$

x $\frac{24}{7} \div \frac{-3}{14} = \frac{24}{7} \times \frac{-14}{3} = -16$

Xusuusnow: i Haddii a iyo b ay yihiin tirooyin lakab, $b \neq 0$, kolkaa

$$\frac{a}{b} = a \times \frac{1}{b}$$

ii Tirooyin lakab kasta a iyo b ah oo $b \neq 0$, haddii $a \times b = 1$, kolkaa tiro lakab kastaa waa u rogaal tiro lakabka kale.

Inagoo ka duuleyna waxaan kor kusoo qeexney, ayaa waxaan hadda fiirineynaa isuqaybinta tirooyinka lakab iyo xeerarkooda.

Xeerka 1: Suggidda summadda qaybta.

b Haddii ay summadaha la qaybshaha iyo qaybshuhu isku mid tahay, kolkaa summadda qaybtu waa " +".

Tusaale, ahaan $\frac{-48}{-6} = \frac{48}{6} = 8$

t Haddii summadda la qaybshaha iyo qaybshuhu ay kala duwan yihiin, kolkaa summadda qaybtu waa " –".

Tusaale, ahaan $\frac{-39}{3} = \frac{-39}{3} = -13$

Xeerka 2: In la helo qiimaha qaybta. Qiimaha sugan ee laqaybshaha u qaybi qiimaha sugan ee qaybsha ha.

Tusaale 15: Isu qaybi kuwa soo socda

b $18 \div 6$ t $-8.4 \div 1.4$ j $\frac{-15}{4} \div \left(\frac{-1}{8}\right)$

Furfuris:

tiro	Masalada	calaamada	Qiimaha sugan	qeybta
a	$18 \div -6$	–	$18 \div 6$	3
b	$-8.4 \div 1.4$	–	$8.4 \div 1.4$	6
c	$\frac{-15}{4} \div \frac{-1}{8}$	+	$\frac{15}{4} \div \frac{1}{8} = \frac{15}{4} \times 8$	30

Xusuuso:

i Kolka 0 loo qaybiyo tiro lakab aan eber ahayn, qaybtu waa eber.
Taaso ah, $0 \div a = 0$, $a \neq 0$.

ii Tiro lakab u qaybinta 0, kuma shaqeyso. Taasoo ah, $a \div 0$. Maqeexna.
Tusaal ahaan, $-8 \div 0$, waxay macnaheedu tahay waxa jiro tiro lakab 'a' ah oo ay $a \times 0 = -8$. Laakiin $0 \times a = 0$ haddaba $0 \times a = 0 \neq -8$.
Si lamid ah, $a = 0 \div 0$ macnuhu waa $a \times 0$ laakiin $0 \div 0$ way jaban tahay.

iii Tirooyin lakab kastoo a iyo b ah, $b \neq 0$ $a \div b = \frac{a}{b}$

Kolka la maago xeerka isu qaybinta, waxaa la socda in $\frac{a}{-b} = \frac{-a}{b} = -\frac{a}{b}$

$(a, b \in \mathbb{Q}, b \neq 0)$.

Tusaale ahaan, $\frac{-24}{8} = \frac{24}{-8} = \frac{-24}{8} = -3$

Leylis 1.7

1 Korka ka xisaabi.

b $48 \div (-8)$ t $2.5 \div (-5)$ j $0 \div (-3)$

x $-4.5 \div 9$ kh $0.25 \div \left(-\frac{1}{4}\right)$ d $-0.81 \div (-0.9)$

r $11.1 \div (-0{,}3)$ s $0.08 \div (-0.001)$

2 Isu qeybi kuwa soo socda.

b $1.5 \div (-3)$ t $-20 \div (-2)$ j $\frac{-50}{25}$

x $-45 \div (-9)$ kh $-\frac{7}{9} \div \left(\frac{-14}{3}\right)$ d $\frac{7}{10} \div \left(\frac{14}{25}\right)$

r $\frac{-5}{8} \div \left(\frac{-5}{16}\right)$ s $25.7 \div (-0.019)$ sh $-89.5 \div (-8.9)$

3 Xisaabi mid kasta kuwaa soo socda.

b $(11 + 7) \div (-3)$ t $-\frac{1}{2} - 5 \div 2$ j $5 + 8 \div (-4)$

x $-6 \div 2 - 82$ kh $18 \div (-9 + 3)$

d $(1.2 - (-2.4)) \div (-0.4)$ r $-0.2 \times (-0.3) \div 0.8 \times (-0.7)$

4 Fududee ilaa heerka ugu dambeeya Hadday suurogal tahay.

b $-\frac{27}{36}$ t $-\frac{25}{40}$ j $\frac{-24}{-60}$ x $\frac{-2ab}{a}; (a \neq 0)$

5 Ku keen tusaale tusaya inaanay isu qaybintu tirooyin lakab ku sax ahayn:

b Astaanta kala hormarinta t astaanta hormogalinta

Ereyada Muhiimka ah

- Qiima sugan
- Harsanaan fanata
- Horsanaan degata
- Ka wayn
- Ka yar
- Tirooyin lakab taban
- Saami
- Astaanta kala hormarinta
- Rogaalka xisaabfal (fal)
- Tirooyin idil
- Togan
- Asal-madoorshaha isugeynta
- Astaanta hormagalinta
- Astaanta kala dhigga
- Abyooneyaal
- Asal-madoorshaha isku dhufashada
- Lid
- Tirooyin lakab
- Rogaalka (weydaarka) isu geynta
- Jajab
- Tirooyin tirsiimo

Koobista Cutubka

1. Isugeynta, iskudhufashada iyo isuqeybinta waxay ku shaqeeya tirooyinka lakab ee togan laakiin kala goynty kuma shaqeyso.
2. Isugeynta, kala goynta, iskudhufashada iyo isuqeybintu waxay ku shaqeeyaan ururka tirooyin lakab. (0 wuu ka reeban yahay)
3. Lidka tiro lakab kastoo a waa –a, 0 isaga ayaa lid isku ah.
4. $\mathbb{N} \subseteq \mathbb{W} \subseteq \mathbb{Q}$
5. Ururka tirooyinka lakab, $\mathbb{Q}$ waxa loo qeexaa

   $$\mathbb{Q}= \left\{ \frac{a}{b} : a,b \in \mathbb{Z} \text{ islamarkaa } b \neq 0 \right\}$$
6. Qiimaha sugan ee tiro waa fogaanta u dhaxaysa barta unnugga iyo bar dul dhacda xariiq tiro korkeed.

7 Tiro lakab kastoo a, $|a| = \begin{cases} a \text{ haddii } a \geq 0 \\ -a, \text{ haddii } a < 0 \end{cases}$

8 Xariiqda tiro haddii $x > y$, markaa x, waxay ka xigtaa midig, y, y waxay ka xigtaa bidix x.

9 Tiro lakab kastoo togan way ka wayn tahay 0, islamarkaa tiro lakab kastoo taban way ka yar tahay 0.

10 Laba tirooyin lakab taban tirada qiimaha sugan wayn leh ayaa yar.

11 Wadarta tabaneyaasha tirooyinka lakab waa tabane yaal tirooyin lakab, ah.

12 Wadarta tirooyinka lakab togan way togan tahay:

i $a + b = b + a$ ii $(a + b) + c = a + (b + c)$

iii $a - b = a + (-b)$ iv $a - a = a + (-a) = 0$

v $a + 0 = 0 + a = a$

13 Tirooyinka lakab ee a iyo b $a - b = (a + (-b)$

14 Wadarta laba tirooyin lakab lid ah waa 0, Taas, oo ah, $a + (-a) = 0$; $(a \in \mathbb{Q})$.

15 **Taranta:**

Togan × Togan = Togan

Togan × taban = Taban

Taban × Taban = Togan

Taban × togan = Taban

16 **Isuqeybinta:**

Togan ÷ Togan = Togan

Togan ÷Taban = Taban

Taban ÷Togan = Taban

Taban ÷ Taban = Togan

17 **Laba tirooyin lakab kastoo:**

a, iyo b ah, $a \div b = a \times \frac{1}{b}; (b \neq 0)$

18 Tiro lakab kastoo a ah, $a \times \left(\frac{1}{a}\right) = 1, a \neq 0$ waxaa loo yaqaanaa rogaalka a,

19 Tirooyin lakab kastoo, a, b iyo c ah,

b Astaanta kala hormarinta

i $a + b = b + a$ ii $a \times b = b \times a$

t Astaanta hormogalinta

i $(a + b) + c = a+(b + c)$ ii $(a \times b) \times c = a \times (b \times c)$

j Astaanta asal madoorshaha.

i $a + 0 = 0 + a = a$ ii $a \times 1 = 1 \times a = a$

20 Tirooyin lakab kastoo, a, b, iyo c ah

$a \times (b + c) = (a \times b) + (a \times c)$.

Tan waxaa loo yaqaanaa Astaanta kala dhigga iskudhufashada ee isu geynta.

Lylisyada guud ee Cutubka 1aad

1 Raadi lidka tirooyin lakab kasta.

b -4.8 t 0 j $|-6|$ x $-3\frac{1}{8}$

2 Raadi qiimaha. Sugan, fududee hadday suuragal tahay.

b $|-1.85|$ t $|\sqrt{2}-2|$

j $|a-b|$ haddii $a < b$ x $|-1.2|+|-2.8|$

kh $\left|2\frac{1}{3}\right|-1-|1.5|$

3 ku qiimee tibaax kasta qiimaha lagu siiyey.

b $|4x| - |x|\ ; x = -5$ t $|2| - 2x - 4|x|\ ;\ x = -\frac{1}{2}$

4 U qor kuwa soo socda mid kasta horsanaan fanata.

b $-1, 2, -1, -2, 3, 1{,}001, -0.001, -\frac{1}{2}, -\frac{2}{3}$

t $-\frac{1}{2}, -\frac{2}{3}, \frac{1}{4}, 0.75. -1.25, 0.125, \frac{2}{3}$

5 Ka shaqee xisaab faladan soo socda.

b $\frac{27}{8}+\left(-\frac{9}{4}\right)$ t $-\frac{81}{19}+\frac{1}{38}$ j $-4.1 \times (1.2 - 0.8)$

x $-13.8 + (-1.11) + 8.9$ kh $\frac{36}{13}\div\left(-\frac{1}{39}\right)$ d $\frac{3}{4}\times(-12+(-2))$

r $(-0.8) \times (0.7)\times \left(-\frac{8}{5}\right)$ s $(-3) \times (-8) \times (1.2) \times (-0.1)$

6 Kashaqee xisaab faladala tilmaamay.

b $4(-1)\,(5) + (-3)\,(2)\,(-4)$ t $(-8) \div (-4) + (-3)(2)$

j $\frac{(-3)(8)(-2)}{(-4)(-8)-92)(-12)}$ x $10 \div 5 - 4 \div 2 + 15 \div 3 + 2.5$

kh $8 + (-3) + (-5) - 9$ d $5.28 - 6.7 - (-4.35) + 4$

r $-5\frac{3}{8}+2\frac{7}{8}-1\frac{1}{8}$

7 Kala sheeg kuwa soo socdaa inay run yihiin iyo inay been yihiin.

b $(-3)+\left(-\frac{1}{2}\right)=-\frac{7}{2}$ t $-7 - 3 + 5 = -5$

j $-1 \times (-0.5) \times (-2) = 1$ x $\frac{-3}{2}(-1.2)+(-2.4)=1.8+3.6$

8 Wadarta saddex abyoone oo isku xiga ayaa ah 24, Raadi abyooneyaashaas.

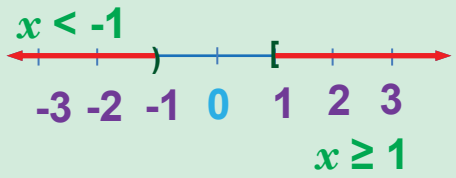
9 U gee taranta −8 iyo −9 taranta 17 iyo −3

10 Haddii aad ku dhufatid wadarta 3 iyo −7 doorsoomaha "*y*" Natiijadu waa 12. Raadi qiimaha "*y*".

11 Helikobtar ayaa 600ft ka sareysa heerka badda ee la simanka dhulka islamarkaana gujis ayaa si ku toosan ah 325ft uga hooseeyo heerka badda. Intee ayey isku jiraan?

12 Ka soo qaad Halimo iyo laba walaalo ay yihiin waxay bixiyeen lacag is le eg oo maalgalineed oo dhan Birr 20,000. Hadaba haddii ay maalgalintii ay ku gadeen lacag dhan Birr 16,232 imisa ayaa midwalba khasaaray?

CUTUBKA 2 AAD



ISLEEGYADA IYO DHEELIYADA TOOSAN

Ujeedooyina cutubka:

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

- *furfuraan isle'egyada toosan iyagoo adeegsanaya xeererka qaabdoorinta isku dhigma*
- *furfuraan dheelliyada toosan iyaga oo adeegsanaya xeererka qaabdoorinta isku dhigma.*

Tusmooyinka muhiimka ah:

2.1 Furfurista isle'egyada toosan

2.2 Furfurista dheelliyada toosan

Ereyada Muhiimka ah

Soo koobida cutubka

Laylisyo guud

HORDHAC

Horey waxaad ku soo barateen fasalka 6aad casharada cutubka 5aad fekrado ku saabsan sida loo raadiyo furfurista isle'egta toosan iyo dheeliga fudud, halkan waxaynu ku eegaynaa faahfaahin qoto dheer oo ah furfurista isle'egyada toosan iyo dheeliyada inaga oo adeegsaneyna xeerarka qaabdoorinta isu dhigma.

2.1 FURFURISTA ISLE'EGYADA TOOSAN

Inta aynaan u gudbin nidaamka tooska ah ee furfurista isle'egyada toosan, bal aan naqtiino xeerarka qaab doorinta isudhigma inaga oo ku naqtiimayna hawlgalka soo socda.

Hawlgal 2.1

1 U fiirso miisaan garboolaha ay kafadiisu mid walba saaran tahay 2 kg oo liin ah.

- **i** Haddii aad saarto 2 kg oo liin ah kafad walba kadib maxaad ka odhan kartaa dheeliga kafadaha?
- **ii** Haddii aad ka qaado $\frac{2}{3}$ kg oo liin ah kafad walba,kadib maxaad ka odhan kartaa dheeliga kafadaha ,ama kuu muuqda?
- **iii** Haddii aad ka qaado $\frac{1}{2}$ kg oo liin ah kafadda bidix islamarkaana1kg kafadda midig, maxaad ka odhan kartaa sinaanta dheeliga kafadaha?
- **iv** Haddii aad u labanlaabto tirada liinta kilogiraam ahaan ,maxaad ka odhan kartaa sinaanta dheeliga kafadaha?
- **v** Maxaad ku soo koobi kartaa kuwa ku muujinsan **i**, **ii** , **iii** iyo **iv** ee sare?

2 Ka soo qaad inay fasalka xisaabta ay dhigtaan 60 arday. Tirada ardayda gabdhuhu way ku labanlaabmaan tirada wiilasha fasalka. Soo saar tirada wiilasha iyo tirada gabdhaha fasalka?

3 Sheeg tibaaxaha soo socda kuwa ah tibxo isleh

b	$3x, 14x^2, 20x$	**t**	$x, -6x, -24x$
j	$x, 3a, 6a, -2x$	**x**	$4a^2, 3a^2, -8a^2$

4 Kuwa soo socda sheeg kuwa ah isle'egyo toosan.

b	$x = 3$	**t**	$x - 4 = 6$	**j**	$3x + 1 = -5$
x	$4 - x > 6$	**kh**	$3x + 4 \le 2$	**d**	$-8 \neq 10$
r	$\frac{x+2}{3} = -3$	**s**	$x^2 - 3x = 4$	**sh**	$\lvert x - 1 \rvert = 2$

5 Fururista isle'egta $x + 5 = 10$ waa

b $x = -5$ **t** $x = 6$ **j** $x = 5$ **x** $x = 7$

6 Tee ayaa isle'egyada soo socda furfuristeeda tahay x = 4

b $x - 7 = 10$ **t** $2x - 5 = 3$ **j** $x + 5 = -9$ **x** $3x - 10 = 4$

7 Haddii $2x + 5 = 15$ islamarkaana $x - 4$ waxay le'eg tahay

b 2 **t** −4 **j** 1 **x** −8

8 Hubi in $x = 4$ ay tahay furfurista $6x - 26 = 2$ iyo inayna ahayn

9 maxaad samayn haddaad rabtid in aad hubiso tirada lagu siiyey inay tahay furfurista isle'eg toosan iyo in kale.

Hawlgalka 2.1 ee naqtiinka ah waxaad ku gunaanadi kartaa qodobadan soo socda

1 u geynta iyo ka goynta xaddi isku mid ah labada kafadoodba ma bedaleyso dheeliga kafadaha

2 si aynu u hubino in tiro u tahay furfuris ama aysan u ahayn isle'eg lagu siiyey, ku badal tirada meesha doorsoomaha ,isla markaana eeg inaad heshay hawraar run ah ama hawraar been ah. Haddii aad hesho hawraar run ah kolkaa tiradaasi waa furfurista haddii kale u ma'aha furfuris.

U fiirso hawraarta leh sansaantan:

$24 - 10 = 14$

$2 + 4 = 6$

$5 \times 4 = 20$

$\frac{24}{3} = 8$.

Sida hawraarada leh calaamada isle'ekaanshaha waxaa loo yaqaanaa hawraar ama isle'egta fudud

Tibaax xisaabeed waa tibaaxda ay ku jiraan tiro ama tirooyin badan, mid ama doorsoomeyaal badan iyo hal xisaabfal ama fallo aritmatik badan.

Weedh xisabeedka ay weheliso summada isle'ekaanshuhu "=" si ay isugu xidho laba tibaax xisaabeed waxaa lagu magacaabaa isle'eg.

Kuwa soo socda waa tusaalooyin ah isle'egyo.

b $x = 6$ **t** $\frac{2}{5}y - 6 = \frac{2}{3}y + 2$ **j** $17 - 6x = 20$

x $2a^3 + 3b^2 = 6$ **kh** $x - y = 6$ **d** $x^2 - 4 = 0$

r $2x + 7 = 5t$

Isle'egta toosan ee leh hal doorsoome x waa isleegta loo qori karo saansaanta $ax + b = 0$ halka, a iyo b ay yihiin tirooyin maangal ah islamarkaana $a \neq 0$

kuwa soo socdaa waa tusaalayaal isle'egyo toosan

b	$x + 5 = 10$	t	$5x - 10 = 3$	j	$3x - 12 = 15$
x	$\frac{3}{4}x + 6 = 8$	kh	$3x - 5 = 5x + 4$	d	$\frac{x+4}{3} = 1$

Tusaale 1: Ku cadee adigoo adeegsanaya habka ku bedalka in $x = -2$ ay u tahay furfuris $3x+7=1$

Furfuris: $3x + 7 = 1$ ……*qoridda asalka isle'egta*

$3(-2) + 7 = 1$ …… *-2 ku bedal x*

$-6 + 7 = 1$ ……*fududeyn*

$1 = 1$ ……*waa run*

Sidaas darted, $x = -2$ waa furfurista $3x + 7 = 1$.

Tusaale 2: Miyey tahay $x = 2$ furfurista $3x + 5 = 7x - 3$?

Waad hubin kartaa inay labada dhinacaba isle'eg yihiin ama ay kala duwan yihiin sida loogu muujiyey tusaha hoose.

Tibaaxa dhinaca bidix	Tibaaxa dhinaca midig	Sababta(faahfaahinta)
$3x = 5$	$7x - 3$	Siin
$3(2) + 5$	$7(2) - 3$	Ku bedel $x = 2$ tibaax kasta
$6 + 5$	$14 - 3$	Fududeyn
11	11	Fududee

Sidaas datreed, jawaabtu waa haa waayo $x = 2$ waxay run ka dhigaysaa weedh xisaabeedka.

Furfuris waa qiimaha doorsoomaha, oo, marka aad ku bedesho doorsoomaha qiimahan, ka dhigaya isle'egta run (dhanka bidix waxay le'ekanaysaa dhanka midig)

Guud ahaan ururka furfurista isle'eg waa ururka ka kooban dhamaan furfurisyada isle'egta.

Laba isle'eg waxa la yidhaa isle'egyo isku dhigma haddii ay leeyihiin urur furfuriseed isku mid ah.

Tusaale 3: Hubi isle'egyada soo socda inay u dhigmaan isleegta $x - 2 = 4$

a $x + 5 = 11$ **b** $x - 7 = -1$ **c** $2x - 3 = 9$

Furfuris: Si loo hubiyo in $x - 2 = 4$ ay u dhiganto $x + 5 = 11$, $x - 7 = -1$,

$3x - 3 = 9$ waa inaynu 6 ku bedalaa x isle'eg kasta sida tusaha hoose u ku tusay.

Isle'egta 1	Isle'egta 2	Isle'egta 3
$x + 5 = 1$	$x - 7 = -1$	$2x - 3 = 9$
$6 + 5 = 11$ (run)	$6 - 7 = -1$(run)	$12 - 3 = 9$(run)

Haddii isle'eg toosan leedahay furfuris, waxay leedahay hal furfuris kaliya waxaad ku soo koobi kartaa $x = 6$ kaligeed ayaa ah furfurista isle'ega walba.

Sidaas darteed, isle'egyada, $x - 2 = 4$, $x + 5 = 11$. $x - 7 = -1$, $2x - 3 = 9$ way isku dhigmaan sababta oo ah waxay leeyihiin urur furfuriseed mid ah{6}.

Xeerarka isku dhignaanta qaabdoorinta isle'egyada toosan

Si aad u hesho ururka furufurista isle'eg toosan waxaad u bedali isle'egta toosan ee lagu siiyey isle'eg saansaan u dhiganta leh oo aad kaligeed ku qori hal dhinac isle'egta islmarkaana madoorsoomaha ku qor dhinaca kale.

Xeerarkani waxa kaloo la yidhaa astaamaha isle'kaanshaha ka hor inta aynan u gudbin xeerarka isku dhignaanta qaab doorinta, isku day inaad ka shaqeesid hawlgaladan hoos lagugu siiyey.

Hawlgal 2.2

Sababee talaabo kasta furfurista isle'eg yada hoos lagugu siiyey.

b Siin: $x - 2 = 4$

$x = 6$

t Siin: $x + 5 = -3$

$x = -8$

j Siin: $3x - 5 = -8$

$3x = -3$

$x = -1$

kh Siin: $4x - \frac{1}{2} = \frac{1}{2}$

$4x = 1$

$x = \frac{1}{4}$

d Siin: $2x - 8 = 22$

$2x = 30$

$x = 15$

x Siin: $\frac{2}{7}x+3=4$

$2x+21=28$

$2x=-7$

$x=-\frac{7}{2}$

r Siin: $\frac{2}{5}x+\frac{3}{5}=-\frac{2}{5}$

$2x+3=-2$

$2x=-5$

$x=-\frac{5}{2}$

Astaamaha isle'ekaanshaha

Xeerka 1: U geynta iyo ka goynta tiro mid ah labada dhinacba isle'eg ayaa waxay ku siisaa isle'eg u dhiganta.

Ka dhig in a, b iyo c ay yihiin tirooyin lakab.

i Astaanta isu geynta isle'ekaanta.

Haddii $a = b$, kolkaa $a + c = b + c$.

ii Asaanta kala goynta.

Haddii $a = b$, kolkaa $a - c = b - c$.

Ogow haddii ay kula soo deristo isle'eg toosan oo leh saansaanta $x + b = 0$, oo b ay tahay madoorsoome, kolkaa waxaad u baahan tahay kaliya hal minguurinta isudhigma u geynta ama ka goynta midkood tiro isku mid ah labada dhinacee isle'egta si aad ugu furfurto doorsoomaha x. Taasoo ah

$x + b = 0$,

$x + b - b = 0 - b$, ka goo b labada dhinacba

$x = -b$.

Sidaas darted, qiimaha 'x' ee runta ka dhigaya isle'egta waa $x = -b$,

Haddaba, urur-furfuriseedka $x + b = 0$ waa $\{-b\}$ama U.R = $\{-b\}$.

Xeerka 2: Ku dhufashada iyo u qeybinta dhinac kasta isle'egta tiro lakab aan eber ahayn oo isku mid ah isle'ekaantu isma bedadasho.

i astaanta isku dhufashada

Haddii $a = b$, kolka $ac = cb$

ii astaanta isu qeybinta

Hadii $a = b$ kolkaa $\frac{a}{c}=\frac{b}{c}(c \neq 0)$

Ogow haddii ay kula soo deristo isle'eg toosan oo leh saansaanta $ax = c$, $(a \neq 0)$, halka a iyo c ay yihiin madoorsoome la iska soo qaatay kolkaa waxaad u baahan tahay oo kaliya hal minguur, taas oo ah u qeybi a dhinac kasta

Siin: $ax = c$.

Waxaynu helaynaa, $x = \frac{c}{a}$ ……*loo qeybiyey dhinac kasta a*

Waxaynu arki karnaa in $\frac{c}{a}$ ay tahay furfurista isle'egta $ax = c$ maxaa yeelay

$$a\left(\frac{c}{a}\right) = \frac{a}{a}(c) = c$$

U tixgeli isle'egta toosan ee; $ax + b = 0$, $(a \neq 0)$ halka a, iyo b, ay yihiin ma doorsoomeyaal la iska qaatay.

Haddii b ay ka duwan tahay eber, sidaas awgeed waxaad u baahan tahay minguurinta isudhigma oo ka badan hal tallaabo si aad u furfurto isle'egta toosan.

$ax + b = 0$

$ax = -b$……*kagoo b dhinac walba*

$x = \frac{-b}{a}$ ……*u qeybi 'a' dhinac walba*

labada arrimood ee kor ku xusan waxaa lagu muujiyey tusaalooyinka soo socda:

Tusaale 1.furfur $4x = 20$

$x = 5$……*u qeybi 4 dhinac walba*

Aad ayey u fududahay in aynu aragnay $4 \times 5 = 20$

Islamarkaana, $x = 5$ waa furfurista isle'egta.

Tusaale 2: Furfur $\frac{2}{3}x = 4$

Furfuris: Si aad u hesho furfurista isle'egta lagu siiyey,

Marka hore ka saar jajabka adiga oo ku dhufanaya dhinac kasta 3

$\frac{2}{3}x = 4$ ……*asalka isle'egta*

$2x = 12$……*ku dhufo dhinac kasta 3*

$x = 6$……*u qeybiyey 2 dhinac kasta*

Tusaale 3: Furfur $4x + 8 = -12$ islamarkaana sababee jawaabtaada

Furfuris: $4x + 8 = -12$……*asalka isle'egta*

$4x = -20$……*ka goo 8 dhinac kasta*

$x = -5$……*u qeybi 4 dhinac kasta*

Sidaas darted, $x = -5$ waa furfurista isle'egata lagu siiyey.

Si loo hubiyo in -5 u tahay furfuris isle'egta -5 ku bedal x isle'egta lagu siiyey.

$4(-5) + 8 = -12$ ……*-5 ku bedal x*

$-20 + 8 = -12$ ……*fududeynta tirooyinka*

$-12 = -12$ ……*waa run*

Sidaa darted, $x = -5$ waa furfurista isle'egta lagu siiyey.

Ogow inaad raacdo tallaabooyinka soo socda furfuridda isle'egyada toosan

1 U gee ama ka goo tiro mid ah labada dhinac islamarkaa u furufur doorsoomaha aan la aqoon.

2 Ku dhufo ama u qaybi labada dhinac tiro mid ah oo aan eber ahayn oo u furfur doorsoomaha aan la aqoon.

Laylis 2.1

Kaga jawaab su'aalaha 1 iyo 2 af ahaan

1 waa inuu maxay noqdo qiimaha x si ay:

b	$x + 12 = -4$	t	$2x + 6 = 16$	j	$3m - 6 = 3$
x	$4x - 20 = 4$	kh	$12x + 20 = 104$	d	$11x + 110 = -11$
r	$23x + (x + 4) = 28$	s	$100x + 100 = 100$		

2 Haddii $3x + 4 = -5$ kolkaa waa imisa qiimaha $4x - 2$?

3 Haddii $8x - 7 = 1$ kolkaa waa imisa qiimaha $3x + 1$?

4 Furfur mid walba isle'egyada toosan ee soo socda

b	$x + 24 = -13$	d	$3a = -4$	c	$\frac{4x-2}{3} - x = 12$
t	$x - 8 = 30$	r	$2x + 5 = 29$	g	$10x + 11 = 41$
j	$6x = 18$	s	$7m - 3 = 4$	f	$3x + 2 = -7$
x	$3x = 15$	sh	$3x - 6 = 9$	q	$4(y - 5) + 2y = -26$
kh	$24 + t = -24$	dh	$4(x - 8) = 26$	k	$8m - 10 = 14$

Weedh xisabeedyo kuu hogaamiya isle'egyo Tosan

Waxaad ku jirtay ilaa eegga barashada isle'eg toosan iyo sida loo furfuro isle'egyo toosan oo hal doorsoomc leh. Qaybtan dhexdheeda waxaad ku arki doontaa u isticmaalka isle'egyada toosan in lagu furfuro dhacdooyinka (masalooyinka) dhabta ah ee aan kula kulano hawlgalada ee nolosheena maalinle.

Ka hor intaanad u galin nidaamka loo maro sida furfuro weedh xisaabeeyada loo tibaaxan karo si isle'eg toosan ah waxa lagaa sugayaa inaad ka shaqayso hawlgalada soo socda.

Hawlgal 2.3

1 Ka fekar tiro x ah. Ka dib,
   - i Qaado saddex laabka tiradii aad ka fekartay islamarkaana qor tibaaxda u taagan
   - ii Ka soo qaad in haddii saddex laabka tiradii aad ka fekartay lagu kordiyo 20, tiradu waxay noqoneysaa 80. Qor isle'egta u taagan masaladani.
   - iii Waa maxay tiradu?
   - iv Sheeg talaabooyinka lagu furfurayo masalada?

2 Labanlaabka tiro iyo 4 ayaa ah 50. Raadi tirada islamarkaa hubi tirada aad heshay?

3 Tiro iyo 24 ku birsan ayaa ah 15. Raadi tirada oo hubi natiijada aad heshay?.

4 10 ayay ka yar tiro waa 15. Raadi tirada oo hubi natiijada aad heshid

5 10 ka wayn labalaabka tiro waa 12. Waa maxay tiradu?

Tusaale 1: Haan ayaa waxay qaadaa 20 litir oo biyo ah. Haddii $\left(\frac{2}{5}\right)^{\text{add}}$ ka haanta biyo lagu shubo, imisa litir ayaad u baahan tahay si aad u buuxiso.

Furfuris: U qaado x litir biyaha loo baahan yahay si loo buuxyo, haantu waxay qaadi kartaa 20 litir oo biyo ah. Haanta waxaa lagu shubey $\frac{2}{5}(20) = 8$ litir, sidaas awgeed waxaynu u tibaaxaynaa weedhan sida soo socota.

$x + 8 = 20$

$x = 12$ ……*ka goo 8 dhinac walba*

Sidaas darteed, waxa aad u baahan tahay 12 litit oo biyo ah si aad u buuxiso haanta.

Tusaale 2: 20 laga dhimay afarlaabka tiro ayaa ah 40. Raad tirada

Furfuris: Ka dhig tirade x, kolkaa $4x - 20 = 40$

$$4x = 60$$

$$x = \frac{60}{4}$$

$$x = 15$$

Tusaale 3: Da'da faadumo aabaheed waa 47 sano. Aabaheed wuxuu ka weyn yahay 5 sano laba laabka dad faadumo. Imisa sano ayey jirta faadumo?

Furfuris: Ka soo qaad x dada faadumo ee hadda ay tahay. Laban laabka da'da faadumo waa $2x$. Aabaheed wuxuu ka weyn yahay 5 sano $2x$ taas oo loola jeedo.

$2x + 5 = 47$ islamarkaana u furfur x

$2x = 42$

$x = 21$

Sidaas darteed, faadumo waa 21 sano ayey jirtaa

Weedh xisaabeedyada kugu hagaya isle'egyada toosan u adeegso talaabooyinkan soo socda

Talaabada 1: Xaddiga u taagan ka lagu weydiiyay u qaado doorsoomaha x.

Talaabada 2: Adeegso warbixinta lagu siiyey uga dhig talaabada 1 isleegta toosan.

Talaabada 3: U furfur isle'egta toosan doorsoomaha x oo hubi natiijada.

Laylis 2.2

1 Furfur mid walba isleegyada toosan ee soo socda

b	$x + 10 = -15$	**t**	$x + 12 = 18$	**j**	$y - 7 = 3$
x	$10 = x - 10$	**kh**	$7a - 4 = 10$	**d**	$2x + 7 = -11$
r	$-21 = 6x + 9$	**s**	$24 = 3x - 1$	**sh**	$10 + 5x = 15$
dh	$2x - 6 = 4$	**c**	$5x + 8 = 3$	**f**	$3x + 6 = 6$
q	$4x - 12 = 12$	**g**	$6x - 6 = -6$	**k**	$12 = 2x - 4$
l	$8x - 4 = 4$	**m**	$2x + 3 = 3$	**n**	$8x - 16 = 24$
w	$7y + 14 = -7$	**h**	$3m + 3 = 6$	**y**	$2t + 12 = 2$
a	$20 = -20 + 2x$	**e**	$4a - 19 = 5$	**i**	$6 + 1t = 18$
o	$6x + 21 = 27$				

2 Raadi laba tiro abyoon togan isku xiga oo wadartoodu tahay 79.

3 16 ka yar 3 laabka tiro ayaa ah 20. Raadi tiradaas?

4 10 ka badan laba-ka saddexda tiro ayaa ah 60. Raadi tiradaa?

5 Soo saar laba abyoone kisi isku xiga oo wadartoodu tahay 8.

6 Raadi saddex abyoone togan isku xiga oo ay wadartoodu tahay 12?

7 1 ka yar shan laabka tiro waa 9. Kolkaa raadi tiradaa?

2.2 FURFURISTA DHEELIYO TOOSAN

Waxaad aragteen in isle'eg tahay habdhis xisaabeedka loo tibaaxayo xidhiidhka ka dhexeeya isle'ekaanshaha xaddiyada. Siday doonta ha ahaatee, ma'aha dhammaan xidhiidhadu inay u baahan yihiin isle'ekaansho xidhiidhka ka dhexeeya, sida, tirada xayawaanka adduunka ku dul sugan wuu ka badan yahay 20, culayska jiirku wuu ka yar yahay culayska maroodiga, dhererka maroodigu kama yara dhererka dibi.

Xidhiidhada nocaydan ahi ma'aha xidhiidhada isle'ekaanshaha, laakiin xidhiidhada sidan ah waxa la yidhaa dheeli.

Haddii aad soo qaaddo isle'egta toosan ($ax + b = 0$, $a \neq 0$) oo aad ku bedasho summadda "=" isle'ekaanshaha mid ka mid ah summadda dheeliga $<$. $>$, $\leq$, $\geq$ waxaad heli dheeli toosan.

Tusaale ahaan, $x + 3 > 5$, $2x - 6 \leq x + 1$ waa dheeliyo toosan.

Intaanad u gelin falanqeynta furfurista dheeliyada toosan waxa lagugula talinayaa inaad qabato shaqada laylisyada soo socda oo si wayn kaaga caawinaya inaad fahamto qaabdoorinada dheeliyada toosan.

Hawlgal 2.4

Layliska 1- 3 raadi mid walba qiimaha x in ay tahay furfurista dheeliga

Waydiimo afka ah:

	Dheeli				*qiimayaasha*				
1	$7x - 8 > 0$	b	$x = 2$	t	$x = -1$	j	$x = 1$	x	$x = -2$
2	$3x + 12 < -4$	b	$x = -5$	t	$x = -6$	j	$x = -8$	x	$x = -3$
3	$0 \leq \frac{x+4}{5} < 2$	b	$x = -2$	t	$x = 5$	j	$x = -5$	x	$x = 7$

4 Kuwa soo socda tee ayaa ah dheeli toosan.

b	$6 \geq 10$	t	$12 > 4$	j	$x > 4$
x	$12 = 12$	kh	$x < -10$	d	$x + 2 > 4$
r	$x - 6 < 5$	s	$2x + 4 = 6$	sh	$2a^2 - 3a \geq 6$
dh	$3x + 1 \leq 10$	c	$4x - 5 > 2x^3$	f	$6x + 3 < 11$
q	$4 \leq 2 + x$	g	$x + 5 > -6$	l	$0 \leq 2x + 6$
m	$12\,m - 34 \geq -6$				

5 waxaad ogtahay $10 < 12$, kadib ka jawaab su'aalaha soo socda

b miyey $10 + 3 < 12 + 3$? Sababtee? Faahfaahi

t miyey $10 - 14 < 12 - 140$? Sababtee? Faahfaahi

j miyey $4 \times 10 < 4 \times 12$? Sababtee? Faahfaahi

x miyey $\frac{10}{2} < \frac{12}{2}$? sababtee?

kh miyey $-2 \times 10 < -2 \times 12$? Sababtee ama sababtee ayey ku noqon wayday Faahfaahi

d miyey $\frac{10}{-2} > \frac{12}{-2}$?sabab?ama sababtee ayey ku noqon weyday haddii ay maya tahay? Faahfaahi

r maxaad ku soo koobi saansaanta hawlgalada kor ku xusan

6 Ka soo qaad 3 kg oo bun ah ayaa saaran kafada bidix islamarkaana 2kg oo bun ah in ay saaran tahay kafadda midig. Waxaad arkaysaa in labada kafadood ayna isku dheeli tirnayn. Ka jawaab mid kasta su'aalaha soo socda.

b Haddii aad ku darto laba kg oo bun ah oo kale kafad walba, kafadee ayay saaran yihiin kg (kiiloogaraam) badan oo bun ah? (kafadda bidix mise kafadda midig)

t Haddii aad ka qaado hal kiiloogaraam (kg) oo bun ah kafad walba, maxaad ka odhan kartaa miisaanka? Kafaddee ayaa miisaan badan?

j Haddii aad laban laabto xaddiga bunka ee kafad walba, kadib isbarbardhig xaddiyada bunka ee kafad walba (kafadee ayay saaran yihiin kilograamyo badan oo bun ah?) kafada bidix mise ta midig

x Haddii aad ka qaado $\frac{1}{3}$ kg oo bun ah kafad walba. Maxaad ka odhan kartaa miisaanka kafadaha?

kh Maxaad kaga soo koobi kartaa weedhaha kor ku xusan eek u hagaya u qaynta iyo ka goynta xaddi mid ah iyo ku dhufashada madoorsoome toga nee xaddiyo aan isle'ekayn labada qeyboodba.

7 Siin dheeliga $x + 6 > 24$, kadib

i Qor sababta talaabo walba; $x + 6 > 24$

ii Ku muuji $x > 18$ xariiq tireedka korkiisa

iii Tax ugu yaraan afar tiro oo run ka dhigaya $x + 6 > 24$.

8 Siin dheeliga $2(x + 4) > x + 4$, kadib,

i Qor sababta talaabo walba: $2x + 8 > x + 4$

$2x > x - 4$

$x > -4$

ii Tax ugu yaraan shan tiro oo run ka dhigaya $2x + 8 > x + 4$

iii Ku muuji $x > -4$ xariiq tireedka korkiisa .

Dhugo qeexaha soo socda

Qeex: Dheeliga toosan ee leh hal doorsoome waa dheeliga ku lug leh tibaaxaha, loo qoro saansaanadan midkood:-

1 $ax + b > 0$ **2** $ax + b \geq 0$

3 $ax + b \leq 0$ **4** $ax + b \geq 0$

Halka a iyo b ee qeexadan sare ay yihiin tirooyin lakab la iska qaatay $a \neq 0$.

Hawlgal 2.5

1 $5 > 2$ waa hawraar run ah. (fiiri hadday mid kasta oo ka mid ah kuwan soo socda yihiin run ama been)

b $(5 + 3) > (2 + 3)$ ..... *Dhinac kasta u gee 3*

t $(5 - 3) > (2 - 3)$ ..... *Dhinac kasta kagoo 3*

j $(5 \times 3) > (2 \times 3)$ ..... *Labada dhinac ku dhufo 3*

x $\frac{5}{3} > \frac{2}{3}$ ..... *Labada dhinac u qeybi 3*

2 $5 > 2$ waa hawraar run ah. Fiiri inay run ama been yihiin kuwan soo socda.

b $5 + (-3) > (2 + (-3))$ **t** $5 - (-3) > (2 - (-3))$

j $5 \times (-3) > 2 \times (-3)$ **x** $\frac{5}{-3} > \frac{2}{-3}$

3 Waa maxay astaamaha aad ku soo bandhigi kartid

b U geynta ama ka goynta tiro togan labada dhinac ee isle'eg?

t Ku dhufashada labada dhinac tiro togan ee dheeli?

j Ku dhufashada labada dhinac ee dheeliga tiro taban?

Xeerka Qaabdoorinta isudhigma ee dheeliyada toosan

Fasalka 6aad , waxaad ku soo barateen sida loo furfuro dheeliyada toosan ee fudud iyo sida loogu muujiyo furfurista xariiq tireedka korkeeda. Qeybtan,waxa aad furfuri doontaa dheeliyada toosan ee doorsoomaha xaddiga la raadinaya dhamaan qiimayaasha x ee run ka dhigaya dheeliga. Waa furfurista dheeliga, dhamaan ururka tirooyinka maangalka ee u ah furfurista dheeliga waa urur furfuriseedka dheeliga.

Badanaa dheeliga toosan wuxuu leeyahay furfurisyo aan tiro ahaan u xadidnayn islamarkaana waxaan ku muujin karnaa xariiq tireedka dushiisa.

Raadinta urur furfuriseedka dheeliga toosan waxaynu u minguurinaynaa saansaanta isku dhignaanta islamarkaana soocida doorsoomaha. Si aynu u samayno tan, u wareeji doorsoomaha dhinaca bidix ee dheeliga islamarkaana madoorsoomaha dhinaca midig ku dhaaf.

Xeerkan waxaa kaloo lagu yidhaa astaamaha dheeliga

Astaamaha dheeliyada

1 Ugeynta ama kagoynta tiro isku mid ah dheeliga dhinac walba wax isbedal ah kuma keenayno, sumada dheeliguna sideedii ayey ahaanaysaa taas oo ah tiro kasta a, b iyo c waxaynu helaynaa

- Haddii, $a < b$ kolka $a + c < b + c$ islamarkaana $a - c < b - c$
- Haddii, $a > b$ kolka $a + c > b + c$ islamarkaana $a - c > b - c$

2 Ku dhufashasda ama u qeybinta labada dhinac ee dheeliga tiro togan oo isku mid ah summada dheeligu sideedii ayey ahaaneysaa, taas oo ah tiro kasta a iyo b islamarkaana $c > 0$ waxan helaynaa:

- Haddii, $a < b$ kolkaa $ac < bc$ islamarkaana $\frac{a}{c} < \frac{b}{c}$
- Haddii $a > b$ kolkaa $ac > bc$ islamarkaana $\frac{a}{c} > \frac{b}{c}$

3 Marka dheeliga dhinac walba lagu dhufto ama loo qeybiyo tiro taban jihada summada dheeligu waa lagma maarmaan inay isrogto, taas oo ah tiro kasta a, b kolka $c < 0$ waxay noqon

- Hadii $a < b$ kolkaa $ac < bc$ ismarkaana $\frac{a}{c} > \frac{b}{c}$
- Haddii $a > b$ kolkaa $ac > bc$ islamarkaana $\frac{a}{c} < \frac{b}{c}$

Mid walba astaamaha kor ku xusan waa run haddii summada $<$ lagu bedalo $\leq$ islamarkaana summada $>$ lagu bedalo $\geq$

Tusaale ahaan:

- Haddii $a \leq b$, kolkaa $a + c \leq b + c$
- Haddii $a \geq b$, kolkaa $a + c \geq b + c$

Tusaalayaasha soo socda si fiiro gaar ah u adeegso talaabooyinka astaamaha dheeliyada ama xeerarka minguurinta isku dhigma ee dheeliyada toosan.

Tusaale 1: Furfur dheeliga $x - 16 \leq 11$

Furfuris: $x - 16 \leq 11$ ……*qor asalkii dheeliga*

$x - 16 + 16 \leq 11 + 16$……*u gee 16 dhinac walba*

$x \leq 27$……*fududeyta*

Sidaas darteed, furfuristu waa $x \leq 27$ urur furfuriseedka waxaa lagu muujin karaa xariiq tireedka hoos ku xusan

Jaan. 2.1

Tusaale 2: Furfur dheeliga $3x - 12 < 24$

Furfuris: $3x - 12 < 24$……*asalkii dheeliga*

$3x - 12 + (12) < 24 + (12)$……*u gee 12 dhinac walba*

$3x < 36$……*fududn ee*

$x < 12$……*u qeybi 3 dhinac walba*

Sidaas awgeed furfuristu waa $x < 12$ islamarkaana waxaynu ku muujin karnaa xariiq tireedka hoos ku xusan

Jaan. 2.2

Tusaale 3: Raadi ururka furfurista dheeliga $\frac{7x+3}{4} \geq 6$

Furfuris:

$\frac{7x+3}{4} \geq 6$ ……*qor dheeliga asalkiisa*

$4\left(\frac{7x+3}{4}\right) \geq 4 \times 6$ ……*Dhinac kasta ku dhufo 4*

$7x + 3 \geq 24$ ……*fududeynta*

$7x + 3 - 3 \geq 24 - 3$ ……*kagoo 3 labada dhinac*

$7x \geq 21$ ……*fududeynta*

$\frac{7x}{7} \geq \frac{21}{7}$ ……*dhinac kasta u qaybi 7*

$x \geq 3$ ……*fududeyta*

Sidaa darteed ururka furfuristu waa $\{x : x \geq 3\}$

Jaan. 2.3

Tusaale 4: Ka dooro furfurista ururka guud U = {1, 2, 3, 4} ee dheeliga $8x - 12 > 9$

Furfuris: Ku bedal tiro walba meesha x islamarkaana eeg in uu dheeligu run yahay ama in aanu run ahayn.

$8(1) - 12 > 9$ ……*1 ku bedal x*

$-4 > 9$ ……*waa been islamarkaana 1 ma aha furfurista dheeliga*

$8(2) - 12 > 9$ ……*2 ku badal x*

$4 > 9$ ……*taas oo ah been 2 ma aha furfuris*

$8(3) - 12 > 9$ ……*ku badal 3 meesha x*

$24 - 12 > 9$ ……*3 × 8 = 24*

$12 > 9$ ……*dheeligu waa run sababtoo ah 3 waa furfurista dheeliga*

$8(4) - 12 > 9$ ……*4 ku badal x*

$32 - 12 > 9$

$20 > 9$ ……*taas oo ah run sababtoo ah 4 waa furfurista dheeliga*

Sidaas darteed, urrurka guud dhexdiisa urur-furfuriseedka dheeligu waa {3, 4}.

Laylis 2.3

1 Furfur dheeliga toosan ee soosocda

b	$x + 5 > 13$	**t**	$x - 8 < 4$	**j**	$m + 12 \geq 24$
x	$6x - 8 > 16$	**kh**	$7x - 2 < -16$	**d**	$10x + 15 \geq -25$
r	$2x + 12 > 10$	**s**	$3x + 14 < 5$	**sh**	$6x + 5 \leq -19$
dh	$3 + 4x > 15$	**l**	$6m - 12 < -12$	**g**	$3y + 27 > 21$

2 Siin dheeliga $4x - 8 \geq 3(x + 2)$

i Cadee talaabo walba ee furfurista

Talaabada 1: $4x - 8 \geq 24$

Talaabada 2: $4x - 8 + (8) \geq 24 + 8$

Talaabada 3: $4x \geq 32$

Talaabada 4: $x \geq 8$

ii Ku muuji furfurista $x \geq 8$ xariiqtirada korkeeda.

3 Raadi furfurista (yada) dheeliga $2x + 4 < x + 3$ adigoo u qaadanaya ururka guud $U = \{-3, -2, 0, 1\}$

4 Laylis shaqo kooxeed.

Dheeliyada soo socda u furfur x islamarkaana ku muuji furfurista xariiq tiro korkeeda

b $4(2x + 3) > 3(3x - 2)$

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

j $2.5x - 4.2 > 8.5 \times 7.5$

5 Haddii tiro ka badani afar ay 6 ka yar tahay, kolkaa

b Qor dheeliga si aad u sharaxdo masalada

t Raadi furfurista dheeliga toosan si aad u heshid (su aasha b)

6 Tiro ayaa si labanlaab u korodhay min laba kana wayn 8

b Qor dheeliga toosan si aad u furfurtid masaladan

t furfur masaladan si aad u heshid (**b**)

7 Masalooyinka isle'eg toosan iyo dheeliyada oo shaqo kooxeed ahaan lagaga Shaqaynayo.

Tilmaan:- Waxaad ka shaqayn doontaan dhamaan masalooyinkan hal dhinac markii ay kooxi ka shaqaynayso dhinaca kala

	Hoos u tax 1		Hoos u taxa 2
1	$2n + 15 = 29$	1	$3n - 10 = 11$
2	$10x + 9 = 69$	2	$3(33x + 4) + x = 212$
3	$2(3a + 1) + a = 23$	3	$5(2a - 5) - 5 = 0$
4	$2d + 19 < 5$	4	$55d + 8 < -27$
5	$(x - 2) + 3x - 2 \geq 12$	5	$15 \leq 6x - 9$
6	$m + 5(m - 4) \geq 5 - m$	6	$7m + 4(2m - 10) \geq 359$

Ogow waxaa jira weedh xisaabeedyo inagu hagaya dheeliyada toosan, u fiirso tusaalayaasha soo socda.

Tusaale 1: Dakhliga lagu gadis x halbeegyo waxsoo saar dhan $R = 125x$. qiimaha x halbeeg ee la soo saaray waa $c = 25x + 1000$. Si aynu u helno faa'iidado dakhligu inuu qiimaha kaga waynaado ay tahay. Qiimaha x haddaan u leexino xaga faaiidada muxuu noqonayaa?

Furfuris: $R > C$

$125x > 25x + 100$

$100x > 1000$

$x > 10$

Sidaa darteed x waxay ka waynaataa 10 si aan u helno faaiido.

Laylis 2.4

1. Ismaaciil wuxuu haystaa 8 Birr, wuxuuna qorshaystay inuu ku gato furun qiimaheedu yahay 2 Birr. Raadi inta xabbo ee furun ah ee ay lacagtu u goynayso?
2. Hodan waxay qorshaysatay inay iibsato halxabo oo cambe ah iyo tufaaxyo ka badan waxayna haysataa 20 Birr. Haddii tufaaxa qiimihiisu yahay 5 Birr cambahana 1 Birr. Raadi inta xabbo ee tufaax ay hodan iibsatay?

3 Daa'uud waxa buugga kaydka ugu jirta Birr 500 bilowgii xagaaga. Waxa u rabaa inay ugu yaraan Birr 200 ay ku jirto buugga kaydi, ka kolka u xagaangu dhammaanayo. Wuxu Birr 25 tobaad kasta ugala soo baxaa tigidhada shaneemada.

b Qor dheeliga u taagnaan karaa xaaladda Daa'uud?

t Imisa todobaad ayuu Daa'uud kala soo baxay lacag buuggiisa kayd ka? Sababee jawaabtaada.

Ereyada muhiimka ah

- Dakhli
- Faa'iido
- Isku xiga
- Ka badan
- Qaabdoorinta isudhigma
- Ururka furfurista
- Dheeli toosan
- Guud/urrur guud
- Isle'eg toosan
- Ka yar
- Qiimaha

Soo Koobida Cutubka

1 Isle'egta toosan ee leh hal doorsoome x waa isle'eg toosan oo loo qori karo saansaanta $ax + b = 0$, halka a iyo b ay yihiin tirooyin islamarkaana $a \neq 0$

2 Furfuristu waa qiimaha, isleeg toosan oo ah marka aad ku badashid meesha doorsoomaha qiimahawaxay isle'egta ka dhigaya run.

3 Urrur furfuriseedka isle'egta toosan waa urrur ka kooban dhammaan qiimaha macquulka ah ee doorsoomaha, kuwaas oo ka dhigaya isle'egta toosan run.

4 Astaamaha isle'eg toosan

U soo qaado a, b iyo c in ay yihiin tirooyin, kadib waxaynu helaynaa kuwa soo socda.

Haddii $a = b$ kadib

i $a + c = b + c$ ii $a - c = b - c$

iii $ac = bc$ iv $\frac{a}{c} = \frac{b}{c}$ haddii $c \neq 0$

5 Dheeliga toosan ee leh hal doorsoome waa dheeli ay lamaaneeyaan tibaaxo kasta oo u qorma sansaamahan midkood

i $ax + b > 0$ ii $ax + b < 0$

iii $ax + b \leq 0$ iv $ax + b \geq 0$

6 Halka a iyo b ee qeexaha sare ku xusan ay yihiin madoorsoomayaal islamarkaana $a \neq 0$ urur furfuriseedka dheeligu waa ururka ka kooban dhamaan qimayaasha doorsoomaha kuwaas oo ka dhigaya dheeliga toosan run.

7 Astaamaha dheeliga toosan

i U geynta ama ka goynta tiro isku mid ah islamarkaana dheeliga dhinac walba wax isbadal ah kuma keenayso summada dheeliga sideedii ayey ahaaneysaa, taas oo ah tiro lakab kasta oo a, b iyo c waxay noqonaysaa

- haddii $a < b$ kalkaa $a + c < b + c$ islamarkaana $a - c < b - c$
- haddii $a > b$ kalkaa $a + c > b + c$ islamarkaana $a - c > b - c$

ii Ku dhufashada ama u qeybinta labada dhinaca ee dheeliga tiro togan oo isku mid ah summada dheeligu sideedii ayay ahaaneysaa.

Taas oo ah tiro lakab kastoo a iyo b kolka $c > 0$ waxay noqon.

- Haddii, $a < b$ kalkaa $ac < bc$ islamarkaana $\frac{a}{c} < \frac{b}{c}$
- Haddii, $a > b$ kalkaa $ac > bc$ islamarkaana $\frac{a}{c} > \frac{b}{c}$

iii Marka dheeliga dhinac walba lagu dhufto ama loo qeybiyo tiro taban, jihada summada dheeligu waa lagmamarmaan in ay is rogto taas oo tiro lakab kastoo a iyo b kolka $c < 0$ waxay noqon.

- Haddii $a < b$ kalkaa $ac > bc$ iskamarkaana $\frac{a}{c} > \frac{b}{c}$
- Haddii $a > b$ kalkaa $ac < bc$ islamarkaana $\frac{a}{c} < \frac{b}{c}$

Mid walba astaamaha kor ku xusan waa run haddii summada $<$ lagu badali $\leq$ islamarkaana summada $>$ lagu badalo $\geq$.

Lylisyada guud ee Cutubka 2aad

1 Furfur isleegyada toosan ee soo socota.

b $3m - 12 = 24$ **t** $15y + 20 = 35$ **j** $4 + 5m = -21$

x $8t - \frac{5}{4} = \frac{7}{4}$ **kh** $3\,(2 + m) = -6$ **d** $4\,(3x - 3) = 12$

r $6x - 9 = 15$ **s** $\frac{10x + 2}{3} = 4$

2 Raadi furfurista isleegyadan toosan ee soo socda adigoo adeegsanaya urrurka guud ee lagu siiyey

b $25x - 23 = 17$, $U = \{-2, -1, 0, 1, 2\}$

t $35 + 21x = 35$, $U = \{-3, -2, -1, 0\}$

j $2x + 3 = 13$, $U = \{6, 5, 4\}$

x $4x - 10 = 2$, $U = \{1, 2, 3, 4\}$

3 Fur fur weedh xisaabeedyadan soo socda adiga oo u dajinaya isle'egyo toosan ahaan

b marka afar lagu dhufto tiro waxay kordhaysaa 8,waxa ay la mid tahay 24,waa maxay tiradaasi?

t hal la hoos dhigay sadex ka tiro oo loo geyey laba la hoos dhigay shan ka tiro waa 22, raadi tiradaas?

j wadarta sadex abyoone togan oo isku xiga waa 24, raadi tirada ugu horeysa.

x nin gaadhiyada iibiya ayaa wuxuu bixiyey dulsaar go'an ka 500 birr bishiiba,dheeraad waxaa ku ahaa 2000 dulsaar iibkiiba, imisa ayuu iibin karaa sanadkiiba si uu u helo 100,000 birr sanadkiiba?

d dhererka laydi waa sadex jibaarka balaca laydiga haddii wareega laydigu yahay 24 cm, kadib raadi laydiga.

kh cabdi waxa uu ubax ka wayn yahay 10 sano, sanadka soo socda cabdi wuxuu noqon laba jibaarka dada ubax imika imisa jir ayey yihiin?

4 Furfur dheeliyada toosan ee soo socda.

b	$x-3>4$	**t**	$m+12<-10$	**j**	$5-m>3$
x	$6t+24\geq 18$	**kh**	$4m+12\leq 4$	**d**	$2(3-x)>6$
r	$5x-11>4$	**s**	$4x+9\leq 17$	**sh**	$25m-50>75$
dh	$\frac{2x-14}{3}\leq -2$	**c**	$4t+3<12$	**g**	$3(2x-2)\leq 24$
f	$9t-3\leq 4$	**q**	$\frac{1}{2}(4x+1)\geq \frac{5}{2}$	**k**	$10\ m-3\geq 17$
l	$31>4(2y-6)+3y$				

5 Furfur weedh xisaabeedyadan soo socda mid walba adiga oo u dajinaya dheeliyo toosan ahaan

b geele wuxuu keenaa sanduuqyo waraaqo ah xafiisyada ku yaala dhisme, culayska sanduuq walba waa 64 kh isla markaana.

t kharashka iininta x cabirka wax soosaarku waa $R = 25x$, qiimaha lagu soo saarayo x cabirka waa $C = 15x + 100{,}000$ si loo helo faa'iido waa in dakhligu ka waynaadaa qiimaha, waa maxay qiimahaas x ee lasoo saaro faa'iidada laga helayo?

Waxay noqon karaan masalooyin dheeraada

Masalooyinka is le/egta toosan iyo dheeliyada shaqo kooxeed ahaan jahada:- waxaad ka wada shaqeyn dhamaan masalooyinka hal joog u tax halka saaxiibkaana uu ka shaqeynayo masalooyinka joog u taxa kale.

Joog u taxa 1

1 $2n + 15 = 29$

2 $10x + 9 = 69$

3 $2(3a + 1) + a = 23$

4 $2d + 19 < 5$

5 $(x - 2) + 3x - 2 \geq 12$

6 $m + 5(m - 4) \geq 5 + m$

Joog u taxa 2

1 $3n - 10 = 11$

2 $3(33x + 4) + x = 212$

3 $5(2a - 5) - 5 = 0$

4 $55d + 8 < -27$

5 $15 \leq 6x - 9$

6 $7m + 4(2m - 10) \geq 359$

CUTUBKA 3AAD

a : b

a : b = c :d

I=R×D×T

SAAMI,SAAMIGAL IYO BOQOLEY

Ujeedooyina cutubka:

Cutubkani marka uu dhamaado kadib,waxaad awood u yeelan doontaa inaad:

- *Fahanto fegradaha guud ee saamiga iyo saamigalka*
- *Furfurto masalooyinka la xidhiidha boqoleyda*
- *uga faa'iidaysato nuxurka boqoleyda si aad ugu furfurto masalooyinka faa'iidada, khasaaraha iyo dheefta fudud.*

Tusmooyinka muhiimka ah:

3.1 Saami Iyo Saamigal

3.2 Qoto Dheeraynta Boqoleyda

3.3 Adeegsashada Boqoleyda

Ereyada Muhiimka

Koobista cutubka

Laylisyo guud

HORDHAC

Xisaab ahaanta saami, saamigal iyo boqoleyda waa nuxuro xidhiidh u wado leh isdhexgalka. Cutubkani wuxuu ahmiyad siinayaa isticmaalka saami, saamigal iyo boqoley. Cutubkani dhexdiisa waxaad ku baran doontaan sida loogu qoro saami saansaanta ugu fudud; tii oo lagu naqtiimayo saamigalka quman iyo saamigalka dadban, oo laguugu bandhigay saami galka.

Dhammaan xaaladahan dhexdooda. Waxay ku lug leeyihiin shaqada isbarbardhigista xaddiyada fekrad ka siinta xidhiidhka tirooyinkooda. Waxaa raacsan, inaad ku fiirin karto ama u isticmaasho nuxurada si aad ugu furfurto masalooyinka nolosha runta ah. Cutubku waxa kaloo u bandhigaa nuxurka boqoleyda iyo u adeegsashada masalooyinka xaqiiqada dunida.

3.1 SAAMI IYO SAAMIGAL

Fasalka lixaad buugga xigaabta cutubka 6aad ayaad waxaad ku soo baratay saamigalka quman iyo saamigalka dadban. Cutub hoosaadkan wuxuu ku lug leeyahay nuxurka saami iyo saamigalka. Wuxuu bandhigayaa maslooyinka xaqiiqda ku ah aduunyada iyo weedh xisaabeedyada nuxurada khuseeya.

3.1.1 Saami

Sidee ayaad iskugu barbardhigi laba xaddi ama tiro?

Waxaad iskugu barbardhigi kartaa isu qaybin laba tiro. Xaaladan ayaad waxaad kaga hadli kartaa saamiga laba xaddi. Ka hor qeexitaanka saamiga laba xaddi waxaa lagama maarmaan ah in loo baahan yahay qabashada hawlgalada soo socda.

Hawlgal 3.1

1 Waa maxay jajab?

2 Maxaad ula jeedaa saasnsaanta ugu fudud jajabka?

3 U qor jajab kasta jajabyadan soo socda saansaanta ugu fudud.

b $\frac{38}{95}$ t $\frac{48}{144}$ j $\frac{96}{36}$ x $\frac{153}{102}$

4 Waa maxay saami?

5 Maxaad ula jeedaa saamiga labo tiro tirsiimo?

6 Sidee ayaad ku ogaan kartaa kolka saamiga labo tiro u tibaaxan yahay saansaanta u hooseysa?

7 Keen tusaalooyin xaddiyo la iskugu barbardhigayo saami?

8 Ka dooda faraqa u dhexeeya jajab iyo saami, idinkoo tusaale ka bixinaya?

9 Ka dhig saamiga tirada gabdhaha iyo tirada wiilasha inay tahay 3;5 waa maxay dhab ahaan ula jeedadu?

10 Isbarbardhig tirada gabdhaha iyo tirada wiilasha fasalkaaga?

11 Ka soo qaad inaad maalin walba warshada sibidhka ee "A" ay kuu soo saarto 250 tan oo sibidh ah, halka ay maalin kasta warshada sibidhka ee "B" ay kaaga soo saarto 350,000 kintaal oo sibidh ah. Markaa isbarbardhig labada warshadood inta ay maalin walba kuu soo saaraan?

12 Fasal ayey 16 gabdhood iyo 28 wiil ku jireen.

Soo saar

b saamiga tirada gabdhaha iyo tirada wiilasha
t saamiga tirada wiilasha iyo gabdhaha
j maxaad ka odhan kartaa labadaa saami guud ahaan

13 Ka soo qaad in saamiga dhererka xaawa iyo dhererka faadumo u yahay 5:7. Haddii u dhererka faadamo yahay 175 cm, waa maxay dhererka xaawa?

14 Haddii Birr 2400 saddexda qof ee A, B iyo C loogu qaybiyo saamiga 1:2:5. Raadi qof kasta inta ku soo hagaagaysa?

15 Waddo ayaa dhererkeedu yahay 840 km. Haddii waddada lagu kala qeybiyo saamiga 2:7:11 soo saar dhererka qeyb kasta?

Hadda, waxaad ka odhan kartaa in saamiga laba xaddi ay tahay isubarbardhig ama isu qeybin.

Tusaale 1: Imtixaan xisaab 40 dhibcood ah ayey hodan ka heshay 36, daa'uudna ka helay 24, siciidna 18 islamarkaana faadumo ka heshay 30, isbarbar dhig darajada arday walba helay.

Furfuris: Daa'uud wuxuu helay $\frac{2}{3}$ kolka loo eego intay heshay hodan

Siciid wuxuu helay $\frac{3}{5}$ ka intay heshay faadumo

Faadumo waxay heshay $\frac{5}{6}$ ka inta ay heshay hodan siciid wuxu helay $\frac{3}{4}$ ka inta daa'uud

Saamiga laba xaddi wuxuu tilmaamaa inta jeer ee xaddiga hore uu ka yahay ka labaad oo u muujini kara aljabra ahaan sida ay qaybtoodu tahay.

Qeexda guud ee saami waa sidan soo socota:-

Qeex 3.1: Haddii a iyo b ay yihiin laba xaddi, kolkaa tibaaxda $\frac{a}{b}$ ayaa la yidhaahdaa saamiga a iyo b. a iyo a waxaa la yidhaahdaa tibxaha isirada saamiga. Tibixda hore ee a waxaa la yidhaahdaa isirka hore tibixta laabaad ee b na waxaa la yidhaahdaa isirka dambe.

Ogow: Saamiga labada xaddi ee a iyo b waxaa si caadiya loogu qoraa saddex hab.

i Ereyo ahaan a iyo b

ii Erey fure u dhexeeyo, sida, a:b

iii Summad jajab ahaaneed sida $\frac{a}{b}$.

Saami a:b ayaa waxa la yidhaahdaa waa saansaanta u fudud (u hoosaysa) haddii labada tibxood ayna lahayn isir ay wadaagaan oo ka duwan hal taasoo ah IWW labada tibxood waa 1.

Tusaale 2: Dugsi ayay joogeen 50 bare iyo 1250arday soo saar saamiga tirada barayaasha iyo ardayda

Furfuris: Saamiga tirada barayaasha iyo tirada ardaydu waa 50: 1250,hasayeeshee si loogu qoro jajab fudud waxaa loo qaban isku jarid si ay u noqoto 1.25.

Haddaba 50:1250 =1:25.

Tani waxay ku xusuusinaysaa isku jariinka isirka ay wadaagaan sareeyaha iyo hooseeyaha jajabyada.

Saamiga 1:25 wuxuu u jeedaa bara kasta waxaa ku aadaya 25 arday ama tirada barayaashu waxay ka noqdaan $\frac{1}{25}$ ka tirada ardayda. Saamiga laba xaddi waa natiijada isbarbardhigista wax isku nooca taasoo macneheedu tahay xaddiyada la isbarbardhigayaa waa inay ahaadaan halbeegga cabiro isku mid ah.

Tusaale ahaan waa inaan la isbarbardhigin 15 wiil iyo 10 sac ama 10 kg iyo 50m ama 5 caruusadood iyo 4 khudrad ah.

Tusaale 3: Soo saar saamiga

b $3\frac{1}{6}$ bilood iyo 38 maalmood

t 70km iyo 7500 m

j 250 mlt iyo2 lt

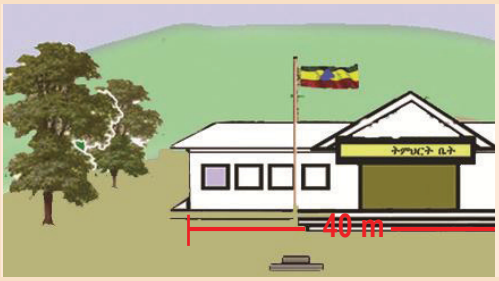
Furfuris: b maadaama xaddiyada la ina siiyey ay yihiin halbeeg kala duwan, waa inaan $3\frac{1}{6}$ u rognaa maalmo oo noqonaysa 95 maalmood hadaba saamiga la rabo waa 5:2

t labada xaddi ma' aha halbeeg mid ah hadaba, 70 km u rog mitir oo dhan 7000 m. ,haddaba,saamiga la rabay waa 28:3.

j xaddiyadu ma aha halbeeg isku mid ah,sidaas daraadeed 2 litir u rog mililitir,waxayna dhan tahay 2000 mlt .haddaba saamiga la rabaywaa 1:8.

Shaqo Kooxeed3.1

1 Dhererka dhismaha dugsi ayaa ah 40 m sida uu muujinayo jaantuska hoose. Muuqaalka qorshaha dhismaha la dhisayey waxa uu ahaa saamiga fogaanta qorshaha iyo fogaanta dhismaha xaqiiqda ah waa 1:200



Jaantuska 3.1

b xisaabi dhererka dhismaha ee muuqa naqshadda

t Baaxad intee le'eg buu leeyahay dhismaha dhabta ahi

j Haddii balaca albaabku dhismaha dhabta ahi yahay1.2m kolkaa waa imisa baladhka albaabka naqshadu?

2 Fiiri khariirada dugsigiina waa imisa qiiyaasta khariiradiisu? Tiiyoo qiyaasta khariirada la isticmaalayo soo saar qiyaasta wareega iyo bedka dhismaha dugsiga.

Waxaad sidoo kale u qaybin kartaa xaddi lagu siiyey, aan nidhaahno x, saami lagu siiyey ee a:b adoo isticmaalaya daamkan hoos lagugu siiyey.

Talaabada 1 aad: Soo saar wadarta saamiga labada tibaaxood, taasoo ah: a + b

Talaabada 2aad: U adeegso jidka soo socda si aad u hesho labada qaybood ee xaddiga lagu siiyey ee x.

$$\text{Qaybta koowaad} = \frac{a}{a+b} \times x$$

$$\text{Qaybta labaad} = \frac{b}{a+b} \times x$$

Tusaale 4: Fasal ayaa waxaa ku jiray 48 arday haddii saamiga tirada gabdhaha iyo ta wiilashu tahay 3:5, kolkaa soo saar tirada gabdhaha iyo tirada wiilasha ee fasalka.

Furfuris: Wadarta tibxaha saamiga lag u siiyay waa 3 + 5 = 8, kolkaa

$$\text{tirada gabdhuhu} = \frac{3}{8} \times 48 = 18$$

$$\text{tirada wiilasha} = \frac{5}{8} \times 48 = 30$$, sidaas darted, waxaa fasalka ku jira 18 gabdhood iyo 30 wiil.

Ogow: In jid la mida ah looga shaqaynayo haddii xaddiga lagu siiyay loo qaybinayo laba qaybood in ka badan ee saamiga.

3.1.2 Saamigal

Ka hor inta aan la qeexin saamigal waa inaad nuxurada saamigalka quman ah iyo saamigalka aan qumanayn ku naqtiintaa hawlgalka soo socda.

Hawlgal 3.2

1 Ka soo qaad inaad ku soo iibsatay 6 qalin Birr 9.00 kolkaa

b intee ayaad siin lahayd 8 qalin, 12 qalin iyo 4 qalin khad.

t ma u arkaysaa in kolka tirada qalimada la soo iibiyay korodho, in wadarta qiimaha aad bixinayso korodho?

j ma u arkaysaa in tirada qalimada la soo iibiyay kolkaa ay yaraato in lacag ka yar aad bixinayso ?

x maxaad ka odhan xidhiidhka ka dhexeeya tirada qalimada la soo iibiyey iyo qiimha lacagta la bixiyey ? .

2 Ka soo qaad in labo qof loo shaqaalaysiiyay si ay u dhisaan darbi qaadanaya 24 maalmood si loo dhamaystiro, kolkaa

b Imisa maalmood ayey

i 4 qof ku dhamaynayaan shaqadaa

ii 6 qof si ku dhamaynayaan shaqo la mida?

t Ma arkaysaa in tirada dadka loo shaqaalaysiiyey korodho/yaraato,tirada maalmaha loo baahan yahay dhamaystirka shaqada la midka ah yaraato/korodho? (yaraato ama korodho)

j Maxaad ka odhan lahayd xidhiidhka u dhaxeeya tirada dadka shaqeeyay iyo tirada maalmaha loo baahan yahay in lagu dhameeyo shaqada.

3 Haddii $x:y = 3:5$ islamarkaana $y : z = 2:3$ kolkaa raadi $x:z$?

4 Ka soo qaad in ay fasal ku jiraan 15 gabdhood iyo 25 wiil, kolkaa.

b soo saar saamiga tirada gabdhaha iyo tirada wiilasha.

t soo saar saamigalka gabdhaha ee fasalka

j soo saar saamigalka wiilasha ee fasalka

x maxaad odhan isbarbardhigista **qaybo** iyo **qaybo**.

kh maxaad odhan isbarbardhigista qaybo iyo wax idil?

5 Cadee saamiyada soo socda in laba kasta ay is leeg yihiin iyo in kale?

b $\frac{16}{24}$ iyo $\frac{8}{16}$

t 8:14 iyo 20:35

j 1.5:2.7 iyo 4.5:8.1

x 8:28 iyo 12:36

6 Raadi madoorsoomaha mid kasta saamiyada isle'eg ee soo socda.

b $5:3 = x : 6$

t $2:P = 4:3$

j $7:x = 49:63$

x $y:15 = 6:9$

kh $7:8 = m:2$

d $a:13.2 = 2.5 : 5.5$

7 Maxaa saameeya isleekaanshaha saamiyada? Haddaba, maxaad ku magacaabi isleegta $8:12 = 24:36$?

8 Mid kasta kuwan soo socda tee ayaa ah saamigal quman ama saamigal aan qumanayn?

b Xoog go'an (F) oo lagu falay cuf (M) **huban** iyo karaarkeeda (a)

t Kaynaanka (V) ee bas iyo amminta (t) ku qaadatay dhamaystirka fogaanta (d).

j. Tirada raga la siiyey inay ka shaqeeyaan hawl iyo amminta ay ku qaadatey si lo dhammeeyo shaqo la mid ah.

x. Fogaanta lagu socday xawaare madoorsoome ah iyo amminta ay qaadatay.

9 Xoghayn ayaa 70 bog ku garaacday 5 maalmood makiinad Imisa bog ayey ku garaaci kartaa 7 maalmood?

10 Afar nin ayaa shaqo ku qaban kara 3 maalmood Imisa maalmood ayey 6 nin ku qaban doonaan shaqadii mid la mid ah?

Hawlgalka sare ayaa kuu hogaaminaya qeexaha guud ee saamigalka guman iyo saamigalka aan gumaneyn sida hoos lagugu siiyay.

Qeex 3.2: Laba xaddi (doorsoomayaal) oo x iyo y ah ayaa la yidhaahdaa waa isku saamigal quman, oo loo qor sida y ~x, haddii u jiro madoorsoome k oo ay y = kx, k ≠ 0, k waxaa la yidhaahdaa isirka saamigalnimada

Qeex 3.3: Laba xaddi oo x iyo y ah ayaa waxa la odhan karaa waa isku saamigal weydaar ah haddii uu jiro doorsoome k oo ay $y = \frac{k}{x}$ ama $xy = k; k \neq 0$

Qeex 3.4: Saamigalin waa isleegkaanshaha laba saami. Taasoo ah, labada saami $\frac{a}{b}$ iyo $\frac{c}{d}$ haddii a: b = c:d, kolkaa a,b,c iyo d way isu saamigalsan yihiin.

Saami isma bedalo kolka labada tibxoodba lagu dhufto ama loo qaybsho tiro aan eber ahayn. Tusaale ahaan 18: 24 waxay le'eg tahay 6 : 8 le'eg 3:4. Maxaad ku magacaabi isleekaanshahan?

Tani iyana waxay kuu hogaaminaysaa qeexda guud ee saamigalka a:b = c:d, a, iyo d waxaa la yidhaahdaa cidhfo, islamarkaa b iyo c waxaa la yidhaahdaa dhexyo .

Fiiri saamigalka 8:12 = 24:36

Waa maxay cidhifaha iyo dhexyuhu? Soo saar taranta cidhfaha iyo taranta dhexyaha.

Taranta cidhfaha iyo taranta dhexyuhu miyey isleeg yihiin?

Hubaal ahaan,taranta cidhfuhu waxay leeg tahay taranta dhexyaha. Tarantan waxaa la yidhaahdaa isku dhufashada iswaydaar ee saamigalka.

Guud ahaan:

$a \times d = b \times c$ haddii iyo haddii kaliya $a:b = c:d$.

Tusaale 5: Haddii 18: x = 36: 50 ay isu saamigal yihiin soo saar qiimaha x?

Furfuris:

$$\frac{18}{x} = \frac{36}{50}$$

$$36 \times x = 18 \times 50$$

$$x = \frac{18 \times 50}{36}$$

$$x = 25$$

Waxaad u adeegsan kartaa iskudhufashada iswaydaar ee saamigalka inaad ku furfurto dhibaatooyinka nolosha dhabta ah.

Tusaale 6: Bed dhul 63000 m^2 ayaa waxaa laga beeri karaa 700 geedo ah intee geed ayaa laga beeri karaa bed dhan 0.18 km^2?

Furfuris: Kolka bedku kordho geedaha la beerayaana way kordhayaan

Tirada geedaha	*Bad*
700	63000m^2
x	0.18km^2=180,000m^2

kolka loo dhigo isleegta labada saami, waxaad heli .

63000 :180000 = 700 : x

$$\frac{63000}{180000} = \frac{700}{x}$$

$$x = \frac{180000 \times 700}{63000} = 2000$$

Haddaba 2000 geed ayaa laga beeri karaa bedka 0.18km^2

Tusaale 7: warshad ayaa ku soo saarta 27000 nalal ah 15 maalmoodba lmisa nal ayey ku soo saartaa 7 maalmood.

Furfuris: Kolkay tirada maalmuhu yaradaan,tirada nalalkuna way yaraanayaan.

Tirada nalalka	*Tirada maalmaha*
27000	15
b	7

Isleekaysiinta labada saami waa:

$27000 : b = 15 : 7$

$$\frac{27000}{b} = \frac{15}{7}$$

$$b = \frac{7 \times 27000}{15} = 12600$$

Haddaba 12600 nal ayey ku soo saari kartaa 7 maalmood.

Laylis 3.1

1 Soo saar saamiga (saansaanta u fudud)

b 45 sm iyo 5m

t 200g iyo 5kg

j $2\frac{1}{2}$ saac iyo 54seken

x $1\frac{1}{2}$ san iyo 3 bilood

2 Wadarta tirada shaqaalaha warshad ayaa ah 1980. Haddii tirada raggu tahay 1020, kolkaa ku soo saar saamiga (saansaanta u fudud)

b tirada raga kolka loo eego tirada haweenka

t tirada haweenka iyo wadarta tirada shaqaalaha.

3 Waraaq laydiyeed ayaa dhererku yahay 0.3m, islamarkaana baladhku yahay 21cm, soo saar saamiga

b baladhka iyo dhererka

t dhererka iyo wareega

4 Tirooyinka afar-afarta ah ee soo socda kuwee ayaa sameeya saamigal.

b 3, 5, 15, 25

t 3, 15, 25, 5

j 18, 27, 12, 18

x 12, 10, 16, 10

5 Saamigal kasta oo soo socda, soo saar qiimaha x

b $x : 6 = 5:3$

t $9: 25 = x :125$

j $\frac{7}{18} = \frac{x}{54}$

x $\frac{16}{x} = \frac{17}{102}$

6 Laynka gudbiyaha danab dhererku yahay 9.2 cm ayaa khariiradda qiyaastiisu tahay 1:1500. Ku xisaabi dhererka laynka gudbiyaha danabka nolosha dhabta ah? (ku xisaabi mitiro, ama kiiloomitiro)

7 Xaglaha saddexagal ayaa ah saamiga 3:5:7 ku soo saar cabbirka xagal waliba digrii?

8 Jaale liibaan ayaa raba inuu ugu qaybiyo 10,500 saddexdiisa cunug A, B, iyo C saamiga 5:7:9 soo saar mid walba inta u helayo?

9 Lacag maar ah ayaa lagu kala sameeyey kobor, tin iyo sink saamiga ah 95:4:1

b intee ayaa bir kasta looga baahan yahay si loo sameeyo 1 kg oo maar ah?

t intee ayaa bir kasta looga baahan yahay kiiloogiraam badhkii oo maar ah?

10 Arday ayaa 6 buug siistay Birr 27.60 lmisa ayuu ka bixinayaa 15 buug oo la mid ah?

11 Saamiga ka dhexeeya laba xaddi ayaa ah 2:7 haddii uu xaddiga labaad yahay 9.8kg, waa intee xadiga hore?

12 Dugsi ayay ku jireen 150 arday. Saamiga tirada wiilasha iyo ta gabdhuhu waa 7:8. Waa imisa tirada wiilasha iyo ta gabdhaha dugsiga dhigtaa?

13 Macdaar iibiye ayaa ku gaday darsin qalin qori ah Birr 16.00 islamrkaana wuxuu ku gadaa qalin qori kasta Birr 1.75 waa maxay saamiga faa'iidada iyo qiimaha gadistu?

14 Laba qof, Abiib iyo xuseen ayaa kuwada maalgashaday lacag meherad. Abiib wuxuu ku maalgashadey Birr 3450 islamarkaana xuseen wuxuu ku maalgashaday Birr 5500 Dhamaadka sanad miisaaniyadeedka, waxay faa'iidado ugu kala qaateen saamiga maalgashigooda. Kolka faa'iidada tahay Birr 7350 imisa ayey Abiib iyo xuseen mid walba helayaa?

15 Faarax oo shaqeeyey 8 saacadood ayaa waxa la siiyey Birr 30. Intee ayuu heli doonaa shaqada 10 saacadood kolka lagu lacag siiyo si la mid ah?

16 Haddii 15 wasdaad ay ku dhisi karaan gidaar dhererkiisu yahay 100m muddo maalmoah. Imisa wastaad ayaa ka shaqayn si loo dhiso dhererka 120m gidaarla joog ah lana mudo ah?

17 Gaadhi ayaa 80 km ku socda saacad. Fogaan intee le'eg ayuu ku socon 12 daqiiqo?

18 Siddeed nin ayaa ku qaban kara shaqo 10 maalmood. Imsa maalmood ayey 12 nin ku qaban karaan shaqadan?

19 Gaadhi ayaa ku socda celceliska xawaaraha 55km/sac ayey ku qadataa in 4 saacadood ku gaadho meel. Ammin intee ah ayey ku qaadan inuu ku gaadho isla meeshii haddii u ku socdo xawaaraha 40km/sac .

20 Safar ayaad ku qaadatay 21 daqiiqo, kolkaad ku socoto 4.5 km/saac. Waa intee fogaanta aad soconayso haddii aad ku socoto 3.5 km/saac?

3.2 QOTA DHEERAYNTA BOQOLAYDA

Xaalado nolosha maalin kasta, waxaad kula kulantaa erayga boqoley oo inbadan caadi ahaan loo isticmaalayo. Tusaale ahaan waxaad aragtaa hawraaraha sida (iibku 50%) ayuu ka joogaa suuqa.

Cutub hoosaadkan wuxuu bandhigaa nuxurada iyo tibaaxaha sida sal, hanti boqoley iyo boqolkii sal la ogyahay loo isticmaalayo nuxurka saamigal.

Waxaad wax badan ka soo baratay jajabyo iyo jajab tobanleyaal. Waxaad hawlgalka soo socda ugu qaban kartaa naqtiin ahaan taas oo kaa caawinaysa si aad u fahamto boqoleyda.

Hawlgal 3.3

1 Waa maxay tobanley?

2 Waa maxay boqoley? Tusaalayaal ka bixi

3 Sidee ayaad jajabyada ugu bedali kartaa jajab tobanleyaal?

4 Sharax sida jajab tobanle looga dhigo boqoley iyo sidoo kalee boqoley loogu bedali kara jajab tobanle.

5 Jajab tabanle kastoo soo socda ka dhig jajab caadi ah.

b 0.15 t 0.03 j 5 x $2.\dot{9}$ kh $2.4\dot{2}$

6 Jajabyada soo socda mid kasta u bedal jajab tobanle.

b $\frac{2}{5}$ t $\frac{13}{100}$ j $\frac{4}{7}$ x $\frac{112}{100}$ kh $3\frac{1}{2}$

7 Boqoley kasta oo soo socota u rog jajab tobanle

b 3 % t 1. 5% j 25% x 12.23
kh 0.102%

8 Jajab kasta oo soo socda u tibaax boqoley ahaan

b 8:15 t $\frac{79}{125}$ j $\frac{7}{4}$ x $\frac{1}{8}$

9 Jajab tobanle kastoo soo socda u tibaax boqoley

b 0.37 t 1.03 j 0.015 x 0.58

10 Maxaad u la jeedaa n% halka n ay tahay tiro togan?

11 Haddii saddex ka afraadka ardayda fasalku ay xidhan yihiin dirays boqolkiiba waa imisa ardayda fasalka aan xidhnayn dirayska?

12 1250 ardayda dugsi ayey 850 wiilal yihiin. Boqolkiiba ardayda imisaa gabdho ah? Boqolkiiba Wilalshu imisa ayey ka yihiin?

13 Ka soo qaad maymuuna in 25% ka mid ah mishaarkeedu yahay Birr 265.45 kolkaa bishii mishaarkeedu waa imisa?

14 Qoys ayaa 35% oo miisaaniyada bishii Birr 7500 ku iibsaday raashin intee in le'eg ayay raashinka siistaan?

15 Hodan ayaa ka heshay 18 dhibcood imtixaan xisaab oo 20 dhibicood ahaa. 23 ayay ka heshay 25 dhibcood oo imtixaan ingiriisi ah. Imtixaankee ayey ku wanaagsanayd?

Casharkan waxaad u adeegsan doontaa saamigalka si aad ugu furfurto masalooyinka boqoleyda, Fekradaha saamigalku waa ta boqokiiba (oo ah saami) inuu leekaan karo saami kale kasta kolka loo eegayo saamigal,

$$\frac{\text{Boqoleyda(xaddiga)}}{\text{Salka (idlanaanshaha)}} = \frac{\text{boqolkii (dulsaar)}}{100}$$

Tibxaha boqoleyda (xaddiga) (B) iyo salka (S) waxay kala yihiin sareeyahay iyo hooseeyaha saamiga le'eg boqolkiiba dulsaarka (D) ee lagu siiyey. Tusaale ahaan, ka soo qaad in lagu waydiiyey inaad soo saarto 35% ka 140. Waxaad og tahay in 35% ay tahay saamiga $\frac{35}{100}$. Ereyga "ka" wuxu tilmaamayaa in 140 u yahay salka "s" ama ideylo kolkaa waxaad u arkaysaa saamiga $\frac{B}{140}$ oo la sameysa saamigal $\frac{35}{100}$. Furfuridda saamigalka:

$$\frac{B}{140} = \frac{35}{100}$$

$B \times 100 = 35 \times 140$ (taran waydaar)

$B = \frac{35 \times 140}{100}$ (u qaybinta 100)

$B = 49$

Haddaba 35% ka 140 waxay le'eg tahay 49

Ogow: i Salka (S) waa tirada boqolkii falaya bilawga xaddiga.

ii Boqoleyda (xaddiga) waa qayb ka mid ah salka ee u sugay boqolkii.

Tusaale 1: Soo saar boqoleyda kuwa soo socda

b 7.25% ka birr 1500 t $15\frac{1}{2}\%$ ka 2400

Furfuris: b waxaad eegaysaa $\frac{B}{1500}$ oo la samaysa saamigal $\frac{7.25}{100}$.

Furfur saamigalka: $\frac{B}{1500}=\frac{7.25}{100}$

$$B=\frac{1500\times 7.25}{100}=108.75$$

t marka hore xusuuso in $15\frac{1}{2}\%=15.5\%$ waxaad u eegaysaa saamiga $\frac{B}{2400}=\frac{15.5}{100}$ oo samaysa saamigal $\frac{15.5}{100}$.

furfuridda,saamigalka: $\frac{B}{2400}=\frac{15.5}{100}$

$$B=\frac{2400\times 15.5}{100}=372$$

Haddaba $15\frac{1}{2}\%$ ka 2400 waxay leeg tahay 372.

Xaqiiqo ahaan aad ayey u fududahay haddii aad eegto xidhiidhka ka dhexeeya salka (S), boqolkiiba (D) iyo hantida (B) si aad u hesho darsoomaha,

1. *Haddaad ogtahay salka (S), iyo boqolkiiba (D), waad soo saari kartaa boqoleyda adoo adeegsanaya jidka* $\mathbf{B=\frac{S\times D}{100}}$.

Tusaale 2: Warshad ayaa todobaadkii soo saarta 6400 shaadhadh. Haddii 45% tirada shaadhadhku ay cad yihiin waa intee shaadhadhka aan cadayn?

Ugu horeyntii xusuuso in 100% – 45% = 55% oo ah tirada shaadhadhka aan cadayn. Halkan, waxa lagu siiyey 55% iyo salka (S) oo ah 6400. Haddaba,

$$B=\frac{S\times D}{100}=\frac{6400\times 55}{100}=3520$$

Sidaas darted, 3520 shaadh ayaan cadayn.

2. *Hadaad ogtahay salka (S) iyo boqoleyda (B) waxaad ku soo saari kartaa adoo adeegsanaya jidka* $D = \frac{B}{S} \times 100\%$.

Tusaale 3: Bare ayaa Birr 750 ku bixiyey kiro guri. Haddii mushaarkiisu yahay Birr 4000, waa imisa boqolkiiba inta uu ku bixiyo kirada guriga?

Furfuris: Hadda waxaa lagu siiyey hantida ah birr 750 iyo salka ah birr 4000, waxaad rabtaa inaad soo saarto boqolkiiba ama dulsaarka kolkaa

$D = \frac{750}{4000} \times 100\% = 18.75\%$, haddaba baruhu wuxuu bixiyaa 18.75% ka mushaarkiisa kiro guri.

3. *Haddii aad ogtahay boqolkiiba (B) iyo boqolayda (D), waad soo saari kartaa salka (S) adoo adeegsanaya jidka* $\mathbf{S = \frac{B}{D} \times 100}$.

Tusaale 4: Nin ayey tahay inuu 4% ka bixiyo ku kordhinta canshuurta (V.T.A) joogga kabo qiimo loo joogsadey. Haddii ninku bixiyey Birr 12.80, muxuu ahaa qiimaha loo joogsaday kabuhu?

Furfuris: kolkan waxaa lagu siiyey boqolkii 4% iyo boqolkcyda birr 12.80 waxaad rabtaa inaad soo saarto salka Kolkaa.

$$S = \frac{B}{D} \times 100$$

$$= \frac{12.80}{4} \times 100 = 320$$

Haddaba qiimaha loo joogsaday waa birr 320.

Tusaale 5: Shirkad caymis ayaa nin ugu qiimaysay Birr 33600 ku cayminta qiimaha gaadhigiisa oo ay ku jirto korodhka canshuur ah 5%, waa intee qiimuhu inta aan cashuuur kordh lagu biirin?

Furfuris: Halkan Birr 33600 waxay u taagan tahay 105% ee qiimaha,si loo soo saaro qiimaha caadiga ah 100% ayaad rabtaa inaad xisaabiso,

$$\frac{\text{Birr } 33600}{105\%} \times 100\% = \text{Birr } 32000$$

waxaad rabtaa inaad soo saarto boqolkiiba inta wax ku kordhay ama kadhacay. Si aad u soo saarto tan adeegso xeerka:

$$\frac{\text{Boqolay}}{100} = \frac{\text{Korodhka ama dhimaalka dhabta ah}}{\text{hantida caadiga ah}}$$

Waxa laga yaabaa inaad rabto xisaabinta boqolkiiba inta wax korodhay am ka dhimantay. Si aad uga shaqeyso tani waa inaad adeegsataa xeerkan.

Tusaale 6: Afar sano ka hore,dad 12,000 ah ayaa loo diwaan galiyay xaalad kaneeco gobol qudha. Sanadkana 9000 oo qof ayaa loo diwaan galiyay xaaladii oo kale. Waa intee boqolkiiba hoos u dhacu?

Furfuris: $\text{Boqolkiiba (Dulsaar)} = \frac{Boqoley}{Salka} \times boqol$

$$D = \frac{B}{S} \times 100$$

$$D = \frac{9000}{12000} \times 100$$

$$= \frac{3}{4} \times 100 = 75\%$$

Laylis 3.2

1 Mid kasta oo soo socota soo saar boqolayda

b 48.5% ka birr 240 **t** 45%ka 396

j 125% ka $3\frac{1}{2}$km **x** 39%ka 1700m

2 Furfur masalooyinka boqoley ee soo socda mid kasta.

b 56%ka 180 waa tiradee

t $25\frac{1}{2}\%$ tiradee ayey ka tahay 3000?

j 63 boqolkiiba intee ayey ka tahay 400?

x 7.25%ka 18000 tiradee ayey tahay?

kh 25.6% tiradee ayey ka tahay 188.8?

d $8\frac{1}{3}\%$ ka 600 waa tiradee?

r 117 boqolkiiba waa ka intee 270?

s 42.5% tiradee ayey ka tahay 276.25?

sh 6.75% ka 32000 waa tiradee?

3 35%ardayda dugsi ayaa ah gabdho. Haddii wadarta tirada ardaydu tahay 1240,soo saar tirada wiilasha ee dugsiga?

4 Dugsi ayaa 40% ardaydu ku timaadaa lug dugsiga. Waxa ku jira dugsiga 1050 arday. Waa imisa tirada ardeyda dugsiga ku timaad lugta?

5 Bir dhafan ayaa uga samaysan sinki iyo coberta ah, 20% sinki iyo 80% kobar Haddii waslada birta ah miisaankeedu yahay 160kg, waa intee sinkiga ku jiraa?

6 Canbaro ayaa bishii qaadata Birr 2500, waxay u isticmaashaa 45% kharashyada guriga, 15% kharashyada nafteeda,25% kharashyada caruurteeda, inta u hadhay way keydsataa. Waa intee hantida bishii ay kaydsataa?

7 Waxay igu qaadataa 45 daqiiqo socdaalka dugsigu anigoo 60% ku socda bas. intee ayaan ku dhamaystaa safarka baska?

8 Doorashadii guud, 85% tira koobka dadku way codeeyeen: Haddii 85000 qof ay codeeyeen, waa imisa tira koobka magaaladu?

9 Qiimaha hal kiloogaraam sonkor ah ayaa ahaa Birr 7.50. Qiimaheedii ayaa u kordhay ilaa Birr 13.50. Waa intee boqolkiiba qiimaha korodhka?

10 Ka soo qaad inuu qof ka bixiyo 6% qiimaha soo iibsashada. Haddii qiimaha talaagad (qaboojiye)la isticmaalay yahay Birr 3500, waa intee in leeg cashuurta gadidda in logu bixiyo ah ?

11 Ka soo qaad qiimaha soo iibinta T.V uu yahay Birr 4500 oo ay qiimaha cashuur korordhka (VAT) yahay Birr 675. Waa imisa boqolkiiba cashuur korodhku?

12 Qiimaha kombiyuutar ayaa ah \birr 8920 lagu daray cashuur korodh. Haddii cashuurta koradhay ay tahay $17\frac{1}{2}\%$ka qiimaha kombiyuutarka, soo saar wadarta qiimaha ah inuu iibsaduhu bixiyo?

13 Hadii dukaan 25% uu qiimo dhimis ku sameeyo shaadh qiimihiisu yahay Birr 260, waa imisa xaddiga qiime dhimistu?

14 Alaab qiimaheedu yahay Birr 120 ayaa la saaray canshur dhan 5% oo ah qiimihiisa. Markaa wadarta qiimaha alaabta iyo canshuurtii oo la socotaa waa imisa?

15 Warshad sonkoreed ayaa kor u qaadaysay saacadaheeda shaqo si ay u korodhiso wax soo saarkeeda sanadkii. Waxay hiigsanaysay 48,868,500 kiintaal oo sonkor ah, laakiin waxay ka karmanisay yoolkeedii 25%, intee kiintaal ayey soo saartay?

16 44% daryeelka caafimaadka shaqeeya waa dhakhtarka gobol ka haddii tirada dhakhtaradu 6 ay ka yar yihiin meelaha goobaha caafimaad. Waa imisa daryeel caafimaad ka uu bixiyo gobolku?

17 Shirkad yar oo dakhliga biishii soo galaa yahay Birr 7200 Kirada waxay ku bixisaa 25%, waxay keydsadaan 35%, waxay isticmaashaa 18% iyo 22% kharashyo kale ah

a Waa imisa lacagta ay keydsataa?

b Waa imisa lacagaha ay kirada ku bixiso iyo ta ay isticmaasho?

18 Celcelis maalmeedka tirada macaamiisha ee Bushaaro wayn ayaa u korodhay 240 ilaa 360. Waa imisa boqolkii ahaan inta ku korodhay tirada macaamiishu?

19 Qiimo dilaalis 12% ah ayaa lagu biiriyey qiimaha baabuur lagu gadayey Birr 160,000. Waa maxay qiimaha baabuurku kolka ay la jirto lacagta diilaalku?

20 Tukaan ayaa ku kordhiyay qiimaha iibka korodh 15%,si uu u noqdo qiimaha iibku birr 253 imisa ayuu ahaa qiimihii hore ee korodhku?

3.3 ADEEGSASHADA BOQOLEYDA

Noloshaada waaxaad in badan kula kulantaa xaaladaha isticmaalka nuxurka boqoleyda. Ciwaan-hoosaadkan, waxaad ku qaadan doontaa u adeegsiga boqoleyda ku furfurista mas'alooyinka faa'iidada, khasaaraha iyo dheefta fudud.

3.3.1 Faa'iidada Iyo Khasaaraha

Si aad u fahamto nuxurka faa'iidada iyo khasaaraha waxaa lagaa rabaa inaad ka shaqayso hawlgalka soo socda:

Hawlgal 3.4

1 Ka soo qaad inaad ku soo iibsatay shaadh Birr 90 ka dibna aad ku gaday Birr 120.

b Maxaad ku magacaabi kartaa qiimaha shaadhka aad ku soo iibsatay?

t Maxaa la yidhaa qiimaha shaadhka aad ku iibisay?

2 Maxaad odhan qiimaha

b Aad shay kasoo bixisay t Shay ku iibisey

3 Goorma ayaad helaysaa maxaashama faa'iido??

4 Nin ayaa dibu ku gatay Birr 5600 ayaa ku iibiyey Birr 6200. Miyuu faa'iiday Mise waa khasaarey?

5 Nin tafaariiq wax ku iibiya ayaa TV u ku gatay Birr 3800 islamarkaana waxa ku kordhay kharashyo ah Birr 85. Haddii u TV ku iibiyo Birr 3250. Sheeg macaashkiisa ama khasaarahiisa?

6 Moxamad wuxu ku soo gatay 200 kun ah Birr 300 islamarkaa wuxu ku iibiyey mid kasta Birr 2.65. Raadi faa'iidadiisa?

7 Kombiyuutar lagu iibiyey Birr 6400 ayuu qof ku khasaaraa 20%. Waa maxay qiimaha gadashadu?

Tibxaha maaliyadeed, qiimaha laga soo bixiyey walax ayaa waxa la yidhaa qiimaha gadashada (q.g) islamarkaana hantida (qiimaha) walax lagu iibiyey waxa la yidhaa qiimaha iibista (q.i).

Ogow: i Haddii ay q.i > q.g kolkaa waxa jira faa'iido

Faa'iido = q.i – q.g 1

ii Haddii ay q.i < q.g, kolkaa waxa jira khasaare

Khasaare = q.g – q.i.....2

iii Faa'iidada iyo khasaaraha marwalba waxa laga xisaabiyaa q.g

Jidadka soo socda ayaa waxay ku lug leeyihiin faa'iidada iyo khasaaraha.

$$\text{Faa'iido}\% = \frac{\text{Faa'iido} \times 100\%}{\text{q.g}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3$$

$$\text{Khasaare}\% = \frac{\text{Khasaare} \times 100\%}{\text{q.g}} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 4$$

Jidka 3aad waxay keentaa faa'iido $= \dfrac{\text{q.g} \times \text{faa'iido}\%}{100}$

Jidka 1aad waxaad ka heli kartaa in

$$\text{q.i} - \text{q.g} = \frac{\text{q.g} \times \text{Macaash}\%}{100}$$

$$\text{q.i} = \text{q.g} + \frac{\text{q.g} \times \text{Macaash}\%}{100}$$

$$= \frac{100 + \text{Macaash}\%}{100} \times \text{q.g} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots 5$$

Sidoo kale, Jidka 4aad wuxu keenaa

$$\text{Khasaare} = \frac{\text{q.g} \times \text{khasaare}\%}{100}$$

Jidka 2aad waxaad iyana ku heli kartaa

$$\text{q.g} - \text{q.i} = \frac{\text{q.g} \times \text{khasaare}\%}{100} \rightarrow$$

$$\text{q.i} = \text{q.g} - \frac{\text{q.g} \times \text{khasaare}\%}{100}$$

$$= \frac{100 - \text{khasaare}\%}{100} \times \text{q.g} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots 6$$

Waa inaad eegga firisaa tusaalooyin qaar ah inay tusaan u adeegsiyada jidada kari ku furfuridda masa looyinka lu leh macaashka (faa'iidada) iyo khasaaraha.

Tusaale 1: Macdaarle ayaa bakhaara kaga gatay funaanad Birr 320 islamarkaana wuxu ku iibiyey Birr 440. Raach faa'iida isa ama khasaare ahiisa boqolkii.

Furfuris: Halkan qiimaha gadashadu (q.g) = Birr 320

qiimaha iibistu (q.i) = Birr 440

maadaama q.i > q.g, waxa jira faa'iido

u adeegsashada jidka 1, waxaad heli

Faa'iido = q.i – q.g

= Birr 440 – Birr 320 = Birr 120

Haddaha, adeegsashada jidka (3) waxaad heli

$$\text{Faa'iido}\,\% = \frac{\text{Faa'iido} \times 100\%}{\text{q.g}}$$

$$= \frac{120}{320} \times 100\% = 37.5\%$$

Tusaale 2: Ganacsade ku iibiyey joog kabaha Birr 220 ayaa wuxu ku khasaaray 12%. Soo saar qiimaha gadasha (q.g) joogga kabaha.

Furfuris: Halkan, q.i = Birr 220, khasaare % = 12%.

U adeegsashada jidka 3aad waxaad heli

$$\text{q.i} = \left(\frac{100 - \text{khasaare}\,\%}{100}\right) \times \text{q.g}$$

$$220 = \left(\frac{100 - 12}{100}\right) \times \text{q.g}$$

$$220 = \left(\frac{88}{100}\right) \times \text{q.g}$$

$$\text{q.g} = \frac{220 \times 100}{88} = \text{Birr } 250$$

Haddaba, qiimaha gadashada kabuhu waxay ahayd Birr 250

Tusaale 3: Ku iibista tallaagad Birr 3400 ayuu ganacsaduhu ku khasaa ey 15%. Haddii u raba inuu ka faa'iido 15%, muxuu noqon lahaa qiimaha iibsashada (q.i) tallaagadu?

Furfuris: Qaybta 1aad q.i = Birr 3400 iyo khasaare % = 15% jidka 6aad.

$$\text{q.g} = \frac{\text{q.i} \times 100}{100 - \text{khasaare}\,\%}$$

$$= \frac{3400 \times 100}{100 - 15}$$

$$= \frac{3400 \times 100}{85}$$

$$= \text{Birr } 4000$$

qaybta 2aad : q.g = Birr 4000 iyo faa'iido % =15% jidka 5aad,

$$q.i = \left(\frac{100 + \text{faa'iido}\,\%}{100}\right) \times q.g$$

$$= \left(\frac{100+15}{100}\right) \times 4000$$

$$= \frac{115}{100} \times 4000 = \text{Birr } 4600$$

Shaqo Kooxeed 3.2

1 Haddii qiimaha gadashada 15 qalin qori u la mid yahay qiimaha iibinta 12 qalin big, soo saar faa'iidada ama khasaaraha boqolkii socdka ganacsiga.

2 Ku iibinta 95 liin ah Birr 160, ayey gabadh ku khasaartay 20% imisa liin ah ayey tahay inay ku iibiso Birr 112 si ay uga hesho faa'iido ah 20% dhammaan?

3.3.2 Dheef fudud

Dhamaan ganacsiga agagaarkaaga ka qabsoomaya wuxuu ku lug leeyahay lacag. Mar-marka qaarkood, qof ayaa ka daynsada lacag saxiibkii, ehelkiisa, bangiga iwm.

Hawlgal 3.5

1 Maxaad u taqaan lacagta qof ka daynsado bangi?

2 Maxaad u taqaan lacagta dheeraadka ah ee la siiyo qofka lacagta laga amaahdo?

3 Ka soo qaad in aad dhigatay Birr 1500 bangiga deegaanka. Iimisa ayaad ku heli doontaa muddo 3 sano ah haddii lagugula balamay dulsaar 4% lacagta aad dhigatay sanandkii?

4 Dheefta fudud ee Birr 800 amaah ahaan looga bixiyey birr 160 dhamaadka muddo 2 sano ah. Waa imisa dulsaarka dheeftu?

5 Arday ayaa ku soo iibsaday kombiyuutar uu ku daynsaday dheef fudud, kombiyuutarka qiimihiisu wuxuu ahaa Birr 7200 oo u dulsaarka dheeftuna ahaa 12%. Haddii amaahdu tahay in loo bixiyo todobaadkiiba hal mar muddo shan sano ah, xisaab:

b xaddiga dheefta muddo 5 sano u bixinay

t wadarta hanti dib u celinayo

j todobaadkii inta uu bixinayo

wadarta raasamaalk iyo dheefta fudud waxa layidhaa hanti oo loo qoro
H = R + I
Dheefta fudud (I) waxay ku tiirsan tahay raasamaalka (R) la amaahday iyo aminta ay soconayso amaahdu (T) dheefta fudud waxaa loo eegaa ku xisaabtanka heshiis, si gaar ah u magacaabaya boqolkii isticmaalka raasamaalka sannad kasta. oo la yidhaa dulsaarka dheefta (D). Haddii aad rabtid inaad soo saarto dheefta adeegso jidkan.

$I = R \times D \times T$

Halka, I = dheef fudud

R = raasamaal

D = dulsaarka dheefta ama korscod

T = amminta (sannado)

Shaqo Kooxeed 3.3

u tag bangiga kuugu dhaw waydiina inta nooc ee dheef ay leeyihiin ? kala hadal faa'iidada iyo waxyeelada ay dheef kastaa leedahay.

Tusaale 4: Nin beeralay ayaa ka amaahda maaliyada shirkad horumarineeed Birr 250,000 muddo 5 sano ah si uu ugu soo iibsado cagaf-cagaf. Haddii ay shirkadu ku siisay dulsaarka dheefta fudud 8.5% sanadkii,waa imisa dheefta uu siinayo shirkadda?

Furfuris: halkan, raasamaal(R)=Birr 250,000

ammin (T) = 5 sano
dulsaar(D%) =8.5% =0.085.
kolkaa waxaad helaysaa
$I = R \times D \times T$
= Birr$(250{,}000 \times 0.085 \times 5)$

= Birr 106250

Haddaba wuxuu siinayaa shirkadda, dheefta fudud ee Birr 106250

Tusaale 5: Wadarta raasamaal ayaa lagu kaydsaday 8 sano dulsaarka 3% dheef fudud in la bixiyo. Xisaabi, wadarta rasamaalka haddii dheefta fudud noqotey Birr 1200.

Furfuris: wadarta lacagta la kaydiyey waa birr R oo keenta

I = Birr 1200, T=8 sano iyo d = 3%

waxaad ogtahay $I = R \times D \times T$ ama

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

$$= \frac{\text{Birr}\,1200}{0.03 \times 8} = \text{Birr}\,5000$$

haddaba, raasamaalka la dhigtay waa Birr 5000

Tusaale 6: Waa maxay dulsaarka dheefta fudud ee raasamaalka Birr 3000 uu ku noqonayo Birr 4920 mudada 4 sanadood dheef fudud ah.

Furfuris: Halkan waxaad haysataa R = Birr 3000, H = Birr 4920, T = 4sano

$I = H - R = \text{Birr } 4920 - \text{Birr } 3000$

$= \text{Birr } 1920$

kolkaa, $I = R \times D \times T$ ama

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

$$= \frac{1920}{3000 \times 4}$$

$$= \frac{16}{100} = 16\%$$

haddaba ,dulsaarka 16% ayey birr 3000 ku noqonaysaa 4920 mudda 4 sano ah

Laylis 3.3

1. Wiil ayaa saacad ku gatay birr 450 wuxuuna ku hagaajiyey kharash dhan ku iibsaday birr 300. Haddii uu saacadii birr 540 soo saar faa'iidada boqolkiiba?
2. Nin ganacsade ah ayaa laba mishiin ku iibiyey 24000 mid kasta. Mishiin ayuu ka faa'iiday 20% ka kalana wuxuu ku khasaaray 20% soo saar ganacsadaha faa'iidada ama khasaarihiisa boqolkiiba?
3. Haweenay ayaa faaiiday 15% markii ay kabo ku iibisay Birr 368 imisa ayay ka faa'iidi lahayd haddii ay labalaab ku iibin lahayd?

4 Shirkad wayn ayaa macaashtay Birr 64,000 sannadkii hore. Sannadkan Birr 88,000. Waa imisa isbedelka Boqolkiiba macaashka u dhexeeya labada sanno?

5 Qof ayaa ku khasaaray 20% iibiska 90 qalin big oo uu siiyey birr 126 imisa qalin big ayuu ku iibiyey birr 120 oo uu ka helay faa'iido 20% ah.

6 Madbacad ayaa ka faa'iiday 20 % buuggaaga ay ku iibisay Birr 84 intee ayuu ku iibin doonaa si uu u faa'iido 30%.

7 Haddii qiimaha iibista 20 shay ay le'eg tahay qiimaha gadashada 23 shay soo saar khasaaraha ama faa'iidada.

8 Faadumo ayaa kaga daynsatey birr 500 saaxiibkeed 8% sanadkii oo dheef fudud ah. Waxay soo celisay lacagtu 3 sano ka dib. Waa imisa hantida ayu soo celinaysaa dhammaan?

9 Maxamed ayaa dhigta bangi Bir 15600 bangiga ayaa bixiynaya dheef 3% sanad walba. Soo saar dheefta fudud ee uu helay dhamaadka 5 sano

10 Haddii birr 800 laga helay Birr 1,6000 muddo 6 bilood ah, waa imisa dulsaarka dheefta fudud lagu helay?

11 Dheefta fudud ee sagaal bilood 6% waa Birr 36.90. Soo saar raasamaalka?

12 Jaale Nuur ayaa ku kala maalgashada Birr 12,5000 dulsaarka 4% sannadkii iyo Birr 9600 dulsaar dhan 4% sannadkii. Waa imisa wadarta dheefta fudud halsano malglinataasi?

13 Xaliimo ayaa dhigatay Birr 14500 shirkad dhaqaale horumarineed muda 8 sano ah waxayna heshay Birr 4785 dheef fudud ah muxuu ahaa dulsaarka dheeftu sanadkii?

14 Waqti intee le'eg ayey dheefta Fududi ku noqonaysaa $\frac{1}{4}$ ka raasamaalka leh dulsaarka 8% sanadkii?

15 Xaaladee, ayaa dheefta fudud lagu helay inay noqoto.

b Birr 5000 lagu kaydiyey 5 sano dulsaar 3% sanadkiiba?

t Birr 400 lagu kadiyey 6sano dulsaar 4% sanadkiiba

Ereyada Mahiimka ah

- Isirka hore
- Cidhfo
- Dheef fudud
- Faaiido
- Iswaydaar
- Isirka saamigalinta
- Qiimaha lagu iibiyey
- Saami
- Saamigal aan qumaneyn
- Madoorsoomaha saamigalinta
- Saamigal quman
- Dheef
- Boqoley
- Sal
- Qimaha iibka (q.i)
- Khasaare
- Raasamaal (R)
- Hanti (H)
- Celcelis
- Dhexyo
- Dulsaar (D)
- Iskudhufashada
- Khasaare
- Raasamal (R)
- Saami
- Sal (S)
- Isirka dambe
- Isku dhufasho isweydaar
- Saamigal waydaar (rogal)
- Dhexyo
- Macaash (faa'iido)
- Qiimaha gadidda (q.g)
- Dulsaarka dheefta (d)
- Dheef fudud (1)
- Saami

Soo Koobida Cutubka

1 Haddii A iyo B ay yihiin laba xaddi,kolkaa tibaaxda $\frac{A}{B}$ waxaa la yidhaa saamiga A iyo B ,oo loo qoro A:B

2 Laba doorsoome x iyo y waa isu saamigal quman oo loo qoro $y \sim x$, haddii ay jirto madoorsoome k ah oo ay $y = kx$, $k \neq 0$, k waxa la yidhaa madoorsoomaha saamigalka.

3 Laba doorsoome x iyo y waxaa la yidhaa waa isu saamigal waydaar ah (dadban),loona qoro $y \sim \frac{k}{x}$,haddii ay jirto madoorsoome k ah oo ay $y = \frac{k}{x}$ ama $xy = k, k \neq 0$

4 Saamigal waa weedh oo xisaabeed sheegaysa in laba saami ay isle'eg yihiin si kale, haddii a:b=c:d, a,b,c, iyo d way isu saamigalsan yihiin.

5 Isku dhufasho isweydaar waa taranta sareeye iyo hooseeyaha lidka ee laba jajab taas oo ah, haddii $\frac{a}{b} = \frac{c}{d}$, kolkaa $a \times d = b \times c$ (taran iswedaar).

6 $\frac{a}{b} = \frac{p}{100}$, halka

a =boqoley tirada ay boqolkii ku fasho

b= salka uu tirada boqolkiiba ku fasha

p= boqolkiiba oo la macano ah hal boqolkiiba ogow in $a = \frac{b \times p}{100}$ haddii b iyo p lagu siiyey

$b = \frac{a}{p} \times 100$ haddii a iyo p lagu siiyey

$p = \frac{a}{b} \times 100$ haddii a iyo b lagu siiyey

7 faa'iido = qiimaha gadida (q.g) – qiimaha soo iibka (q.i).

- khasaare= qiimaha iibka (q.i) – qiimaha gadida (q.g).
- $\text{faa'iido}\,\% = \frac{\text{faa'iido} \times 100}{\text{q.i}}$
- $\text{khasaare}\,\% = \frac{\text{khasaare} \times 100\%}{\text{q.i}}$
- $\text{q.g} = \frac{100 + \text{faa'iido}\%}{100} \times \text{q.i}$
- $\text{q.i} = \frac{\text{q.i} \times 100}{100 - \text{khasaare}\%}$

8 Dheef fudud = raasamaal × dulsaar × amin

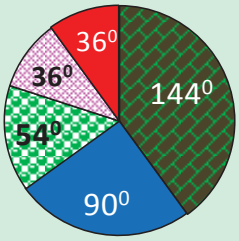
I =P × D × T

Hant= raasamaal + dheef, kolka hanti (A), raasamaadka (P) iyo dheefta fudud (1) A = P + I dheefta

? Laylisyada guud ee Cutubka 3aad

1. Sanad cabdi ayaa shaqaystey Birr 8400 wuxuuna u bixiyey cashuur dakhli Birr 1200 soo saar saamiga.
2. Birr 13920 ugu qaybi saddex qof saamiga ah 3: 5 :7
3. Haddii dheefta birr 3000 ay tahay Birr 150 mudo go, an, imisa ayey noqon doontaa dheefta raasamaalka birr 4500 oo la mudo ah, ayna dulsaarka dheeftu isku mid tahay.
4. Aiyo B ayaa ku maalgashaday bilawga meherad Birr 24000 iyo Birr 36000 siday u kala horeeyaan. Haddii dhamaadka sanadka ay heleen faa'iidada Birr 25000,soo saar saamiga faa'iidad u helayo mid kasta?
5. 20 nin ayaa ku falay beer 8 maalmood, imisa maalmood ayey ku qaadaneysa 16 nin inay ku falaan beertaa?
6. Gaadhi ayaa ku socdaalay 160 km amin 4 saacadood ah. Intee in le'eg ayey ku qaadanaysaa inuu socdo 400 km.
7. Haddii ay 30 nin ku samayn karaan 40 mitir dhar ah maalintii intee mitir oo dhar ah ayey ku samayn karaan hal maalin 240 nin?
8. Gadisle ayaa ku soo iibsaday gaadhi birr 120000 waxan kor fuulay kharash kale Birr 5000. Haddii uu gaadhiga ku gaday Birr 1325000, soo saar faa'iidadiisa boqolkiiba?
9. Ku gadashada mooto ayaa dhan Birr 2024, ayaa ganacsadaha mootadu wuxuu ku khasaarey 12% haddii uu rabay inuu ka faa'iido 12% maxay noqon lahayd qiimaha gadista mootadu?
10. Imisa sannadood ayey Birr 6000 ku noqon doontaa hantidu Birr 9000 ah,haddii dulsaarka dheefta fudud tahay 12% sannadkiiba?
11. Dulsaarka dheefta intee ayey dheefta fudud ku noqon doontaa saddex ka afraadka raasamaalka muddo 5 sano ah.

CUTUBKA 4AAD



HABAYNTA XOGAHA

Ujeedooyinka cutubka:

Cutubkani marka uu dhamaado kadib, waxaad awood u yeelan doontaa inaad:

- *ururiso xog islamarkaana ku dhisto xariiq garaafeedyo iyo jaarta goobeedyo fudud xog lagu siiyey*
- *soo saarto tirosinka ,dhexfurka,badi-dhacaha xog lagu siiyey*
- *raadiso qiyaasta faraqa xog lagu siiyey.*

Tusmooyinka muhiimka ah:

4.1 Xog Ururinta Loo Adeegsado Amaaradaha Taaley

4.2 Dhisitaanka Iyo U Bedalka Xariiq Garaafeedyo Iyo Jaarti Goobeedyo

4.3 Tirosinka, Badidhacaha, Dhexfurka Iyo Qiyaasta faraqa Xogta

Ereyada Muhiimka ah

Koobista cutubka

Laylisyo guud

HORDHAC

Xogaha sida casriga ah la iskugu gudbiyo waxay si wayn faa'iido ugu leedahay bulshada waqtigan casriga ah. Waxay tahay xogta loo soo ururiyey si nidaam ah una agaasiman si qof go'aan uga keeni karo. Sidaa darteed, waxaa muhiim ah in la ogaado habka loo ururiyo xogta, agaasimo, loo koobo sidoo kale loo bandhigo.

Cutubkan waxaad ku baran doontaa xog ururinta loo adeegsado amaaradaha taaley (Taly), dhisitaanka iyo u bedalka xariiq garaafeedyo iyo jaarti goobeedyo, soo saaridda tirosinka badi-dhacaha, dhexfurka iyo faraqa xog.

4.1 XOG URURINTA LOO ADEEGSADO AMAARADAHA TAALEY

Amaarada taaley waxaa loo adeegsadaa ku tirinta walaxaha, waxa ay yihiin qotonka xariiqo yaryar oo mid kastaa u taagan yahay halbeeg ama mid kaliya Tusaale ahaan, / waxay u taagan tahay kow (mid), // waxay u taagan tahay laba /// waxay u taagan tahay saddex, //// waxay u taagan tahay afar 𝍸 oo ah afar la dhex gudbay tu shanaad waxay u taagnaataa 5, si ay kuugu fududeyso ama dhib yaraato in aad u tiriso wadarta kooxo shan ah islamarkaa haddii loo arko inay mid noqotay 7 waxaa loo dhigi 𝍸//.

Cutub-hoosaadkan dhexdiisa waxaad ku baran doontaa xog ururinta loo adeegsanayo amaarada Taaley. Si aad u fahamto waxaa kaa gacansiin tixgalinta shaqada hawlgalka soo socda

Hawlgal 4.1

Xog ayaa laga ururiyey 20 arday oo arday kasta la weydiiyey tirada dadka ku wada nool guriga qoyskkooda. Natiijada waxaa loo qoray sida soo socota:-

2, 4, 6, 5, 7, 2, 4, 3, 6, 5, 3, 7, 8, 4, 3, 6, 5, 8, 3, 2

Ka jawaab su aalahan soo socda:-

- **b** Imisa arday ayey 2 qof ku wada nool yihiin gurigooda?
- **t** Imisa arday ayey 3 qof ku wada nool yiniin gurigooda?
- **j** Imisa arday ayey 4 qof ku wada nool yihiin gurigooda?
- **x** Imisa arday ayey 5 qof ku wada nool yihiin gurigooda ?
- **kh** Imisa aday ayey 6 qof ku wada nool yihiin gurigooda?
- **d** Imisa arday ayey 7 qof ku wada nool yihiin gurigooda ?
- **r** Imisa arday ayey 8 qof ku wada nool yihiin gurigooda ?
- **s** Imisa arday ayey 10 ku wada nool yihiin gurigooda?

Waxaad ku soo koobi kartaa xogtan adiga oo adeegsanaya tusahan oo loo yaqaan tusaha amaarada Taaley. Sidaa awgeed tusaha joog-taxa hore waa la buuxiyey waxaana la idinka filayaa kuwa hadheysan inaad buuxishan.

Tirada dadka guriga ku wada nool	2	3	4	5	6	7	8	Wadarta
Amaahda Taaley	|||							
Tirada ardayda leh tirada dadka gurigooda ku wada nool	3							

Tuse.1-Tirada ardayda gurigooda ay tiro dad ah ku wada nool yihiin

Hadda, fiiri hawlgalka 4.1, way kuu cadahay in haddii aad u agaasinto xogta saansaanta tuse ay fahamkeedu kuu dhib yaraanayso oo aad adeegsan karto. Tusaale ahaan tusaha 4.1 joogu taxa 1, qof ayaa ka fahmi kara inay tahay saddex arday ay leeyihiin guryo 2 qof ku wada nool yihiin. Si la mid ah, qof kalana u garan karo tirada ardayda qoysaskoodu ay yihiin 3, 4, 5, 6, 7 iyo sidaas oo kale.

Ogow in tirada amaaradaha Taaley ay le'eg tahay tirada ardayda leh tirada dadka ku nool qoyskaaga, tusayaashan oo kale ayaa la yidhaa tusaha amaaradaha Taaley

Shaqo Kooxeed 4.1

1 Imisa qof ayaa ku nool guriga qoyskaaga? Raadi inta qof ee ku nool guryaha qoyska ardayda fasalkaaga isticmaal jaartiga Taaley si aad ugu qorto xogta islamarkaana buuxi tusaha hoose.

Tirada dadka guriga qoys ku wada nool									
Amaaradaha Taaley									
Tirada ardayda leh tirada dadka qoys ku wada nool									

2 Waa kee maadada aad u jeceshahay? Waxaa suuragal ah inaad doorato ingiriisi, xisaab, bayoolaji, fisigis, kimistari, cilmi bulsho, madani, iwm. Raadi maadada ardayda fasalkaagu u jecel yihiin. U adeegso jaartiga taaley si aad u qorto xogta oo ku buuxi tusaha hoose

Maadadda uu jecel yahay									
Amaarada Taali									
Tirada ardayda leh maadada ay jecel yahay									

Shaqo kooxeed 4.1, qofku kama baran karo agaasimadda xog iyo isticmaalka amaarado Taaley oo kaliya, laakiin iyana waxay laga baran karaa sida loo ururiyo xog. Tusaalaha si aad u ogaato tirada ardayda fasalkaada jecel maadada xisaabta,waxaad arday kastoo fasalkaada ah aad waydiini in xisaabtu tahay maaddo uu jecel yahay ama ay tahay maaddo una jaclayn.

Laylis 4.1

1 30 arday ayaa la weydiiyey inay sheegaan bisha ay dhasheen, waxaana loo qoray sida soo socota:

Maskaram, Hidhaar, Tir, yakaatit,hidhaar,tir, maskaram,hidhaar,tir, yakaatit, hidhaar, tir, maskaram, sane, hamle ,nahase, magaabiit, tir, maskaram, tahsaas, sane, ginboot. Soo koob xogta adoo isticmaalaya tuse amaarado Taaley?

2 Dhibcaha imtixaan xisaab ah ee 40 arday oo lagu saxay 20 dhibcood ayaa loo diwaan galiyey sida soo socota:

15, 16, 15, 16, 18, 19, 20, 8, 10, 12, 15, 16, 15, 18, 16, 16, 18, 19, 20, 11, 9, 8, 10, 18, 8, 9, 10, 18, 19, 12, 15, 16, 16, 12, 16, 19, 10, 8, 9, 20.

Soo koob xogta adoo adeegsanaya tuse amaarado Taali su'aal tirada (3) iyo (4) waxay u baahan tahay ka ururinta xog ardayda fasalkaada. Sidaa dartee, waxay u fiican tahay, haddii aad u qabataan koox-koox si shaqo mashruuc oo kale.

3 Waa maxay ciyaarta aad doorbidaa? raadi ciyaarta ay u jecel yihiin ardayda fasakiinu. Isticmaal jaartiga Taaley si aad u diwaan galiso xogta oo ku buuxi tusaha soo socda:-

Ciyaarta uu jecel yahay									
Amaarado Taali									
Tirada Ardayda leh jecaylka ciyaarta									

4 Kolka aad waynaato waa maxay shaqada aad doonayso inaad qabato? Raadi shaqada ay ardayda fasalkaagu ay rabaan inay qabtaan? U adeegso jaarti Taaley diiwaan -galinta xogta oo buuxi tusaha hoose dhexdiisa.

Shaqada u doonayo inuu qabto									
Amaarado Taali									
Tirada ardayda rabta inay ka shaqeeyaan shaqadan.									

4.2 DHISITAANKA IYO KU MUUJINTA XARIIQ GARAAFEEDYO IYO JAARTI GOOBEEDYO

Waligaa ma la yaabtay waxaan u isticmaalo garaafyada? Ama waa maxay waxa u kuu sheego garaafku? Kuwan ayaa ah fekradda muhiinka ah ee aad ku eegayso cutut hoosandkan. Ujeedada garaaf waa inu kuu muujiyo u qeexista garaaf ahaan ururka xog dhamaan loogu arki karo xogo wadajir ahaan ah oo u degdeg ugu habeeyo qofka raba inu wax sheega. Waxa jira garaafyo noocyo badan oo kala duwan ,oo mid kastaana u leeyahay wax uu kaga duwan yahay ka kale isaga uga dhiga mid uu faa'iido badan si nidaam u gaar ah uga yeesho. Xariiq garaafeed iyo jaarti goobooyin ayaa ah labada nooc ee garaafyada cutub-hoosaadkan aad ku baranayso.

Xariiq Garaafeedyo

Hadda waxaad wax ka baranaysaa nooca garaafka la yidhaa xariiq garaafeed. Si uu kaaga gargaaro wax ka fahamka casharkan fiiri hawlgalka soo socda.

Hawlgal 4.2

1 Ku muuji baraha soo socda salaxa-*xy* oo u isticmaal isku xidhka baraha xariijimo.

b (2,3),(4,5),(3,6),(1,2),(5,10) t (2,4),(4,8),(3,6),(1,2),(5,10)

j (2,10) ,(4,8),(10,2), (3,7)

2 Heerkulka magaalada A ayaa loo diwaan galiyey todoba maalmood (maalin 1, maalin 2, …, maalin 7) sida tusaha hoose u ku siiyey.

Maalin	1	2	3	4	5	6	7
Heer kulka ah digrii feeramhayt	43° F	53° F	90° F	57° F	59° F	63° F	67° F

b ku muuji baraha salax-xy oo iskugu xidh xariijin baraha (waxaad ku qori maalmaha dhidhibka jiifa islamarkaana ku qor heerkulka ah digrii feeranhayt dhidibka taagan)

t imisa barood ayaa garaafka ku dulyaal?

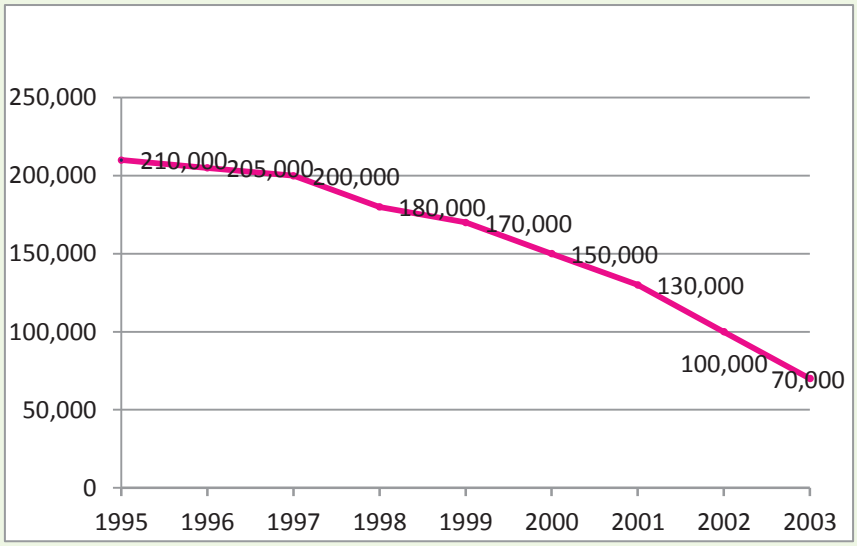
j waa maxay heerkulka ugu hooseeyee la diwaan galiyey ?

x waa maxay heerkulka u sareeya diiwaangalintu?

kh heerkulka magaaladu miyuu kordhaa mise wuu dhinmaa waqtiba-waqtiga kale ?

3 Fiiri garaaf kasta oo soo socda oo ka jawaab su'aasha daba socota

l Sawir garaaf adoo isku xidhaya baraha oo tusaya qiimaha baabuur waqtiba-waqtiga kale.



b waa imisa baraha garaafka ku yaal?

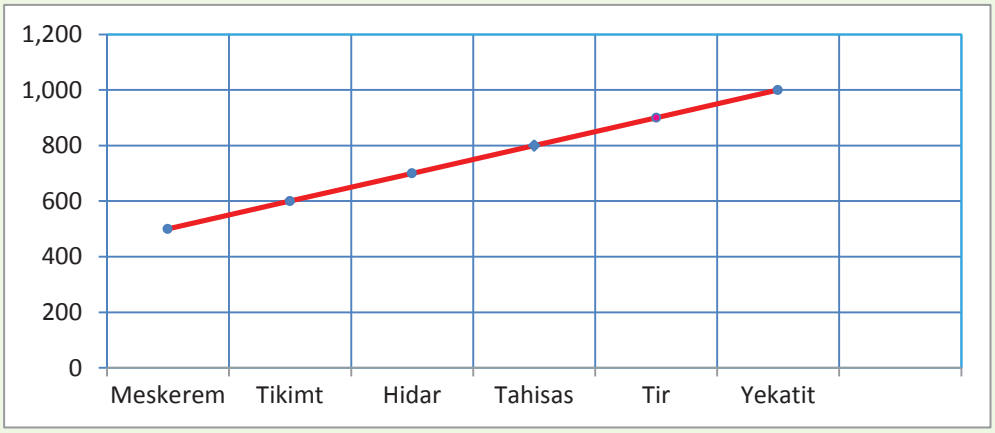
t maxay ayuu ahaa qiimha ugu sareeya ee la diwaanqaliyey?

j waa maxay qiimaha ugu hooseeye diiwaan galintu?

j miyuu kordhaa mise wuu dhinmaa qiimaha gaadhiga kolkaba waqtiga ka dabibeeya?

kh tus qiimeyaal oo ku samee garaafka.

II Garaaf tusaya miisaanka dibi waqtiba waqtiga dambe (waa in la sawiraa)



b imisa barood ayaa garaafka ku yaal?

t waa maxay qiimaha ugu sareeya ee loo qoray?

j waa maxay qiimaha ugu hooseeya ee loo qoray?

x miyuu miisaanka dibigu sii kordhayaa ama sii degayaa waqtiba waqtiga uu ka dambeeyo ?

kh ka samee garaafka tuse qiimayaal ah.

Dhamaan garaafyada aad ku soo martay hawlgalka 4.2. waa xariiq garafeedyo. Xariiq garaafeedyadu waxay isbarbardhigaan laba doorsoome. Doorsoome kasta waxa lagu qoraa dhidib dushiisa. Xariiqda garaaf waxay leedahay dhidib qotoma iyo dhidib jiifa. Baraha xariiqada garaafka lagu dul muujiyey garaafka, waa kuwa xariiqda toosan isku xidha. Hawlgalka 4.2 su'aasha tirada 2, waxaad ka ogaan kartaa in heerkulka isku bedelo min maalin ilaa maalin. Su'aasha tirsiga 3(I) ee hawlgalk 4.2 qiimayaasha baabuurku waxay isku bedelayaan min sanad ilaa sannad. Su'aasha tirsi 3(II)miisaanka culayska dibugu wuxuu isbedelaa bil kasta. Xariiq garaafeedyo kasta waxay muujinayaan isbedalka xogta waqtiba waqtiga ka dambeeya. Xariiq garaafeedka wuxu u faa'iido badan yahay tusidda xog ama war isku bedala si isdabajooga waqtiba ka dambe. Mar-marka qaarkood waxaa xariiq garaafeedka la yidhaa jaarti xariiqeed. Garaafka xariiqeed waa jidka loo soo koobto sida labala warjibayn ay iskula xidhiidhaan iyo sida midba ka kala duwanaanta aan uga madax banaanayn. Tirooyinka ku dhinac qoran xariiqda garaafka waxaa la yidhaa qiyaas. Qaybaha xariiqda garaaf waxaad ka helaysaa dhidibada (taagan iyo jiif) magac,qiyaas, baro, iyo xariiqo.

- Magaca xariiqda garaafku wuxuu kuu sheegayaa waxa garaafku ku lug leeyahay.
- Qoraalka u jiifa gudub hoose iyo qoraalka qotonka dhinac yaalaa ayaa kuu sheega nooca xaqiiqooyinka la taxay.
- Qiyaasta gudubta salka jiifa iyo qiyaasta qotonka dhinaciisu waxay kuu sheegaan inta ay dhan tahay ama inta ay badan tahay.
- Baraha ama dhibicaha garaafka dulyaal waxay ku tusaan xaqiiqooyinka.
- Xariiqaha isku xidha barahu waxay ku tusayaan qiyaasta qiimayaasha ka dhexeeya baraha.

Jaart Goobeed

Haddaba, waxaad dhawri doontaa garaaf nooc kale oo la yidhaa jaart goobeed. Jaart goobeedyada mar mar waxaa la yidhaa garaafyo goobo. Si wayn ayey uga duwan tahay xariiq garaafeedyada. Si ay kaaga caawiso wax ka fahamka u dhugo hawlgalka soo socda:

Hawlgal 4.3

1 Sawir goobo oo ka jawaab weydiimaha soo socda waa imisa boqolkiiba inta aan hadhaysnay goobada?

b Haddii goobada loo kala qaybiyo laba qaybood isle'eg oo qayb la hadheeyo, kolkaa waa maxay boqolkiiba inta aan hadheysnayn goobada?

t Haddii goobo loo kala qaybiyo afar qaybood isle'eg goo saddex qaybood hadheysan, kolkaa waa maxay boqokii goobada aan la hadhayn?

j Haddii goobo loo kala qaybiyo lix qaybood oo isle'eg oo afar qaybood la hadheeyo, kolkaa waa maxay boqolkii goobada inta aan la hadhayn?

2 Dhis goobo oo u midabee sida soo socota khusaysa: 10% casaan,20% buluug, 30% cagaar iyo 4% cadaan ah.

3 Ka ururi xog ardayda fasalkaaga oo ka jawaab su'aalaha soo socda:

b Tiri tirada ardayda fasalkiina ,tiri tirada ardayda dhediga ah iyo tirada ardayda labka ah

t soo saar boqokiiba labka iyo dhediga ardayda.

j dhis goobo oo ugu qaybi laba si saamigalkooda ugu lug lahaato ardayda lab iyo kuwa dhediga.

Halkan waxaad ku ogaan kartaa in goobooyinku muujiyaan warka ku saabsan saamiyada xubno kasta ay yeeshaan.

Ka dhig goobadu inay tahay qayb walax idil ah, kadibna u qaybi goob-gabalo ah siday ugu kala aadan yahay saamigalka qayb kasta.

Jaarti goobeed wuxu sheegaa boqoley. Sidaa darteed, waxa loo adeegsadaa isbarbardhigista qaybaha kala duwan ee walax idil isku mid ah. Goobo ama garaaf goobo waxay u taagan tahay 100% ee xogta. Qayb kasta ee meel ka qaadata goobada waxay u taagan tahay qayb ka ah 100%. Habdhiskani, ayaa waxay suurogal ku tahay in la arko sida wax loogu qaybiyey kooxo kala duwan sidaa darteed, jaartiyo goobo waa goobooyinka u qaybsan goob-gobalo, oo goob-gobal kastaa yahay jajabka walaxda idil.

Jaarti garaafeedka, dhammaan qiimayaasha la adeegsanayo waa la isku geeyaa islamarkaana helista qaybta goob-gobal kasta waxa jajabka lagu dhuftaa 360^o si loo helo xagasha u taagan qayb kasta.

Tusaale: 1. dugsi ayaa u isticmaalay dhulka ku xeersan dugsiga sida soo socota :- Dhul daaqsin 40%, garoon ciyeero 25% garoon kubadeed 15%, ubax beeris 10% iyo baabuur joogsi 10%. Tani waxa loogu muuji karaan isticmaalka jaarti goobeedka sidan:-

Furfuris: Qaybta goobo-gobolka u togaan waa:-

b Daaqu waa 40% ka $360^o = \frac{40}{100}(360^o) = 144^o$

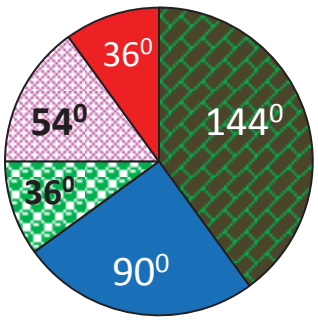
t Meel lagu cayaaro waa 25% ka $360^o = \frac{25}{100}(360^o) = 90^o$

j Garoonka kubada cagta waa 15% ka $360^o = \frac{15}{100}(360^o) = 54^o$

x Ubax beerid waa 10% ka $360^o = \frac{10}{100}(360^o) = 36^o$

Kh Baabuur joogsi waa 10% ka $360^o = \frac{10}{100}(360^o) = 36^o$

sawirka jaarti goobo:



- Dhul daaqsin
- Garoon Ciyaaro
- Ubax beeris
- Garoon Kubadeed
- Baabuur joogsi

Laylis 4.2

1 Culayska arday ayaa isku bedala sanad ilaa sannad sida tusaha hoos min 1991 ilaa 1997.

Sano	1991	1992	1993	1994	1995	1996	1997
Calays kg	48	50	54	54	53	52	50

b U isticmaal waraaq garaaf oo sawir xariiqda garaafka u taagnaanta xogta tusaha?

t Qiyaas heerkulka hoorka kolka u karkaray 25 daqiiq ka dib?

j intee barood ayaa ku yaal garaafka?

x sheeg sannadaha culayska ardaygu kordho?

kh sheeg sannadka culayska ardaygu dhinmo?

d sheeg sanadaha culayska ardaygu uu isbedal la'aan yahay ?

r maxay ayuu ahaa qiimaha ugu sareeya ee loo diiwaangaliyey ?

s maxay ayuu ahaa qiimaha ugu hooseeya ee loo diiwaangaliyey

2 Hoor ayaa la karkariyey oo heerkulkiisa loo diiwaangaliyey toban daqiiqo dhextaal ah sida lagugu tusay tusaha soo socda.

Aminta(daqiiqo)	0	10	20	30	40	50	60
Heer kul(°C)	5	26	45	61	74	80	85

b u adeegso waraaq garaaf oo sauuir graaf xariiqeed tusaya xogtaa.

t Qor cabbbirka heerkulka hoorka 25 daqiiqo kadib kolka u karkaro.

3 Jamaal ayaa kaydsada 15% dakhliga bishii u helo islamarkaa 30% uu ku iibsado raashin, 20% kiro guri,25% lacagta dugsiga ee caruurta inta hadhayna baabuur fuul.

b waa maxay cabbirka xagasha jaarti goobo u taagnaada dakhliga kharashka baabuur fuul ?

t waa maxay baaxadda xagasha u taagnaan doonta kharashka raashinka u noqonayo jaarti goobo?

j imisa digrii ayaad ku tilmaami kirada guri jaarti goobo?

x ku sawir jaarti goobeed sida Jamaal u isticmaalay lacagtiisa ?

kh haddii Jamaal dakhliga soogal bishii yahay Birr 3,000.00 intee in le'eg ayuu raashin siistay?

4 Bishii maskaram dhexdeedii ayaa haweenay dawaarle ahi heshay faa'iido ah Birr 1,500.00 waxay kaydsatey Birr 600.00 islamarkaana Birr 450.00 siisatay raashin, 300.00 birr kiro guri ayey ku bixisay iyo 150.00 birr baabuur fuul.

b u tibaax kharashaynteeda intay ka tahay dakhliga boqolkiiba.

t ku sawir jaarti goobo tusidda sida ay dawaarluhu u isticmaashay lacagteedii?

4.3 TIROSINKA, BADIDHACAHA, DHEXFURKA IYO TOOXDA XOG

Si go' aan looga gaaro xog waxa faa'iido badan in lasoo saaro celcelisyada. Celcelisku wuxuu tilmaama qiimaha nooc ahaaneed ee ururka xog noocyada u muhiimsani ayyihiin tirosinka, dhexfurka iyo badi dhace. Waxaad iyana aad uga helaysaa war dheeri ah xogtaadii kolkaad soo saarto tirosinka, dhexfurka iyo badidhace. Celceliskani waxaa hubaal ah in aad u baahan tahay cabbiraadda filiqsanaanta aad hesho sida xog ay isku rogrogto. Heerkan waxaad eegaysaa kaliya faraqa xogta ee cabbirka isrog-rogidda qiimaha ugu sareeya iyo ta ugu hooseysa ee xogta ku jirta.

Hawlgal 4.4

1 Waxaad mar hore aad qaadatay faylka natiijooyinka fasalada 5aad iyo 6aad.

b waa imisa celceliska dhibcaha fasal kasta?

t aqoon ma u leedahay sida loo soo saaro celceliska dhibcaha darajo(uga wada hadla arrinta laba-laba).

2 Xog ayaa laga ururiyey 9 arday islamarkaa arday kasta waxa la weyd- iiyey inta qof ee ku wada nool gurigooda. Natiijooyinka waxaa loo qorey sida soo socota:-

3, 4, 4, 3, 5, 4, 4, 3, 6

b Waa maxay celceliska tirada dadka 9ka guri ku nool?

t tiradee ayaa u soo noqnoqod badan?

j U habee xogta guriga ugu tiro yar ilaa ka u tiro badan, islamarkaa cadee tirada bartamaha u ah tirada dadka ee guryaha ku nool. I waa maxay?

x waa maxay faraqa ta u dheer iyo ta ugu yar?

3 Fiiri dhibcaha xaawa ay 0 maado oo min 100 ah ka heshay oo loo diiwaan galiyey sida soo socota

85, 90, 95, 80, 85, 70, 90, 92,82

b waa imisa celceliska dhibcaha xaawa?

t Sooc ta ugu sareysay iyo ta ay ugu dhibco hooseeysey oo soo saar faraqa u dhexeeya?

j u habee dhibcaha ta ugu yar ilaa ta ugu sareysa oo raadi dhibicda badhtanka ah

x dhibicdee ayaa u soo noqnoqosho badan ?

Shaqo Kooxeed 4.2

1 Waa imisa tirada da'da ugu rakaad badan (ugu soo noqnoqod badan)ardayda fasalkiina? Waxaad rabtaa inaad ururiso xogta da'da arday kasta oo fasalkiina ah raadi iyana tirasinka (celceliska) da'da ardayda fasalkiina .

2 Waa maxay bisha dhalashada ugu soo noqnoqodka badan ardayda fasalkiinu? Waxad qaban sahanka aad kula soo baxayso bisha arday kasta oo fasalkiina u dhashay?

3 Booqasho u aad Xaafiiska diiwaangalinta ardayda oo ka soo ururi tirada ardayda labka ah iyo ta dhedigga ah. Waa maxay celceliska tirada ardayda labka ah iyo ardyda dhedigga ah? Waa imisa celceliska ardyda oo dhami?

Hawlgalka 4.3 iyo shaqo kooxeedka 4.2 Waxaad si balaadhan ugu fahmaysaa waxa celcelis u yahay iyo sida loo soo saaro sidaa darteed, natiijo ahaan waxaad heli fekradaha soo socota:

Tirosinka Xog

Tirosin mar mar waxa la yidhaa celceliska aritmatik (AM) oo ah wadarta tirooyinka taxan, oo loo qaybiyey dhamaan tirsiga tirooyinka taxan. Caadi ahaan tirosinka liiska tirooyinka ayaa waxaa loo yaqaan celcelis.

$$\text{Tirosin} = \frac{\text{wadarta liiska tirooyinka}}{\text{tirsiga liiska tiooyinka}}$$

Tusaale 1: Raadi tirosinka 3, 6, 11 iyo 8

Furfuris: Isu gee dhamaan tirooyinka oo u qaybi tirada liiska wadarta liiska u waa

$= 3 + 6 + 11 + 8$, tirsiga liiska tirooyinku $= 4$

$$\text{Tirosin} = \frac{3+6+11+8}{4} = \frac{28}{4} = 7$$

Tusaale 2: Soo saar tirooyinka 11,11,13,10,11,13, iyo 12

Furfuris: $$\text{Tirosin} = \frac{11+11+13+10+11+13+12}{7}$$

$$= \frac{81}{7} = 11.57$$

Tusaale 3: Soo saar celcliska Aritmatika ee 204, 135, 310, 256, 330 iyo 223.

Furfuris: $$\text{C.A} = \frac{204+135+310+256+330+223}{6}$$

$$\text{C.A} = \frac{1458}{6} = 243$$

Tirosinka liiska tirooyinku waxay noqon karaan waqtiyada qaarkood tiro aanad filayn ee mar-marka qaar ah loo qaato in ay yihiin celceliska muuq qaldan ama fekrad been ah Waa tiro aad ku qortey warqad korkeed, laakiin aan ahayn xaalad xaqiiqo ah.

Tusaale: Fiiri hawraarada soo socda.

b Magaalo madax ayaa qiimaha celceliska carruurta ee qoys yahay 1.7 haseyeeshee, xaqiiqo ahaan ma heli kartid 0.7 ka cunug!

- t koox kubadda cagta ah ayaa leh celceliska gool dhalinta 2.4 gool bil gudaheed laakiin, maheli kartid 0.4 gool ah!
- j Celceliska baaxadda qoys ee magaalo ayaa ah 4.5 laakin ma aan heli karno 0.5 qof ah!

Tirosinka qiimaha celcelisyada masalooyinkan nolosha dhabta ah badanka ma noqdaan kuwa dhadhan leh haddii aanay jawaabtu ahayn tiro idil ah, laakiin haddana waad isticmaali kartaa tirooyinkan wax ku xisaabinada. Tusaale ahaan, haddii aad u ogtahay in tirosinka baaxadda fasal ay tahay 13.5 arday ,kolkaa waa inaad xisaabisaa 10 fasal,taas oo noqon karta $10\times13.5=135$ arday

Dhexfurka xogta:-waa qiimo badhtameedka liiska kolka loo qoro horsanaan kordhaysay ama degaysa. Haddii liisku yahay tirooyinka tiro kinsi ah, tirada badhtanka tirooyinka horsiimaha leh ayaa ah dhexfurka rakaadka.

Haddii tirsiga tirada tirooyinku tahay tiro dhaban ah, dhexfurku waa wadarta labada tiro badhtameed oo loo qaybiyo 2 kolka horsanaan loo qoro tirooyinka.

Waxaad ogaataa inay jiraan mar kasta tirooyin badan oo ka wayn ama le'eg dhexfurka liis u leeyahay sidoo kale ayna jirto in ka yar ama le'eg dhexfurka liisku leeyahay.

Tusaale 4: Dhererada joogga mitir ahaanta 7 geed oo ku yaal beer nasasho ayaa loo diwaan galiyey sida soo socota: 41, 60, 47, 42, 44, 42 iyo 47soo saar dhexfurka dhererka jooggooda. Si loo helo dhexfurka u habee ugu horayn horsanaanta kordhaysa sida soo socota oo kale:-

41, 42, 42, 44, 47, 47, 60, liisku waa 7 tiro, haddaba tirada badhtanku tirada 4aad ee liiska sidaas darteed, dhexfurku = 44.

Tusaale 5: Da'da koox dad ah ayaa u diiwaangashan sida soo socto:
14, 29, 14, 13, 14, 13, 16, 15, 18, 20, Si aad u hesho dhexfurka da'ahooda kolka ugu horeysa u habee horsanaanta kordhaysa sida:

Furfuris: 13, 13, 14, 14, 14, 15, 16, 18, 20, 29, tirada da'uhu waa 10 kolka tirooyinka badhtanku waa tirooyinka 5^{aad} iyo 6^{aad} ee horsanaanta. Haddaba dhexfurku waa celceliska labada tiro:

$$\text{dhexfurka} = \frac{14+15}{2} = 14.5$$

waxaad ogaataa in aad heli karto qiimaha dhexfurka aan isaga laftisu ku jirin liiska xogta. Tusaalaha 4aad, qiimaha dhexfurku waa 14.5, hasa ahaatee 14.5kuma jiro tirooyinka liiska lagu siiyey. Waxaad aragtay in marmarka qaar qiimaha tirosimaha ururka xog yahay mid ka duwan dhexfurka ma aa in si dhib yar fekar qaladan sida qiimaha tirosin.

Si lamid ah dhexfur marmarka qaar waa nooc ka fiican celceliska si loo isticmaalo kolka ay ku jiraan xogta qiimayaal kala fog.

Tusaale 6: Mushaharka 5 qof ee shirkada ayaa loo siiyey Biir ahaan sida:

80000, 8000,8000,12000,175000, celcelisku waa bir 42200.

Tani waa fikrad qaldan maadama ay mushaarooyinka inta badan ay ka badan tahay. Tani waxaa u sabab ah qiimaha dheer ee 175000.ee xogta oo kolkaa celcelisku kuma ah cabbir wanaagsan. Xaaladani qiimaha dhexfurku waa ka bartanka liiska. Mushaharka dhexfurku waa 8000.

Tani waxay u tahay tilmaan wanaagsan heerka guud ee mushaarka, tusaalahan waxaad uga fekar dhiiban kartaa in dhexfurku aad uga faa'iido badan yahay siinta fekarka laga qaadanayo celceliska mushaarooyinka shirkada.

Badi dhacaha xogta:

Waa qiimaha ugu soo noqnoqodka badan liiska. Iyana waa nooc kale oo celcelis ah. Liis wuxuu yeelan karaa hal badidhace in ka badan. Tusaale ahan, liiska dadka jecel madooyinka, badi-dhacuhu wuxuu noqon karan ka u doorashada badan (ka u cod badan).

Tusaale 7: Raadi badidhacaha baaxada kabaha koox arday ah. Baaxada kabahoodu waa:35,36,37,40,30,39,37,36,37,38,39

way dhib yar tahay inaad aragto waxa dhacaya haddii aad u dhigto horsanaanta tirada.

30,35,36,36,37,37,37,38,39, 39, 40,

Eegga way kuu fududahay inaad aragto tirada ugu muuqa badan, badanaa liiska. Tirada u soo noqnoqod badan waa 37.

Hadaba badiba dhacaha baaxada kabuhu waa 37. Baaxada faraqa u dhaxeeya qiimaha ugu sareeya iyo qiimaha ugu hooseeya waa 10.

Tusaale 8: Raadi badi dhacaha 140, 113, 127, 110 iyo 138?

Furfuris: Malaha Badi dhace

Tusaale 9: Raadi badi dhacaha 21, 17, 19, 24, 15, 24, 17

Furfuris: Wuxuu yeelanayaa laba Badi dhace 17 iyo 24 xogta noocaas ah waxaa lagu sheegaa inay tahay laba-badi dhace.

Xusuus: Badi dhace waxtarkiisu waa raadinta celceliska xogaha tayo ahaaneed sida: midab, heerka waxbarasho iyo xaalada guurka (xaas)

Faraqa xog

Faraqa baaxadda u dhexeeysa qiimaha ugu sareeya iyo ka ugu hooseeya marka la taxo.

Tusaale 10: Shan qof ayaa midabka ay u doorteen baabuur yahay casaan, buluug, qahimi, caddaan, Buluug Badidhacaha midabku waa Buluug.

Tusaale 11: Raadi baaxadda faraqa tirooyinka soo socda 16,14,15,13. Marka hore u dhig horsanaanta tirooyinka si uu u fududaado araga ta u hoosaysa iyo ta u saraysa 13,14,16,16, tirada u hooseysaa waa 13 islamarkaa ta u sareysaa waa 16, sidaas darteed, faraqa xogta = 16 – 13 = 3.

Tusaale 12: Isbarbardhig fara heerkulka magaalada A iyo B ee todobaadka bisha Hamle ee lagugu siiyay tusahan soo socda inta dhigrii santigiraydh.

Magaalo	Axad	Isniin	Talanda	Arbaca	Khamiis	Jimce	Sabti
A	20°C	20°C	21°C	21°C	21°C	19°C	19°C
B	22°C	24°C	24°C	23°C	22°C	23°C	21°C

Marka hore qor xogta magaalado A horsanaanta

A: 19, 19, 20, 20 , 21, 21, 21.

Sidaa darteed heerkulka ugu hooseeya A waa 19°C ka ugu sareeyaana waa 21°C.

Faraq = 21°C – 19°C = 2°C.

Marka xiga u qor xogta magaalo B horsantan

B: 21, 22, 22, 23, 23, 24, 24

Faraqa: 22 – 19 = 3 Cosdaa darteed faraqa magaalo B ee heerkulkeedu waa 3°C.

Waad isbarbardhigi kartaa faraqyada heerkulada A iyo B faraqa yara wayn oo ah 3°C. "B" marka labarbar dingo faraqa "A" oo ah 2°C. Tan oo ay macnaheedu tahay intii lagu jiray todobaadkan ayaa heerkulka magaalo B ka isbadbedel badnaa magaalo A

Tusaale 12: Ururka dhibcaha ee fasal ayaa 12 arday loo qoray sidan

87, 84, 92, 84, 72, 77, 59, 51, 84, 72, 99, 69.

Soo Saar tirosinka, dhexfurka, badi dhacaha iyo faraqa dhibcaha fasalka.

Tirosin: $$\frac{87 + 84 + 92 + 84 + 72 + 77 + 59 + 51 + 84 + 72 + 99 + 69}{12}$$

$$= \frac{930}{12} = 77.5$$

Dhexfur = $\frac{77+84}{2} = \frac{161}{2} = 80.5$

Badidhace = 84 (84 ayaa ah rakaadka ugu soo noqnoqod badan)

Faragat = 99 – 51 = 48

Laylis 4.3

1 Hoos waxaa ah biilasha wax iibisiga shan qoys kala duwan oo shan todobaad birr ahaan ee mid kastaa. Soo saar celceliska biilka wax iibsiga ee shanta todobaad.

b 40,70,90,80,100

t 100,1300,110,120,140

j 100,80,90,120,110

x 90,80,100,90,100

kh 130,110,70,90,130

2 Heerkulka ah digrii sentigireeydh oo 7maalmood isku xiga ayaa loo qoray sidan: 25, 30, 32, 28, 25, 33, 32

b waa maxay celceliska heerkulka 7 maalmood?

t imisa ayuu ahaa faraqa heer kulka 7maalmood?

j soo saar badidhacaha iyo dhexfurka heerkulka7 maalmood?

3 Kartoonno ukuma ah ayaa culays kg yahay:3,4,5,3,4,6,3,6,3,5

b waa imisa celceliska culayska kartoonadu

t waa imisa farqiga culayska kartoonadu?

j soo saar Badidhacaha iyo dhexfurka culayska kartoonada?

4 Fasalka 7aad saddex arday oo dhigata ayaa barata 8 maado. Natiijada dhamaadka imtixaanka simistarka 1aad ay boqol ka heleen ayaa loo qoray sida soo socota:-

Arday i: 90, 89, 86, 80, 83, 87, 88, 91

Arday ii: 56, 76, 58, 67, 83, 90, 60, 75

Arday iii: 75, 95, 96, 89, 83, 87, 88, 91

b Soo saar celceliska dhibcaha arday kasta

t Soo saar farqiga dhibcaha arday kasta?

j Raadi dhexfurka iyo badi dhacaha dhibcaha arday kasta?

x Ardaygee ayaa helay celcelika u sareeya?

kh Ardaygee ayaa helay u celcelis hooseeya?

d Ardaygee ayaa haba yaraatee helay dhibco madoorsooma ah?

r Ardaygee ayaa leh dhibico kala gedisan ?

Ereyada Muhiimka ah

Amaarado Taaley	Badidhace
Dhexfur	Jaarti Goobeed
Faraqa xogta	Tirosin
Tuse Amaarado Taaley	Xariiq Garaaf
Xog	Goob-gobal

Soo Koobida Cutubka

Barashada cutubkan kadib waa inaad garato qeexaha tibaaxaha soo socda aanad yeelato xirfadaha loo qaban karo:

1 Xog waa waxyaabo ururs an (warijibeyn), badanaa tirooyin loo ururiyey si looga helo war, waxaa loo agaasimaa si horsanaan kordhaysa ama degaysa ah.

2 Amaaradaha Taaley ayaa waxa loo isticmaalaa tirooyinka si nidaamsan walxaha waxa ay yihiin xariiqo qotono yar yar oo mid waliba u taagan tahay halbeeg kaliya.

3 Tusaha amaaradaha Taali waa ku muujinta xog tuse ahaan, waxaa loo adeegsadaa si loo soo koobo xog.

4 Xariiq garaafeed waa sawir u muujinta xogta loo isticmaalo jiitimo, xariiq garaafeedku waa hab loo koobayo sida laba inood oo warjibeyn ah iskula xidhiidhaan iyo siday u kala gadisan yihin ama ay iskugu tiirsan yahay midba midka kale, xariiq garaafeedka waxaa badanaa loo adeegsadaa si ay ugu taagnaato urur ka qiimayaasha xog uu xaddi iskula bedalo aminta. Garaafyadani waxay u faa'iido badan yihiin u raadinta dhinacyada guud (waxyaalaha la qabanayo); taasi waxay tahay raadinta naqshad guud ee ururada xog dhexdooda ka hadla heerkulka, iibka, shaqaalenimada, faa'iidada ama qasaaraha shirkada ee xadka muddo u adeegsashada xariiq garaafeedka haddaad u baahan tahay inaad ogaato sida xaddi isku bedelo aminba ta ku xigta. Xariiq-garaafeedyadu waxay ina awoodsiiyaan sidaan u heli lahayn naqshadaha waqti qaatay.

5 Goobo garaafeed: (jaarti goobo ah) waa iyana u muujinta xogta sawir ahaan. Jaarti goobeed wuxuu tusaa boqoleyda. Haddaba, waxaa loo adeegsadaa isbarbardhigga qaybaha kala duwan ee wax idil. Goobo garaafeedku wuxuu u taagnaada 100% ka xog isticmaal jaart goobeed haddii aad u baahan tahay isbarbardhigga qaybaha (goob-gobalada) kala duwan ee wax idil, ma jiro wax ammin ah oo ku lug leh iyo noocyo badan oo ay ku tacaluqadaa.

6 Tirosin: mar mar waxaa la yidhaa tirosinka aritmatikada $(\overline{AM})$ waa wadarta tirooyinka liiska ku jira oo loo qaybiyey tirada tirsiga tirooyinka liiska.

7 Dhexfur: waa qiimaha tirada badhtanka liiska ka ah kolka horsanaan kordhaysa ama degaysa loo qoro.

8 Badidhece: waa tirada qiimaha badiba dhacaha u ah liiska iyana waa nooc celcelis kale ah, liis wuxuu lahaan karaa hal badidhece in ka badan.

9 Faraqa xog: waa kooxda faraq u dhaxeeya qiima u sareeya iyo qiimaha u hooseeya liiska xogta.

10 Goob-gobal: waa qaybta xagal xudduneedka qaanso meerisay ee addimada xagashana ay gacano u noqdeen.

Lylisyada guud ee Cutubka 4aad

1 Tirada kiintaalada daafi maalintii lagu gado bakhaar ganacsi bishii Tir sida hoos lagugu siiyey :

12, 13, 15, 14, 15, 15, 12, 13, 15, 12, 11, 12, 11, 12, 14, 5, 12, 13, 5, 12,15, 15, 15,11, 13, 14,13, 15, 13, 12.

Same tusaha Amaaradaha Taaley oo soo saar Tirosinka, dhaxfur, badidhace, iyo faraqa xogta.

2 Maalin kasta lacagta la siiyo 20 shaqaale muruqmaal ah ayaa tii oo birr ah hoos lagugu siiyey:-
20,25,25,30,20,25,25,35,40,30,20,40,35,25,30,40,25,35,30, 35
u samee tuse amaarado taaley ah, kadibna raadi tirosinka, dhexfurka, badidhacaha, iyo faraqa xogta.

3 Tusaha hoose ayaa wuxuu ku siiynay aa tirada ardayda dugsiga sanad kasta min 1995 ilaa 2002. Sawir xariiq garaafeedka muujin kara xogta.

Sanada	1995	1996	1997	1998	1999	2000	2001	2002
Ardayda	1000	1050	1150	1200	1300	1360	1450	1500

4 Kharashka qoys ee waxyaalo kala duwan sannad dhexdii ayaa loo kala siiyey sida tusaha hoose ku qoran, ku sawir jaarti goobeed si xogta ugu taagnaato.

Shayo	Cuno	Waxb	Dhar	Madadaalo	Waxyaabo kala duwan
Hanti oo birr ah	6000	4000	5000	3000	2000

5 Dhererada joogga 10 wiil iyo 10 gabdhood ayaa lagu cabbiray santimitir islamarkaana waxaa loo diiwaan galinayaa sida soo socota :-
Dhererka wiilasha: 150,160,165,155,160,170,165,155,156,168
Dhererka gabdhaha:150,140,132,145,148,145,150,135,130,155

b waa imisa dhererka wiilasha iyo ta gabdhaha ugu dheer siday u kala horeeyaan?

t waa imisa dhererka wiilka iyo gabadha ugu dherer kuwa ugu gaaban sida ay u kala horeeyaan?

j waa imisa faraqa dhererada wiilasha iyo dhererada gabdhaha siday u kala horeeyaan?

x waa imisa tirosinka dhererka wiilashu?

kh waa imisa tirosinka dhererka gabdhuhu ?

d imisa wiil ayaa dhererkoodu ka wayn yahay dhererka tirosinkooda?

r imisa gabdhood ayaa leh dherer ka badan dhererka tirasin kooda?

s soo saar dhexfurka iyo badi-dhacaha xog waliba?

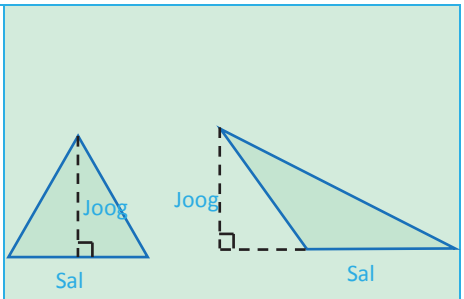
6 Xisaabi tirosinka, dhexfurka, badidhacaha iyo faraqa xogta soo socata. Waa tee ururka xogta ugu faraq yar?

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

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

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

CUTUBKA 5AAD



SHAXANNADA JOOMATERIGA IYO CABBIRAADAHA

U Jeedooyinka Cutubka:

Cutubkani kolka uu dhammaado ka dib, waxaad awood u yeelan doontaa inaad:

- *soo soocdo dhisto islamarkaana sharaxdo astaamaha afardhinacleyaasha sida, koor iyo barbarooleyaasha.*
- *kala soocdo faraqa u dhexeeya geesooleyaasha tuurta leh iyo geesooleyaasha golxada leh.*
- *soo saarto wadarta xaglo gudeedyada geesooleyaasha tuurta leh.*
- *soo saarto wareegyada iyo bedadka saddexagalda iyo kooraha iyo goobooyinka.*
- *soo saarto cabbirada qaybaha biriisamyada iyo dhululbooyinka.*

Tusmooyinka muhiimka ah:

HORDHAC

Xisaabta fasalka lixaad waxaad ku soo barateen noocyo kala duwan iyo astaamaha qaar ka mid ah shaxanada joomateriga, asaaska dhisitaanada joomateriga iyo cabbiraadaha. Cutubkan waxaad ku xoojin doontaan aqoontiinii hore islamarkaana waxaad ugu sii korodhisan doontaan barashada shaxanada joomateriga sida afargeeslayaasha. Geesoolayaasha iyo goobooyinka dhisidooda, astaamahooda iyo cabbiraadooda.

5.1 AFARDHINACLEYAASHA, GEESOOLEYASHA IYO GOOBOOYINKA

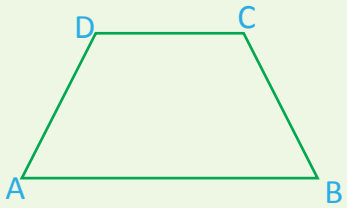
5.1.1 Afardhinacleyaasha

Ka hor inta aynaan qeexin afardhinaclaha, waa inaad ka shaqeysaan hawlgalka soo socda kaasoo si fudud idinka caawinaya in aad u fahamtaan afardhinacle waxa u yahay.

Hawlgal 5.1

B Guuri shaxanka 5.1 islamarkaana ka shaqee su'aalaha soo socda:

1. Imisa dhinac ayuu leeyahay?
2. Sharax dhinacyada?
3. b. U magac bixi shaxanka
   t. Waa maxay magaca guud ee shaxanku
4. Calaamadee xaglaha gudaha.
5. Qor dhinacyada lamaanayaasha ah ee iska soo horjeeda.
6. Qor dhinacyada lamaanayaasha deriska ah.
7. Sawir xaglo-gooyeyaasha
8. Haddii $\overline{AB}$ / /$\overline{DC}$ kolkaa maxaad ku magacaabi shaxanka?



Jaantuska 5.1

T Sharax mid walba fekradaha soo socda adigoo adeegsanaya ereyadaada ama sida aad u qabto in ay yihiin islamarkaana la falanqee saaxiibadaa.

- **b** afardhinacle
- **t** dhinacyada afardhinacle.
- **j** dhinacyada deriska ah ee afardhinacle
- **x** dhinacyada iska soo horjeeda ee afardhinacle

kh xaglo-gooyeyaasha afardhinacle.

d xaglo gudeeyada afardhinacle.

J b faahfaahi tibxida koor

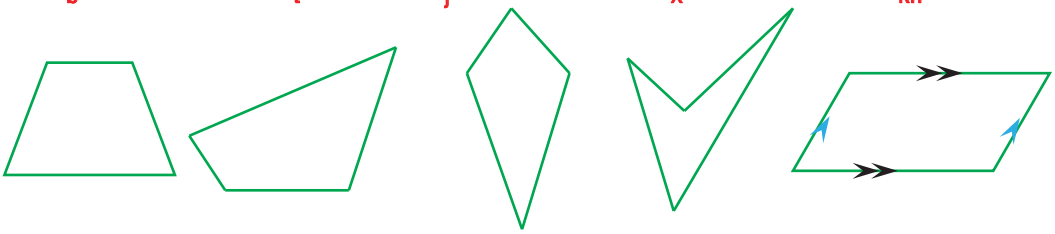
t adiga oo sawiraya koor muuji

i salalka koorta ii adimada koorta iii joogga koorta.

- **Dib u xasuuso in afardhinacle yahay shaxan afardhinac leh si fudud oodan**

Tusaale 1: Shaxanada soo socda waxay u taagan yihiin qaar ka mid ah tusaalayaasha afardhinacleyaasha.

b t j x kh



Jaantuska 5.2

B. Dhisidda iyo astaamaha koorta

Fasalkii lixaad waxaad ku soo barateen sida loo dhiso saddexagalada loo adeegsanayo mastarad, xagal-beege iyo lamaanayaah goobeeye. Cutub hoosaadkan waxaad ku arki doontaa faahfaahinada iyo dhisitaanada koorta iyo afardhinacleyaal kaloo gaar ah.

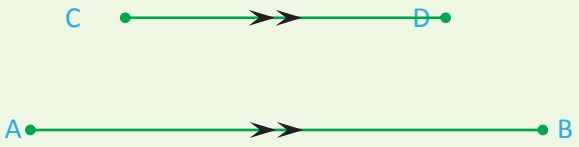
Hawlgal 5.2

Qalabka loo baahan yahay: mastarad, xagal-beeg goobeeye,

1 b dhis xariijimaha $\overline{AB}$ iyo $\overline{CD}$ halka $AB = 8$ cm, $\overline{CD} = 5$ cm islamarkaa $\overline{AB} // \overline{CD}$, sida ka lagugu siiyey Jaantuska 5.3.

t isku xidh baraha A ilaa C islamarkaana B ilaa D

j falanqee samayska afardhinaclaha.



Jaantuska 5.3

2 Dhis koorta PQRS halka $\overline{RS} // \overline{PQ}$ iyo $QR = 2\,cm$, $PQ = 4cm$ $M(\angle P) = 45^o$; $m(\angle Q) = 70^o$adiga oo adeegsanaya talaabooyinka dhisitaanka ee soo socda

b sawir xariijin $\overline{PQ}$ islamarkaana PQ = 4cm

t ku dhis $\angle P$ iyo $\angle Q$ cabbirada lagu siiyey

j muuji barta R islamarkaana QR = 2cm

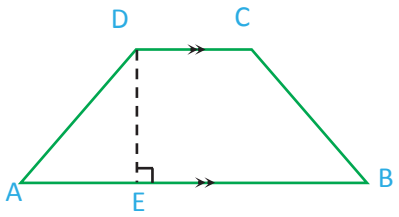
x dhis xagasha TRS islamarkaana $m(\angle TRS) = 70^o$ ee ku dul dhaca QT

kh isku xidh P ilaa S islamarkaana S ilaa R.

3 Faahfaahi qeybaha koorta lagu dhisay kor ee 1 iyo 2 Afardhinaclaha aad kor ku soo dhisteen waxaa lagu magacaabaa koor. Guud ahaan, koorta waxaa loo qeexaa islamarkaana loo hanaaniyaa sida soo socota.

Qeex 5.1: Koor waa afardhinacle ay barbarro yihiin mid ka mid ah lamaanayaasha dhinacyada iska soo horjeeda.

Jaantuska 5.4 $\overline{AB} // \overline{DC}$ halka $\overline{AD} \not\parallel \overline{BC}$ kadib afargeeslaha ABCD waa koor' halka:



Jaantuska 5.4

- Dhinacyada barbaraha ah $\overline{AB}$ iyo $\overline{CD}$ waa salal
- Dhinacyada aan ahayn barbaraha $\overline{AD}$ iyo $\overline{BC}$ waa addimo
- $\overline{DE}$ waa joogga ama qotonka

Ogow: Koorta dhinacyada aan barbaraha ahayn ay isku sorgoan yihiin waxa lagu magacaabaa koor labaale ah.

Laylis 5.1

1 Ku qor run haddii hawraarta lagu siiyay sax tahay ama been haddii ay tahay qalad.

b Shaxan kasta oo leh afar dhinac waxaa lagu magacaabaa afardhinacle

t Dhamaan afargeeslayaashu waxay leeyihiin laba xagalo –gooye

j Xaglo-gooyeyaasha koor kasta way isku sargo'an yihiin.

x Afargeeslaha labadiisa dhinac ee wadaaga bar dhamaad waxaa lagu magacaabaa dhinacyo deris ah.

kh Salka hoose ee koortu mar walba wuu ka wayn yahay salka sare.

d Xagal-gooyaha afargeesle wuxuu u qeybiyaa afargeeslaha laba sadexgal oo isku sargo'an.

r Addimada koortu waa la barbaro midba midka kale .

s Xaglaha salka ee koorta labaalaha ah way isku sargo'an yihiin

sh Xaglo-gooyeyaasha koorta labaalaha ah way isku sargo'an yihiin

2 Imisa sal ayey koortu leedahay?

3 Koorta xaglaha salka ee lamaanayaasha ah waa 120^o iyo 150^o, raadi cabbirka xaglaha kale.

4 Koorta labaale ABCD, haddii mid ka mid ah xagal saleedyada tahay 70^o. Raadi cabbirka xaglaha kale?

5 Dhis koorta EFGH ee $\overline{EF} \parallel \overline{GH}$ islamaarkaana $\overline{EF}$ =6cm , $\overline{FG}$ = 3cm, $m(\angle E) = 60^o$ iyo $m(\angle F) = 55^o$?

6 Dhis koorta ABCD halka $\overline{AB} \parallel \overline{CD}$ islamarkaana $\overline{AD}$ = 4cm, $m(\angle D) = 70^o$ $\overline{DC}$ =11cm iyo $m(\angle C) = 85$?

T. Dhisidda iyo Astaamaha Barbarroolaha

Waxaad horey u soo barateen afargeesle waa shaxan afardhinacle si fudud u oodeen. Iminka waxaad faahfaahisaan fekrada afardhinaclaha nooca gaar ah oo la yidhaa barbaroole iyo dhisidda barbaroole leh cabbirada adimada lagu siiyey.

Hawlgal 5.3

1 Maxaan ula jeednaa marka aan leenahay laba xaglood waa xaglo is buuxsha/isdhameeya?

2 Dhig laba qalabka jibbaarma ah oo $30^o - 60^o - 90^o$ oo Magacow shaxanka ay sameeyaan.

3 Faahfaahi qaabka barbaroole.

4 Adiga oo adeegsanaya mastarad, xagal-beege iyo lamaanayaal goobeeye ah dhis barbarooleha DEFG halka DE= 6cm,EF= 4cm, $m(\angle D) = 65^o$ adiga oo adeegsanaya talaabooyinka soo socda:

b Sawir xariijin $\overline{DE}$ islamarkaana DE = 6cm

t Dhis $\angle D$ halka $m(\angle D) = 65^o$ islamarkaana $\angle E$ cabbirkiisu waa 115^o

j Muuji barta F islamarkaana EF =4cm

x Dhis $\angle EFG$ islamarkaana $m(\angle EFG) = 65^o$ (halka G ay tahay isgoyska $\overline{DG}$ iyo $\overline{FG}$

kh Miyaad heshay barbaroolaha DEFG ee aad raadinaysay ?

d Barbaroolaha DEFG,maxaad odhan kartaa .

i Dhinacyada iska soo horjeeda ?

ii Xaglaha iska soo horjeeda?

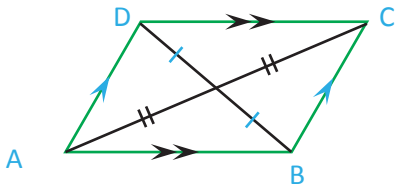
iii Xaglaha deriska ah?

iv Xaglo gooyeyaasha?

Hawlgalka sare ayaa wuxuujaasiinayaa war waxtar u leh qeexitaanka barbaroole.

Qeex 5.2: Barbarroole waa afardhinacle ay laba dhinac kastoo iska soo horjeedaa ay barbarro yihiin.

Jaantuska 5.5 $\overline{AB}$// $\overline{DC}$ iyo $\overline{AD}$// $\overline{BC}$, kolkaa ABCD waa barbaroole



Jaantuska 5.5

Astaamaha barbarroolaha

1 Dhinacyada iska soo horjeeda ee barbarrooluhu way isku sargo'an yihiin

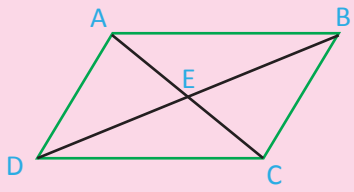
2 Xaglaha iska soo hor jeedaa ee barbarrooluhu way isku sargo'an yihiin

3 Xaglaha isku xiga ee barbarrooluhu waa xaglo isbuuxsha

4 Xaglo gooyeyaashu way iskala badhaan midba midka kale.

Laylis 5.2

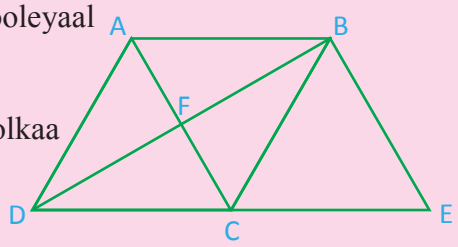
1 Haddii hal xagal ee barbarroolaha ABCD tahay 65^{o}, kadib raadi cabbirka xagalaha kale.



Jaantuaka 5.6

2 Shaxanka lagu tusay ee ABCD waa barbarroole. Haddii xaglo gooyeyaasha $\overline{AC}$ iyo $\overline{DB}$ ay ku kulmaan E islamarkaana $\overline{DB}$=6cm,raadi dhererka $\overline{EB}$.

3 Shaxanka, ABCD iyo ACED waa barbarrooleyaal Xaglo-gooyeyaasha $\overline{AC}$ iyo $\overline{DB}$ ee ABCD Waxay Ku kulmaan F, Hadii CF = 4cm, kolkaa raadi BE



Jaantuska 5.7

4 Barbarroolaha ABCD,cabbirka xagasha A waa x digrii islamarkaana cabbirka xagasha B waa $(2x-30)$ digrii, raadi cabbirka xagasha B

5 Barbarroolaha ABCD, $m(\angle ABC)=3x-12$ islamarkaana $m(\angle CDA) = x + 40$, raadi $m(\angle ABC)$, $m(\angle CDA)$, m (BCD iyo $m(\angle DAB)$

6 Barbaroolaha ABCD, $AB = 7x-4$,islamarkaana $CD = 2x+21$,raadi $\overline{AB}$ iyo $\overline{CD}$

7 Dhis barbaroolaha ABCD oo ay AB = 8 cm, BC = 5 cm islamarkaana $m(\angle A) = 70^o$

8 Dhis barbarroolaha ABCD halka AB = 7cm, $\angle B = 110^o$ islamarkaana $\overline{BC} = 4$ cm

J. Dhisida iyo astaamaha barbarroolayaasha khaaska ah

Afardhinacleyaasha, laydi, qardhaas, iyo laba jibaarane waa barbarrooleyaal khaas ah, maadaama oo mid waliba buuxinayo dhamaan astaamaha barbarroolaha.

Dhisitaanka laydiyada, qardhaasaha iyo labajibaaranuhu waxay lamid yihiin oo ay noqonayaan ta barbarroolaha oo wax yar faahfaahsan, si aad isugu daydo, ka shaqee hawlgalka soo socda.

Hawlgal 5.4

1 Waa maxay laydi?
2 Laydigu ma barbarroolaa?
3 Waa maxay labajibaarane?
4 Dhis laydiga ABCD ee AB = 6cm iskamarkaana BC = 4cm
5 Dhis qordhasta PQRS ee PQ = 4cm islamarkaana $\angle P = 85^o$
6 Dhis labajibaaranaha KLMN ee KL = 5cm.

Shaqo kooxeed 5.1

Ka shaqee mid kasta kuwa soo socda,adiga oo la wadaagaya fekradaada kooxdaada dhaxdeeda.

1 Sidee ayaad u wada xidhiidhin
- b labajibbaarane iyo qardhaas
- t labajibaarane iyo laydi
- j Laydi iyo qardhaas
- x qardhaas iyo abitooy
- kh Qardhaas iyo barbarroole.

2 Maxaad fekrad ahaan ka odhan kartaa
- b xaglo –gooyeyaasha laydiga
- t xaglo-gooyeyaasha qardhaasta
- j xaglo–gooyayaasha labajibaaranaha
- x xaglo-gooyeyaasha koorta

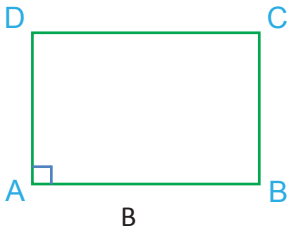
3 b magacaw saddex afardhinacleyaal oo ah barbaroole
- t magacaw laba afardhinacle aan ahayn barbarroole

4 Tus xidhiidhka ka dhaxeeya noocyada kala duwan ee afardhinacleyaasha adiga oo adeegsanaya tusaha Feyn.

Laydi

Qeex 5.3: laydi waa barbarroole leh xagal qumman

Jaantuska 5.8 m(∠A)=90° sidaas awgeed barbarroolaha ABCD wuxuu u taagan yahay laydi



Jaantuska 5.8

Astaanmaha laydiga

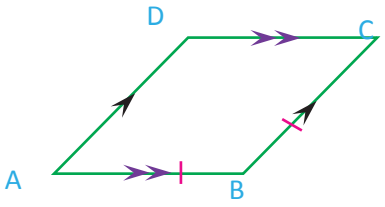
1 dhinacyada iska soo horjeeda ee laydigu waa barbaro, wayna isku sargo'an yihiin
2 xaglo-gooyeyaasha laydigu way is kala badhaan midba midka kale
3 dhamaan xaglaha laydigu waa xaglo quman
4 xaglo-gooyeyaasha laydigu way isku sargo'an yihiin

Qardhaas

Qeex 5.4: Qardhaas waa barbarroole labada dhinac ee deris ka ah ay isku sargo`an yihiin.

Jaantuska 5.9ABCD waa barbarroole halka

$\overline{AB} \equiv \overline{BC}$ markaa ABCD waa qardhaas.



Jaantusk 5.9

Astaanta qardhaasta

1 dhinacyada iska soo horjeeda ee qardhaastu waa barbaro, wayna isku sargo'an yihiin.
2 xaglo-gooyeyaasha qardhaastu way iskala badhaan midba midka kale.
3 dhamaan dhinacyada qardhaastu way isku sargo'an yihiin.
4 Xaglogooyeyaasha qardhaastu way Isku qotomaan midba midka kale.
5 Xaglo-gooyeyaasha qardhaastu waxay kala badhaan xaglaha geesaha.

Labajibaarane

Qeex 5.5: Labajibaarane waa qardhaas leh xagal qumman ama laba jibaarane waa laydi dhinacyadiisa deriska ah ay isku sargo`an yihiin.

Astaamaha laba jibbaaranaha

1 Laba jibbaaranuhu waa barbaroole kolkaa
- b dhinacyada iska soo horjeedaa waa barbaro wayna isku sargo'an yihiin
- t xaglaha iska soo horjeedaa way isku sargo'an yihiin
- j xaglo-gooyeyaashu midba midka kale ayuu u kala badhaa

2 Laba jibaaranuhu waa qardhaas, islamarkaana
- b xaglo-gooyeyaashu way isku qotomaan.
- t xaglo-gooyayaashu waxay kala badhaan xagalaha geesaha.

3 Labajibaaranahu waa laydi islamarkaana.
- b xaglo-gooyeyaashu way isku sargo'an yihiin
- t dhamaan xagluhu waa xaglo quman.

Laylis 5.3

1 Laydiga ABCD, dhererka xagalgooyaha AC waxa u taagan $6x - 2$ islamarkaana dhererka xagal gooyaha BD waxaa u taagan $4x + 2$.
- b raadi qiimaha x
- t raadi AC, BD iyo AB

2 Laydiga ABCD,xaglo-gooyeyaasha ABiyo BC waxay iska gooyaan E, Haddii $AE = 3x + y$, $BE = 4x - 2y$ islamarkaana $CE = 20$, raadi x iyo y

3 Barbaroolaha ABCD, $AB = x + 4$, $DC = 3x - 39$ islamarkaana $BC = 2x - 16$ tus in ABCD u yahay qardhaas.

4 Ku qor run haddii hawraarta lagu siiyey sax tahay ama been haddii ay tahay qalad.

b	laydigu waa qardhaas	t	Qardhaastu waa laydi
j	Barbarrooluhu waa qardhaas	x	Barbarrooluhu waa laydi

kh Haddii xaglo-gooyeyaasha afargeesle ay isku qotomaan midba midka kale kolkaa inuu noqdo qardhaas waa lagama maarmaan.

d Xaglo-gooyeyaasha qardhaastu waxaa ay sameeyaan afar saddexagal oo isku sargo'an

r xaglo-gooyeyaasha labajibbaaranuhu waxay isku kala badhaan si qotome ahaan ah.

s Qardhaas kastaa waa labajibbaarane

sh Xaglo-gooyeyaasha waxay u qaybshaa labajibbaaranaha , afar saddexagal labaale ah oo isku sargo'an.

dh Haddii bar-badhtameeyada dhinacyada laba jibaaranaha la kulansiiyo, waxaa ka samaysma labajibbaarane kale.

5 Dhis qardhaasta ABCD leh $AB = 6$cm islamarkaana $m(\angle A) = 70^o$

6 Dhis laydiga PQRS leh $PQ = 8$cm islamarkaana $QR = 10$ cm

7 Dhis laba jibbaaranaha ABCD leh $AC = 6$ cm

5.1.2 Geesoolayaasha

Fasaladii hore iyo qeybihii hore waxaad garawsateen in shaxanka si sahlan saddexda dhinac u oodeen lagu magacaabo saddexagal, shaxanka sahlan ee afardhinaclaha si fudud u oodan waxaa lagu magacaabaa afar-geesoole, Si lamid ah taas waxaad heli kartaa shaxan sahlan ee shan dhinaclaha oodan, shaxanka sahlan ee lix dhinaclaha oodan islamarkaad sii socda noocyada. Shaxanadan sida noocyadan ah ee sifudud ugu samaysma xariijimaha waxaa lagu magacaabaa geesoolayaasha.

Hawlgal 5.5

1 Ku keen qeexda, geesoole erayadaada,

2 Maxaad ugu yeedhi, shaxan oodan oo ka samaysan saddex xariijimood ama kabadan?

3 Sheeg tusaale ah shaxan si fudud u oodan oo aan ahayn geesoole.

4 U fiirso labada barood A iyo B meelkasta geesoolaha dhexdiisa. Marka aan isku xidhno A iyo B, xariijin ahaan, xariijinta $\overline{AB}$ waxay ku dhacaysaa geesoolaha dhexdiisa.

b sawir saddex geesoole oo kala duwan oo run ka dhigaya hawraarta sare,

t miyaad garan magaca geesoolaha sidan ah? muxuu yahay.

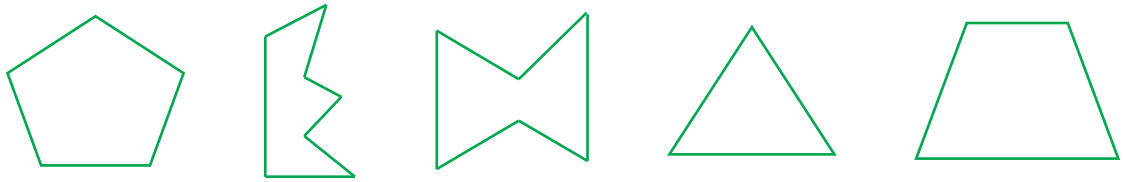
5 U fiirso labada barrood D iyo E ee geesoolaha dhaxdiisa marka aan isku xidhno labadaas barood, waxaa suurogal ah xariijinta $\overline{DE}$ in ayna ku dul dhicin dhamaanteed geesoolaha.

b sawir saddex geesoole kuwaas oo run ku noqonaya hawraarta sare.

t miyaad garanaysaa magaca geesoolaha runta ku noqonaya hawraarta sare? Waa maxay magacaasi?

Qeex 5.6: Geesoole waa hilin si fudud ay u oodeen xariijimo

Shaxannada soo socda waxay u taagan yihiin qaar ka mid ah tusaalayaasha geesoolayaasha.

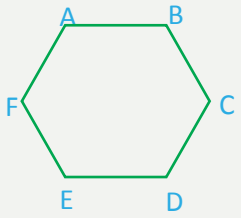


a b c d e

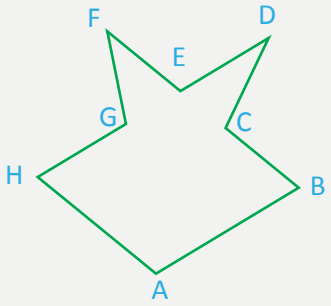
Jaantuska 5.10

Ogow: geesoole tuur leh waa geesoole ay cabbirka xaglo-gudeedyadiisu mid walba u ka yar yahay 180°.

t geesoole golxo leh waa geesoolaha leh ugu yaraan hal xaglo-udeed oo cabbirkeedu ka wayn tahay 180°.



Jaantuska 5.11



Jaantuska 5.12

Jaantuska 5.11: geesoole tuur leh geesoolahaa tuuta leh:
(mid walba cabbirka xagal kastaa way ka yar tahay 180°)

Jaantuska 5.12: Geesoole golxo leh:
(xaglo gudeedyada G, E iyo C mid kast wuu ka wayn yahay 180°)

Ogow: Ereyga Geesoole waa in loo fahmo in loo tixraaco geesoole tuur leh. Abla-ablaynta geesooleyaasha iyadoo loo eegayo tirada geesahooda.

Tirada dhinacyada	Magaca geesoolaha
3	Saddex geesle
4	Afar geesle
5	Shan geesle
6	Lix geesle
7	Todoba geesle
8	Siddeed geesle
9	Sagaal geesle
10	Toban geesle
n	n-geesle

Ogow: Geesoolaha dhamaan dhinacyadiisu iyo xaglihiisu ay isku sargo'an yihiin waxaa lagu magacaabaa geesoole qaabsan.

Tusaale1:

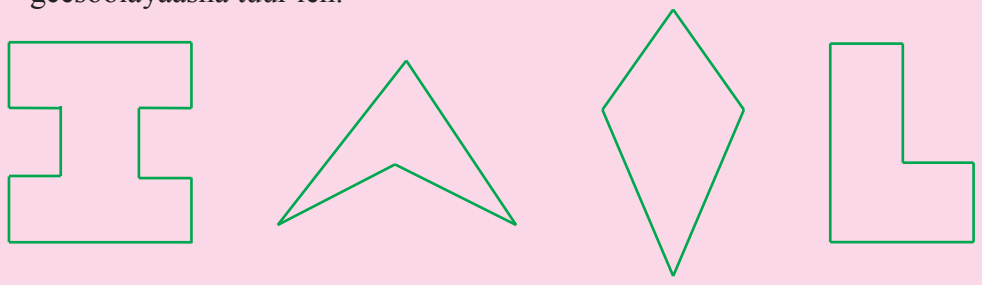
b saddexagal siman waa saddexagal qaabsan

t laba jibaaranuhu waa afargeesle qaabsan

Laylis 5.4

1 waa maxay geesoolaha ugu fudud?

2 U kala sooc geesoolayaasha soo socda sida geesoolayaasha golxo leh ama geesoolayaasha tuur leh.



b t j x

Jaantuska 5.13

3 Kee ayaa ah kuwa soo socda geesoole qaabsan?
b qardhaas t laydi j lix geesle x midnaba

4 Kuwa soo socda kee ayaan u taagnayn geesoole?
b toban geesle t shaxan leh 100 dhinac
j goobo x saddexagal labaale ah

5 Muxuu noqon magaca geesoole leh 12 dhinac?

6 Qaar ka mid ah xaglo-gooyeyaasha geesoolaha golxo leh waxay ku dhacaan dibada geesoolaha,
b run t been

5.1.3 Goobo

Waxaad soo barateen noocyada kala duwan ee geesoolayaasha, waxaad eegga wax ka baran doontaa shaxanka sallax ee lagu magacaabo goobo.

Hawlgal 5.6

1 Maxaynu ula jeednaa marka aan leenahay ururka baraha fogaan mid ah wada jira bar maguuraan ah?

2 Sawir goobo gacankeedu yahay 4 cm islamarkaana muuji xuddunteeda.

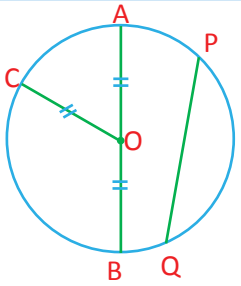
3 Adiga oo adeegsanaya goobeeyahaa, sawir goobo islamarkaana ka jawaab mid walba su'aalaha soo socda.
b Calaamadee xuddunta O iyo baro badan oo goobada dusheeda ah sida A,B,C,D,iyo E,
t Cabbir fogaanta OA, OB, OC, OD, OE.
j Imisa ayey bar waliba u jirtaa xuddunta O?
x sheeg magacyada xariijimaha, $\overline{OA}, \overline{OB}$, $\overline{OC}$, $\overline{OD}$ iyo $\overline{OE}$?
kh isku xidh baraha A iyo B, B iyo C, A iyo D.
d Waa maxay magacyada xariijimaha $\overline{AB}, \overline{BC}$, iyo $\overline{DE}$?
r haddii xariijinta $\overline{AD}$ ay ka gudubto xuddunta goobada 0, maxaa lagu magacaabaa xariijinta $\overline{AD}$?
i waa imisa $\overline{AD}$ adiga oo u tibaaxaya $\overline{AO}$?
ii u fiirso hilinadan xoodan ee ABC, BCD, ACD ee goobadaada dusheeda. Waa maxay magacoodu?

4 Erayadaa ku sharax kuwa soo socda .
b xuddunta goobada t gacanka goobada
j boqonka goobada x dhexroorka goobada
kh qaansada goobada

Qeexaha 5.7: Goobo waa ururka baraha fogaan isku mida u wada jira bar maguuraan ah oo la yidhaa xuddunta goobo.

Jaantuska 5.14 dhexdiisa

- O waa xuddunta goobada
- $\overline{OA}, \overline{OB}$ iyo $\overline{OC}$ waa gacamada goobada
- $\overline{PQ}$ iyo $\overline{AB}$ waa boqonada goobada
- $\overline{AB}$ waa dhexroorka goobada
- PAC, PQB, ACB waa qaansooyinka goobada.



Jaantuska 5.14

Laylis 5.5

1 Ku qor run haddii hawraarta lagu siiyey sax tahay ama been haddii ay tahay qalad.
- b Haddii boqon uu u qeybiyo goobada laba qaybood oo isle'eg kolkaa wuxuu noqonayaa dhexroorka goobada,
- t dhexroorada goobooyinka isku mid ah way isku sargo'an yihiin .
- j laba boqon oo kasta oo goobo isku mid ah way isku sargo'an yihiin.
- x goobadu waxay yeelan kartaa dhexrooro badan
- kh boqonada isku sargo'an ee hal goobo waxay fogaan isle'eg u jiraan xuddunta goobada
- d dhexroorku waa boqonka ugu dheer goobada .
- r gacanku waa badhka dhexroorka goobada.

2 Gooba leh gacan 4 cm ah
- b sawir boqon ah 4 cm
- t sawir boqon ah 8 cm, maxaad ka odhan kartaa boqonkan?
- j ma ku sawiri kartaa boqon ah 9 cm?

5.2 ARAGTIINADA SADDEXAGALLADA

Cutub-hoosaadkan, aragtiinka wadarta xaglaha iyo aragtida xagalo dibadeedka saddexagal ayeynu. ku sharixi islamarkaa aynu ku caddeyn.

5.2.1 Wadarta Xaglo Guddeedyada Saddexagal

Fasalada hoose waxaad ku soo baratay noocyada kala duwan ee saddexagalada xaglo-gudeed tantaaliga ah iyo cabbirka xagasha toosan.

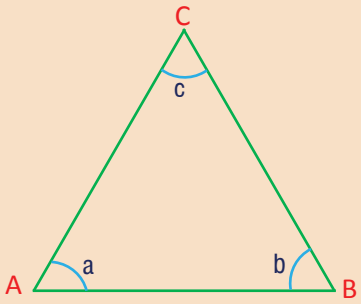
Shaqo Kooxeedka 5.2

Ka shaqee kuwa soo socda, adiga oo kadoodaya fekradaada ahaan kooxdiina dhexdeeda,

Qalabyada loo baahan yahay:- maqas, mastarad, warqad adag dhuuban

b ku dul sawir saddexagalka aad doonto warqad adag oo dhuuban

t U hadhee sidii laguu tusay, kolkaa ka goo ama ka jeex saddexda gees sidii lagugu waaniyey qaybta hadhaysan.

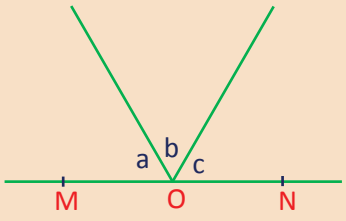


Jaantuska 5.15

j isku aadi saddexdaa qurub si wada jir ah cidhif-yadooda oo ku aadi girgirka (geerka) mastaradaad (ama geerka miiskaaga) sida lagu tusay

x waa imisa wadarta xaglaha a,b,c,?

kh waa imisa cabbirka xagal toosan ?



Jaantuska 5.15

d maxaad ku soo gabagabayn wadarta xaglo-gudeedka saddexagalka aad kor ku soo aragtay?

Hawlgal 5.7

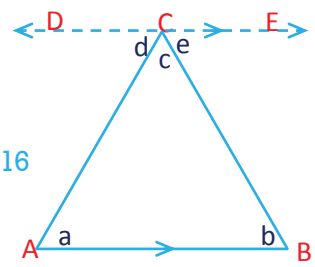
1 Siin saddex xariiqood ℓ_1, ℓ_2, iyoℓ_3 ee salax halka ℓ_1 ay barbaro la tahay ℓ_2 islamarkaana ℓ_2 iyo ℓ_3 waa xariiqo isgooya, kadood xaglo-gudeedyada talantaaliga ah, imisa ayey dhan yihiin ? miyey isku sargo'an yihiin?

2 Siin barta "P" iyo xariiqa "ℓ" salax dushii halka P kuma dul dhacdo ℓ, imisa xariiq ayaad ku dul sawir kartaa oo ka gudba "P" oo barbaro la ah L?

Aragtiin 5.1: (Aragtiinka wadarta xaglaha)

Wadarta cabbirka xaglo-gudeedyada saddexagal waa 180^{o}.

Siin: ΔABC ee leh xaglo-gudeedyada a, b iyo c.
Weydiin: caddee in, $a + b + c = 180°$
Sawir xariiqda $\overline{DE}$ ee ka gudubta c, lana barbarro ah $\overline{AB}$ islamarkaa samaysa ∠DCA iyo ∠ECB. Sida jaantus 5.16 u ku tusayo. Halka m (∠A) = a, m (∠B) = b, m (∠C) = c, m (∠ECB) = e islamarkaa m (∠DCA) = d.
Caddeyn;



Jaantuska 5.16

Hawraar	Sababaha
1. $d + c + e = 180^o$	1. Xagal toosan
2. $d = a$	2. Xaglo gudeedyo talantaali ah.
3. $e = b$	3. Xaglo gudeedyo talantaali ah.
4. $e + d + c = 180^o$	4. Ka goynta talaabooyinka 2 iyo 3 tallaabada 1.
5. $a + b + c = 180°$	5. Astaanta kala hormarinta isu geynta.

Sidaas awgeed,m(∠A) + m(∠B) + m(∠C) =180^o

Tusaale1: Haddii cabbiraadda xaglaha saddexagal ay yihiin x^o, $3(x)^o$ kolkaa cabirka xagal kastaa waa imisa?

Furfuris: Aragtiinka wadarta xaglaha
$x^o + 3(x^o) + 5(x^o) = 180°$
$9(x^o) = 180°$
$x^o = 20°$, $3(x^o) = 60°$ fi $5(x^o) = 100°$.

Cabbirka xagal kastaa waa 20,60 iyo 100^o sida ay isugu xigaan

Tusaale 2: Xaglaha saddexagal waa saami ahaan 1:3:6 raadi cabbirka xagal walba ee saddexagalka.

Furfuris: Ka soo qaado xaglaha saddexagalka, inay yihiin x, $3x$ iyo $6x$ sida ay isugu xigaan kolkaa

$x + 3x + 6x = 180^o$
$10x = 180^o$
$x = 18^o$, $3x = 3(18^o) = 45^o$ islamarkaana

$6x = 6(18^o) = 108^o$

Laylis 5.6

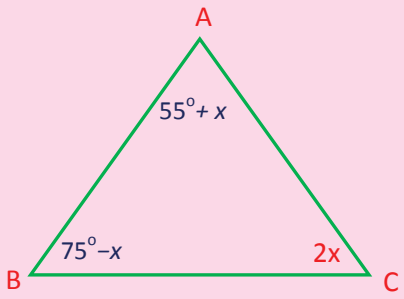
1 Raadi cabbirka xagal kasta ee saddexagalka kolka xagal tahay 75^o islamarkaa xagasha labaad waa afar-laabka cabbirka xagasha saddexaad?

2 Haddii cabbiraadda xaglaha saddexagl ay yihiin $2x^o$, $3x^o$, iyo $4x^o$, kolkaa waa imisa cabbirka xagal walba?

3 Saddexda xaglood ee saddexagal waa 4:5:9 saami ahaan, waa noocee saddexagalkani?

4 Raadi qiimaha x ee saddexagalada soo socda.

b



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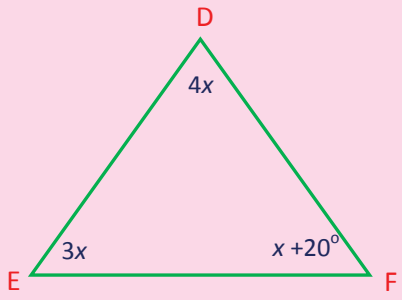


Jaantuska 5.17

5 Saddexagal cabbiraada xaglihiisu ay yihiin x,y iyo z ,raadi qiimaha x, y iyo z haddii $x + y = 110^o$ islamarkaa $x + z = 120^o$

6 Saddexagalka qumman ee hal xagal fiiqan ay la mid tahay afar lagu dhuftay cabbirka xagasha kale,raadi cabbirka xagal walba ee saddexagalka.

7 Cabbirka xagal raaran ee saddexagal labaale ah wuxuu dheer yahay cabbirka xaglaha salka mid walba 30^o, raadi cabbirka xagal kasta ee saddexagalka.

8 Cabbiraadda xaglaha saddexagalka ABC waxay u taagan yihiin $2x$, $x + 10$ iyo $2x - 30$.

b U qor wadarta cabbiraadda xaglaha X ahaan

t Raadi qiimaha x.

j Waa noocma saddexagalkani?

5.2.2 Xagal-Dibadeedka Saddexagal

Falanqaynteenii hore waxaad ku soo aragtay xaglogudeedyada iyo aragtiinka wadarta xaglaha gudaha ee saddexagal. Hadda, waxaad arki doontaa xagal kale oo xagal buuxisa xagal gudeed geese kastoo saddexagal laga yidhaa xagal-dibadeedka saddexagal.

Hawlgal 5.8

1 Ka jawaab mid walba su'aalaha soo socda adiga oo tixraacaya saddexagalka lagu siiyey ee jaantuska 5.18.

b waa kuwee xaglo-gudeedyada ABC?

t xagashee ayaad u malaynaysaa in ay tahay xaglo-dibadeedka ABC?

j waa inimsa wadarta xaglo-gudeedku iyo xaglo dibadeedku ee ABC gees kasta?

x imisa xaglo-dibadeed ayaad ka filaysaa gees kastoo ΔABC?

kh waa imisa wadarta m(∠d) + m(∠e) + m(∠f)?

2 Ku qor run haddii hawraarta lagu siiyey sax tahay ama been haddii ay tahay qalad.

b m(∠a) + m(∠c) = m(∠f)

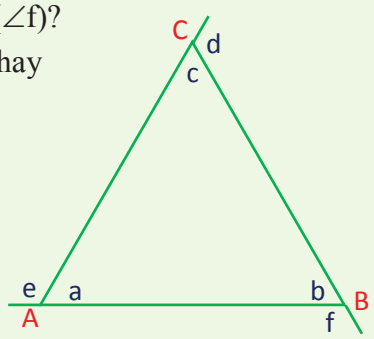
t m(∠a) + m(<b) = m(∠d)

j m(∠b) + m(<c) = m(∠e)

x m(∠c) + m(∠c) + m(∠b) = m(∠d)

3 Sidee ayeynu uga muujin karnaa xaglo-dibadeed

b saddexagalka t geesoole kasta



Jaantuska 5.18

Ogow:

1 Haddii dhinaca saddexagalka la fidiyo gees kasta, xagasha ka samaysanta dhinac deriska la ah waxaa lagu magacaabaa xaglo-dibadeedka saddexagalka.

2 Xaglo-dibadeedka geesoole kasta wuxuu u samaysmaa sida xaglo-gudeedka saddexagalka oo kale.

3 Gees kasta geesoolaha, waa xaglo isbuuxsha.

4 Gees kasta geesoolaha, waxaa jira laba xaglo-dibadeed kuwaas oo foodsaar isku ah.

Aragtiin 5.2: xagal dibadeedka saddexagal waxay le'eg tahay wadarta xaglaha gudaha ka durugsan.

Ogow: ΔABC ee u ku tusayo jaantuske 5.20 dhexdiisa.

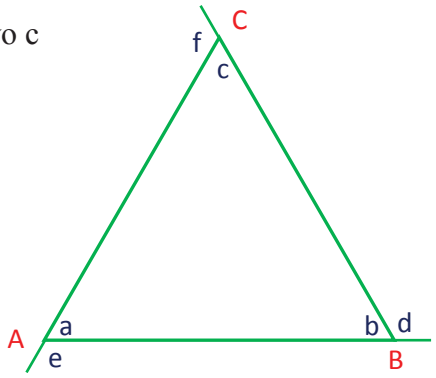
- Xaglaha A iyo C waxa la yidhaa xaglah gudeedyada ka durugsan xagal-dibadeeka ∠d.

- Xaglaha a iyo b waxa la yidhaa xaglo gudeedyada ka durugsan xagal dibadeedka ∠f.
- Xaglaha b iyo c waa xagla gudeedyada ka durugsan xagal dibadeedka ∠e.

Siin: ΔABC oo leh xaglo gudeedyada a, b iyo c

Iyo xagal dibadeed ka d.

Waydiin: Caddee in $\angle d = \angle a + \angle c$



Jaantuska5.20

Cadayn:

Hawraaraha	Sababaha
1. $a+b+c=180^o$	1. Aragtiinka wadarta xaglaha
2. $b+d=180^o$	2. Xagal toosan
3. $a+b+c=b+d$	3. Ka timid 1 iyo 2
4. $a+c=d$	4. b way wadaagaan 3
5. $d=a+c$	5. Dib u habayn

Sababla mid ah, waxaad eegi kartaa $e=b+c$ iyo $f=a+b$

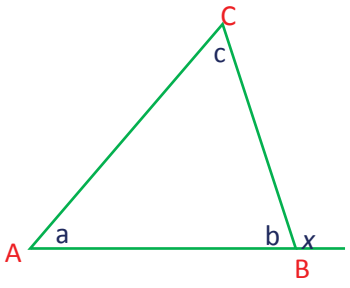
Tusaale 1: Haddii $x=120^o$ islamarkaana $c=70^o$, kadib raadi qiimaha a,

Furfuris: adeegsiga aragtiinka xaglo-dibadeedka

$a+c=x$

sidoo kale $a+70^o=120^o$, sidaas darteed

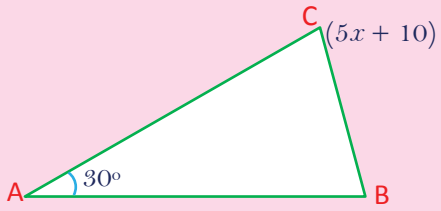
$a=120^o-70^o=50^o$



Jaantuska 5.21

Laylis 5.7

1 Halka ΔABC, $\overline{AC} \equiv \overline{BC}$. Cabbirka xaglo-dibadeedka geeska C waxay u taagan tahay $5x + 10^o$, hadii ∠A cabbirkeedu yahay 30^o, raadi qiimaha x,



Jaan 5.22

2 ΔABC, m(∠B) waa afar Laabka waynaanta sida m(∠A). Xagal-dibadeedka C cabbirkeedu waa 125^o. Raadi cabbirka ∠A.

3 ΔDEF, m(∠D)=$2x + 4$, m(∠E) = $6x - 58$ cabbirka xagal-dibadeedka F waxa uu u taagan yahay $5x$,

b raadi qiimaha x t waa maxay nooca saddexagalkani?

4 ΔABC, haddii m(∠A)=35^o islamarkaa cabbirka xagal-dibadeedka C waa 105^o, kadib waa imisa cabbirka ∠B?

5 Raadi cabbirka xagla-dibadeedka ka samaysma fidinta xaglaha salka saddexagalka labaale ah, haddii xagasha raaran saddexagalka cabbirkeedu yahay.

b 20^o t 80^o j 120^o x 135^o

6 Raadi cabbirka xagasha raaran ee saddexagalka labaale ah haddii xaglo-dibadeedka midkood ka samaysmo fidinta cabbirka salka.

b 100^o t 140^o j 160^o x 135^o

5.2.3 Wadarta Xaglo-Gudeedyada Geesoole

Waxaad ogaatay in ay jirto xidhiidh ka dhexeeya wadarta cabbirada xaglo gudeedyada geesoole iyo tirada saddexagalada ay ku sameeyaan xaglagooyeyaasha gees maguuraan ah.

Hawlgal 5.9

1 Sawir afargeesoolaha ABCD ka dooro hal gees. Geeskaas ka sawir xaglo-gooye kasta oo suurogalaya.

b imisa xaglo-gooyeyaal ayaad sawirtay adiga oo adeegsanaya hal gees?

t imisa saddexagal ayaa ka samaysmi kara ?

j waa imisa wadarta cabbirka xaglo-gudeedyada ee afar geeslooluhu?

2 Sawir shangeeslaha ABCDE. ku sawir xaglo-gooyeyaasha hal gees.

b imisa xaglo-gooyeyaal ayaad sawirtay?

t imisa saddexagal ayaa ka sameysmi kara?

j maxaad u malayn wadarta cabbirka xaglo-gudeedyada shan geesooleha?

3 Sawir lix geesooleha ABCDEF, ku sawir xaglo-gooyeyaasha halgees.

b imisa xaglo-gooyeyaal ayaad sawir tay ?

t imisa saddexagal ayaad heli kartaa?

j maxaad u malayn wadarta xaglo-gudeedka lix geesoolaha?

Hawlgalka sare, geesooleha tuurta leh ee leh n –dhinac waxaad ku soo koobi kartaa sida soo socota

Tirada dhinacyada	Xaglo-gooyeyaasha gees kasta	Tirada saddexagalada	Wadarta xagl-gudeedyada
4	1	2	$2 \times 180° = 360°$
5	2	3	$3 \times 180° = 540°$
6	3	4	$4 \times 180° = 720°$
7	4	5	$5 \times 180° = 900°$
. . . 10	. . . 7	. . . 8	. . . $8 \times 180° = 1440°$
n	n - 3	n - 2	. . . $(n - 2)\,180°$

Aragtiin 5.3: *wadarta cabbirada xagla-gudeedyada geesoole tuurle kastoo n dhinac leh waxa lagu helaa $(n - 2)180°$.*

Tusaale 1: Raadi wadarta cabbirka xaglo-gudeedka geesoole leh 12-dhinac.

Furfuris: wadarta xaglo-gudeedyada geesooluhu = $(n-2)180^o$

$= (12-2)180^o$

$= (10)(180^o) = 1800^o$

Tusaale 2: Raadi tirada dhinacyada geesoolaha haddii wadarta xaglo-gudeedkiisu yihiin 16200?

Furfuris: wadarta xaglo-gudeedku $=(n-2)\times 180^o$

$1620^o = (n-2)180^o$

$1620^o = 180^o n - 360$

$1980^o = 180^o n$

Sidaas darted, $\frac{1980^o}{180^o} = n$

$11 = n$ ama $n = 11$.

Ogow: Sidaas awgeed mid walba xaglo gudeedyada geesoolaha qaabsan way isku sargo'an yihiin, kadib cabbirka xaglo-gudeed kasta ee geesoolaha qaabsan oo leh n-dhinac wuxuu la mid yahay $\frac{(n-2)\times 180^o}{n}$

Tusaale3: Raadi cabbirka xaglo-gudeed kasta ee lix geesoolaha qaabsan?

Furfuris: xaglo-gudeed kasta ee geesooluhu $= \frac{(n-2)\times 180^o}{n}$

$= \frac{(6-2)\times 180^o}{6}$

$= \frac{4\times 180^o}{6} = 120^o$

Laylis 5.8

1 Raadi wadarta cabbirka xaglo-gudeedyada geesoolaha leh tirada dhinayada soo socota.

b 8 t 12 j 15 x 20

2 Haddii wadarta cabbirka shanxaglo-gudeed ee lixgeesooluhu tahay 600^o, raadi cabbirka xagasha lixaad.

3 Imisa dhinac ayuu leeyahay geesooluhu, haddii wadarta cabbirka xaglo-gudeedyadu tahay.
b 8 xaglo toosan t 3960^o j 1800^o

4 Raadi tirada dhinacyada ee geesoolaha qaabsan haddii xaglo-gudeed kastaa uu yahay.
b 90^o t 120^o j 150^o x 135^o

5 Haddii xaglaha shan-geesooluhu ay yihiin x^o, $2x^o$, $(x+30)^o$, $(x-10)^o$, $(x+40)^o$, raadi cabbirka xagal kasta?

6 Raadi wadarta tirada xaglo-gooyeyaasha laga sawiray hal gees ee geesoolayaasha soo socda ee leh dhinacyada lagu siiyey.
b 3 t 10 j 100 x n

7 Raadi xaglo-gudeed kasta ee afargeesooleha, haddii xaglo-gudeedyadiisu ay u taagan yihiin $x-5$, $x+20$, $2x-45$ iyo $2x-30$.

8 Xaglaha afargeesoolaha waa 1:6:7:4 saami ahaan, raadi cabbirka xagal kastaa ee afar-geesooleha.

9 Miyey noqon kartaa wadarta cabbirka xaglo-gudeedyada geesoole 1350^o?

10 Laba xaglood ee shan-geesoole waa 100^o iyo 150^o, raadi saddexda xaglood ee kale, haddii ay isku sargo'an yihiin.

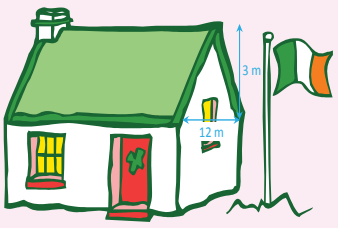
5.3 CABBIRAADDA

Qaybtani waa qeybta labaad ee joomatariga muhiimka in oo ah. Halkaas oo aanu ku eegi doono qaar ka mid ah fikradaha horey inoo la soo darsay. Waxaynu kaloon bilaabaynaa inaan ku dhisno qaababka badan ee aljebrada si aynu u raadin wareegyada, bedadka iyo mugagga.

5.3.1 Bedka saddexagalka

Waxay ku bilaabmaysaan masaladan

Axmed wuxuu rabaa in uu ku bedalo dhinaca kore ee gidaarka ee leh qaabka saddexagal iskuulkiisa,waa imisa Bedka qeybta uu axmed rabo in uu bedalo?



Jaantuska 5.23

Fasalkii 6aad waxaad ku soo aragteen sida loo raadiyo bedadka laydiga iyo saddexalka-xagal quman. Hawlgalka soo socda wuxuu kaa caawinayaa sidii aad u jidmarin lahayd jidka guud si aad ugu raadiso bedka nooc walboo sadexagal ah.

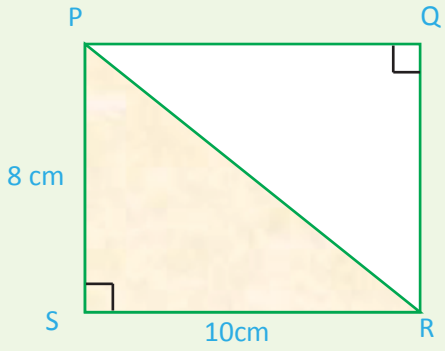
Hawlgal 5.10

1 Laydiga PQRS wuxuu u qeybsamaa laba saddexagal xagal qumman.

b sidee ayaad isu barbardhigi kartaa bedadka labadaas saddexagal?

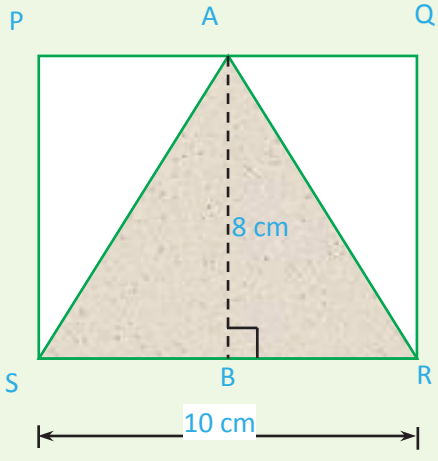
t waa imisa bedka saddexagalka hadhaysan ?

j ma sheegi kartaa jidka guud ama habka loo raadiyo bedka saddexagal xagal quman?



Jaantuska 5.24

2 Laydiga PQRS ee loo qaybiyey afar saddexagal sida hoos ku xusan, A iyo B waa bar-badhayaasha PQ iyo SR, sida ay isugu xigaan.



Jaantuska 5.25

b isbarbardhig bedadka ΔAPS iyo ΔABS, maxay noqonayaan iyaguna bedadka ΔABRiyo ΔAQR?

t jajab ahaan badka laydigu imisa ayuu ka noqonayaa bedka sadexagalka hadhaysan?

j maxaad ku soo koobi kartaa dhererka PS iyo AB?

x waa imisa bedka laydiga PQRS?

kh waa imisa bedka saddexagalka hadhaysan?

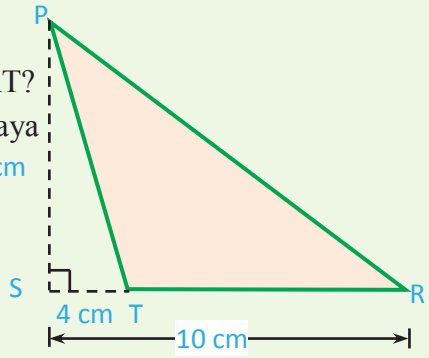
d ma siin kartaa jid guud habka loo raadiyo bedka saddexagal?

3 U fiirso ΔPRS.

b adiga oo adeegsanaya jidka aad heshay ee su'aasha tirada1. Raadi bedka PRS iyo PTS?

t ka dib imisa ayuu noqonayaa bedka PRT?

j miyaad u heli jid bedka PRT ee ku siinaya cabbiraadda salka TR iyo joog qotonka ee lagu siiyey?



Jaantuska 5. 26

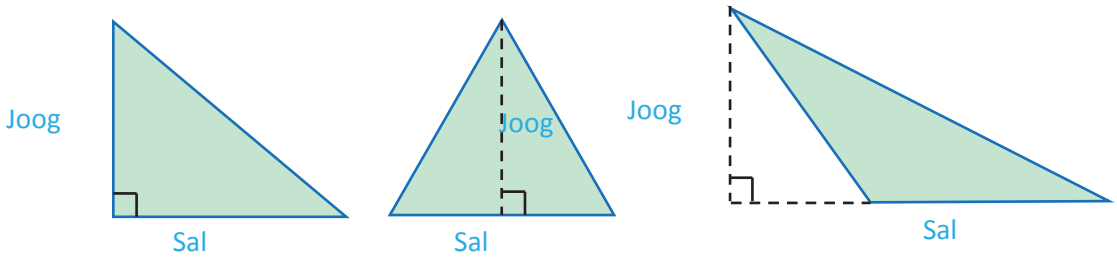
4 Adigoo tixgalinaya dhamaan xaaladaha aad horey u soo fiirisay ma sheegi kartaa jidka guud ee raadinta bedka saddexagal nooc kasta ah?

Jidka Bedka Saddexagal

Badka (A) ee saddexagalku wuxuu le'eg yahay taranta badhka salkiisa (b) iyo jooggiisa (h) taas oo ah $A=\frac{1}{2}bh$

Ogow dhinaca saddexagal kasta,waxaa loo qaadan karaa sal islamarkaana fogaanta qotonku waa jooga xagal qumman ee dhinacaas. Haddaba, saddexagal kastaa wuxu leeyahay saddex sal iyo saddex joog oo ku aaddan.

Xaaladda saddexagalka xagal furan leh, xariijinta loo isticmaalo joogga waxay ku dhici kartaa saddexagalka meel dibada ka ah sida shaxanka saddexaad u ku tusayo.

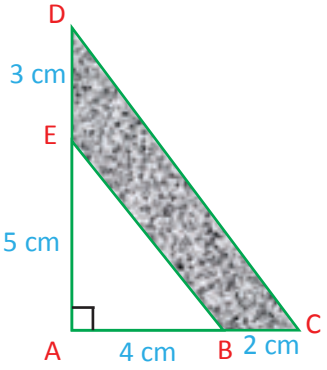


Jaantuska 5. 27

Tusaale1: Waa imisa bedka qeybta saddexagalka dugsiga ee jaale dayr rabo inuu ka bedalo taas oo lagu sheegey bilowgii masalada.

Furfuris: $A = \frac{1}{2}bh = \frac{1}{2} \times 12\text{m} \times 3\text{m}$

$= 18\ \text{m}^2$



Jaantuska 5. 28

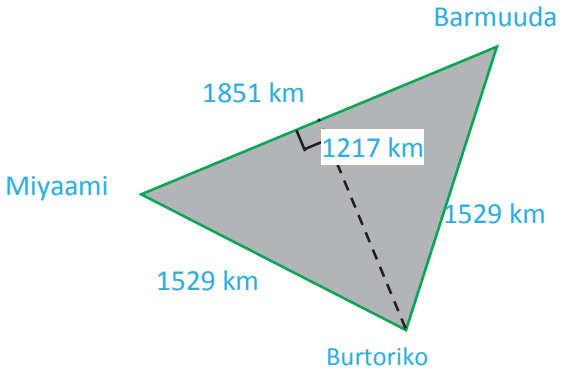
Tusaale2: Raadi bedka hadheysan

Furfuris: Bedka hadheysan = bedka ΔACD – bedka ΔABE

$$= \frac{1}{2} \times 6\text{cm} \times 8\text{cm} - \frac{1}{2} \times 4\ \text{cm} \times 5\ \text{cm}$$

$$= 24\text{cm}^2 - 10\text{cm}^2 = 14\text{cm}^2$$

Tusaale 3: Saddexagalka barmuuda wuxuu ka samaysmaa xariijimo maangal ah oo ka bilawda bar u dhaw magaalada miyaami, ilaa barmuuda, ilaa purtoriko islamarkaana ku noqda miyaami. Waa imisa bedkaa oo dhan saddexagalka barmuuda.



Jaantuska 5.29

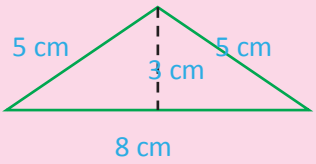
Furfuris: $A = \frac{1}{2}bh = \frac{1}{2} \times 1851 \text{ km} \times 1217 \text{ km}$

$= 1{,}126{,}333.5 \text{ km}^2$.

Laylis 5.9

1 Raadi bedka mid walba ama saddexagalka hoose ee lagu siiyey.

b



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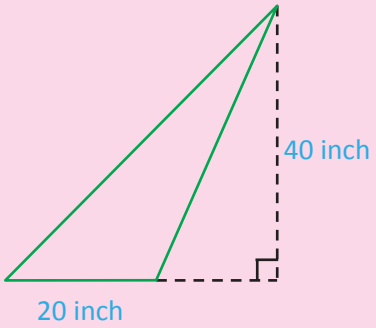

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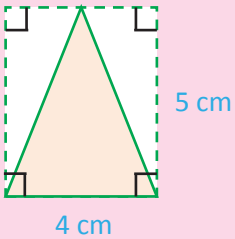
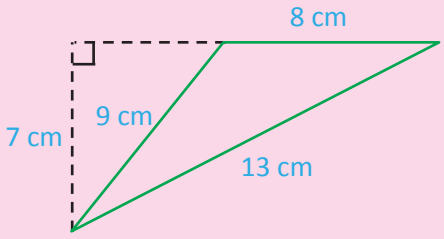


x



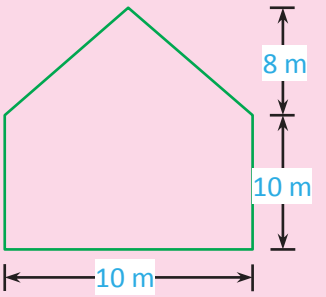
Jaantuska 5.30

2 Saddexagal leh bed 40 cm^2 ah islamarkaana salku yahay 8cm. Raadi jooga saddexagalka.

3 Saddexagal leh bedka 120 m^2 islamarkaana joog qotonku yahay 10m. Xisaabi salkiisa

4 Soo saar bedka dhafan ee muuqaal kastoo soo sood.

b



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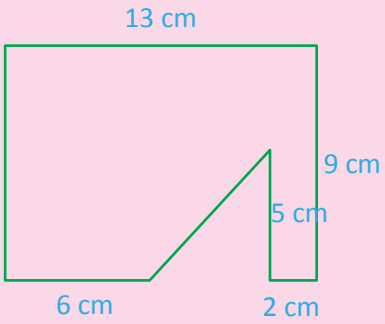

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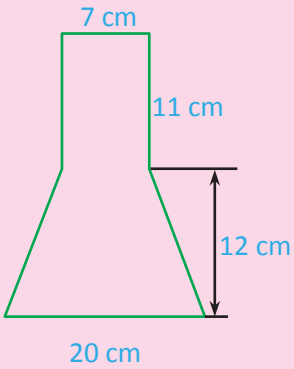
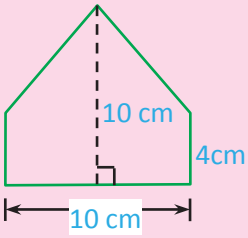


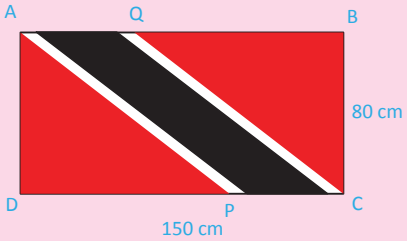
x



Jaantuska 5.31

5 Calanka qaranka ee wadanku Tirindaad iyo Tobago wuxuu leeyahay saddex nashqadood. Cabbiraddoodu waa sida ku xusan jaantuska, haddii

BQ = DP = 100cm



Jaantuska 5.32

b xisaabi badka calanka

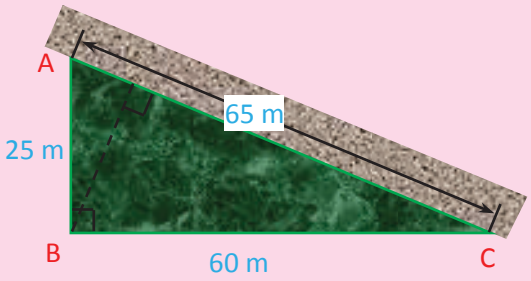
t xisaabi badka cas ee calanka

j Qiimaha marada calanku lagu sameeyaa waa Birr 64.00 halkii m^2 – ba. Qiimo intee dhan ayey marada calanka si loo sameeyo noqonayaa?

6 ABC waa dhul qaab saddexagal leh sida cabbirada u ku tusayo jaantuska soo socda:

b Raadi bedkeeda?

t Hilin ka bilaabma B ayaa u gudba ilaa meel aad ugu dhaw wadada. U adeegso bedka dhulka si aad u hesho dhererka hilinka ugu dhawaan mitir.



Jaantuska 5.33

7 Saddexagal xagal quman oo leh dhererada 6cm,8cm, iyo 10 cm. Soo saar bedkiisa.

5.3.2 Wareega iyo bedka koorta

Qeybta 5.1.1 qeexaha, astaamaha koorta iyo sida loo dhiso koor ayaan ku soo qabanay koorta xakeeda. Hadda, waa ammintii la eegi sida loo raadiyo wareegga iyo bedka koorta.

Hawlgal 5.11

1 Sawir koor leh baaxad kasta

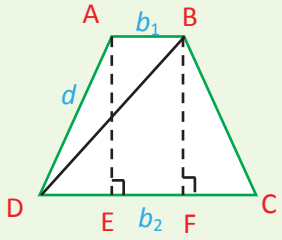
b habee salalka, adimada iyo joogga koorta aad sawirtay

t cabbir dhamaan dhinacyadeeda

j soo saar wareegeeda.

2 u fiirso koorta ku muujisan dhinaca midig. Xagalagooyaha DB ay u kala qaybiya koorta laba saddexagal,

ΔABD iyo ΔBCD.



Jaantuska 5.34

b muxuu noqon jooga ΔBDC, u qaado dhinaca DC sal ahaan?

t waa sidee dhererka joogga ΔABD (adiga oo u qaadanaya AB salka)?

j waa maxay sababta saddexagaladani ay u leeyihiin dherer jooga oo iskumid ah h?

x waa maxay jidka lagu raadiyo bedka ΔABD iyo ΔBCD?

kh miyaad dhiraandhirin kartaa jidka lagu raadiyo bedka koorta ABCD?

Wareegga

Wareegga geesoole waa wadarta dhererka dhinacyadiisa; .

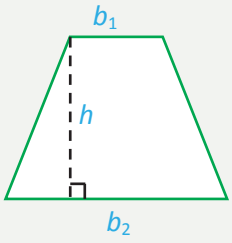
Siin: koorta ABCD

Wareegga (p) koorta ABCD wadarta fogaanta ku wareeggsan (kumeersan), Ta

P = AB + BC + CD + DA

P = a + b + c + d

Jidka Bedka Koor:	bedka koortu waxay le'eg tahay wadarta dhererka dhinacyada barbarada ah oo lagu dhuftay fogaanta u dhaxaysa dhinacyadaas oo loo qeybiyay labo, $A=\frac{1}{2}(b_1+b_2)h$



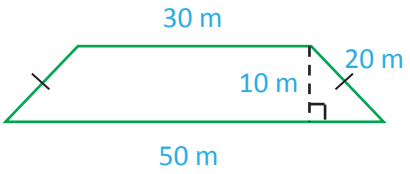
Jaantuska 5.35

Tusaale1: Raadi wareega iyo bedadka koorta labaale ah

Furfuris: P = 30m + 20 + 50 + 20m =120m

$A=\frac{1}{2}(b_1+b_2)\,h$

$=\frac{1}{2}(30\text{ m}+50\text{ m})\times 20\text{ m}=800\text{ m}^2$



Jaantuska 5.36

Tusaale 2: Badka koor waa $110m^2$ dhinacyada barbarada ah waa 13 cm iyo 7cm cabbirkoodu, raadi fogaanta u dhaxaysa dhinacyada barbarada ah,

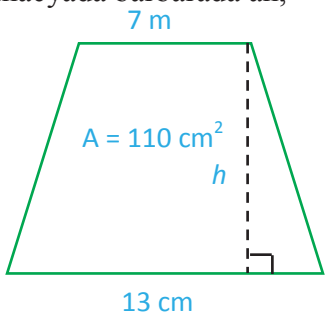
Fur-furis: $A=\frac{1}{2}(b_1+b_2)\,h$

$110\text{ cm}^2=\frac{1}{2}(7\text{ cm}+13\text{ cm})\,h$

$110\text{ cm}^2=10\text{ cm}\times h$

$11\text{ cm}=h$

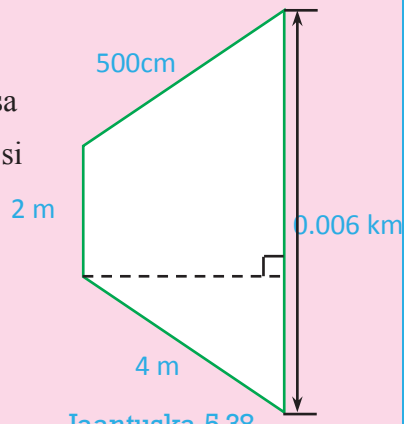
sidaas darted, fogaanta u dhaxaysa dhinacyada barbaraha waa 11cm



Jaantuska 5.37

Laylis 5.10

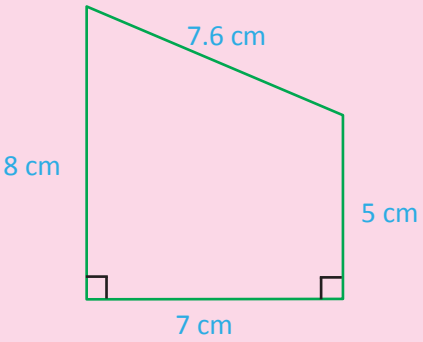
1 Xasan wuxuu haystaa dhul (sida ka muuqata dhinaca midig) kaas oo u baahan in loo oodo si looga ilaaliyo xayawaanka in uuna galin, imisa mitir oo xadhigwaayir ah ayuu u baahan yahay si uu u oodo oodo?

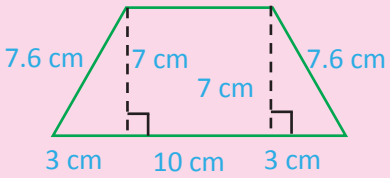


Jaantuska 5.38

2 Raadi bedka koorta dhinacyadeeda barbaraha ahi ay yihiin 6cm iyo 11 cm, ee fogaanta u dhaxaysana ay tahay 8cm.

3 Xisaabi wareega iyo bedadka muuqaaladani.





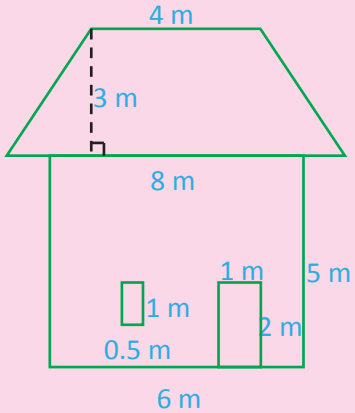
Jaantuska 5.39

4 Bedka koorka ayaa ah 60cm^2. Haddii joogiisu iyo mid kamid ah dhinacyada ay kala yihiin 6cm iyo 11cm sida ay isugu xigaan, raadi dhererka salka kale.

5 Faadumo waxay rabtaa in ay ranjiyeyso wajahada hore ee gurigooda.

b Raadi bedka u baahan in la ranjiyeeyo

t Faadurno waxay ka qaadataa Birr 3 cabbirka 1m^2 – kiiba ay ranjiyeysoba lmisa lacag ah ayey faadumo helaysaa?



Jaantuska 5.40

6 Khaddar wuxuu u baahan yahay in uu ogaado bedka iyo wareega dhul uu leeyahay oo ah qaab kooreed, aadimada 40 m iyo 50 m islamarkaana dhinacyada barbarada ah 90m iyo 12 m ay kala yihiin, joogiisuna yahay 40m. Xisaabi wareegga iyo bedka dhulka khaddar.

5.3.3 Wareegga Iyo Bedka Barbaroolaha

Ka hor inta aynaan u gudbin sida loo raadiyo wareega iyo badka barbaroolaha,aan nakhtiino astaanta barbaroolaha inaga oo adeegsanayna hawlgalka soo socda:-

Hawlgal 5.12

Sawir barbaroole baaxad kasta leh islamarkaana u dhig si siman geesihiisa.

b dhinacee ayaa u ah sal?

t sidee ayaad u qeexi joogga barbaroolaha?

j ma sheegi kartaa jidka lagu raadiyo wareegga barbaroolaha?

Wareegga

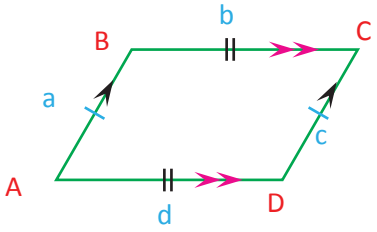
Wareega barbaroolaha wuxuu ka kooban yahay is ugeynta dhamaan afartiisa dhinac ama waxaa kale oo ku siin kara labanlaabka wadarta labada dhinac ee aan barbarada ahayn,sabab?

P = AB + BC + CD + DA

= a + b + c + d

= a + b + a + b (sababta oo ah c =a iyi d = b)

= 2a +2b = 2(a + b)



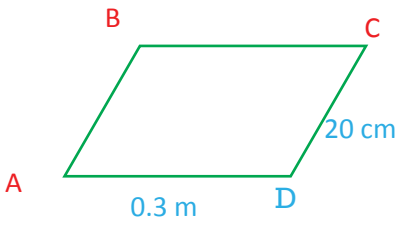
Jaantuska 5.41

Tusaale: Soo saar wareegga barbarroolaha hoos lagu siiyey

Fur-furis: P = 2(a + b)

= 2(0.3m + 20cm) = 2(30cm + 20cm)

=2(50cm) =100cm



Jaantuska 5.42

Bedka

Shaqo Kooxeed 5.3

Shaqo laba-baba ah

Kaabayaasha loo baahan yahay:-waraaqaha xariiqaha leh, qalin qori iyo maqasyo.

Ujeeddo:-si loo dhiraandhiriyo jidka raadinta badka barbaroolaha

1 ***Shaqo:-***shaxanka warqada dusheeda/warqada xariiqaha leh, sawir barbaroole leh baaxad kasta,

2 Goob barbaroolaha

3 Sawir xariiq u taagan joogga barbaroolaha islamarkaa hal dhinac goo adiga oo u eegaya jooga xariiqdiisa.

4 Isku habee qurubka aad goysey iyo ka kale ee ku yaal dhinac kale si ay u sameeyaan laydi. Waxaa laga doodi

- i Isbarbardhig bedka laydiga samaysmay iyo bedkii hore ee barbarroolaha.
- ii Barbarroolaha muxuu la mid yahay qeybta jooga ka laydiga.
- iii Erayadaada ku sheeg jidka lagu helayo bedka barbarroolaha.

Jidka bedka barbarrolaha

Bedka barbarrooluhu wuxuu le'eg yahay taranta salka (b) iyo joogga (h) taas oo ah A=bh

Tusaale 1: raadi bedka barbarroolaha PQRS iyo dhererka SR

Furfuris: bedka =bxh

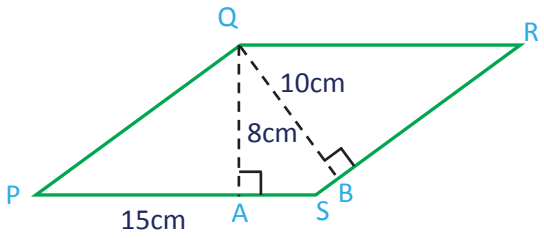
A= PS× QA

A=15cm × 8cm =120cm^2

Mar labaad bedka = SR × QB

120^{2}cm =SR×10cm

12cm = SR



Jaantuska 5.43

Tusaale 2: Barbarroole leh badka 36cm^2, haddii salka dhererkiisu yahay 4cm, raadi joogiisa.

Furfuris: A = b× h

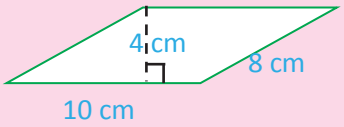
36cm^2 = 4cm × h

9cm = h, sidaas dartee, joogu waa 9cm.

Laylis 5.11

1 Soo saar wareegga iyo badka mid walba barbarrooleyaashan.

b



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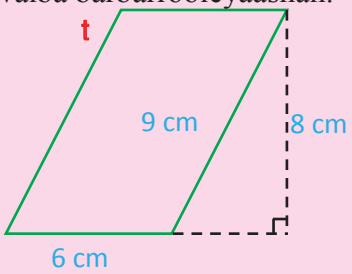


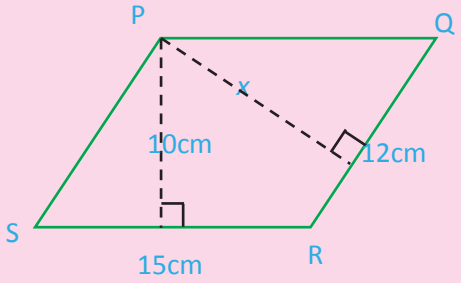
Jaantuska 5.44

2 Badka barbarroole waa $84cm^2$,haddii dhererka qotonkiisu yahay 21cm,soo saar salkiisa,

3 Badka lagu siiyey ee barbarroole waa $56cm^2$,haddii salkiisu yahay 8cm,raadi jooggiisu cm ahaan,

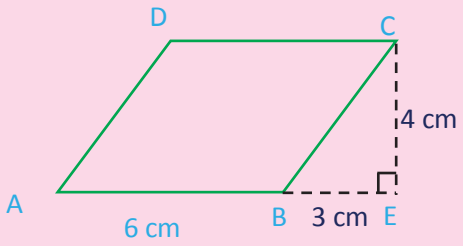
4 Soo saar dhererka dhinaca labadajibaar badkiisu le'eg yahay badka barbarroole leh salka 12 cm iyo joogga 3cm,

5 Barbaroolaha PQRS, raadi badka iyo qiimaha X,



Jaantuska 5.45

6 Shaxanka ABCD waa barbarroole raadi bedadka barbarroolaha ABCD iyo bedka afar-geesoolaha AECD.



Jaantuska 5.46

7 **b** haddii laba barbarroole ay leeyihiin wareeg isku mid ah, markaa miyey yeelan karaan bad isku mid ah?

t miyuu wareegga wayni markasta keeni bed wayn?

j muxuu noqon bedka barbarrooluhu haddii

i joogga la labolaabo?

ii salka iyo joogga labadoodaba la labalaabo?

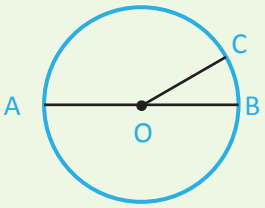
5.3.4 Meeriska Goobada

Qeybtan waxaydun raadinaysaan xidhiidhka ka dhaxeeya gacanka goobada iyo meeriskeeda. Tii oo ku salaysa natiijooyinkiina, , waxaad soo saari doontaan jidka meeriska goobada ka dibna u adeegsataan si aad ugu furfurtaan maslooyinka la xidhiidha.

Hawlgal 5.13

1 U fiirso, goobada ku muujisan dhinac midig, sheeg tibaaxahan

b	xudun	t	gacan
j	dhexroor	x	meeris



Jaantuska 5.47

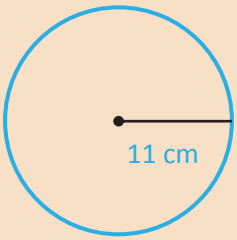
Shaqo Kooxeed 5.4

Qalabyada loo baahan yahay:-maqas, qalin qori.mastarad, qoobeeye waraaqda buugga

Ujeeddo:- In la soo sarro xidhiidhka ka dhaxeeya meeriska goobada iyo dhexroorkeeda

HawL:

1 Goobeeyaha ku sawir goobo gacankeedu yahay 11 cm



Jaantuska 5.48

2 Goo goobada islamarkaana qalinka ku calaamadee meel ka mid ah meeriska goobada

3 Waraaqda buugga dushiisa ku samee qalinka calaamadi mid ka mid ah xariiqaha saar goobada xariiqda dusheeda adiga oo isku beegaya labada calaamadood ta goobada iyo xariiqdaah.

4 Ku dul wareeji goobada xariiqda dusheeda ilaa calaamada goobadu ay taabanayso xariiqda marlabaad, calaamadee barta xariiqda buuga.

Jaantuska 5.49

Ka wada hadla /faahfaahiya

b waa imisa fogaanta u dhaxaysa labada calaamadood ee waraqada dusheeda?

t waa imisa dhexroorka goobadu?

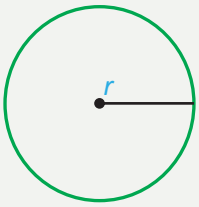
j sidee ayaad dhexroorka goobada iyo fogaantan aad isubarbardhigi kartaa?

5 ku celi qaab lamid ah, addiga oo sawiraya goobo gacankeedu yahay 22cm, 33cm iyo 44cm

6 sidee ayaa dhexroorka goobada loola xidhiidhin karaa meeriska?

Shaqo –kooxeedka kor ku xusan ,waxaad ku soo koobi kartaa meeriska goobadu waxay si toosa ula xidhiidhaa dhexroorkeeda. Meeriska goobadu waxay in yar dheer tahay saddex lagu dhuftey dhexroorka tirada lagu dhuftay waxaa lagu magacaabaa π{ xaraf giriig ah- bay (pi) }badanaa ugu dhawaan π waa 3.14 iyo $\frac{22}{7}$.

Meeris	Meeriska goobo wuxu la mid yahay π lagu dhuftay dhexroorka ama π lagu dhuftay labalaabka gacanka taas oo ah C = πd ama C = 2πr Jaantuska 5.50



Tusaale1: raadi meeriska goobada gacankeedu yahay 5cm

Furfuris: C = 2πr

= 2π× 5 cm = 10πcm ≈2 × 3.14 × 5 = 31.4 cm

C≈31.4 cm

Tusaale.2: dhexroorKa taayir baaskiil waa 71 cm, fogaan intee le'eg ayaad socon doontaa kadib 10 wareeg u dhamaystiro taayirku.

Fur-furis: Sababtoo ah shaagu waa qaab-goobeed,kolkaa marka uu wareego hal wareeg u rogo, wuxuu socday in le'eg meeriska shaaga kolkaa:

$C = \pi d$

71= 222.94 cm

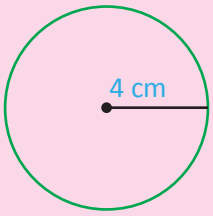
sidaas darted, wadarta fogaantu waxay noqonaysaa

10 × 222.94cm = 2229.4cm ≈ 22m.

Laylis 5.12

1 Raadi meeriska walxaha soo socda

b



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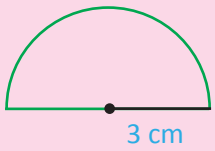

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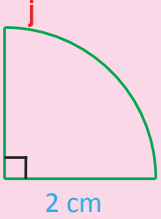


Jaantuska 5.51

2 haddii meeriska goobo tahay 628cm, waa imisa gacanku?

3 Meeriska war qaab goobo ayaa ah 12.568 m. Soo saar dhexroorkeeda.

4 Taayir leh dhexroorka 100cm, waa imisa fogaanta ay wareegeyso giraantiisu?

5 Sheeg sida meerisyada laba goobo la isu barbardhigo,haddii dhexroorka mid uu yahay labanlaabka cabbirka dhexroorka ka kale.

5.3.5 Bedka Goobo

Shaqo Kooxeed 5.5

Kaabayaasha loo baahan yahay: warqado, goobeeye, mastarad, qalin qori maqasyo.

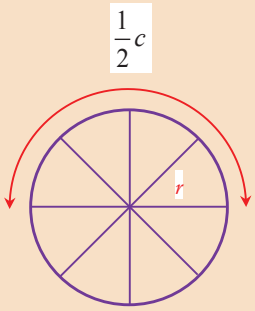
Ujeeddo: in loo soo dhiraandhiriyo jidka lagu raadinyo bedka goobo

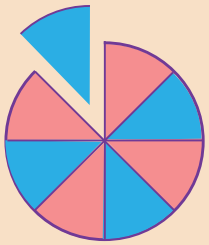
Hawsha: Sawir goobo intay doonto le'eg

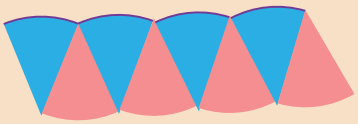
1 U qeybi goobada 8 meelood oo isle'eg

2 Goo qayb walba goobada

3 Iskugu habee qeybaha sida saansaanta barbarroolaha







Janntuska 5.52

Ka hadala

i Muxuu noqon joogga " barbarrooluhu"?

ii Muxuu noqon salka "barbarrooluhu"?

iii Muxuu noqon jidka bedka ee barbarooluhu?

iv Sidee ayaad u adeegsan kartaa jidka lagu raadiyo bedka goobada?

Salka barbarrooluhu wuxuu le'eg yahay badhka meeriska goobada $\left(\frac{1}{2}C\right)$

islamarkaana joogiisu wuxuu le'eg yahay gacanka goobada xogtan iyo jidka bedka barbarroolaha adiga oo adeegsanaya waad raadin kartaa bedka goobada

$A = b \times h = \frac{1}{2} C \times r = \frac{1}{2} \times 2\pi r \times r = \pi r^2$.

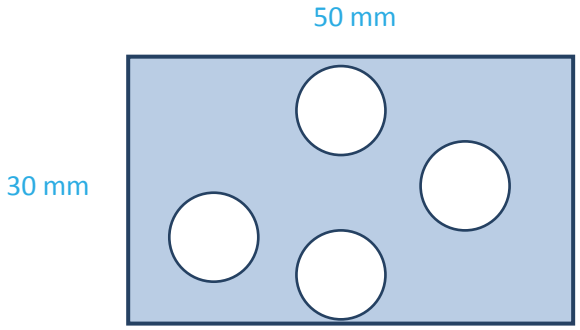
Bedka (A) goobadu wuxuu la mid yahay isku dhufashada π iyo labajibbaarka gacanka (r) taas oo ah $A = \pi r^2$

Tusaale 1: Raadi badka goobo dhexroor keedu yahay 20cm.

Furfuris: $A = \pi r^2 = \pi \times 10^2 \text{ cm}^2 \left(\text{maadaama } \frac{d}{2} = r\right)$

$= 100\pi \text{cm}^2 \approx 314 \text{ cm}^2$

Tusaale 2: Waslad Birr qaab laydi ah sida lagugu tusay jaantuska. Ayaa afar god oo leh dhexroor 10 cm ayaa laga dhex-saaray. Soo saar bedka birta soo hadhay.



Jaantuska 5.53

Furfuris: Badka birta soo hadhay = badka laydiga – bedadka gaabooyinka

$= 50\text{mm} \times 30\text{mm} - 4(\pi \times 5^2 \text{mm}^2)$

$= 1500\text{mm}^2 - 100\,\pi \text{ mm}^2 = (1500 - 100\,\pi)\text{ mm}^2$

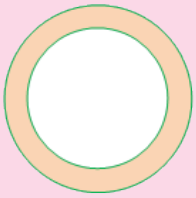
Laylis 5.13

1 Raadi bedka goobada, haddii ay leedahay
b gacan 40 cm ah t dhexroor 2π cm ah

2 Haddii bedka goobo yahay $64\pi cm^2$, muxuu noqonayaa dhexroorkeedu?

3 Haddii meeriska goobo yahay 20 π cm, muxuu noqonayaa bedkiisu?

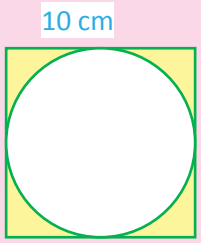
4 Raadi bedka u dhaxeeua labada goobo isku dhaxmeeran oo ka kore leeyahay dhexroorka 8cm islamarkaana ka guduhu leeyahay dhexroorka 6cm.



Jaantuska 5.54

5 Soo saar bedka qaybta hadhaysan, kasta

b



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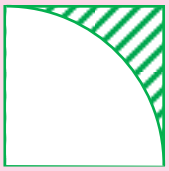

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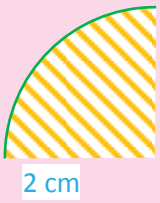

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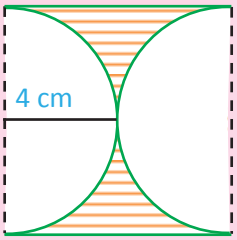

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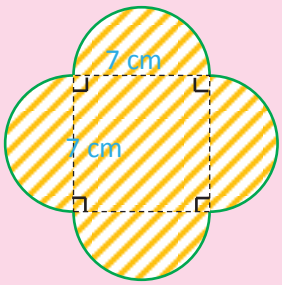

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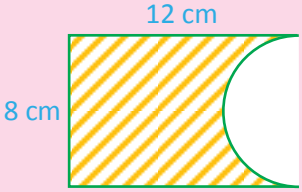

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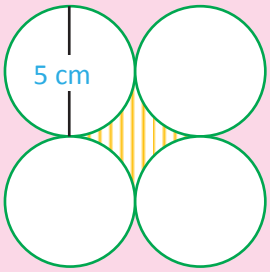

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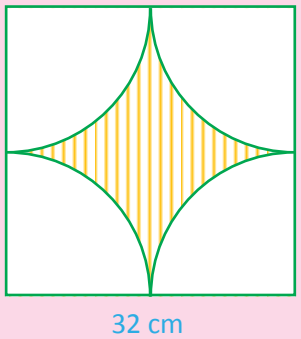

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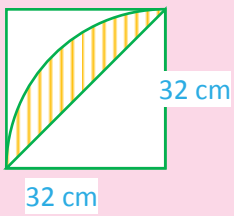
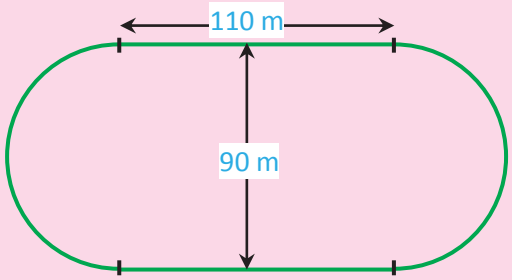


Jaantuska 5.55

6 Qaabka garoonka olombikada ayaa wuxu u ka samaysan yahay laydi iyo laba badh goobooyin, raadi wareega iyo bedkiisa?

7 dhexroorka giraanta kubadda kolayga ayaa ah 18cm, raadi meeriska giraanta iyo bedka ay ku wareegsan tahay?



Jaantuska 5.56

8 Haddii gacanka goobada laban laabmo, maxaa iska bedalaya badkeeda?

9 Gacanka saddex bissa yer, dhex iyo wayn ay kala yihiin 20 cm, 30 cm iyo 40 cm siday u kala horeeyaa au.

b soo saar

t midkee midkee ayaa u fiican in la iibsada kolka labada dooran sino isku qiimo yihiin.

5.3.6 Bed duleedka Biriisam iyo Dhululbo

Waxbarashadii hore dhexdeeda, waxaad ku baratay sida lagu helo bedduleedka iyo mugga biriisam qaab laydi ah. Waxa kaloo inaad iyana raacsan taqaano qeexaha iyo astaamaha ay leeyihin. Qaybtan waxaad ku barandoontaan habka guud ee lagu soo saaro bedduleedka biriisamka iyo dhululubada.

Hawlgal 5.14

1 Qeex

b biriisam t biriisam qaab laydi ah

2 Sheeg qaar ka mid ah tusaalayaasha walaxha leh qaabka biriisam laydi?

3 Imisa waji ayuu leeyahay biriisam ka qaab laydi? Waana imisa tirada geesaha iyo geerarkiisa?

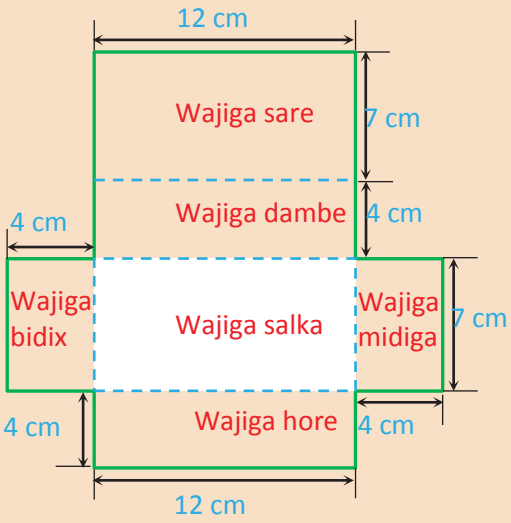
4 Sheeg (qeex) waa maxay macnaha sal, wajiga dadabta, bed duleedka dadabta iyo wadarta bed duleedka biriisam laydi ah.

Hadda aan ka shaqayno shaqo kooxeedka soo socda oo ina awoodsiinaya dhiraandhirinta jidka lagu raadiyo bed –duleedka biriisamka laydiyeed.

Shaqo Kooxeed 5.6

Qalabyada loo baahan yahay: shaxan/warqad xariiqo leh, qalin qori,maqasyo mastarad.

Hawsha



Jaantuska 5.57

1 Shaqo) warqada dusheeda (warqada leh xariiqo,ku sawir si isku tax ah oo siman sida hoos lagu tusay.

2 Isku laab adiga raacaya xariiqaha dhibcaha leh sidaas u samayso shaxan saddex adinle ah, isku dhaji jirjirada.

3 Waa maxay magaca shaxanka adka ah ee aad isku habaysay?

4 Soo saar bedka dhinac kasta ee shaxanka?

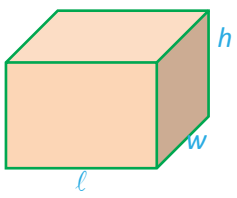
5 Isbarbardhig badka.

i Wajiga kore iyo ka hoose ii Wajiga hore iyo ka danbe

iii Wajiga bidix iyo ka midig

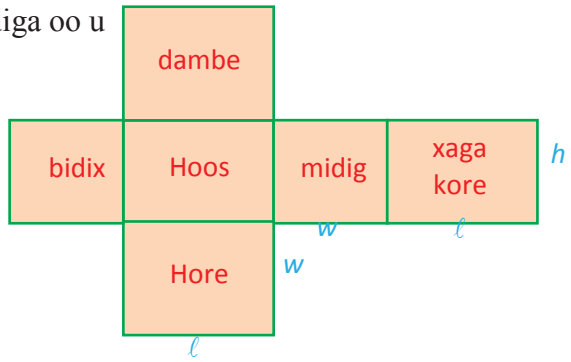
6 Waa imisa wadarta bad-duleedka shaxanka aad samaysay?

Guud ahaan biriisam laydi ah oo leh addimada ℓ, w iyo h,



Jaantuska 5.58

Bed-duleedka waxaa lagu raadin karaa adiga oo u fiirsanaya salidiisa sida hoos lagu tusay.



Bedka wajiga hore = Bedka wajiga dambe = $\ell \times h$ Jaantuska 5.59

Bedka wajiga bidix = Bedka wajiga midig = $w \times h$

Bedka sare = Bedka hoose = $\ell \times w$

haddaba Maadaama bed-duleedka dadabta (A_L) waa wadarta bedka dhamaan wajiyada laga reebo salka sare iyo ka hoose.

A_L = Badka xaga hore + Badka xaga Danbe + Badka dhinac bidix + Badka dhinac midig

$A_L = \ell h + \ell h + wh + wh$

$= 2\ell h + 2wh = 2(\ell h + wh) = 2h\ (\ell + w)$

$= h \times 2\ (\ell + w)$

$= h \times p$, halka p tahay wareegga salka

Al = ph

Markale, maadaama wadarta bed-duleedka (A_t) ee biriisam laydi ah yahay wadarta dhamaan bedadka wajiyada biriisamka.

$A_t = A_L$ + badka salka

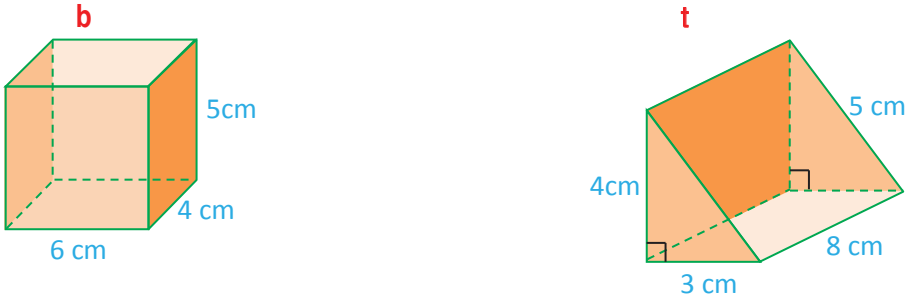
$A_t = A_L + 2A_b$ = badka salka

$A_t = 2A_{\text{xaga hore}} + 2A_{\text{bidix}} + 2A_{\text{xaga kore}}$ (sabab?)

$A_t = 2(lh + wh + lw)$

Xusuusnow: Jidka aan kor ku soo gunaanadnay run kuma aha biriisam laydi ah oo kaliya, laakiin waxa kale oo uu run ku yahay dhamaan noocyada biriisamyada kala duwan.

Tusaale 1: Soo saar bad-duleedka dadabta iyo wadarta bad-duleedka ee biriisamyada soo socda



Jaantuska 5. 60

Furfuris:

b $A_L = p \times h = 2\,(6 + 4) \times 5$

$= 2 \times 10 \times 5 = 100\text{cm}^2$ isbarbardhig

$A_T = A_L + 2A_B$

$= 100\text{cm}^2 + 2 \times 6\text{cm} \times 4\text{cm}$

$= 100\text{cm}^2 + 48\text{cm}^2 = 148\text{cm}^2$ ama

$A_T = 2\ell w + 2\ell h + 2wh$

$= (2 \times 6 \times 4 + 2 \times 6 \times 5 + 2 \times 4 \times 5)\text{cm}^2$

$= (48 + 60 + 40)\ \text{cm}^2 = 148\text{cm}^2$

t Halkan, biriisam waxaa lagu magacaabaa biriisam laydi ah.

$A_L = ph$

$= (4\text{cm} + 3\text{cm} + 5\text{cm}) \times 8\text{cm}$

$= 96\text{cm}^2$

islamarkaana $A_T = A_l + 2A_B$

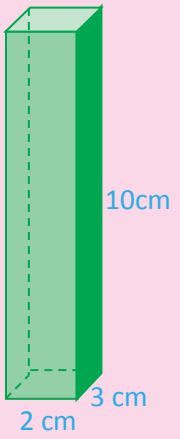
$= 96\text{cm}^2 + 2 \times \frac{1}{2} \times 4\text{cm} \times 3\text{cm}$

$= 96\text{cm}^2 + 12\text{cm}^2 = 108\text{cm}^2$

Laylis 5.14

1 Soo saar bed-duleedka dadabta iyo wadarta bed-duleedka ee mid katsta birilsamyada soo socda?

b



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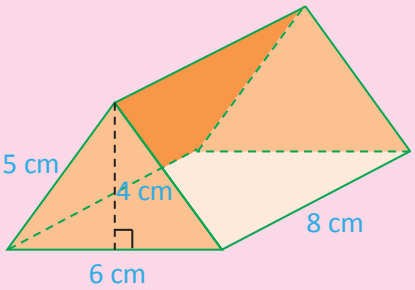

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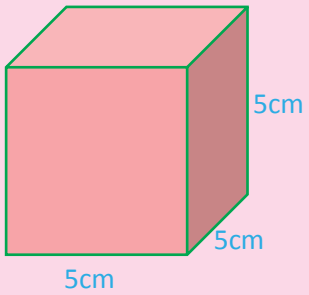


Jaantuska 5.61

2 Waji kasta ee saddexjibbaarane ayaa leh bed ah $16cm^2$. Waa maxay bed-duleedka saddexjibbaaranuhu?

3 Wadarta bed-duleedka saddexjibbaarane ayaa ah $54cm^2$. Waa maxay bedka waji qudh ah? Waa maxay dhererka darafka (girgirka) saddexjibbaarane?

4 Waa maxay wadarta bed-duleedka saddexjibbaarane cabbirku addimadiisu ay yihiin 6 cm, 8 cm iyo 11 cm?

5 Qol leh dherer 4m, ballac 3 cm iyo joog qoton 2 m ah. Soo saar bed-duleedka gidaarrada?

6 Qol u cabbiran 4m iyo 7m, isla markaa joogga saqafku yahay 3m. Hal litir rinji ah ayaa la mariyaa $20m^2$. Imisa litir oo ranji ah ayey qaadan doonaan dhammaantood oo aanu ku jirin sagxada hoose ee qolka?

Dhululubo

Shaqo kooxeedka soo socda, waxaad dhisi doontiin dhululubo taas oo idinka caawinaysa si aad u dhiraandhirisaan jidka bed-duleedka dhululubada.

Shaqo Kooxeed 5.7

Qalabyada loo baahan yahay:

Goobeeye, qalin qori, maqasyo, mastarad, xabag iyo warqad garaaf (xariijimo leh)

Hawl:

1 Wargadda garaafka dusheeda, ku sawir laba goobo oo mid kasta gacankeedu yahay 5 cm.

2 Ka soo goo goobooyinka.

3 Sawir laydi uu ballacu yahay 12 cm iyo dherer 33 cm isla markaa ka soo goo.

4 Laydiga u duub si salalka dhululubo u leekaadaan goobooyinku. Isku xabagee si dhinac xarriiqaha garaafka u muugdaan.

Dhugasho:

1 Waa maxay qaabka sal kasta ee dhululubadu?

2 Soo saar bedka sal kasta?

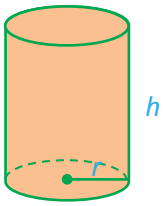
3 Hadda, soo saar bedka dusha xoodan. Ka hor inta aadan u duubin dhululubo ahaan, muxuu ahaa qaabkiisu?

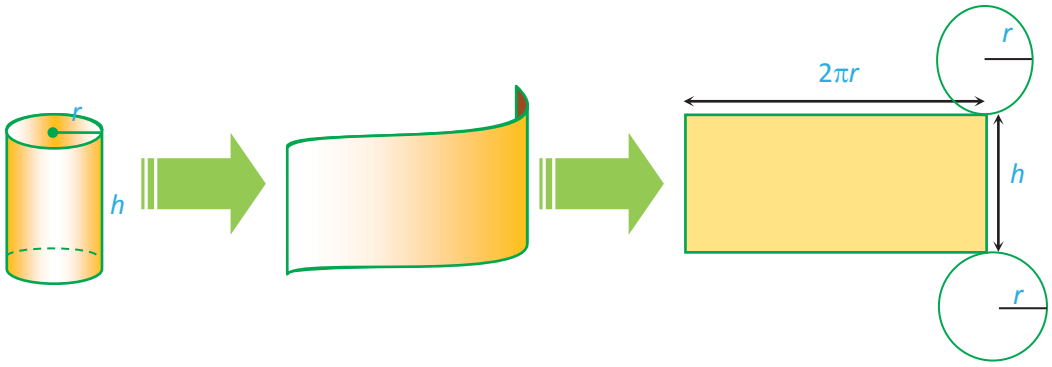
4 Waa maxay wadarta bed-duleedka? Sidee ayaad ku soo saanraa?

5 Qor qaaciidada bed-duleedka dhululubo?

Guud ahaan waxaynu heli sida soo socota:-

- Dhinaca kore iyo dhinaca hoose ee dhululubadu waa goobooyin is baaxad le'eg laguna magacaabo salalka dhululbo.
- U fiirso qeybta soo hadhay ee dhululubada taas oo ah dusha xoodan, haddii aad ka gooyso (adiga oo aan isku laabayn) waxay ku siinaysaa laydi adimadiisu yihiin $2\pi r$ iyo h





Jaantuska 5.62

Waa maxay sababta dhererku u le'eg yahay meeriska goobada?

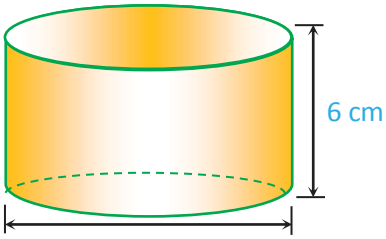
Bed-duleedka dadabta (A_l) = bedka laydiga = $2\pi rh$

Bedka salka(A_B)= πr^2

Wadarta bed-duleedka (A_T) = $A_L + 2A_B$

$= 2\pi rh + 2\pi r^2$

$= 2\pi r\,(h + r)$



Jaantuska 5.63

Tusaale1: Raadi A_B, A_L iyo A_T ee dhululubada

Fur-furis: $A_B = \pi r^2 = \pi \times 5cm^2 = 25\pi cm^2$

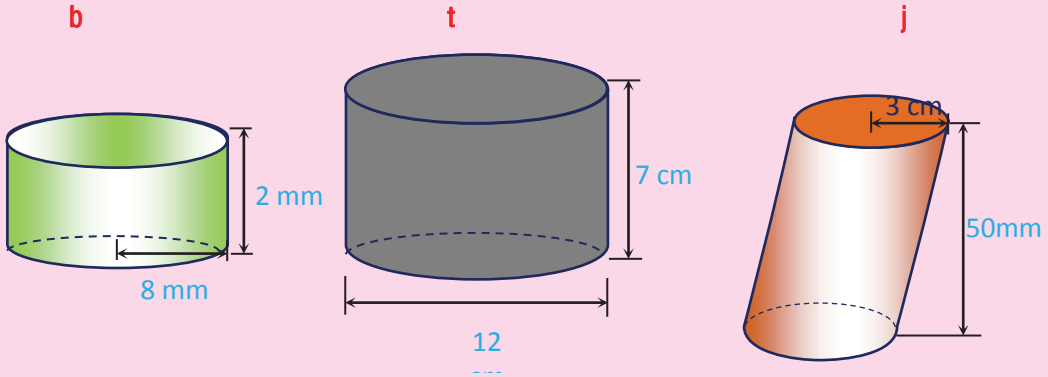
$A_L = 2\pi rh = 2\pi \times 5cm \times 6cm = 60\pi cm^2$

$A_T = A_L + 2A_B = 60\pi cm^2 + 2 \times 25\pi cm^2$

$= (60\pi + 50\pi)\ cm^2 = 110\pi cm^2$

Laylis 5.15

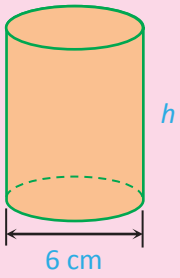
1 Soo saar bed duleedka dadabta iyo wadarta bad-duleedka mid kasta dhululubooyinka soo socda.



Jaantuska 5. 64

2 Joogga daasad sharaab waa 11cm, islamarkaa dhexroorkeedu waa 18 cm raadi bed-duleedka daasada sharaabka.

3 Siin $A_T = 60\pi cm^2$. Soo saar qiimaha h.



Jaantuska 5.65

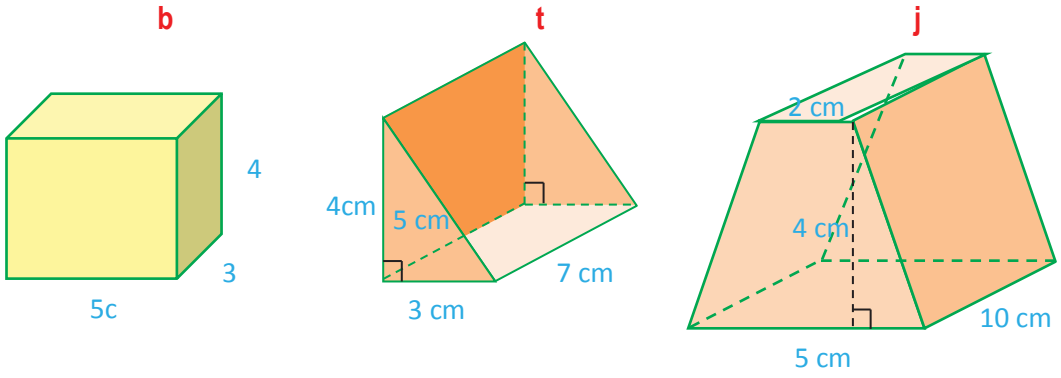
5.3.7 Mugga Biriisamka Iyo Dhululubada

Biriisamka

Fasalkii 6aad waxaad ku soo aragteen qaabka loo raadiyo (saaro) mugga biriisam laydi ah, taas oo ah mugga (inta ay qaadato) biriisam laydi ah, (V) waxay le'eg tahay isku dhufashada bedka salka (A_B) iyo joogga (h):- $V = (\ell \times w) \times h$.

Ogow: jidka wuxuu u noqonayaa noocyada biriisam kasta $V = A_B \times h$

Tusaale 1: Soo saar mugga mid walba biriisamyada soo socda:



Jaantuska 5.66

Furfuris: b $V = A_B \times h$

$= 5cm \times 3cm \times 4cm = 60cm^3$

t $V = A_B \times h$

$= \frac{1}{2} \times 4cm \times 3cm \times 7cm = 42cm^3$

j $V = A_B \times h$

$= \frac{1}{2}(2\,cm + 5\,cm) \times 4\,cm \times h\,cm$

$= 14cm^2 \times 10cm = 140cm^3$

Dhululubo

Hawlgal 5.15

Isbarbardhig oo soo koob, " biriisam iyo dhululubo" oo loo tixraacayo astaanta soo socota.

b Labadooduba ma qaab 3 dhinaclaa?

t Waa maxay salka dhululubadu? Biriisamkuna?

j Imisa sal ayey dhululubadu leedahay? Biriisamkuna?

x Maxaad ka odhan kartaa salalkeedu ay dhululubada?

kh Labaduba miyey leeyihiin jeb-gudub madoorsoome ah?

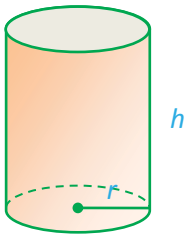
Hawl galka korka ku xusan waxaad ku soo gabagabaynaynaa sida soo socota guud ahaan "dhululubadu waa biriisam salkiisu yihiin goobooyin"

Mugga.

Waa maxay jidka lagu raadiyo mugga biriisam?

$V_{\text{dhululubo}} = A_{\text{sal}} \times \text{joog}$

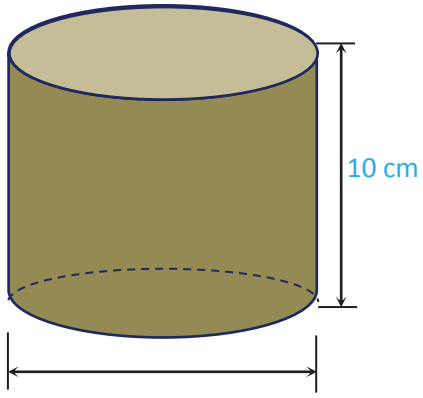
$V = \pi r^2 h$



Jaantuska 5.67

Tusaale 1: Raadi mugga dhululubooyinka ku muujisan jaantusyada soo socda.

b



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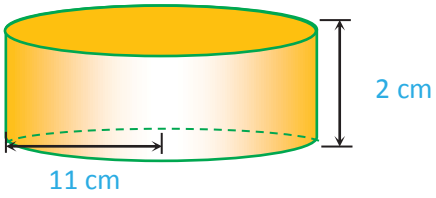


Jaantuska 5.68

Furfuris: **b** $V = \pi r^2 h$

$= \pi \times (7\text{cm})^2 \times 10\text{cm}$

$= 490\ \pi\ \text{cm}^3$

t $V = \pi r^2 h$

$= \pi.\ (11\text{cm})^2 \times 2\text{cm}$

$= 242\pi\text{cm}^3$

Tusaale 2: Daasadda digirta ayaa gacankeedu yahay 4 cm. Haddii mugeedu yahay 80 πcm^3, soo saar jooggeeda.

Jaantuska 5.69

Furfuris: $V = \pi r^2 h$

$80\pi cm^3 = \pi \times (4cm)^2 \times h$

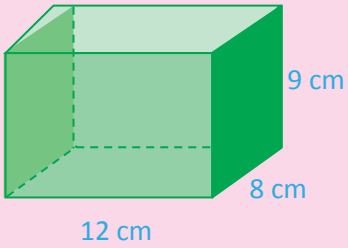
$$\frac{80\pi\ cm^3}{16\pi\ cm^2} = h$$

$5cm = h$ ama $h = 5$ cm

Laylis 5.16

1 Soo saar mugga iyo bed-duleedka walxaha adke ee soo socda.

b



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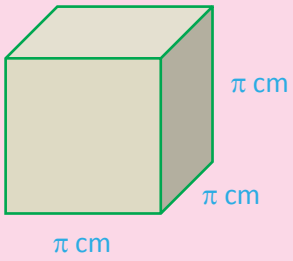

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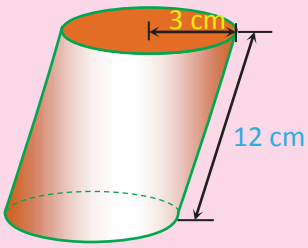
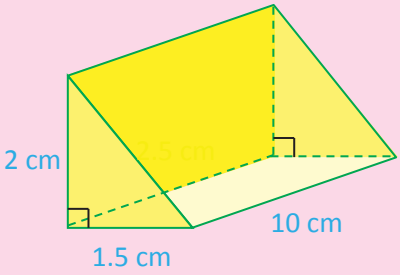
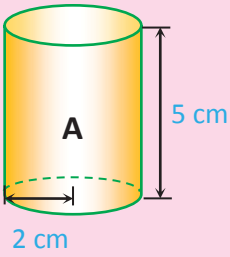


x



Jaantuska 5.70

2 Shaxannada soo socda waxay tusayaan laba dhululubo, A iyo B



Jaantuska 5.71

b Tus in ay labada dhululubo leeyihiin mug isku mid ah.

t Soo saar wadarta bed-duleedka dhululubo kasta.

3 Dhululubo leh mugga $120\pi cm^3$ islamrkaana gacanku yahay 8 cm

b Soo saar joogga dhululubada?

t Soo saar wadarta bed-duleedka dhululubo kasta.

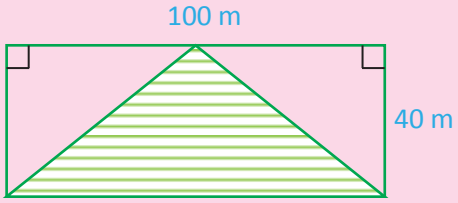
4 Taangi biyood kaluun saddexjibbaarane ah yar ayaa qaada 24 litir oo biyo ah. Dhererku waa 40 cm islamarkaa balacuna waa 20 cm. Waa maxay joogga taangigu?

5 Muga biriisam shan-geesoole ayaa ah $300cm^3$. Raadi bedka salkiisa, haddii cabbirka jooggu yahay 6cm.

6 Barkad lagu dabaasho oo leh 25m oo dherer ah, 15m oo balac ah islamarkaana leh 3m oo qotin ah (gun), imisa litir oo biyo ah ayaa ku jira barkada?

7 Haddii aad labanlaabto joogaa dhululubada muxuu noqon isbadalka uu ku yeelanayo mugga? Faah-faahi?

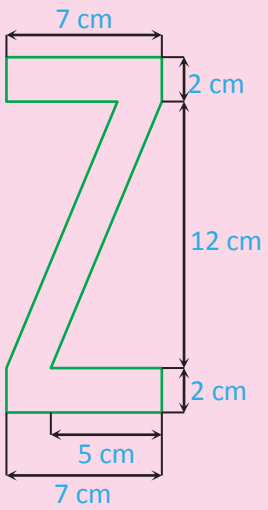
8 Raadi bedka qeybta hadhaysan ee shaxanka hoos lagugu siiyey.



Jaantuska 5.72

9 Bedka koor ayaa ah 200 cm^2. Dhinacayadiisa barbarada ah waa 40 cm iyo 60cm. Waa imisa fagaanta u dhexaysa dhinacyada barbarada ah?

10 Shaxanka soo socda wuxuu ku tusayaa qeyb bir xadiid ah, soo saar bedkeeda?



Jaantuska 5.73

11 Bedka goobada lagu siiyey waa $121\pi cm^2$. Soo saar meeriska isla goobadaas.

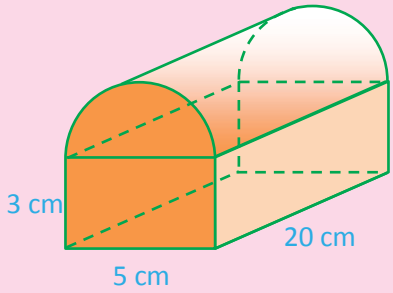
12 Guri laydi ah ayaa leh 5m oo dherer ah, 3 m oo joog ah iyo 4 m oo balac ah, intee waraaqaha dhamaan gidaarkiisa lagu dhajinay, adiga oo aan eegayn albaabadiisa iyo daaqadihiida?

13 Raadi joogga dhululubada haddii bad-duleedka dadabta iyo gacanku ay yihiin $70\pi cm^2$ iyo 5 cm, siday u kala horeeyaan.

14 Mugga dhululubo goobeed quman waa 96 πcm^3, haddii dhexroorka salku yahay 8cm raadi jooggeeda.

15 Wadarta dhererka girgirada saddex jibaarane waa 84cm, waa imisa dhererka hal girgir? Raadi bed-duleedka iyo mugga.

16 Soo saar bed-duleedka dadabta iyo wadarta bed-duleedka shaxanka adkaha ah soo socda.



Jaantuska 5.74

Erayada Muhiimka ah

Afar geesoole	Dhexdhexaad	Qaanso
Hilin fudud oodan	Joog	Sidkan
Gees	Barbarroole	Isbuuxsha
Dhinacyada deriska ah	Laydi	Fogaan siman
Dhinacyo iska soo hor jeeda	Qardhaas	Xuddun
Xaglo-qudeed	Laba Jibbaarane	Xagal toosan
Xaglo-gooye	Lammaane	Xaglo-gudeed talantaali ah
Geesoole	Isku sargo'an	Gudbe
Geesoole tuur leh	Isku Xiga	Xagal gudeedyo durgsan
Geesoole golxo leh	Qeybshe	Geesoole qaabsan
Koor	Gacan	Salal (sal)
Boqon	Addimmo	Dhexroor

Soo Koobida Cutubka

1 Afargeesle waa geesoole afar dhinacsi fudud ugu dooan sahlan oo xidhan

b Dhinacyada deriska ah ee afargeesoolahu waa dhinacyaa leh gees wadaag.

t Dhinacyada iska soo horjeeda ee afargeeslaha waa dhinacyada aan wadagin gees.

j xaglo-qudeedyada afargeesoole waa xaglaha ay sameeyaan dhinacyada deruska ah ee afargeesoolaha.

x xaglo-gooyaha afargeesoole waa xariijinta isku xidha labada gees ee aan isku xigin ee barbarroolaha

2 Koortu waa afargeesoole mid ka mid ah dhinacyada lamaanayaasha ah ee iska soo horjeeda ay barbaro yihiin.

b dhinacyada barbaraha ah ee koortu waa salalka koorta

t dhinacyada aan ahayn barbaraha ee koortu waa adimada koorta

j fogaanta qotonka u dhexeeya salalka koortu waa joogga koorta.

x xariijinta isku xidha bar bartameedyada dhinacyada aan ahayn barbaraha ee koorta waxaa lagu magacaabaa dhextaal koorta.

3 Koor labaale ah waa koorta labadeeda dhinac ee aan barbaraha ahayni isku sargo`an yihiin.

4 Barbaroole waa afargeeslaha labada lamaaneyaasha ee dhinacyada iska horjeedaa ay yihiin barbaro.barbarroole kasta.

b dhinacyada iska soo horjeeda way isku sargo`an yihiin

t xaglaha iska soo horjeedaa way isku sargo`an yihiin

j xaglo-gooyeyaashu way is kala badhaan

x xaglaha isku xigaa way is dhanneeyaan

5 Laydi waa barbarroole leh hal xagal qumman.

b dhamaan xaglaha laydigu waa xaglo quman

t xaglo-gooyeyaasha laydigu way isku sargo`an yihiin

6 Qaedhaas waa barbarroolaha labadiisa dhinac ee deriska ah ay isku sargo`an yihiin.

b dhamaan dhinacyada qardhaastu way isku sargo`an yihiin

t xaglo- gooyeyaashu qardhaastu way iskala badhaan si isku qotonta midba midka kale.

j xaglo-gooyeyaasha way kala badhaan xagasha raaran.

7 Labajibbaarane waa laydi iyo qardhaas labadaba.

8 Geesoole waa hilin si fudud ugu oodan xariijimo.

b geesoole tuur leh waa geesoolaha cabbirka xaglo-gudedyadiisu ka yar yihiin 180^o mid walba.

t geesoole golxo leh waa geesoolaha leh ugu yaraan hal xaglo-gudeed oo cabbirkeedu ka wayn yahay 180^o.

9 Goobo waa urur baro oo fogaan isle`eg u wada jira bar maguuraan ah oo la yidhaahdo xudunta goobada.

b gacanka goobo waa xariijin kabilaabmeta xudunta oo ku dhamaata bartii doonto baraha goobada dusheeda.

t boqonka goobo waa xariijinta isku xusta laba barood oo goobada dusheeda ah

j dhexroorka goob waa boqonka ugu dheer kaasoo ka gudba xudunta goobada.

x qaansada goobo waa qeyb kastoo goobada ah

10 Haddii dhinaca saddexagal ee gees kasta la fidiyo, xagasha ay la samayso dhinaca la deriska ah waxaa lagu magacaabaa xaglo-dibadeedka saddexagalka.

b gees kasta xaglo-qudeedka iyo xaglo-dibadeedku way isku isbuuxshaan.

t Gees kasta, waxaa jira laba xaglo-dibadeed kuwaas oo ah isku foodsar ah.

11 Wadarta cabbirada xaglo-qudeedyada n – geesoole = $(n-2)180^o$

12 Geesoole qaabsan waa geesoolaha ay dhamaan dhinacyadiisu isku sargo'an yihiin islamarkaana dhamaan xaglahiisu ay isku sargo'an yihiin.

13 Cabbirka xaglo-qudeed kasta ee geesooleha qaabsan,

n – dhinacyada = $\frac{(n-2)\times 180^o}{n}$.

14 Bed

b Bedka (A) ee saddexagal kastaa wuxu le'eg yahay bedhka taranta salka (b) iyo joogga (h) ku beegan salkaas

t Bedka (A) ee barbarroole wuxu le'eg yahay taranta salka (b) iyo joogga (h) eek u beegan.

j Bedka (A) ee koortu waxay le'eg tahay badhka wadarta salalka (b_1) iyo (b_2) lagu dhuftay jooggiisa (h)

$$A = \frac{1}{2}(b_1 + b_2)\, h$$

x Bedka (A) ee goobo wuxu le'eg yahay taranta π iyo laba jibbaarka gacankeeda.

$A = \pi r^2$

kh Bed-duleedka (A_L) ee biriisatn quman wuxu le'eg yahay taranta wareegga (P) ee salka iyo joogga birisamka.

$A_L = ph$

d Wadarta bed-duleedka (A_T) ee biriisam quman wuxu le'eg yahay wadarta beddnleedyada dadbiraha iyo beddka salalka (2Ab)

T.a $A_T = A_L + 2A_b$

$\Rightarrow A_T = ph + 2A_b$

r Wadarta bed-duleedka (A_T) ee biriisan laydiah wuxu le'eg yahay wadarta bedadka dhammaan wajiyadiisa.

$A_T = 2\,(Lh + wh + Lw)$

s Bed-duleedka dadabta (A_L) ee dhululo wuxu le'eg yahay taranta meeriska salak (c) iyo jooggiisa (h).

A_L = ch, halka c u taagan tahay meeriska

$\Rightarrow A_L = 2\pi rh$

sh Wadarta bed-duleedka (A_T) ee dhululbo waxay le'eg tahay wadarta bed-duleedka dadabta iyo bedka salaka.

$A_T = A_L + 2A_B$

$\Rightarrow A_T = 2\pi rh + 2\pi r^2$

$\Rightarrow A_T = 2\pi r\,(h + r)$

15 Wadarta dhererada dhinacyada geesoole waxa la yidhaa wareegga geesoolha.

16 Meeriska goobo waa fogaanta wareegga goobo.

17 Meeriska (c) ee goobo wuxu le'eg yahay π lagu dhuftay dhexroorkeeda ama π lagu dhuftay laban laabka gacankeed.

$C = \pi\, d$ ama $C = 2\pi r$

18 Biriisam waxa la odhan karaa waa biriisam quman haddii geerarka dadabtu ku qotomaan salka, haddii kale waa biriisam janjeedha.

19 Biriisamka leh sal goobo waxal la yidhaa dhululbo.

20 Mugga biriisam kasta wuxu le'eg yahay taranta bedka salka iyo jooggiisa.

$V = A_B h$

V – waa muq

A_B – bedka salka

h – joogga biriisamka

21 Mugga dhululbo waxay le'eg tahay taranta bedka salka iyo jooggiisa.

t, a, $v = A_B h$

$\Rightarrow V = \pi r^2 h$

22 Dhererka dhinac kasta ee saddexagal wuxu noqon karaa salka saddexagalka, qotonka fogaanta geeska ka soo horjeedaa u jirta salka waxa la yidhaa joogga saddexaglka.

Lylisyada guud ee Cutubka 5aad

1 Saamiga laba xaglood ee barbarroole waa 4:5. Raadi xaglaha barbarrolaha.

2 Xaglo-dibadeedka qardhaas ayaa ah 115^o. Raadi cabbirka xaglo-gudeedyada ee qardhaasta.

3 Koorta PQRS, $\overline{PQ} // \overline{RS}$. Haddii $\angle Q = 110^o$ waa imisa $\angle R$ islamarkaa sababta sheeg?

4 Saamiga xaglaha afargeesoole waa 3:6:2:4. Raadi cabbirka xaglaha.

5 Afar geesoole xaglihiisu waa x^o, $3x^o$, $2x^o$, iyo $6x^o$, Raadi cabbirka xaglaha.

6 Waa imisa wadarta xaglo-qudeedyada geesoole, halka tirada dhinacyadu "n" yihiin

b 11 t 9 j 30 x 36

kh 90 d 1002

7 Miyuujiraa geesoole tuur leh oo ay wadarta xaglo-gudeedyade u leehahay tahay:

b 1360^o? t 2340^o? j 3160^o? x 3600^o?

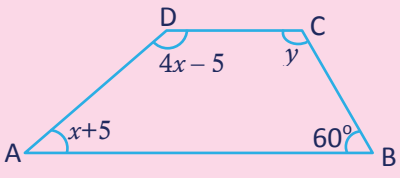
8 Gees kasta ee geesoole qaabsan, haddii aan ka sawirno 12 xaglo-gooyeyaal, raadi:

b wadarta xaglo-gudeedyada geesooleha

t xaglo-gudeedyada geesooleha cabbir mid walba.

9 Kooraha hoos lagugu siiyey mid walba, raadi xaglaha u taagan x iyo y.

b



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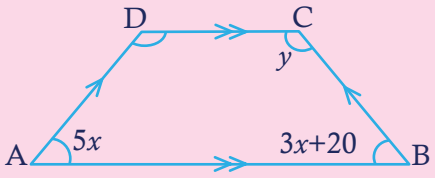
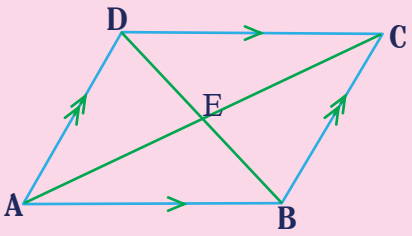


Jaantuska 5.75

Su'aalaha 10-13 tixraac barbarroolaha ABCD ee shaxanka.



Jaantuska 5.76

10 Haddii m(∠DAB) = $4x - 60$ islamarkaana m(∠DCB) = $30 - x$, kolkaa raadi

b m(∠DAB) t m(∠DCB)

j m(∠ABC) x m(∠CDA).

11 Haddii m(∠DCB) = $a + 12$ islamarkaana m(∠CDA) = $4a + 18$ raadi cabbirka xaglaha barbarroolaha .

12 Haddii AB = $4x + y$, BC = $y + 4$, CD = $3x + 6$, DA = $2x + y$ raadi dhererka dhinacyada barbaroolaha.

13 Haddii AE = $5x - 3$ islamarkaa EC = $15 - x$, raadi AC.

14 Dhisme:

b dhis koorta ABCD, $\overline{AB} // \overline{CD}$ ee AB = 5cm, BC = 6cm, CD = 8cm islamarkaa m(∠ABC) = 115^o

t dhis qardhaasta ABCD ee AB = 8cm islamarkaa m(∠ABC) = 85^o.

j dhis barbarroolaha ABCD ee AB = 7cm, ∠A = 60^o islamarkaa AD = 4cm.

x dhis labajibbaarane dhiniciisu yahay 10cm.

15 Xagaha afargeesoole waa 1:4:5:8 saami ahaan

b raadi cabbiraadda xaglaha dhammaantood ee afargeesoolaha.

t afargeesoolahani ma koorbaa? Sabab?

j afar geesaalahani ma barbarroolaa? Sabab?