

XISAAB

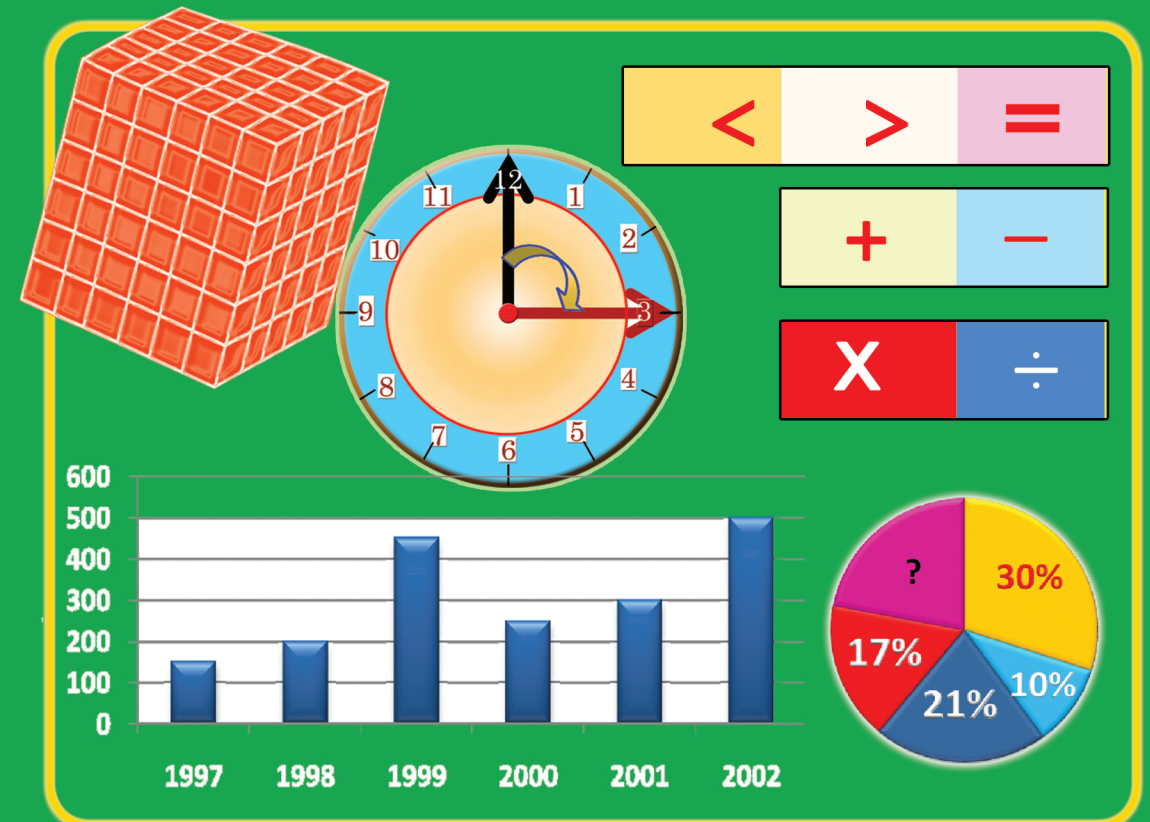
Tilmaame Bare
FASALKA 5^{aad}



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JAMHURIYADA DIMOQRAADIGA FADARAALKA ITOOBIYA
WASAARADDA WAXBARASHADA

MOE



JAMHURIYADA DIMOQRAADIGA FADARAALKA ITOOBIYA
WASAARADDA WAXBARASHADA

Birr 33.35

XISAAB

TILMAAME BARE

Fasalka 5^{aad}

Qorayaal, Tafatirayaal, Ansixiyayaal

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

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CUTUBKA **1** TIROOYINKA IDIL IYO AFARTA XISAABFAL

HORDHAC

Cutubkani wuxuu awooda saarayaa sidii uu u nakhtiimi lahaa fikradaha ku saabsan afarta xisaabfal ee tirooyinka idil ee ilaa 100,000 iyo siduu awooda u saari lahaa fikradahaas ku saabsan tirooyinka idil ee ka weyn 100,000. Cutubka waxaa loo qaybiyey laba cutub-hoosaadyo qaybta koowaad ee cutub-hoosaadku waxay awooda saaraysaa in ardaydu awoodaan inay akhriyaan, qoraan, isbarbardhigaan tirooyinka idil ka weyn 100,000 ayna go'aamiyaan ka dambeeyaha iyo ka horeeyaha tiro idil oo lagu siiyey, qaybta labaad ee cutub-hoosaadku waxay ka hadashaa xisaabfallada ku saabsan tirooyinka idil ee ka weyn 100,000.

Ujeedooyinka Cutubka

Cutubku marka uu dhammaado dabadeed ardaydu waxay awoodi doonaan inay:

- *Akhriyaan tirooyinka idil ee 100,000 ka weyn*
- *Isbarbardhigaan, horsanaana u qoraan tirooyinka idil ee ka weyn 100,000*
- *Go'aamiyaan ka dambeeyaha iyo ka horeeyaha (eber ma'ahaah) tiro lagu siiyey*
- *Go'aamiyaan qiime-rugeedka god kasta oo tiro idil oo lagu siiyey*
- *Kala soocaan tiro dhaban iyo tiro idil*
- *Ku shaqeyn karaan xisaabfallada isugaynta iyo kala goynta*
- *Furfuran (xalliyaan) masalooyinka ku saabsan iskudhufashada ee tirooyinak idil*
- *Caddeeyaan astaanta kala-dhiga iskudhufshada ee isugaynta.*
- *U qaybiyaan tiro idil, tiro idil kale oo aan ahayn eber.*

Kaabayaasha loo doorbiday cutubka 1^{aad}

Buugga ardayga iyo tilmaame baraha ma'aha ee waxaa kale oo lagugula talinayaa inaad diyaarisid keentidna fasalka qalabyadan soo socda marka loo baahdo:

Shax ka kooban:

- *Shaxyo qiime-rugeedyo leh*
- *Shaxda isbardhigga*
- *Lacago kala duwan*
- *Shaxda iskudhufashada*
- *Fallaadha tirada*

1.1 TIROOYINKA IDIL EE KA WEYN 1,000,000

Xiisadaha loo qoondeeyey: 20 xiisadood

Waxa ugu yar ee ardaydga laga rabo

Dhammaadka cutub-hoosaadkan, ardaydu waxay awoodi doonaan inay:

- *Akhriyaan tirooyinka idil ee ilaa 1,000,000*
- *Qoraan tirooyinka idil ee ilaa 1,000,000*
- *Isbarbardhigaan tirooyinka idil ee ilaa 1,000,000*
- *U qoraan horsanaanta tirooyinka idil ee ilaa 1,000,000*
- *Qoraan tirooyinka idil ee ka weyn 1,000,000*
- *Isbarbardhigaan tirooyinka idil ee ka weyn 1,000,000*
- *U qoraan siday u kala horeeyaan tirooyinka idil ee ka weyn 1,000,000 laga bilaabo ka ugu yar ilaa ka ugu weyn ama ka ugu weyn ilaa ka ugu yar*
- *Go'aamiyaan ka dambeeyaha iyo ka horeeyaha (marka laga reebo eber) ee tiro idil oo lagu siiyey*
- *Go'aamiyaan qiime-rugeedka god kasta oo tiro idil oo lagu siiyey*
- *U qoraan tiro idil oo lagu siiyey sida uu yahay wadarta dhufsaneyaasha 10*
- *Go'aamiyaan horsanaanta tirooyin idil oo lagu siiyey, adigoo isticmaalaya qiime-rugeed ama fallaadha tirada*
- *Kala soocaan tiro dhaban iyo tirooyinka idil*

Erayo cusub: Qiime-rugeed, tiro, tiro idil, tiro idil oo dhaban, tiro kisi oo idil ka ka horeeye, ka dambeeye.

Hordhac

Ujeedada ugu weyn ee cutub-hoosaadka:

- Kani waa in ardayda loo nakhtiimo tirooyin ak idil ee ilaa 1,000,000 iyadoo ay akhriyayaan tiro lagu siiyey, iyadoo la siinayo tusaale la xidhiidha nolol-maalmeedka, kaas oo lagu caddeynayo tirooyinkan waxa kale oo uu ka hadli doonaa cutubkani isagoo inoo sheegaya qiime-rugeed godad lagu siiyey, iyo isbarbardhigga iyo horsanaata tirooyinka.

Cudbinta Casharka

B. Nakhtiinka tirooyin ak idil ee ilaa 1,000,000

Waxaad ku bilaabi kartaa adigoo ardayda ka codsanaya inay akhriyan qoraan isbarbardhigaan tirooyinka idil ee ilaa 1,000,000 adigoo isticmaalaya su'aalaha 1 iyo 2 ee hawgalka 1.1.

B. Tirooyinka idil ee kaweyn 1,000,000

Ku bilow casharkan adigoo ardayda weydiinaya su'aalahan:

- Waa imisa tirada dadka deegaankeenu?
- Waa imisa tirada dadka itoobiya?

Ka dib marka aad bartid tirada ilaa 100,000 adigoo ugeynaya 1 ilaa 99,999 kudhiirgah ardayda inay isticmaalaan tirooyin ka badan 100,000 isla markaana ay akhriyaan, qoraan isbarbardhigaan tirooyinkaas. Ka caawi ardaydu, siday u sookoobi la haayeen tiro kasta oo tiro idil ah, oo ah “n” kana duwan 0, inay leedahay ka horeeye “n – 1” iyo ka dambeeye (n + 1) ka dibna ku hoggaami ardayda inay tilmaan kuna soo gabagabeeyaan qodobadan:

- Ma jirto tiro idil oo ugu weyn
- Eber inuu ugu yar yahay tirooyinka idil

C. Qiimo rugeed iyo horsanaanta tirooyinka idil

Qaar ka midah ardayda u dhiib kaarar tirooyin leh iyaga oo si saf ah u taagan, ka dibna ardayda kalena ha akhriyaan tirooyinka sameysmaya, ku celceli adiga oo isugu badalaba kaararka arday waxaad u sharaxdaa qiimo rugeedka god kasta oo ka mida tirooyinka lagu siiyey adigoo isticmaalaya shaxda qiimo rugeeda ka caawi ardayda siday ugu qori lahaayeen fidinta tirooyinka idil ee lasiiyey sida tusaalahan: $7,789,453 = 7 \times 100,000 + 7 \times 100,000 + 8 \times 100,000 + 9 \times 1000 + 4 \times 100 + 5 \times 10 + 3 \times 1$ ku dhiirigali ardayda siday ugu muujin lahaayeen tirooyinka idil falaadha tirada ay isticmaalayaan siday isu barbardhigi lahaayeen. Falaadha tirida iyo horsanaata tirooyinka lakab.

D. Tirada dhabanka ah iyo ta kisiga ah

- Ardayda waxaad u kala sooci kartaa tiro dhaban iyo tiro kisi adigoo adeegsanaya tusaalayaal kala duwan sida.
- Adigoo u qaybinaya qiyaas lacag ah oo lasiiyey.
- Adigoo koox koox ugu qaybinaya lambaradooda lagu diiwaangaliyey una kala saaraya tirooyinka diwaangalinta ee dhabanka ah iyo tirooyinka diiwaangalinta ee kisiga ah.

Ku dhiirigali ardayda inay qoraan tirooyin dhaban ah iyo tirooyin kisi ah ka dibna u tilmaan inay tirooyinkan ku gabagabaysmayaan sidan.

1. dhaban + dhaban = dhaban
2. kisi + kisi = dhaban
3. kisi + dhaban = kisi = dhaban + kisi

Jawaabaha hawlgalka 1.1

1. b. Laba boqol afar iyo soddon
t. Laba boqol soddon iyo kow kun, boqol iyo laba iyo toban
j. Kun, boqol iyo kow iyo toban
x. Lix kun afar boqol iyo sagaal iyo labaatan.
kh. Afar iyo toban kun lix boqol iyo sagaashan
d. Sagaal boqol iyo sagaashan kun iyo sagaal boqol iyo hal.
r. Shan iyo lixdan kun lix boqol toddobaatan iyo saddex.
s. Boqol kun iyo saddex.
2. b. 101 t. 1870 j. 300,536 x. 10,007
3. b. $9033 < 24,266 < 242,667$
t. $34,789 < 169,875 < 458,700 < 567,980$
5. b. $456,780 > 456,098$ t. $638,561 > 638,516$
j. $10,022 < 10,122$

Jawaabaha layliska 1.1

1. b. Saddex boqol iyo shan iyo afarta kun lix boqol toddobaatan iyo siddeed
t. Shan iyo sagaashan kun lix boqol toddobaatan iyo saddex
j. Afar kun lix boqol sagaashan iyo afar
2. b. 5012 t. 986,470 j. 240,370
3. Dhulka, maaris, meerkuri

Jawaabaha layliska 1.2

1. b. Laba milyan, sadex boqol iyo shan iyo afartan kun lix boqol toddobaatan iyo siddeed.

- t. Kow iyo toban milyan, laba boqol saddex iyo soddon kun saddex boqol toddobaatan iyo lix.
 - j. Boqol iyo hal milyan laba boqol iyo afar iyo sodon kun shan boqol lixdan iyo todoba.
 - x. Lixbilyan, hal, milyan, laba boqol sodon iyo afar kun, afar boqol todobaatan iyo sideed.
 - kh. Saddex iyo toban bilyan, sagaal boqol iyo siddeed milyan lix boqol iyo sideetan iyo afar kun, afar boqol konton iyo kow.
2. b. 3,00,405 t. 105, 00,000 j. 8,003,200,563

Jawaabaha Hawlgalka 1.3

- 1. b. 14, 219 < 127,008 < 1, 255, 730 < 1, 309, 542 < 4, 206, 302 < 6,714, 690
- t. 557, 626 < 3,594,962 < 6,439,006 < 12,008,860 < 102, 708,420 < 360, 285, 114

Jawaaha layliska 1.3

- 1. b) Labada tiro marka la isbarbardhigayo waa in la dhex galiyo sanduuqa isbarbardhiga.
- t) Isbarbardhigtu wuxuu sameysaa isaga oo ka bilaabmaya tirada ugu yar ilaa tirada ugu weyn, haddii laba tiro ay isle'ekaadaan waxaa looga gudbi tirada ku xigta ilaa inta ay tirada ka dhamaaneyso.
- 2. b) 21, 384 < 21, 843
- t) 9,370,005 < 9,370,025
- j) 5,934,177 < 5,934,178
- 3. Kuwee ugu yar lammaaneyaasha tirooyinka ee soo socda?
 - b) 98,909, 98,099
 - t) 2,436,022,765, 2,436,022,068
 - j) 5,934,177, 5,934,178

Jawaabaha hawlgalka 1.4

1.

$99,999 + 1 = 100,000$	$999,999 + 1 = 1,000,000$	$99,999,999 + 1 = 100,000,000$
------------------------	---------------------------	--------------------------------

2.

$100,000 - 1 = 99,999$	$1,000,000 - 1 = 999,999$	$10,000,000 - 1 = 9,999,999$
------------------------	---------------------------	------------------------------

Jawaabaha layliska 1.4

- 1. Ka dambeeyuhu waa 1,000,000,000 ka horeeyuhuna waa 999,999,998
- 2. Maya

3.

		i	ii	iii	iv	v
n - 1	3,799,999	3,750,599	8,999,999	10,989,999	898,999,999	99,999,999
n	3,800,000	3,750,600	9,000,000	10,990,000	899,000,000	100,000,000

4. 10,000,000,000
999,999,999

5. 1,000,000,000
999,999,999

Jawaabaha layliska 1.5

1. b) Hal bilyan iyo toban.
t) Afartan iyo saddex bilyan afar boqol iyo afartan iyo afar kun, saddex boqol iyo afartan iyo afar.
j) Afartan iyo lix milyan, todoba boqol iyo sagaashan kun, laba boqol iyo sideetan iyo kow.
x) Todoba bilyan seddex boqol iyo afartan iyo shan.
kh) Sagaalboqol iyo sideetan iyo todoba bilyan.
d) Laba boqol sideetan iyo laba bilyan, afar kun iyo toban.
2. b) Itoobiya t) Somali
3. 100,000,101,101
4. b) $8,787,675,456 < 17,787,675,456$
t) $1,000,000,000 < 1,000,000,010$
j) $982,000,000,000 < 987,000,000,000$
5. b) hal milyaan t) toban kun
j) kumaad x) boqolaal kun

Jawaabaha hawlgalka 1.5

1. b) 4 boqolaad oo birr t) 3 boqollad oo birr
5 tobnaad oo birr 6 tobnaad oo birr
7 halaad oo birr 6 halaad oo birr
j) 9 boqolaad oo birr x) 5 kumaad oo birr ah
8 tobnaad oo birr 3 boqolaad oo birr ah
7 halaad oo birr 4 tobnaad oo birr ah
2 kowaad oo birr ah
2. b) 5 kumaad oo birr t) 6 toban kumaad oo birr
4 boqlaad oo birr 8 kumaad oo birr
5 boqlaad oo birr
4 tobnaad oo birr
3 halaad oo birr
- j) 9 boqol kumaad oo birr
1 toban kumaad oo birr
2 kumaad oo birr
3 boqlaad oo birr
4 tobnaad oo birr
5 halaad oo birr

Jawaabaha layliska 1.6

1. b) $8 \times 100,000 + 3 \times 10,000 + 8 \times 100 + 7 \times 10 + 6 \times 1$
t) $4 \times 10,000,000 + 5 \times 1,000,000 + 1 \times 100,000 + 8 \times 1000 + 6 \times 100 + 1 \times 10 + 4 \times 1$
j) $9 \times 1,000,000,000 + 6 \times 100,000,000 + 2 \times 10,000,000 + 9 \times 1,000,000 + 4 \times 10,000 + 5 \times 100 + 3 \times 10 + 8 \times 1$
2. $10 \times 100 + 8 \times 10 + 9 \times 1 = 1000 + 80 + 9 = 1089$ birr
3. b) 6804002 t) 730904302
4. $4 \times 100, 3 \times 10$
5. $5 \times 100 + 6 \times 10 + 9 \times 1 = 500 + 60 + 9 = 569$

Jawaabaha hawlgalka 1.6

1. b) $8 \times 10000 + 8 \times 100 + 7 \times 10 + 6 \times 1$
t) $4 \times 10,000,000 + 8 \times 100 + 7 \times 10 + 6 \times 1$

Jawaabaha hawlgalka 1.7

1. haa
2. 5 nacnac
3. haa, maya

Jawaabaha layliska 1.8

1. b, x, d, r iyo s waa dhaban, waayo godkooda koowaadku waa dhaban, t iyo j na waa kisi.
2. b iyo x waa kisi
t iyo j waa dhaban
3. b) lix t) konton j) konton

1.2 XISAABFALLADA TIROOYINKA IDIL

Xiisadaha loo qoondeeyey: 28 xiisadood

Dhammaadka cutub-hoosaadkan***Ardaydu waxay awoodi doonaan inay***

- *xaliyaan masalooyinka isugeynta ah*
- *xaliyaan masalooyinka kalagoynta ah*
- *caddeeyaan astaamaha aasaasiga ah ee isugeynta tirooyinka idil*
- *xaliyaan masalooyinka ku saabsan isku-dhufasahda ee tirooyinka idil*
- *caddeeyaan astaanta kala dhiga ee isku dhufasah ee isugeynta*
- *isu qeybiyaan tirooyinka idil ee qeybtoodu noqonayso jajab tobanleyaal*
- *xaliyaan masalooloyinka ka kooban xisaabafallo kala duwan iyo qowsaska*
- *raadiyaan qeybiyeyaasha tirooyinka idil*
- *u qoraan taranta isirada isku midka ah jibbaar ahaan*
- *xisaabiyaan ayagoo isticmaalaya jibbaarada*
- *raadiyaan dhiyiw iyo IWM tirooyin idil oo lagu siiyey*

Erayo cususb

- astaanta oodnaanta isugeynta
- astaanta oodnaanta isku-dhufashada
- kala hormarin, hormogalin, astaanmaha kala-dhiga isku-dhufashada iyo isugeynta.
- Dhyw, IWM oo ku salaysan jibbaar
- Jibbaarada tirooyinka idil

Hordhac

Cutub-hoosaadkani wuxuu ka hadlayaa ama ina siinayaa faahfahin ku saabsan xisaabfallada tirooyinka idil waxaa loo qeybiyaa lix cinwaan-hoosaad ciwaan hoosaadka 1^{aad} waa 1.2.1 xuxuuna ka hadlaa isugeynta iyo kal goynta tirooyinka idil, waxaa kale oo ay ina siisaa waxoga astaamo isugeynta ah oo ku saabsan tirooyinka idil sida oodnaanta. Astaanta kala hormarinta iyo hormogalinta isugeynta ee tirooyinka idil iyo astaanta asal-madoorshaha ee eber, qeyb-hoosaadka 1.2.2 isku dhufashada tirooyinka idil ayaa lagaga doodi, waxa kale oo lagaga hali astaamaha isku-dhufashada iyo ku shaqeynta qiimeyaasha ugu dhow qeybta seddexaad waxaa lagaga hadli isu-qeybinta tirooyinka idil qeybta 1.2.4 masalooyin ayaa lagu samayn, marka tibaaxuhu ka kooban yihiin xisaabfaloo badan qeybta 5^{aad} waxay ka hadahsaa dhufsaneyaasha iyo qeybiyeyasha tirooyink idil qeybta 1.2.6 waxay ka hadii jibbaarada tirooyinka idi. Fikradaha dhuyw iyo IWM tirooyin idil oo lagu siiyey sidoo kale waxaa lagaga hadli halkan.

1.2.1 Isugeynta iyo kalagoynta tirooyinka idil

Siaad casharka u bilowdo waxaad ardayda u diri kartaa inay ka shaqeeyaan masalooyinka ay ku jiraan kala goyntu wxayna ku hubin karaan maxsuulka isugeyn, kala goynta lidkeeda u nakhtiin astaanta kala horumarinta iyo hormogalinta isu-geynta tus ardayda astaamaha eberku ku leeyahay tirooyinka idil kaasoo ah $0 + x = x + 0$ tiro kasta oo idil oo x ah.

Nakhtiin astaanta isugeynta ee kala ah hormarinta iyo hormogalinta ku dhiirigali ardayda inay xalliyaan (furfuraan) masalooyinka la xidhiidha nolol-maalmeedka sida su'aalaha lagugu siiyey hawlgalka 1.8 su'aasha 3^{aad}.

Jawaabaha hawlgalka 1.8

1. $(10,000,000 + 15,000,000)$ birr = 25,000,000 birr
2. b) 145,348,328 t) 2,904,658,123

$$\overbrace{\text{A } 3000 \text{ m} \quad \text{B } 1751 \text{ m}}^{\text{C}}$$

3. wadarta fogaantu = $3000 \text{ m} + 1751 \text{ m} = 4751 \text{ m}$
4. lama kala goyn karo

Jawaabaha layliska 1.9

1. 406,940,128
2. b) 98,671,743 t) 480,803 j) 18,280,210
3. 5,501,364 buugaag
4. 6750 Birr

Jawaabaha layliska 1.10

1. b) 89875357 t) 978367944 j) 296839
x) 9247903633
2. 1080
3. b) 17500 t) 10,000

1.2.2 Isku-dhufashada tirooyinka idil**Gudbinta casharka**

Ardaydu ha ka shaqeeyaan masalooyinka laga shaqeynayo eek u saabsan isku-dhufashada ilaa seddexgod tiro ka kooban oo ku saabsan nolosha dhabta ah waxaad isticmaali kartaa su'aalaha hawlgalka 1.9 nakhtiin astaanta kala hormarinta iyo hormogalinta isku dhufashada u ogolow ardayda inay ka doodaan astaanta kala dhiga ee isku dhufashada, si aadu sii xoojisid waxaad siin kartaa tusaaleyaasha sida:

- b) $458 \times 637 = 637 \times 458$
- t) $(246,000 \times 867) \times 948 = 246,000 \times (867 \times 948)$
- j) $839 \times (150 + 73) = 839 \times 150 + 839 \times 73$
- x) $216 \times 19 + 520 \times 19 = (216 + 520) \times 19$

Ka caawi ardayda si ay u caddeeyaan astaamaha eber iyo ha:

Tusaale ahaan: tiro idil oo kasta oo a layidhaa

- i) $a \times 0 = 0 \times a = 0$
- ii) $a \times 1 = 1 \times a = a$

Ku dhiiri gali ardaydaada inay ku shaqeeyaan qiimeyaasha ugu dhawaanta si ay u go'aamiyaan qiimeyaasha qiyaaseed ee isku-dhufashada tirooyink Aadka u badan iyo isbar-dhiga maxsuulka.

Tusaale:

- b) $697 \times 199 \approx 700 \times 200 = 140,000$
- t) $4213 \times 599 \approx 4000 \times 6000 = 2,400,000$

Jawaabaha hawlgalka 1.9

1. $4 \times 10 = 40$ birr
2. Muddo hal bil ah beerooluhu wuxuu iibiyey $30 \times 30 = 900$ litir toban biloodna iyada/isagu wuxuu iibiyey $900 \text{ litir} \times 10 = 9000$ litir
3. b) 2345600 t) 3696078 j) 500,000,000

Jawaabaha layliska 1.11

1. Maalinta waxaa ku jira 24 saacadood 64 casho waxaa ku jira $64 \times 24 = 153$ saacadood.
2. Hal saac waxaa ku jira 60 daqiiqadood 12 saacadoodna waxaa ku jira $60 \times 12 = 720$ daqiiqadood.
3. b) Hal maalin waxay cuntaa lo'du $43 \times 250 \text{ kg} = 10750 \text{ kg}$
t) Hal todobaad lo'du waxay cuntay $7 \times 10750 \text{ kg} = 75,250 \text{ kg}$
j) Aan ka soo qadono in sannadka ay ku jiraan 365 maalmood haddaba lo'du waxay cuntaa sannadka $365 \times 10,750 \text{ kg} = 3,923,750 \text{ kg}$.
4. tirada guud ee tufaaxu waa = tirada jawaanada \times tirada tufaaxa ee ku jirta jawaan kasta = $1000 \times 600 = 600,000$ tufaax halkii tufaax ahi wuxuu joogaa qiimahisu 5 Birr wadarta guud ee qiimaha tufaaxu waa $5 \times 600,000 = 3,000,000$ Birr.

Jawaabaha hawlgalka 1.10

1. b) 11400 t) 11400
2. xisaabfalka isku-dhufashadu wuu ogol yahay kala hormarinla
3. b) 460 t) 460
4. Iskudhufashada waa la horogalin karaa (wey ogoshay hormogalinta).

Jawaabaha layliska 1.12

1. b) $40,000 \times 200 = 8,000,000$ qiimaha ugu dhow $39827 \times 245 = 9757615$
t) $6,000,000 \times 4000 = 24,000,000,000$
 $5,629,998 \times 3728 =$
j) $30,000,000 \times 60,000 = 1,800,000,000,000$
 32651777×56984
2. b) $8 \times (20 + 4) = (8 \times 20) + (8 \times 4)$
t) $28 \times (10 + 9) = (28 \times 10) + (28 \times 9)$
j) $56 \times (30 + 4) = (56 \times 30) + (56 \times 4)$
3. b) $(49 + 21) \times 7 = 7 \times 70 = 490$
t) $92 \times (27 + 32) = 92 \times 50 = 4600$
j) $(75 + 25) \times 12 = 100 \times 12 = 1200$
4. b) 2868 t) 54863 j) 0 x) 0
5. Wadarta tirada geeduhu = tirada jiiiftaxa geedo kasta
 $= 470 \times 34 = 15980$
Halkii geed wuxuu soo saaraa 27 kartoon sidaas darteed faadumo.
Tirada guud ee geeduhu = tirada jiiiftaxa geedaha ee jiiiftax kasta = $470 \times 34 = 15980$
Halkii geed wuxuu soo saaraa 27 kartoon, sidaas darteed faadumo waxay rajeynaysay 27×15980 kartoon oo liin ah
6. Tirada guud ee kuraastu = tirada jiiiftaxa \times inta kursi ee jiiiftax kastaa ku kooban yahay.
 $17 \times 24 = 408$ kursi
Tirada kuraasta madhani = $408 - 343 = 65$

Jawaabaha layliga 1.13

- b) 133612 t) 310.785 j) 4776.292

1.2.3 Isu qeybitna tirooyinka idil

Hawlgalka 1.11

1. i. $\frac{60,000}{20} = 3000$ buug ii. $\frac{60,000}{300} = 200$
- iii. $\frac{60,000}{6000} = 10$
2. Haa
3. $\frac{5891}{1300} = 4.53$

Gudbinta Casharka

Siaad casharka u bilowdo ka caawi ardayda inaad ku laylido ama u dirto laylis ah isuqeybinta tiro badan oo idil oo loo qeybiyo tiro idil oo ka kooban laba, seddex ama afar god ka caawi ardayda siday isugu qeybin lahaayeen, hana ku caddeeyaan qeybta ama ha u qoraan jajabtobanle dhammaadka laba god ka dib barta jajab tobanlaha waxaad istimcaali karta hawlgalka 1.11 iyo tusaalaha raac hawlgalkan. Si aad u sharaxdid astaamaha isu-qeybtinta, ku bilow shaqo kooxeedka 4.3, kuna hogaami ardayda in aad ku soo qabagabayso in isuqeybinta aanay ogolayn kala horumarint iyo hormogalinta midna.

Jawaabaha layliska 1.14

1. $3600 \div 72 = 50$ daqiiqadood
 = 104
2. Baakidhka sigaarka ah ee uu isticmaalaya $= \frac{4160}{40} = 104$ baakidh sannadkii waxaa ku jira sannadka 52 dodobaad todobaad kasta wuxuu isticmaalay in uu cabo $= \frac{104}{52} = 2$ baakidh.
3. $\frac{18000}{20} = 900$ Birr
4. Waxay ku iibisay digaagad kasta $\frac{8424}{234} = 36$ Birr midiibal waxay ku soo iibisay digaagad kasta $= 9828 \div 234 = 42$ birr midiiba.

1.2.4 Masalooyin ka kooban xisaabafalo farabadan**Hawlgalka 1.12**

1. Haa
2. 13

Gudbinta casharka

Ku bilow casharka adigoo arday si gacan ka qabasho ah ugu diraya inay xalliyaan masalooyinka ay ku jiraan xisaabalo badani, ka caawi ardayda inay caddeeyaan horsanaanta midka soo horeeya marka tibaaxdu ka kooban tahay xisaabfalo ka badan hal.

Jawaabaha layliska 1.15

1. b) $(20 + 16) \div 12 + 4$
 $36 \div 12 + 4$
 $= 3 + 4$
 $= 7$
- t) $21 - 15 \div 5 \times 5$
 $= 21 - 3 \times 5$
 $= 21 - 15$
 $= 6$
- j) $6 + (19 - 9) - 10$
 $= 6 + 10 - 10$
 $= 16 - 10$
 $= 6$
- x) $39 - 19 - (18 - 9)$
 $= 39 - 19 - 9$
 $= 20 - 9$
 $= 11$
- Kh) $15 \times 4 - 10 \div 2 + 10 - 27 \div 9$
 $= 15 \times 4 - 5 + 10 - 3 = 60 - 5 + 10 - 3 = 60 + 5 - 3$
 $= 60 + 2 = 62$
- d) $(88 + 8) \times (88 - 8) + 8 \times 8 = 96 \times 8 + 8 \times 8 = 7680 + 64 = 7740$
2. b) $(43 + 7) \times 2$
- t) $(4 \times 9) - 2$
- j) $8 + (9 - 2) \times 4$
- x) $15 - (13 - 8) \times 3$
- kh) $8 \times (3 + 2) \times 2$

1.2.5 Dhufsaneyaasha iyo qeybsheyaasha tirooyinka idil**Gudbinta casharka**

Ku bilwo casharka adigoo ardayda ku dhiirigalinaya inay raadiyaan dhufsaneyaasha 2,3, . . . weydii ardayda inay raadiyaan qeybsheyaasha tiro lagu siiyey isticmaal hawlgalka 1.13 iyo tusaalaha raaca.

Jawaabah hawlgalka 1.13

1. Tirooyin dhaban
2. $27 = 3 \times 9$ $n = 9$
 $81 = 3 \times 27$ $n = 27$
 $234 = 3 \times 81$ $n = 81$
 $333 = 3 \times 111$ $n = 111$
3. $65 = 5 \times 13$ $n = 13$ $200 = 5 \times 40$ $n = 40$
 $75 = 5 \times 15$ $n = 15$ $160 = 5 \times 32$ $n = 32$
 $95 = 5 \times 19$ $n = 19$ $155 = 5 \times 31$ $n = 31$
 $80 = 5 \times 16$ $n = 16$

Jawaabaha layliska 1.16

1. 3 waa qeybiyaha 48, 48 na waa dhufsanaha 3 iyo 16
2. b) {7, 14, 21, 28, 35}
t) {8, 16, 24, 32, 40}
j) {12, 24, 36, 48, 60}
x) {35, 70, 105, 140, 175}
3. {42, 45, 48}
4. b) 12 t) 18 j) 36 x) 66
5. haa, waayo $6957 = 3 \times 2319$
6. haa, marka 7596 loo qeybiyo 9 qaybtu waa 844, hadhaaguna waa eber.
7. b) {1, 2, 4, 5, 8, 10, 20, 40}
t) {1, 3, 9, 27, 81}
j) {1, 2, 4, 8, 16, 32, 64, 128, 256}
x) {1, 3, 7, 21, 49, 147}
8. {12, 20, 36, 456, 52}
9. 42

1.2.6 Jibbaarada tirooyinka idil

Ka caawi ardayda inay kacantooda kaga shaqeeyaan taranta leh isirada isku midka ah sida jibbaarka, isticmaal tusaaleyaal si ardaydu u fahmaan jibbaarka ku buuri ardayda inay caddeeyaan ama kala saaraan fikradaha ama macnaha jibbaar iyo sal ama tirada dusha ka saran una soo saar xeerarka jibbaarka isuqeybinta jibbaarada leh sal isku mid ah waxaa tusaaleyn kartaa tusaalahan oo kale:

$$b. \quad 3^2 \times 3^4 = 3 \times 3 \times 3 \times 3 \times 3 \times 3 = 3^{2+4} = 3^6$$

$$t. \quad \frac{2^6}{2^2} = \frac{2 \times 2 \times 2 \times 2 \times 2 \times 2}{2 \times 2} = 2 \times 2 \times 2 \times 2$$

CUTUBKA ADEEGSIGA (KUSHAQAYNTA) DOORSOOMAYAASHA

HORDHAC

Ujeedada ugu muhiimsan ee cashirkani waa in uu ardayga ka caawiyo si ay u helaan fikrado bilaw ah ama gogol dhig u ah sida loo soo bandhigo masalooyinka dhabta ah ee dunida, ee ay kala kulmaan nolol maalmeedkooda maalin kasta iyagoo adeegsanaya Isleegyo iyo dheeliyo oo si tilmaan ah waxa fur-furista isleegyadaasi iyo dheeliyadaasi looga jeedo.

Cutubkan waxaa loo qaybiyay laba ciwaan oo muhiim ah, oo ciwaan kastana waa la sii qay-qaybiyay, ciwaanada lagaga hadlay cutubkan labaad waa:

- Tibaaxaha Aljabreed iyo fududaynta tibxaalayaasha.
- Isleegyada iyo dheeliyada.

Ciwaanka hore waxaa ku jira, tibaaxo iyo qiimaynta tibxaha fudud ee laga hadlayo. Ciwaanka labaadna waxaa hoos yimaada fur-furista isleegyada iyo dheeliyada.

Ujeedooyinka cutubka

Marka cutubkani dhammaado, ardaydu waxay awoodi doonaan in ay

- *U bedelaan hawraaraha xisaabeedyada fudud, tibaaxo xisaabeed.*
- *Kala sooci karaan tibxo iyo tibaax xisaabeed*
- *Fududeeyaan qiimeyaasha la siiyey ayagoo isku ururinaya tibxaha isku midka ah.*
- *Xisaabiyaan qiimeyaasha tibxaha iyo tibaaxaha xisaabeed yada ayagoo ku salanaya inta tibxood ee ay ka kooban yiliin.*
- *Kala saaraan isleegyo iyo dheeliyo*
- *Go'aamiyaan xalalka suurto galka ah ee isle'eg lagu siiyey ay ku leedahay tirooyin lagu siiyey.*
- *U qoraan masalo fudud oo weedh xisaabeed qaab isle'eg ama dheeli ah*

Kaabayaasha Waxbarasho ee lagu taliyay:

- ❖ Sanduuqyo yar-yar oo xidhan ayaa loo adeegsan karaa, si ardayda looga caawiyo fahanka fikirka doorsoomayaasha. Xataa jajabka ayaa loo adeegsan karaa sidan oo kale

$$\begin{array}{|c} \hline \\ \hline \end{array} \begin{array}{l} +2 \\ -3 \end{array}$$

- ❖ Ardaydu waxay si fufud u fahmi karaan in wax dhax dhigita ama wax ku dhexridida sanduuqa macnaheedu inay tahay u qoondaynta doorsoomihii qiime ama siinta qiime la siiyo doorsoomihii. Haddii uu sanduuqu madhnaa oo lagu darayo doorsoomaha waa haddii marka hore qiimo bilaw ahi sii jiray waxka qaadida ama ka saarida sanduuqu waxaa loo tixgalin karaa ka jarida doorsoomaha oo wax laga jaro..
- ❖ Fududaynta tibxaha waxaad qaadan kartaa tusaale yaal badan oo tibxaha isleh waxaad u soo qaadan kartaa tusaale ahaan waxyaabaha laga heli karo deegaankooda.
 - qalin qoriyo, qalino, buugaag, miisas, kuraasi IWM.
 - Xayawaano, khudaar, midho IWM.

Waxaa loo adeegsan karaa tusaale si ay ardayda uga caawiso fahanka waxa tibxo isleh ay yihiin, macno ahaan iyo waxa ay tahay fududaynta tibxaha Aljabreed, sida la isugu dayayba in lagu muujiyo tusaalayaasha lagu qoray buuga ardayga.

2.1 TIBXAHA IYO TIBAAXAHA ALJABRAAD

Xiisadaha loo qoondeeyay 17 xiiso

Waxa ugu yar ee ardaydga laga rabo

Dhamaadka cutub hoosaadkan, ardaydu waxay awoodi doonaan

- *In ay hawraar xisaabeed u badalaan tibix xisaabeedyo.*
- *Gartaan tibxaha iyo tibxaalayaasha.*
- *Inay fududeeyaan tibxaalayaal la siiyay iyaga oo isku ururinaya tibxaha isleh.*
- *Dhamaystiraan qiimayaasha tibxaha iyo tibxaalayaasha iyagoo ku badalanaya tirooyinka idil doorsoomayaasha la siiyay.*
- *Gartaan tibxaalayaasha Aljabreed iyaga oo ku salaynaya hadba tirada tibxaha ay wataan inta ay leegyihiin.*

Erayo: Madoorsoome, Doorsoome, Tibix Al jabreed, qiimaynta tibxaha iyo tibaaxlayaasha Al-jabreed.

Hordhac

Ujeedada ugu wayn ee cutub hoosaadkani waa in ay ardaydu bartaan adeegsiga doorsoomayaasha si ay ugu taagnaadaan tirooyin iyo sida la isugu keeno si ay u sameeyaan, tibxaalayaal xisaabeed oo fudud. Cutub hoosaadkan waxaa loo qaybiyay laba ciwaan hoosaad oo muhiim ah ciwaan hoosaadka hore wuxuu la xidhiidhaa qorida tibxaha iyo qiimayntooda ee tirooyinka kala duwan iyo qiimayaashooda. Si kastaba ha ahaatee waxaa lagu baran doonaa hal tibix iyo laba tibxaalayaal. Ciwaan hoosaadka labaadna waxaa lagaga hadli doonaa tibxaalayaasha fudud ee leh hal tibix iyo wax ka badan.

Qorida tibxaalayaal sidan oo kale ah iyo qiimayntooda si loo helo qiimayaashooda ayaa wuxuu noqondoona wax yaabaha ugu waa-wayn ee lagaga hadlo ciwaan hoosaadkani.

Gudbinta Cashirka

Waxaad qaybtan soo jiidasho uga dhigi kartaa adigoo ardayda u sheegaya sheekooyin yar-yar ama hal xidhaalayaal oo ku saabsan tirooyinka aan la aqoon, waxaa caawin kara xisaabaad la xidhiidha hawlhooda maalinlaha ah,.

Dhamaadka qaybtani waxaad waydiin kartaa ardaydu in ay sheegaan, madoorsoomayaasha, waydii ardaydu in ay kala saaraan madoorsoomayaasha, doorsoomayaasha iyo tibxaalaha ku jira sheekada.

Waxaad ka caawin kartaa ardayda in ay sameeyaan tibxo fudud si aad u aragto in ay fahmeen fikirka doorsoomayaasha, madoorsoomayaasha. Tibixda iyo ugu danbayntii tibxaalaha fudud, intaa kadib waxaad tusi kartaa in aad ku badasho doorsoomayaasha tibxaale tiro oo aad raadiso tirooyinka kale, kuwaas oo ah qiimayaasha tibxaalaha.

Waxaad u qaybin kartaa Fasalka laba kooxood, oo koox waxaad waydiin in ay sameeyaan tibxo kuwa kalena in ay ku qiimeeyaan tibxaalaha qaar qiimayaasha doorsoomayaasha ah ee tibxaha. Tani faa'iido ayay u yeelan kartaa haddii ay kooxuhu ay isku badalaan doorkooda oo ay sidaasi u sii wadaan iyaga oo tartamaya. Waxaa laga yaabaa in aad siiso ciwaan gaar ah oo horay loogu siisameeyay ciwaanka, si abaalmarin ahaan ah kooxda ku guulaysata, tusaale ahaan, hogaamiyayaasha tibxaalayaasha.

Jawaabaha hawlgalka 2.11. $m + 5$ birr

B = 8.00	B = 10.00	B = 50.00	B = 100.00	B = 200.00
M + 8.00	M + 10.00	M + 50.00	M + 100.00	M + 200.00

2. b) Afar kg ee liinta ah qiimahoodu = waa $4 \times 10.00 = 40.00$ birrt) shanta kg ee liinta ah qiimahoodu = waa $5 \times 10.00 = 50.00$ birr.3. b) $2x$ birr t) $3x$ birr j) yx birr x) $12y$ birr

4. b) 5kg oo burcad ah

t) $5 \times 10.00 = 50.00$.**Jawaabaha layliska 2.1**

1.

cali	h	55sm	56sm	100sm	120sm
Cabdi	$h + 10$	65sm	75sm	110sm	130sm.

2.

55	65	70	80
$2 \times 55 = 110\text{kg}$	$2 \times 65 = 130\text{kg}$	$2 \times 70 = 140\text{kg}$	$2 \times 80 = 160\text{kg}$

3. b)

1kg	2kh	5kg	Ykg
7birr	$2 \times 7 = 14$	$5 \times 7 = 35$	7y

t)

1	2	5	y
8	$2 \times 8 = 60$	$5 \times 8 = 40$	8yb

j)

$n \times 7 + n \times 8 = 15$	
$2 \times 7 + 3 \times 8 = 14 + 24 = 38\text{birr}$	
$4 \times 8 + 5 \times 7 = 32 + 35 = 67\text{ birr}$	
$7y + 8z$	

Jawaabaha hawgalka 2.2

1. Ka soo qaad in joogaagu yahay “h” markaa joogaaga oo lagu daray 50sm waa $(h + 50\text{sm})$.
2. Ka soo qaad culayskaagu in uu yahay “w” markaa culayskaaga oo laga jaray 20kg wuxuu noqondoona $(w - 20)\text{kg}$.
3. Ka soo qaad in tirada liinta ee hooyaday soo iibisay in ay ahayd “p” markaa 4 liin ah oo ka dheeri ah waxay noqon $(p + 4)$ liin ah.
4. Ka soo qaad tirada fasalkaagu in ay tahay “n”, markaa labalaabka ardaydu waxay noqon $2n$ arday.
5. Ka soo qaad dhererka Cali in uu yahay “hsm” sadex laabka dhererka cali oo shan lagu daray wuxuu noqon doonaa $(3h + 5)$.

Jawaabaha Layliska 2.2

1.
 - b) ka soo qaad culayska Basku in uu yahay “X” markaas culayska toban jeer ka badani wuxuu noqon doonaa $10x$.
 - t) ka soo qaad in dhibcaha C/qaadir ay yihiin “S” markaa haddii 20 dheeri ah lagu daro waa $S + 20$.
 - j) waxay ka kulushahay $8c^\circ$ maalintii sanadguuradan ugu danbaysay dhalashadaydu waxay noqondoontaa $t - 8c^\circ$, haddii “t” ay u taagan tahay heerkulka C° maalintii ugu dambaysay sanadguuradii dhalashadayda.
 - x) ka soo qaad “t” in ay u taagan tahay wakhtiga C/qaadir laga rajaynayay inuu soo gaadho marka 30 daqiiqo ka dib waxay noqondoontaa $t + 30$.
2.
 - b) 10 jeer buu u culus yahay sida..... kasoo qaad K in ay u taagan tahay....
 - t) da’daada oo lagu daro 20 “A” waxay u taagan tahay = da’daada?
 - j) in ka yar tirada fasalka miisaskaaga . “t” waxay u taagan tahay tirada falkaaga.
 - x) 30 sano ayuu kaa wayn yahay. y: waa da’daada.
waxaad u qori kartaa weedho tibaaxo ah oo badan haddii aad rabto mid kasta oo ka mid ah layliska qodobka 2aad.

Jawaabaha Hawlgalka 2.3

1.

b) 2	t) 3	j) 1
------	------	------
2.

b) x iyo 2	t) $2x, 3y$ iyo 5	j) 6
--------------	-------------------	------

Jawaabaha layliska 2.3

1. b)

$UV + 7V + 5$	$UV, 7V, 5$	1,7,5	UV, U, bilaa doorsoome
$Abc + bc$	$Abc + 6c$	1,6	Abc,c

2.

	Doorsoomayaal	Qaybaha doorsoomayaasha
b	4	R^2
T	12	Z^3
j	1	Zy^3
X	1	Abcd
kh	200	Ma jiro doorsoome

3. $xy + 5y$ $3x + 5y.$ **Jawaabaha Hawlgalka 2.4**

1. i. 2 gabdhood, 5 gabdhood. ii. 3 bilood, 9 bilood.
ii. $5x, 3x$
2. i. $3x, 3x$ ii. 3 bisadood, 3 bisadood
3. i. $3x, 3y$ ii. 3 bisadood, 3 digaagadood.
4. 5 miis
5. b. gabdhood iyo 2 wiil.

Maya waa 3 gabdood iyo 2 wiil ama 2 wiil iyo 3 gabdhood.

Jawaabaha Layliska 2.4

1. 1 kg basbaas + 1 kg tamaandho ah
2. 2 gabdhood iyo saddex wiil
3. 6 geel ah
4. 2 Dameer + 2dibi.
5. $2 \text{ wiil} + 6 \text{ gabdhood} + 5 \text{ wiil} - 1 \text{ gabadh.}$
 $= (2 + 5) \text{ wiil} + (6 - 1) \text{ gabdhood} = 7 \text{ wiil} + 5 \text{ gabdhood.}$
6. $2x + 6y + 5x - y = 2x + 5x + 6y - y = (2 + 5)x - (6 - 1)y = 7x + 5y$

Jawaabaha Hawlgalka 2.5

1. Qiimaha $9y$, marka $y = 1$ waa $9 \times 1 = 9$
2. Markay $y = 2$, $9y$ waxay noqonaysaa $9 \times 2 = 18$
3. Qiimaha $x + 9$, marka $x = 3$ waa $3 + 9 = 12$
4. Qiimaha $x + 9$, marka $x = 10$ waa $10 + 9 = 19$
5. Qiimaha $2x + 1$, marka $x = 5$ waa $2 \times 5 + 1 = 10 + 1 = 11$.
6. Qiimaha $2x + 1$, marka $x = 0$ waa $2 \times 0 + 1 = 1$.

Jawaabaha Layliska 2.5

1. $54 - 34 + 8 = (5 - 3)4 + 8 = 24 + 8$.
 - b) marka $u = 7$, qiimaha $2u + 8$ waxay leegtahay,
 $2 \times 7 + 8 = 14 + 8 = 22$
 - t) marka $u = 0$, qiimaha $2u + 8$ waxay leegtahay.
 $2 \times 0 + 8 = 8$
- 2.

$x = 1, y = 3, z = 5$	$8 \times 1 \times 3 \times 5 = 120$
$x = 2, y = 4, z = 5$	$8 \times 2 \times 4 \times 5 = 320$
$x = 0, y = 5, z = 7$	$8 \times 0 \times 5 \times 7 = 0$

3.

b	$2 + 2 = 4$
t	$2 \times 2 + 2 \times 3 = 4 + 6 = 10$
j	$5 + 2 = 7$

2.2 ISLE'EGYADA IYO DHEELLIYADA

Xiisadaha loo qoondeeyay 7 xiiso

Waxa ugu yar ee ardaydga laga rabo*Dhamaadka ciwaan hoosaadkan, ardaydu waxay awoodi doonaan inay:*

- *Kala saaraan farqiga u dhexeeya is leegyada iyo dheeliyada.*
- *Soo saaraan fur-furista suurta galka ah ee isleegyo lagu siiyay urur tirooyin ah.*
- *Soo saaraan fur-furista suurta galka ah ee dheeliyada ee urur tirooyin ah oo la siiyay.*

Erayo: isleeg fur-furista Isleegta, dheeliga fur-furista dheeliga.

Hordhac

Ciwaan hoosaadkani wuxuu la xidhiidhaa, isleegyada, dheeliyada iyo sida looga dooranayo fur-furistooda, urur tirooyin ah oo lagu siiyay.

Habka gudbinta Cashirka

Marka halkan la joogo ardaydu waxay yaqaaniin tibxaalayaasha xisaabeed. Ka caawi si ay isleeygo uga sameeyaan waxyaabaha nolol maalmeedkooda ah ee ay la kulmaan. Tusaale ahaan, haddii ay garanayaan inta ay guryahoogu ka fogyihiin Iskuulka, waxay samayn karaan weedho sidan oo kale ah:

- Gurigaygu wuxuu laba jeer uga dhawyahay inta uu iskuulku u jiro guriga Abiib. Waxay samayn karaan isleeygo iyadoo adeegsanaya dhereradooda, culaysyadooda, da'dooda tusaale ahaan anigu 5sm ayaan ka gaabanahay ardayga idhinac fadhiya.
- Laba sano ayaan ka yarahay walaashayda iga wayn. Gurigaygu wuxuu 2km ka dhawyahay iskuulka dhinaca suuqa IWM.

Jawaabaha Hawlgalka 2.6

1. b) i. ka soo qaad lacagta sanduuqa ku jirtaa inay tahay “X” markaa, labanlaabka lacagta sanduuqa ku jirtaa waa $2x$. Haddii labanlaabka lacagta sanduuqa ku jirtaa ay leeg tahay 20birr. Markaa waxaynu haynaa hawraarta $2x = 20$. Markaa isku day qiimaynta tibaaxda $2x$, oo $x = 5$, $x = 8$ iyo $x = 10$, sida laguugu muujiyay shaxanka hoose.

x	$x = 5$	$x = 8$	$x = 10$
$2x$	$2 \times 5 = 10$	$2 \times 8 = 16$	$2 \times 10 = 20$

Waxaad aragtaa waxaynu rabnay $2x$ inay leekaato 20 oo markaynu qiimayno waa 10, taasi oo aynu ku helayno 20, sidaasi darteed waa in ay ku jiraan 10birr sanduuqa. Waxaynu odhanaynaa $x = 10$, waa fur-furista isleegta $2x = 20$.

- ii) ka soo qaad tirada aan la aqoon “Y”.

- saddex laabka tiro oo 5 lagu daray waa $3y + 5$
- saddex laabka tiro oo lagu daray 5 waxay leegtahay 20. Markaa waxaynu haynaa isleegtan $3y + 5 = 20$, waxay u taagan tahay masalo.
- Hada, isku day “Y” inaad ku badasho 2, 3 iyo 5, midiiba hal mar oo aad hesho qiimayaal kala duwan.

$y = 2$	$y = 3$	$y = 5$
$3 \times 2 + 5 = 11$	$3 \times 3 + 5 = 14$	$3 \times 5 + 5 = 20$

Waad aragtaa in midka ugu danbeeyaa uu waafaqayo odhaahdii, markaa waa fur-furista isleegta $3y + 5 = 20$.

Jawaabaha Layliga 2.6

- $8 - 5 = 9$ Been
 $14 - 5 = 9$ Run.
- b) kasoo qaad walaashay da'deedu inay tahay "X" walaashay laba sano ayay iga wayntahay, aniga markaa da'daydu waa $x - 2$, oo $x - 2 = 20$, sababtoo ah anigu waxaan ahay 20. Isleegta aan helaynaana waa $x - 2 = 20$.

doorsoome	$x = 10$	$x = 12$	$x = 15$	$x = 22$
Isleegyda kadib ku badalaada	$8 = 20$	$10 = 20$	$13 = 20$	$20 = 20$
Run/Been	Been	Been	Been	Run

$x = 22$ waa fur-furista.

- ka soo qaad xadiga Daafida ee aan bishan soo iibsanay inay ahayd ykg. Markaa xaddiga daafida aanu bishii hore soo iibsanay waa, $3y$ kgh.

Haddii waxa bilihii hore aanu iibsanay ay ahayd 75kg waxaan haynaa isleegta $3y = 75$.

	$y = 20$	$y = 25$	$y = 35$
Isleegta ku badalashada ka dib	$60 = 75$	$75 = 75$	$90 = 75$
Run/Been	Been	Run	Been

$x = 25$, waa fur-furista.

Jawaabaha hawlgalka 2.7

- Ugu badnaan ilmo kastaa oo da'daada ahi wuxuu dooran roodhida xagga midig. Ma garanaysaa sababta? Sababtoo ah way ka balaadhan tahay oo ay ka dheer tahay. Haddii aan si kale u sheegnana way ka wayn tahay.

2.

ka weyn	>
Ka yar	<
Leeg	=
Le'kayn	≠

3. i. $2 \neq 5$ ii. $2 < 5$ iii. $5 > 2$

4. ka soo qaad da'daadu inay tahay "A" da' da saaxiibkaana ay tahay "B".

Hadii aad saaxiibkaa ka weyn tahay	$A > B$
Hadii saaxiibkaa kaa weyn yahay	$A < B$
Hadii adiga iyo saaxiibkaa aad isle'eg tihiin	$A = B$

5. ka soo qaad dhibcahaagii xisaabta ee jajabyadii ugu dambeeyay ee aad gashay inay ahayd "S", ka soo qaad H inay ahayd dhibcihii ugu saraysay fasalka ee isla tijaabadaasi.

Haddii aad keentay dhibcihii ugu sareeyay

$$S = H$$

Haddi kale

$$S < H.$$

Jawaabaha Hawlgalada 2.8

- b. i) had iyo jeer waa run (ii) had iyo jeer waa been.
- t. marka "X" ee (iii) lagu badalo 4 waxaynu helnaa hawraarta $4 + 2 < 5$ ama $6 < 6$, tani waa hawraar been ah ama waa dheeli oo isma leeka.
- j. marka "X" lagu badalo 2, waxaan helaynaa $2 + 2 < 5$ ama $4 < 5$, waa hawraar run ah.
- x. haddii "X" 2, ee (iv) waxaynu heli $2 - 2 < 2$, taasi oo la mid ah, $0 < 2$, waa run.
- Kh. haddii "X" lagu badalo 2, ee (iv), waxaynu heli $3 - 2 < 3$ ama $1 < 3$, waa run, kadib tiro kasta $x - 2 < x$ had iyo jeer waa run.
- d. haddii aynu "X" ka badalno 2, ee 5, waxaynu heli $0 > 2$, waana been, ku day tiro kasta ma heli doontid qiimaha "X" kaasi oo samayndoona hawraarta $x - 2 > x$, waa run, markaa had iyo jeer waa been.

Jawaabaha Layliga 2.7

1. b) $6 - 5 > 9$ Been
- t) $10 > 4$ Run

2. b) ka soo qaad tirada kalluunada uu ninku siday inay ahayd, marka $2n > 100$, waa dheelliga u taagan waxa uu ninku yidhi.
- t) ka soo qaad in tirada hore ay tahay “x” oo ay talabaadna tahay “y”, markaa $x < 5y - 7$.

Jawaabaha Layliga Guud

1.

Shaayad	Aabahay wuxuu soo iibsaday	Hooyaday waxay soo iibsatay	Wadar
Muus	3kg	5kg	8kg
Liin dhanaan	1kg	2kg	3kg
Liin	5kg	3kg	8kg
Bas-baas/qaji	1kg	1kg	2kg
Basal	5kg	10kg	8kg
tamaandho	4kg	6kg	10kg

Waxay kharash gareeyeen

- $8\text{kg} \times 6.00\text{birr/kg} = 48\text{birr}$ muuskas
- $3\text{kg} \times 12.00\text{birr/kg} = 36.00\text{birr}$, liin-dhanaan.
- $8\text{kg} \times 10.00\text{birr/kg} = 80.00\text{birr}$, liin.
- $15\text{kg} \times 7.00\text{birr/kg} = 105.00\text{birr}$, Basal.
- $2\text{kg} \times 16.00\text{birr/kg} = 32.00\text{birr}$, bas-baas.
- $10\text{kg} \times 8.00\text{birr/kg} = 80.00\text{birr}$, tamaandho.

Waxaad ogaataa in tani tahay tusaale ku fiican si ay ardaydu ku fahmaan fikirka ah tibxaha is leh iyo fududaynta, ku qiimaynta tibxaalayaasha qiime isku mid ah. Midhaha iyo khudaarta kala duwan waxaa u taagnaan kara doorsoomayaal, sida “t” oo u taagan tamaandho iyo “k” oo u taagan basasha IWM.

Haddii aad ku badasho doorsoomaha “t” qiimaha 1kg ee tamaandhada ah, waxaad heli xadiga lacageed ee lagu kharash gareeyay 10kg ee tamaandhada ah IWM.

2.

y	$y + y = 2y$	$3y$	$y + 2$	$y - 3$
$40y$	$2 \times 40y = 80y$	$3 \times 40y = 120y$	$40 \times (y+2)$	$40(y-3)$

3. i) $x = 5$ ii) $x = 5$ iii) $u = 6$ iv) $m = 2$
 v) $m = 8$ vi) $z = 24$ vii) $x = 2$

4. ka soo qaad "X" in ay tahay tiro aan la aqoon, markaa, $x + 5 = 16$, tirada aan raadinaynaa waa 11.
5. Ka soo qaad tirada may tahay z , $3z - 7 = 29$, tirada aan raadinaynaa waa 12.
6. Ka soo qaad tirada in ay tahay "x", markaa $x > 0$ iyo $x < 5$. Tiradani waa in ay labada dheeliba run ku noqotaa wakhtigan waxaa jira in ka badan hal furfuriis, $x = 1$, $x = 2$ iyo $x = 3$, waxay furfuriis u yihiin dheeliga.
7. Ka soo qaad tirada aan la aqoonin in ay tahay "u", ku dar 4, waxaad heli $u + 4$.
 $u + 4 = 5u$.
 $u = 1$, waa fur-furista isleegtan.
8. Ka soo qaad labada tiro oo aan la aqoon ta yari may tahay "x" .markaa ta ku xigtaa waxay noqon $x + 1$, markaa $x + (x + 1) = 17$ ama $2x + 1 = 17$, u qaado $x = 8$, oo hubi, way raali galinaysaa isleegta.
9. Ka soo qaad in ay da'daydu tahay "X", da'da Aabahay waa $3x$, wadarta da'daydu waa $x + 3x = 4x = 64$. Markaa waxaynu haynaa isleegta $4x = 64$, markaa u qaado $x = 16$, oo fiiri way raaligalinaysaa isleegta, markaa da'daydu waa 16, da'da Aabahayna waa: $3 \times 16 = 48$.
10. Ka soo qaad $x =$ dhererka caasha
 $y =$ dhererka walaasheeda ka yar
 $x = 2y$
 $x - y = 10$ kubadal x halkii $2y$ ee isleegta labaad
 $x - y = 10$
 $2y - y = 10$
 $y = 10$
Dhererka caasha = x , halkaas oo $x = 2(10) = 20$ sm.
11. b. ka soo qaad tirada aan la garanayn inay tahay "X", markaa $10x > 10$. Dhamaan tirooyinka marka laga reebo, $x = 1$, eeg in dheeligani run yahay, markaa waxaad qaadan kartaa tiro kasta oo kawayn 1 fur-furiis ahaan.
- t. ka soo qaad tirada aan la garanayn inay tahay "Z", ka soo qaad tirada aan la garanayn inay tahay "W" markaa waxaynu haynaa. $z > w - 7$, $z = 4$.

Furfuriis

$Z = 1$ iyo $w = 2$ waa fur-furista.

$Z = 5$ iyo $w = 3$ waa urur fur-furiis kale.

Sidoo kale qaar kale ayaad raadin kartaa.

CUTUB 3 JAJABYADA, JAJAB TOBANLEYAASHA IYO AFARTA XISAABFAL

HORDHAC

Ujeedada ugu muhiimsan ee cashirkani waxa weeyi, sidii loo balaadhin lahaa oo loo faahfaahin lahaa aqoontii ay hore u hayeen ardaydu ee ku saabsanayd jajabyada iyo jajab tobanlayaasha.

Cutubkani waxaa loo sii qaybiyay 5, ciwaan, kuwaasi oo labada cutub ee ugu dambeeya loogu sii qaybiyay laba ciwaan hoosaad. Ciwaanada la xidhiidha cutubku waa; noocyada jajabka, boqolayda oo jajab ah, isbar-bardhiga iyo habaynta jajabyada, adeegsiga jajabyada iyo adeegyada jajabtobanlaha.

Ujeedooyinka cutubka

Dhamaadka cutubkan ardaydu waxay awoodi doonaan inay:

- *Ogaadaan noocyada jajabka*
- *Inay fahmaan fikirka boqolayda iyo xeerasha u badalida boqolayda loo badalayo jajabyo iyo jajab tobanle.*
- *Ogaadaan habka isbarbar dhiga jajabyada.*
- *Kaga shaqeeyaan afarta xisaab fal ee aasaasiga ah, jajabka iyo jajab toban lahaba.*

Kaabayaasha waxbarashada ee lagu taliyay cutubkan

Marka lagu daro buuga ardayga iyo buugaga macalinka waxaa kale oo lagula talinayaa inaad keento kuwan soo socda fasalka dhexdiisa, markasta oo uu ciwaanku u baahdo. Xataa waxaad u diri kartaa ardaydu in ay soo diyaariyaan oo ay keenaan fasalka dhexdiisa.

Saabaanka loo baahanyahay

- Shaxda iskugaynta jajabka.
- Shaxda kalagoynta jajabka.
- Warqado ad-adag oo ay ku qoran tahay jajabyo togan oo kala duwan.
- Shax ka kooban qiimayaal gaar ah oo la xidhiidha jajab ma qumane iyo tirooyin dhafan.
- Kaadhasha ad-adag oo ka kooban hababka iskugaynta iyo kalagoynta jajabyada.
- Laba jibaaranayaal loo qayb-qaybiyay 100 laba jibaarane oo isleeg si loo muujiyo fikirka boqolkiiba.
- Xeerasha fudud ee iskugaynta jajabyada.
- Sawirada gobolada laba jibaarane ee muujinaya iskudhufashada.
- Shaxda u badalida jajabyada jajab tobanle.
- Shaxda tilmaamaysa xeerka iskuqaybinta jajab tobanlaha.
- Shaxda muujinaysa xeerasha (tallaabooyinka) ee iskudhufashada jajab tobanlaha.

3.1 NOOCYADA JAJABYADA

Xiisadaha loo qoondeeyay 4 xiisadood

Karti

Dhamaadka cutub hoosaadkan ardaydu waxay awoodi doonaan inay:

- *Kala gartaan jajab quman, jajab maqumane iyo tirooyinka dhafan.*
- *U badalaan jajab maqumane tiro dhafan.*
- *U badalaan tirooyinka dhafan jajab maqumane.*

Erayo (kalmado): Jajabyo, Jajab qumane, Jajab maqumane, Sareeye, Hooseeye, Tirooyin dhafan.

Hordhac

Ujeedada ugu wayn ee cutub hoosaadkani waa si loo kala garto noocyada jajabyada. Sida jajabka quman iyo jajab maqumanaha iyo kaalmaynta ama caawinta

ardayda si ay ugu badalaan jajabyo maqumanayaal ah tirooyin dhafan iyo sidaasi cagsigeeda.

Habka gudbinta cashirka

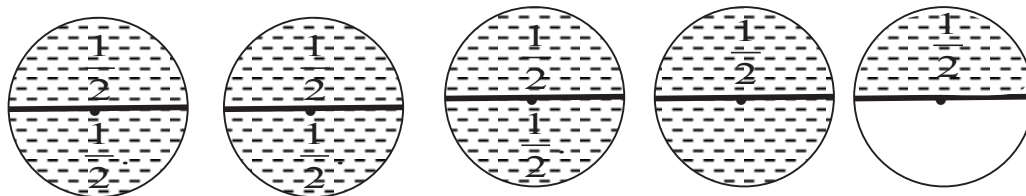
Waydii ardaydu waxa ay ku soo barten ee ku saabsan jajabyada ee fasaladii hoose oo ardaydu ha garteen macnaha jajab quman, jajab ma qumane iyo tirooyinka dhafan. Ka caawi in ay u badalaan jajab maqumane, tirooyin dhafan iyo taasi cagsigeed. Markaa waxaad siiwadi kartaa hawlgalka 3.1, waa inuu ardayda ka caawiyo si ay u xasuustaan wixii ay ku soo barten fasalka 4^{aad} oo ay kala gartaan noocyada jajabka.

Markaa kadib sii ardayda toban daqiiqo oo ay ku falanqeeyaan, waydiina arday kastaa inuu ka jawaabo su'aalkasta. Ugu danbayntii fallanqee jawaabohooda oo ka bixi jawabaha saxda ah.

Xaqiiji in ay ardaydu garanayaan macnaha jajabyada quman, jajab maqumanaha iyo tirooyinka dhafan.

Jawaabaha hawlgalka 3.1

1. Qaybta arday kastaba waa $\frac{1}{2}$.
2. Sawir sawirada $4\frac{1}{2}$ liimood, waydii ardayda inta badh ee ku jirta shaxanadan hoose.



9 badh ayaa la hadheeyay. Markaa macalinku ha siiyo 9 arday.

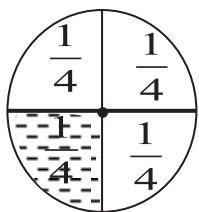
3. waa qayb ka mid ah wax dhan.
4. $\frac{3}{4}$ iyo $\frac{5}{8}$ waxaa la yidhaa jajab qumane.

Jajab	Sareeye	Hooseeye
$\frac{3}{4}$	3	4
$\frac{5}{8}$	5	8
$\frac{7}{5}$	7	5
$\frac{21}{23}$	21	23

Lamaana hore ee $\frac{3}{4}$ iyo $\frac{5}{8}$ waxaa la yidhaa jajab quman.

Lamaanaha labaad ee $\frac{7}{5}$ iyo $\frac{21}{23}$ waxaa la yidhaahdaa jajab maqumane.

5. Qaybta arday kastaa waa $\frac{1}{4}$.

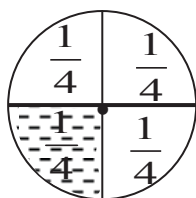


Jawaabaha shaqo kooxeedka 3.1

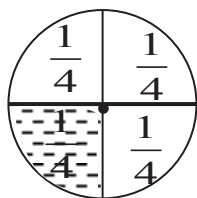
U qaybi fasalka laba kooxood oo sii su'aasha koowaad kooxda koowaad, su'aasha labaadna kooxda labaad.

Ka caawi koox kastaba in ay ka jawaabaan su'aasha iyadoo lagu sawirayo oo la hadhaynayo qaybta sabuurada fasalka ugu saxan sidan hoos ka muuqata.

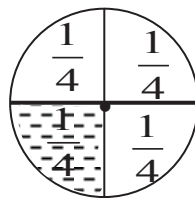
- 1.



Liinta 1^{aad}

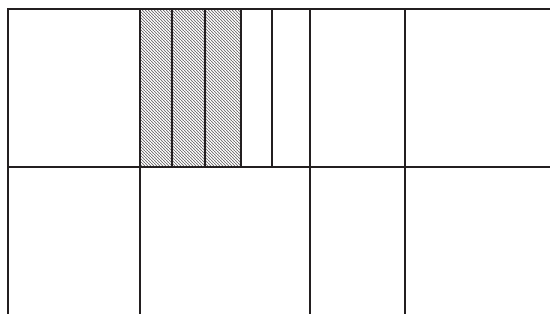


liinta 2^{aad}



liinta 3^{aad}

2. Qaybta la hadheeyay marka la barbar dhigo dhamaan laydiga waa $\frac{3}{8 \times 5} = \frac{3}{40}$



Ugu dambayn waxay ardaydu garawsanaaan qaybqaybinta ah:

$$a \frac{b}{c} = a + \frac{b}{c} = \frac{c \times a + b}{c}$$
 ee a, b, iyo c, ay yihiin dhamaan tirooyinka tirsiiimo

halkaasoo $b < c$.

Jawaabaha layliga 3.1

1. b) $\frac{9}{12} = \frac{3 \times 3}{4 \times 3} = \frac{3}{4} \times \frac{3}{3} = \frac{3}{4} \times 1 = \frac{3}{4}$
 t) $\frac{24}{30} = \frac{4 \times 6}{5 \times 6} = \frac{4}{5} \times \frac{6}{6} = \frac{4}{5} \times 1 = \frac{4}{5}$
 j) $\frac{75}{100} = \frac{3 \times 25}{4 \times 25} = \frac{3}{4} \times \frac{25}{25} = \frac{3}{4} \times 1 = \frac{3}{4}$
 x) $\frac{22}{18} = \frac{11 \times 2}{9 \times 2} = \frac{11}{9} \times \frac{2}{2} = \frac{11}{9} \times 1 = \frac{11}{9}$
 Kh) $\frac{45}{25} = \frac{5 \times 9}{5 \times 5} = \frac{5}{5} \times \frac{9}{5} = 1 \times \frac{9}{5} = \frac{9}{5}$
2. b) D t) B j) A x) F kh) C
3. $\frac{11}{12}, \frac{33}{40}$ iyo $\frac{21}{23}$ waa jajabyo quman.
4. b) $\frac{22}{5} = \frac{20+2}{5} = \frac{20}{5} + \frac{2}{5} = 4 + \frac{2}{5} = 4\frac{2}{5}$
 t) $\frac{34}{6} = \frac{30+4}{6} = \frac{30}{6} + \frac{4}{6} = 5 + \frac{4}{6} = 5 + \frac{2}{3} = 5\frac{2}{3}$
 j) $\frac{11}{4} = \frac{8+3}{4} = \frac{8}{4} + \frac{3}{4} = 2 + \frac{3}{4} = 2\frac{3}{4}$
 x) $\frac{18}{7} = \frac{14+4}{7} = \frac{14}{7} + \frac{4}{7} = 2 + \frac{4}{7} = 2\frac{4}{7}$
 kh) $\frac{43}{7} = \frac{42+1}{7} = \frac{42}{7} + \frac{1}{7} = 6 + \frac{1}{7} = 6\frac{1}{7}$

$$5. \quad \text{b) } 1\frac{2}{3} = \frac{3 \times 1 + 2}{3} = \frac{3 + 2}{3} = \frac{5}{3}$$

$$\text{t) } 4\frac{3}{5} = \frac{5 \times 4 + 3}{5} = \frac{20 + 3}{5} = \frac{23}{5}$$

$$\text{j) } 2\frac{4}{7} = \frac{7 \times 2 + 4}{7} = \frac{14 + 4}{7} = \frac{18}{7}$$

$$\text{x) } 11\frac{1}{2} = \frac{2 \times 11 + 1}{2} = \frac{22 + 1}{2} = \frac{23}{2}$$

$$\text{Kh) } 17\frac{1}{4} = \frac{4 \times 17 + 1}{4} = \frac{68 + 1}{4} = \frac{69}{4}$$

6. $\frac{20}{11}, \frac{52}{35}$ iyo $\frac{5}{3}$ waa jajab maqumane.

7. Qaybta qofkiiba waa $\frac{8}{12}$.

8.

	Jajab	Dhafan, quman, maqumane
B	$2\frac{3}{4}$	Tiro dhafan
T	$\frac{7}{3}$	Jajab maqumane
J	$\frac{9}{10}$	Jajab qumane
X	$\frac{24}{5}$	Jajab maqumane

Qiimayn

Adeegso hababka farsamo oo toos ah ama aan toos ahayn oo kala duwan si aad u qiimayso ardaydaada.

Sii masalooyin layliseed, waydii su'aalo afka ah, shaqo kooxeed, shaqo guri, shaqo fasal. Si ay kaaga caawiso farsamooyinka qiimaynta si aad u hubiso wax qabadka ardayda markaasi waad caawin kartaa ardayda shaqsi-shaqsi xilliga barid barshada dhaxdeeda. Caadayso inaad 1 ama 2 su'aalood siiso casharkastaa marka uu dhamaado, waxay ku dhiiri galin doontaa ardayda inay hore u sii akhriyaan ciwaanka.

3.2 BOQOLAYDA OO JAJAB AHAAN AH

Xiisada loo qoondeeyay 5 xiisadood

Karti

Dhamaadka ciwaan hoosaadkan waxay ardaydu awoodi doonaan inay:

- U tibaaxaan boqolayda jajab ahaan.
- U badalaan boqolayda jajab tobanle.

Erayo (kalmado): Boqolay, Jajab guud, Jajab, Jajab tobanlayaal, Jajab tobanle, La hadheeyay, Aan la hadhayn.

Hordhac

Cutub hoosaadkani waxa uu la xidhiidhaa boqolayda oo jajab ahaan ah iyo jajab tobanle. Ciwaanku wuxuu inta badan diirada saarayaa sida loogu tibaaxo boqolayda jajab ahaan iyo jajab tobanle.

Habka Gudbinta Cashirka

Si aad u bilawdo casharka, sawir gobol labajibaarane ah oo u qaybi 100 qaybood oo isleeg, oo u fiirso gobolada la hadheeyay ee kala duwan ee leh midabo kala duwan, sida hawgalka lagu muujiyay 3.2. markaana ardayda waxaad waydiisaa waa maxay qaybta shaxanka ka midka ah ee lagu hadheeyay midabka huruuda?

Waa maxay qaybta lagu hadheeyay casaanku?

Maxaad u taqaanaa jajabyadaasi? Sii ardayda 5 ilaa 10 daqiiqo si ay ugu falanqeeyaan oo waydii arday kastaba inuu ka jawaabo su'aalaha, ugu dambayntii, falanqee jawaabaha, oo sii jawaabaha saxda ah, waa in aad xaqiijisaa in ay ardaydu garanayaan macnaha boqolay, iyo u badalida boqolayda jajab iyo jajab tobanle.

Jawaabaha Hawlgalka 3.2

- shaxanka 3.5 ee buuga ardayga ku yaal waxaa loo qaybiyay 100 qaybood oo isleeg oo 18 ka mid ah lagu hadheeyay huruud, taasi oo ah 18, kamid ah boqolka goobo ee laba jibaaranaha, waxaa lagu hadheeyay Huruud. Markaa $\frac{18}{100}$ waxaa lagu hadheeyay huruud.
 - 16 ka mid ah 100 ka qaybood ee isleeg waxaa lagu hadheeyay Casaan.
 - $1 + 10 + 16 + 7 = 34$ oo ka mid ah 100ka qaybood ee laba jibaaranaha waxaa lagu qoray ama lagu hadheeyay xuruufta kala ah A, B, C, iyo F. Sidaasi daraadeed $\frac{34}{100}$ waxaa lagu hadheeyay xuruufta kala ah A,B,C, iyo F.
 - 43 oo ka mid ah 100 ka qaybood lama hadhayn, markaas $\frac{43}{100}$ lama hadhayn.

2. Shaxanka 3.6 goobada waxaa loo qaybiyay 10 qaybood oo isleeg, qayb kastaa waxay ka kooban tahay 10 buug. Waxaa jira markaa 10×10 buug = 100 buug.
- b) 100 buug ayaa ku jirta shaxanka
- t) 7 gobol ayaa la hadheeyay markaa $7 \times 10 = 70$ buug, ayaa ku jira gobolada la hadheeyay.
- j) $\frac{70}{100}$ oo buug ayaa ku jira gobolada la hadheeyay.

Jawaabaha Layliga 3.2

1. b) $70\% = \frac{70}{100} = \frac{7 \times 10}{10 \times 10} = \frac{7}{10} \times \frac{10}{10} = \frac{7}{10} \times 1 = \frac{7}{10}$
- t) $60\% = \frac{60}{100} = \frac{3 \times 20}{5 \times 20} = \frac{3}{5} \times \frac{20}{20} = \frac{3}{5} \times 1 = \frac{3}{5}$
- j) $55\% = \frac{55}{100} = \frac{11 \times 5}{20 \times 5} = \frac{11}{20} \times \frac{5}{5} = \frac{11}{20} \times 1 = \frac{11}{20}$
- x) $26\% = \frac{26}{100} = \frac{13 \times 2}{50 \times 2} = \frac{13}{50} \times \frac{2}{2} = \frac{13}{50} \times 1 = \frac{13}{50}$
- kh) $33\% = \frac{33}{100}$
2. b) $2\% = \frac{2}{100} = 0.02$ (urarida laba god xaga bidix)
- t) $12\% = \frac{12}{100} = 0.12$ (urarida laba god xagga bidix)
- j) $175\% = \frac{175}{100} = 1.75$ (urarida laba god xaga bidix)
- x) $25\% = \frac{25}{100} = 0.25$ (urarida laba god xaga bidix)
- kh) $89\% = \frac{89}{100} = 0.89$ (urarinta laba god xaga bidix)
3. b) $\frac{41}{100} = P\% = \frac{P}{100}$. Markaa $P = 41\%$
- t) $\frac{24}{100} = P\% = \frac{P}{100}$. Markaa $P = 24\%$
- j) $\frac{7}{50} = \frac{7 \times 2}{50 \times 2} = \frac{14}{100} = P\% = \frac{P}{100}$ Markaa $P = 14\%$
- x) $\frac{11}{25} = \frac{11 \times 4}{25 \times 4} = \frac{44}{100} = \frac{P}{100}$. Markaa $P = 44\%$

4. qaybaha la hadheeyay = 12, qaybaha aan la hadhayn = 8.
Wadarta qaybaha = la hadheeyay + aan la hadhayn.
= 12 + 8 = 20.

b) boqolkiiba inta la hadheeyay = $\frac{12}{20} = \frac{12 \times 5}{20 \times 5} = \frac{60}{100} = 60\%$

t) boqolkiiba inta aan la hadhayn = $\frac{8}{20} = \frac{8 \times 5}{20 \times 5} = \frac{40}{100} = 40\%$

5. $25\% = \frac{25}{100}$

$$\frac{1}{4} = \frac{1 \times 25}{4 \times 25} = \frac{25}{100}$$

$$0.25 = 0.25 \times \frac{100}{100} = \frac{25}{100}$$

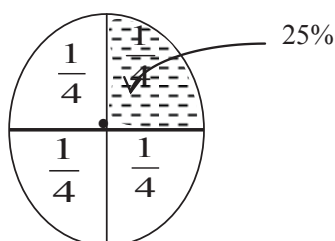
Sidaas darteed; $25\% = \frac{1}{4} = 0.25$.

6. $\frac{30}{60} = \frac{30}{60} \times 100\% = \frac{30 \times 100}{60} \% = \frac{50 \times 60}{60} \% = 50\%$

7. $\frac{87}{100} = 87\%$ sidaasi darteed wuxuu ka jawaabay.

87% su'aalaha.

8.



9. Dhibceheedu waa $\frac{44 \times 2}{50 \times 2} = \frac{88}{100} = 88\%$

10. Boqolkiiba wiilashu waa = $100\% - 30\%$.

$$= \frac{100}{100} - \frac{30}{100} = \frac{100 - 30}{100} = \frac{70}{100} = 70\%$$

Boqolkiiba wiilashu waa = 70%.

Qiimayn

Xusuuso kartiga ugu yar ee barashada, kuwaas oo ardayda laga rajaynayo. Adeegso habab farsamo oo toos ah ama aan toos ahayn oo kala duwan, si aad u cabirto heerka fahanka ee cutub hoosaadka.

Sii hawlgal su'aalo afka ah, shaqo guri, shaqo fasal iyo su'aalo kadis ah oo aad u adeegsato farsamooyin qiimayn, ahaaneed si ay kaaga caawiso ururinta, xogta la xidhiidha ama fahanka wax qabadka ardayga, sidaas daraadeed waad caawinkartaa ardayda xiliga wax dhigida, waydii ardayda hal ama laba su'aalood dhamaadka cashirka, taasi oo ku dhiiri galin doonta in ay cashirka xiga.

3.3 ISBARBARDHIGA IYO HABAYNTA JAJABKA

Xiisadaha loo qoondeeyay 8 xiisadood

Karti

Dhamaadka cutub hoosaadkn ardaydu waxay awoodi doonaan:

- *Inay isbar-bardhigaan jajab yada.*

Ereyo (kalmado)

- Isbar-bardhig, habayn, jajabyada isku dhigma, hooseeyayaasha isku midka ah, boqolay, kordhaya, dhinmaya.

Hordhac

Ujeedada ugu muhiimsan ee cutub hoosaadkani waa in la isbar-bardhigo oo la habeeyo jajabyada fudud ee leh hooseeyayaasha isku midka ah iyo kuwa hooseeyayaashoodu kala duwan yihiin, waxaa intaasi sii dheer, ciwaankani wuxuu la xidhiidhaa isbar-bardhiga labo ama wax ka badan iyada oo loo eegayo habka kordhaya ama dhinmaya.

Gudbinta cashirka

Si cashirka loo bilaabo xusuusi ardayda in ay ku soo barten isbar-bardhiga iyo habaynta tirooyinka idil cutubkii koowaad, waydii siday isku bar-bardhigi lahaayeen jajabyada fudud ee leh hooseeye isku mid ah iyo kuwa hooseeyayaashoodu kala duwan yihiin.ka kaalmee siday ardaydu isku barbar dhigi lahaayeen jajabyada fudud ee leh hooseeye isku mid ah. Ha ka shaqeeyaan oo ha falanqeeyaan hawlgalka 3.3 iyo shaqo kooxeedka 3.2 ee lagu siiyay buuga ardayga,

ku dhiiri gali in uu arday kastaaba la yimaado su'aalo ama ka jawaabo oo uu la falanqeeyo, oo sii jawaabta saxda ah. Ugu dambayntii ka caawi ardaydu in ay isbambardhigaan jajabyada fudud ee leh hooseeyayaal isku mid ah adigoo adeegsanaya jajabyada isku dhigma ee leh hooseeyaha isku mid ah.

Jawaabaha hawgalka 3.3

- $\frac{2}{3}$ iyo $\frac{4}{6}$ waa jajabyo isku dhigma.
- Markaynu ku dhufano hooseeye ama sareeye ee jajab lagu siiyay tiro idil oo isku mid ah oo aan eber ahayn waxaynu helaynaa isleegyo isku mid ah.
- Si aad isku barbar-dhigto arday kasta adeegso jajabyada isku dhigma, taasi oo

$$\text{ah } 1\frac{2}{9} = \frac{11}{9} \quad 1\frac{2}{5} = \frac{7}{5}$$

$$1\frac{7}{20} = \frac{27}{20}$$

Dhufsanayaraaha ay wadaagaan ee jajabkani $\frac{11}{9}$, $\frac{7}{5}$ iyo $\frac{27}{20}$ waa 180

$$\text{Markaa; } 1\frac{2}{9} = \frac{11}{9} \times \frac{20}{20} = \frac{220}{180} \dots \text{dherer}$$

$$1\frac{2}{5} = \frac{7}{5} \times \frac{36}{36} = \frac{252}{180} \dots \text{dherer}$$

$$1\frac{7}{20} = \frac{27}{20} \times \frac{9}{9} = \frac{243}{180} \dots \text{dherer}$$

b) ayaa ugu gaaban

t) ayaa ugu dheer

Jawaabaha shaqo kooxeedka 3.2

Shaqo kooxeedka 3.2 waxay leedahay jawaabo kala duwan ee iskuulo kala duwan, kaasi oo ardayda fasalka shanaad lagu diwaan galiyay. Ka kaalmee ardaydu inay ka jawaabaan su'aalahaasi.

Jawaabaha layliska 3.3

$$1. \quad \text{b) } \frac{3}{5} = \frac{3 \times 3}{5 \times 3} = \frac{9}{15}$$

$$\text{t) } \frac{4}{7} = \frac{4 \times 3}{7 \times 3} = \frac{12}{21}$$

$$\begin{aligned} \text{j)} \quad & \frac{11}{12} = \frac{11 \times 3}{12 \times 3} = \frac{33}{36} \\ \text{x)} \quad & \frac{14}{15} = \frac{14 \times 3}{15 \times 3} = \frac{42}{45} \\ \text{kh)} \quad & \frac{8}{3} = \frac{8 \times 3}{3 \times 3} = \frac{24}{9} \end{aligned}$$

2. Ubadal jajabyadan $\frac{3}{5}$ iyo $\frac{17}{20}$ jajabayo leh hooseeye isku mid ah. Hooseeyaha

$$\text{ay wadaagaan } \frac{3}{5} \text{ iyo } \frac{17}{20} \text{ waa } 20. \text{ Taas oo ah } \frac{3}{5} = \frac{3 \times 4}{5 \times 4} = \frac{12}{20}$$

$$\text{markaa } 12 < 17, \text{ markaa } \frac{12}{20} < \frac{17}{20}$$

Waxay ina tusaysaa $\frac{3}{5} < \frac{17}{20}$. Sidaaasi darteed, $\frac{17}{20}$ way ka wayn tahay $\frac{3}{5}$.

$$\begin{aligned} 3. \quad \text{b.} \quad & \frac{3}{8} < \frac{1}{2} & \text{t.} \quad & \frac{2}{5} < \frac{3}{5} & \text{j.} \quad & \frac{11}{10} < \frac{13}{10} \\ \text{x.} \quad & \frac{3}{8} > \frac{2}{7} & \text{kh)} \quad & \frac{5}{6} < \frac{15}{16} & \text{d)} \quad & \frac{7}{10} > \frac{69}{100} \end{aligned}$$

4. b) hooseeyaha ay wadaagaan ee jajabyadani $\frac{2}{5}, \frac{23}{25}, \frac{3}{20}$ iyo $\frac{3}{10}$ waa 100

$$\frac{2}{5} = \frac{2 \times 20}{5 \times 20} = \frac{40}{100}$$

$$\frac{23}{25} = \frac{23 \times 4}{25 \times 4} = \frac{72}{100}$$

$$\frac{3}{20} = \frac{3 \times 5}{20 \times 5} = \frac{15}{100}$$

$$\frac{3}{10} = \frac{3 \times 10}{10 \times 10} = \frac{30}{100}$$

Maadaama $15 < 30 < 40 < 72$, markaa $\frac{15}{100} < \frac{30}{100} < \frac{40}{100} < \frac{72}{100}$ waa

$\frac{3}{20}, \frac{3}{10}, \frac{2}{5}, \frac{23}{25}$ habka kordhaya.

- b) hooseeyaha ay wadaagaan jajabyadani waa $\frac{11}{3}, \frac{15}{4}$ iyo $\frac{9}{7}$ waa 84.

$$\text{Taasi oo ah } \frac{11}{3} = \frac{11 \times 28}{3 \times 28} = \frac{308}{84}$$

$$\frac{15}{4} = \frac{15 \times 21}{4 \times 21} = \frac{315}{84}$$

$$\frac{9}{7} = \frac{9 \times 12}{7 \times 12} = \frac{108}{84}$$

Maadaama $108 < 308 < 315$, markaa $\frac{108}{84} < \frac{308}{84} < \frac{315}{84}$

Sidaasi darteed jajabyadani $\frac{9}{7}, \frac{11}{3}, \frac{15}{4}$ waxay u yaalaan habka kordhaya.

5. b) hooseeyaha ay wadaagaan jajabyadani $\frac{2}{5}, \frac{4}{9}$ iyo $\frac{21}{50}$ waa 450.

Markaas:

$$\frac{2}{5} = \frac{2 \times 90}{5 \times 90} = \frac{180}{450}$$

$$\frac{19}{25}, \frac{19 \times 4}{25 \times 4} = \frac{76}{100}$$

$$\frac{17}{20}, \frac{17 \times 5}{20 \times 5} = \frac{85}{100}$$

Maadaama; $180 < 189 < 200$, markaa $\frac{180}{450} < \frac{189}{450} < \frac{200}{450}$ markaa

$$\frac{4}{9} < \frac{21}{50} < \frac{2}{5}$$

$\frac{4}{9}, \frac{21}{50}, \frac{2}{5}$ waa habka dhinmaya.

- t) hooseeyaha ay wadaagaan jajabyada $\frac{4}{5}, \frac{19}{25}$ iyo $\frac{17}{20}$ waa 100.

$$\text{Markaa; } \frac{4}{5}, \frac{4 \times 20}{5 \times 20} = \frac{80}{100}$$

$$\frac{19}{25}, \frac{19 \times 4}{25 \times 4} = \frac{76}{100}$$

$$\frac{17}{20}, \frac{17 \times 5}{20 \times 5} = \frac{85}{100}$$

Maadaama $85 > 80 > 76$, markaa $\frac{85}{100} > \frac{80}{100} > \frac{76}{100}$. Markaa

$$\frac{17}{20} > \frac{4}{5} > \frac{19}{25}$$

Markaa; $\frac{17}{20}, \frac{4}{5}, \frac{19}{25}$ waa habka dhinmaya.

- j) Hooseeyaha ay wadaagaan jajabyadani $\frac{4}{3}$, $\frac{5}{8}$ iyo $\frac{7}{6}$ waa 24.
- Taasi oo ah; $\frac{4}{3} = \frac{4 \times 8}{3 \times 8} = \frac{32}{24}$
 $\frac{5}{8} = \frac{5 \times 3}{8 \times 3} = \frac{15}{24}$
 $\frac{7}{6} = \frac{7 \times 4}{6 \times 4} = \frac{28}{24}$
- Maadaama $32 < 28 < 15$, markaa $\frac{32}{24} > \frac{28}{24} > \frac{15}{24}$ markaa $\frac{4}{3} > \frac{7}{6} > \frac{5}{8}$
- Sidaasi darteed; $\frac{4}{3}$, $\frac{7}{6}$, $\frac{5}{8}$ waa habka dhimida.
6. b) wadarta qaybaha = 8
 qaybaha la hadheeyay = 5
 $\frac{5}{8}$ oo ka mid ah shaxanka ayaa la hadheeyay.
- t) qaybaha aan la hadhayn = 3
 $\frac{3}{8}$ oo ka mid ah shaxanka ayaan hadhaysanayn.
7. Wadarta qaybaha tiirka = 10
 Qaybaha jabay = 6
 Qaybaha taagan = 4
 $\frac{6}{10} = \frac{3}{5}$ ee tiirka ahi waa la jabiyay. $\frac{4}{10} = \frac{2}{5}$ ee tiirka ahi way taagan tahay.
8. Si loo helo faraqa u dhexeeya ee dhererada Guuleed iyo Khadar, kaasi oo ah.
- $$99\frac{1}{2} - 93\frac{1}{4} = \frac{198}{2} - \frac{372}{4}$$
- $$= \frac{198 \times 2}{2 \times 2} - \frac{372}{4} = \frac{398}{4} - \frac{372}{4} = \frac{398 - 372}{4} = \frac{26}{4} = 6\frac{1}{4}$$
- Guuleed $6\frac{1}{4}$ cm ayuu ka dheer yahay Khadar.
9. AB waxaa loo qaybiyay 20 qaybood oo isleeg.
- b) AX waxay u taagan tahay $\frac{3}{20}$ ee AB.
- t) AY waxay u taagan tahay $\frac{7}{20}$ ee AB.
- j) AZ waxay u taagan tahay $\frac{13}{20}$ ee AB
- kh) XZ waxay u taagan tahay $\frac{10}{20}$ ama $\frac{1}{2}$ ee AB.

10. b iyo j

11. b) 3 t) 2 j) 1 x) 10

Qiimayn

Adeegso farsamooyin kale si aad u qiimayso ardayda

U dir laylisyoo, hawlgalo, shaqo guri, kadisyoo ama hal xidhaalayaal oo waydiina su'aalo afka ah si ay kaaga caawiyaan farsamooyinka qiimaynta si aad u ururiso xog la xidhiidha kuna saabsan wax qabadka ama fahamka ardayda. Sidaas darteed waad kaalmayn kartaa ardayda waqtiga barid-barashadu socoto. Laqabso ama caadayso inaad waydiiso 1 ama 2 su'aalood dhammaadka casharkasta. Sidaasi darteed ardaydu casharka kuxiga ayay sii akhriyi.

3.4 ADEEGSO JAJABYADA

Xiisadaha loo qoondeeyay 13 xiisadood

Karti

Dhammaadka cutub hoosaadkan, ardaydu, waxay awoodi doonaan inay:

- *Iskugeeyaan jajabyada hooseeyayaashoodu kala duwan yahay*
- *Kala gooyaan jajabyada leh hooseeyaal kala duwan.*
- *Isku dhufashada jajabyada.*
- *Isku qaybinta jajabyada.*

Erayo (kalmado): wadaaga, hooseeyaha ay wadaagaan, Isku gaynta, kala goynta, jajabyad Wadarta, farqi, dhufsanayaasha togan, Sareeye, hooseeye, taran, qayb Rogaal

Hordhac

Ciwaan hoosaadkani wuxuu la xidhiidhaa adeegsiga jajabyada. Waxaa loo qaybiyay laba ciwaan hoosaad. Ciwaan hoosaadka hore waa 3.4.1, kaasi oo la xidhiidha isku gaynta iyo kala goynta jajabyada leh hooseeyayaal kala duwan.

Ciwaan hoosaadka labaadna 3.4.2, kaasi oo la xidhiidha isku dhufashada iyo isku gaynta jajabyada oo uu ku jiro rogaalka jajabyadu.

3.4.1 Isu gaynta iyo kala goynta jajabyada

B. Naqtiinka isku gaynta iyo kala goynta jajabyada leh hooseeyayaal isku mid ah.

Gudbinta cashirka

Si aad u bilawdo cashirka, marka hore xusuusi ardayda inay soo barten iskugaynta iyo kalagoynta jajabyada ee leh hooseeye isku mid ah fasaladii hoose. Waydii sida la isugu daro ama loo kala gooyo jajabyada leh hooseeye isku mid ah. Ka kaalmeey ardaydu si ay uga jawaabaan su'aalaha.

Xasuusi in xisaabtii fasalada hoose lagu soo bartay sida la isugu daro ama loo kala gooyo jajabyada leh hooseeye isku mid ah. Taasi oo ah in sareeyayaasha la iskugeeyo ama la kalagooyo oo hooseeyayaashana mid laga soo qaato.

Si aad u xasuusid, waxaad ku bilawdaa casharka adigoo siinaya hawlgalka 3.4. kaasi oo kayaala buugga ardayga looguna talagalay naqtiin ahaan. U dir masalooyinka ku qoran layliska 3.4, shaqo fasal iyo shaqo guriba.

Jawaabaha hawlgalka 3.4

1. b. $\frac{11}{8} + \frac{3}{8} = \frac{11+3}{8} = \frac{14}{8} = \frac{2 \times 7}{2 \times 4} = \frac{7}{4}$
t. $\frac{12}{47} - \frac{7}{47} = \frac{12-7}{47} = \frac{5}{49}$
2. Waad iskudari kartaa jajabyada leh hooseeye isku mid ah adigoo isku daraya kaliya sareeyaha oo mid ka soo qaadanaya hooseeyayaasha.
3. Waad kalagoynta kartaa jajabyada leh hooseeye isku mid ah adigoo kala gooynta sareeyaha oo kaliya, oo mid ka soo qaadanaya hooseeyaha.

Jawaabaha Layliga 3.4

1. b. $\frac{7}{3}$ t. $\frac{48}{49}$ j. $\frac{100}{86} = \frac{50 \times 2}{43 \times 2} = \frac{50}{43} \times 1 = \frac{50}{43}$
x. $\frac{82}{97}$ kh. $\frac{14}{87}$ d. $\frac{12}{11}$
2. b. $\frac{3}{16}$ t. $\frac{7}{25}$ j. $\frac{5}{10} = \frac{1}{2}$
x. $\frac{45}{99}$ kh. $\frac{5}{7}$ d. $\frac{25}{2}$
3. b. $\frac{7}{4} + \frac{2}{4} = \frac{9}{4} = \frac{8+1}{4} = \frac{8}{4} + \frac{1}{4} = 2 + \frac{1}{4} = 2\frac{1}{4}$

$$\begin{aligned} \text{t.} \quad & \frac{14}{5} + \frac{3}{5} = \frac{17}{5} = \frac{15+2}{5} = \frac{15}{5} + \frac{2}{5} = 3 + \frac{2}{5} = 3\frac{2}{5} \\ \text{j.} \quad & \frac{5}{7} + \frac{4}{7} + \frac{6}{7} = \frac{5+4+6}{7} = \frac{15}{7} = \frac{14+1}{7} = \frac{14}{7} + \frac{1}{7} = 2 + \frac{1}{7} = 2\frac{1}{7} \\ \text{x.} \quad & \frac{24}{11} - \frac{2}{11} = \frac{24-2}{11} = \frac{22}{11} = 2 \end{aligned}$$

T. Isu gaynta iyo kalagoynta jajabyada leh hooseeye kala duwan

Gudbinta Cashirka

Waxaad ku bilaabi kartaa cashirkani adiga oo dhiiri galinaya ardayda si ay uga shaqeeyaan hawlgalka 3.5 ee ku yaala buuga ardayga oo ay keenaan jawaabo. U naqtiin sida loo helo jajab isku dhigma ee jajab lagu siiyay. Adeegsiga xaqiiqadan, ka caawi ardaydu inay isku daraan oo ay kala gooyaan jajabyada fudud ee leh hooseeye kala duwan. (marka la kala gooyo farqigu waa inuu noqdaa togane).

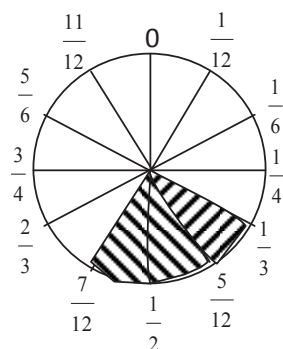
Dhiiri gali ardaydu inay soo gaadhaan oo ay adeegsadaan xeerashan soo socda:

$$\begin{aligned} 1. \quad & \frac{a}{b} + \frac{c}{d} = \frac{a \times d}{b \times d} + \frac{c \times b}{b \times d} = \frac{ad + bc}{bd} \\ 2. \quad & \frac{a}{b} - \frac{c}{d} = \frac{a \times d}{b \times d} - \frac{c \times b}{bd} = \frac{ad - bc}{bd} \quad (\text{halkaas oo } ad > bc) \end{aligned}$$

Ka sokow tusaalayaasha ku qoran buuga ardayga, waxaad ugu dari kartaa tusaalayaal kale oo adigu samayso.

Jawaabaha Hawlgalka 3.5

$$\begin{aligned} 1. \quad \text{b.} \quad & \frac{1}{3} = \frac{1 \times 4}{3 \times 4} = \frac{4}{12} \\ \text{t.} \quad & \frac{1}{4} = \frac{1 \times 3}{4 \times 3} = \frac{3}{12} \\ \text{j.} \quad & \frac{4}{12} + \frac{3}{12} = \frac{4+3}{12} = \frac{7}{12} \\ \text{x.} \quad & \frac{4}{12} - \frac{3}{12} = \frac{4-3}{12} = \frac{1}{12} \\ 2. \quad & \frac{7}{12} - \frac{1}{3} = \frac{7}{12} - \frac{1 \times 4}{3 \times 4} = \frac{7}{12} - \frac{4}{12} = \frac{7-4}{12} = \frac{3}{12} \end{aligned}$$



Qaybta la hadheeyay waxay u taagan tahay faraaqa u dhexeeya $\frac{7}{12}$ iyo $\frac{1}{3}$ kaasi oo ah

$$\frac{3}{12} = \frac{1}{4}.$$

Jawaabaha Layliga 3.5

$$1. \quad b. \quad 1 \quad t. \quad \frac{9}{10} \quad j. \quad \frac{7}{8} + \frac{4}{3} = \frac{7 \times 3 + 8 \times 4}{8 \times 3} = \frac{21 + 32}{24} = \frac{53}{24}$$

$$x. \quad \frac{7}{16} + \frac{3}{8} = \frac{7}{16} + \frac{3 \times 2}{8 \times 2} = \frac{7}{16} + \frac{6}{16} = \frac{7+6}{16} = \frac{13}{16}$$

$$Kh. \quad \frac{2}{7} + \frac{8}{21} = \frac{2 \times 3}{7 \times 3} + \frac{8}{21} = \frac{6}{21} + \frac{8}{21} = \frac{14}{21}$$

$$d. \quad \frac{8}{15} + \frac{2}{3} + \frac{1}{5} = \frac{8}{15} + \frac{2 \times 5}{3 \times 5} + \frac{1 \times 3}{5 \times 3} \\ = \frac{8}{15} + \frac{10}{15} + \frac{3}{15} = \frac{8+10+3}{15} = \frac{21}{15} = \frac{7 \times 3}{15 \times 3} = \frac{7}{5} \left(\frac{3}{3} = 1 \right)$$

$$r. \quad \frac{5}{6} + \frac{5}{12} + \frac{1}{4} \\ = \frac{5 \times 2}{6 \times 2} + \frac{5}{12} + \frac{1 \times 3}{4 \times 3} = \frac{10}{12} + \frac{5}{12} + \frac{3}{12} = \frac{10+5+3}{12} = \frac{18}{12} \\ = \frac{6 \times 3}{6 \times 2} = \frac{3}{2} \left(\frac{6}{6} = 1 \right)$$

$$s. \quad \frac{7}{9} + \frac{11}{18} + \frac{14}{27} \\ = \frac{7 \times 6}{9 \times 6} + \frac{11 \times 3}{18 \times 3} + \frac{14 \times 2}{24 \times 2} = \frac{42}{54} + \frac{33}{54} + \frac{28}{54} = \frac{42+33+28}{54} = \frac{103}{54}$$

$$2. \quad b. \quad \frac{7}{8} - \frac{3}{5} = \frac{7 \times 5 - 8 \times 3}{40} = \frac{35 - 24}{40} = \frac{11}{40}$$

$$t. \quad \frac{8}{21} - \frac{2}{7} = \frac{8}{21} - \frac{2 \times 3}{7 \times 3} = \frac{8}{21} - \frac{6}{21} = \frac{8-6}{21} = \frac{2}{21}$$

$$j. \quad \frac{5}{6} + \frac{5}{12} - \frac{1}{4} = \frac{5 \times 2}{6 \times 2} + \frac{5}{12} - \frac{1 \times 3}{4 \times 3}$$

$$= \frac{10}{12} + \frac{5}{12} - \frac{3}{12} = \frac{10+5-3}{12} = \frac{15-3}{12} = \frac{12}{12} = 1$$

$$\text{Sidaasi darteed; } \frac{5}{6} + \frac{5}{12} - \frac{1}{4} = 1$$

$$3. \quad b. \quad 1 - \frac{2}{3} - \frac{1}{5} = \frac{1 \times 15}{1 \times 15} - \frac{2 \times 5}{3 \times 5} - \frac{1 \times 3}{5 \times 3} = \frac{15}{15} - \frac{10}{15} - \frac{3}{15}$$

$$= \frac{15-10-3}{15} = \frac{15-13}{15} = \frac{2}{15}$$

t. dakhligu waa = 600 birr.

$$\text{Cuntadu waa} = \frac{2}{3} \times 600 = \frac{2 \times 600}{3} = \frac{1200}{3} = \frac{3 \times 400}{3} = \text{Birr } 400$$

$$\text{Kirada Gurigu waa} = \frac{1}{5} \times 600 = \frac{600}{5} = \frac{5 \times 120}{5} = \text{Birr } 120$$

Cuntada waxaad ku kharash garaysay 400 birr kirada Gurigana 120 birr.

4. $\frac{2}{3}$ oo caro-nafqeeye ah ayaa waxaa adeegsan jiray Roda iyo walaasheed.

$$\left(\frac{1}{4} + \frac{5}{12} = \frac{1 \times 3}{4 \times 3} + \frac{5}{12} = \frac{3}{12} + \frac{5}{12} = \frac{8}{12} = \frac{2 \times 4}{3 \times 4} = \frac{2}{3} \right)$$

5. Ninka saddexaad wuxuu cunay $\frac{21}{44}$ liin ah.

Qiimayn

U adeegso farsamooyinka qiimaynta ee kala duwan si toos ah ama si dadban si aad u hesho natiijo ama jawaab celin ku saabsan heerkooda fahan ee ciwaanka.

U dir laylisyo isku gaynta iyo kalagoynta jajabyada ah. Waydii su'aalo Afka ah;

Sii hawlgalo shaqo fasal, imtixaano yar oo kadis ah, si ay kaaga caawiso farsamada qiimaynta si aad u kala saarto oo aad u caawiso ardayda mid mid marka aad

cashirka dhigayso, caadayso ama la qabso inaad waydiiso ama siiso 1 ama 2 su'aalood, dhamaadka cashir kastaba. Tani waxay soo jiidanaysaa ardaydu inay si fiican u dhagaystaan cashirka oo soo akhriyaan ciwaanka ku xiga.

3.4.2 Iskudhufashada iyo Kala goynta jajabyada

B. Iskudhufashada jajabyada

Ugudbinta Cashirka

Waxaad ku bilaabi kartaa cashirka adigoo ku kaalmaynaya ardayda inay ka shaqeeyaan hawlgalka 3.6 ee ku qoran buuga ardayga oo ay ka jawaabaan Tus ardaydu inay ku celceliyaaan iskudhufashada jajabyada iyagoo adeegsanaya xeerka

$$\frac{a}{b} \times \frac{c}{d} = \frac{ac}{bd}$$

Waydii talaabooyinka isku dhufashada jajabyada markaad tani u dhamayso waxaad siin kartaa laylga 3.6, shaqo fasal ahaan ama shaqo guri. Waxaa intaa sii dheer oo aad siin kartaa tusaalayaal la xidhiidha masalooyinka nolosha dhabta ah.

Jawaabaha hawl-galka 3.6

1.

b. shaxan kani wuxuu leeyahay 12 gobol oo laba jibbaarane.

t. 1 laba jibaarane ayaa laba jeer la midabeeyay.

j. $\frac{1}{12}$ x. haa, $\frac{1}{3} \times \frac{1}{4} = \frac{1}{12}$

2.

$$\frac{1}{3} \times \frac{2}{4} = \frac{2}{12} \text{ ayaa laba jeer la midabeeyay.}$$

Jawaabaha layliga 3.6

1. b. $\frac{5}{16}$ t. $\frac{12}{10}$ j. $\frac{4}{24}$ x. 1
 kh. $\frac{4}{6}$ d. $\frac{48}{75}$ r. $\frac{576}{45}$

2.

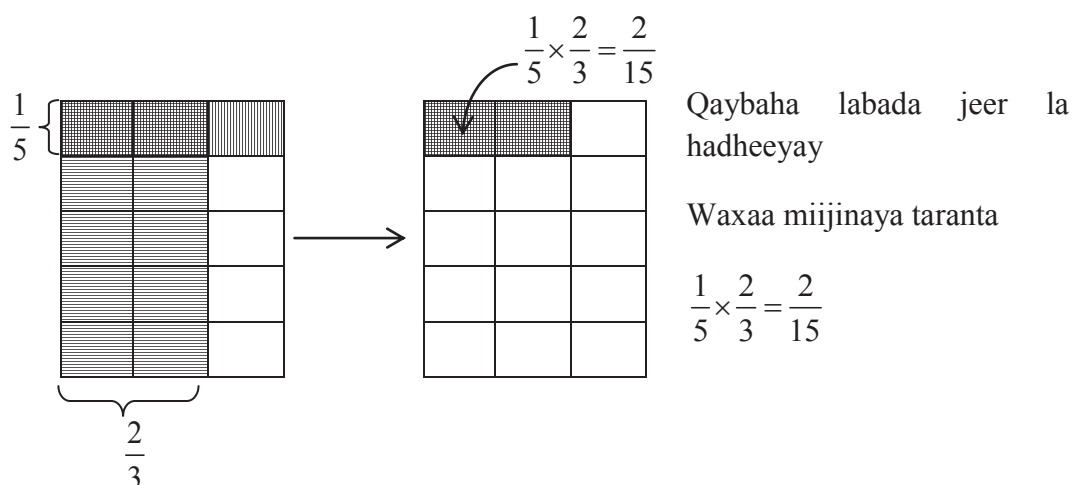
	m	n	$m \times n$
b	$\frac{4}{5}$	$\frac{2}{3}$	$\frac{8}{15}$
t	6	$\frac{3}{2}$	$\frac{18}{2}$
j	$4\frac{1}{2}$	$\frac{7}{9}$	$\frac{7}{2}$

3. b. $\frac{8}{3}$ t. $\frac{3}{8}$ j. $\frac{5}{9}$ x. $\frac{7}{12}$
 kh) $\frac{12}{4}$ d. $\frac{2}{6}$ r. $\frac{60}{45}$ s. $\frac{12}{12} = 1$

4. U badal jajab maqumane oo fududee.

$$\begin{aligned}
 \text{b. } & 2\frac{1}{3} \times 5\frac{1}{6} & \text{t. } & \frac{2}{3} \times 2\frac{4}{9} & \text{j. } & 8\frac{1}{2} \times 2\frac{1}{8} \\
 & = \frac{7}{3} \times \frac{31}{6} & & = \frac{2}{3} \times \frac{22}{9} & & = \frac{17}{2} \times \frac{17}{8} \\
 & = \frac{217}{18} & & = \frac{44}{27} & & = \frac{289}{16} \\
 & = \frac{216+1}{18} & & = \frac{27+17}{27} & & = \frac{288+1}{16} \\
 & = 12 + \frac{1}{18} & & = \frac{27}{27} + \frac{17}{27} & & = \frac{288}{16} + \frac{1}{16} \\
 & = 12\frac{1}{18} & & = 1 + \frac{17}{27} & & = 18 + \frac{1}{16} = 18\frac{1}{16} \\
 & & & = 1\frac{17}{27} & &
 \end{aligned}$$

5.



6. Halkii maalin waxaa ku jira 24 saacadood $2\frac{1}{2} \times 24$ saac.

$$= \frac{5}{2} \times 24 = \frac{5 \times 24}{2} = \frac{5 \times 2 \times 12}{2} = 5 \times 12 = 60 \text{ saacadood.}$$

T. Isu qaybinta Jajabyada

Gudbinta Cashirka

Waxaad ka bilaabi kartaa casharka adigoo dhiirgalinaya oo ku kaalmeena ardayda Inay ka shaqeeyaan hawlgalka 3.7 ee ku yaal buugga ardayga.

Sii ardayda 10 Daqiiqo inay ku falanqeeyaan dabadeedna u sheeg jawaabta saxda ah.

Ardaydu ha raadiyaan rogaalka jajabka la siiyay oo ka caawi ama ka kaalmeey inay Ku celceliyaan isku qaybinta jajabyada iyagoo adeegsanaya xeerkan;

$$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c} = \frac{ad}{bc} \text{ oo ay yihiin } \frac{a}{b} \text{ iyo } \frac{c}{d} \text{ jajabyo togan.}$$

ugu dambayntii u dir dhammaan masalooyinka ku qoran layliga 3.7, shaqo fasalahaan ama shaqo guri.

Jawaabaha Hawlgalka 3.7

1. b. $\frac{2}{3} \times \frac{3}{2} = \frac{2 \times 3}{3 \times 2} = \frac{6}{6} = 1$

t. $\frac{4}{5} \times \frac{5}{4} = \frac{4 \times 5}{5 \times 4} = \frac{20}{20} = 1$

Xaalad kastaba tarantu waa 1 .

2. tirada waa $\frac{8}{3}$, sababtoo ah $\frac{3}{8} \times \frac{8}{3} = \frac{3 \times 8}{8 \times 3} = \frac{24}{24} = 1$

3. $\frac{c}{d} = \frac{4}{3}$ sababtoo ah $\frac{3}{4} \times \frac{4}{3} = \frac{3 \times 4}{4 \times 3} = \frac{12}{12} = 1$

d 3 4 3 4x3 = 12

$\frac{3}{4}$ waa rogaalka isku dhufashada ee $\frac{4}{3}$.

Jawaabaha layliga 3.7

1. b. $\frac{5}{6}$ t. $\frac{3}{4}$ j. $\frac{13}{5}$ x. $\frac{18}{53}$
 kh. $\frac{16}{43}$ d. $\frac{8}{7}$

2.

	$\frac{m}{n}$	$\frac{n}{m}$	$\frac{m}{n} \times \frac{n}{m}$
b		$\frac{6}{1}$	
t		$\frac{7}{5}$	1
j	$\frac{8}{3}$		1
x		$\frac{2}{15}$	

3. b. $\frac{5}{4}$ t. $\frac{14}{7} = 2$ j. $\frac{24}{15} = \frac{8}{5}$ x. $\frac{50}{77}$ kh.

4 d. $\frac{1}{4}$

4. b. 4 t. 2 j. $\frac{63}{110}$ x. $\frac{11}{2}$

kh. 2

5. $\frac{21}{8}$

6. 1 isaga ayaa isku rogaal ah “0” na malaha wax rogaal ah.

Qiimayn

Adeegso farsamooyin kala duwan si aad u qiimayso heerka fahanka iyo wax qabadka ardayda ee cutub hoosaadkan.

U dir layliyo, hawlgalo, shaqo fasal , shaqo guri, imtixaan yar-yar oo kadis ah, oo waydii su'aalo afka ah si ay kaaga caawiso farsamada qiimaynta, si aad u kala saarto oo aad u caawiso ardayda marka aad casharka dhigayso.

Waydii ardayda 1 ama 2 su'aalo dhamaadka casharkasta, markaasi su'aalahaasi waxay dhiiri galin doonaan inay casharka xiga sii Akhriyaan.

3.5 ADEEGSO JAJAB TOBANLAHA

Xiisadaha loo qoondeeyay: 12 xiiso

Karti

Dhamaadka cutubkan, ardaydu waxay awoodi doonaan inay:

- *Raadiyaan wadarta jajab tobanle (ilaa saddex god)*
- *Raadiyaan farqiga jajab tobanle (ilaa saddex god)*
- *Raadiyaan taranta jajab tobanle.*
- *Soo saaraan qaybta jajab tobanlayaal fudud.*

Erayo (kalmado)

- Jajab tobanle, jajab, u badalid, u gadiyid, iskudarid, kalagoyn, iskudhufasho, isku qaybin, lagu dhufte, ku dhufte, wadar, farqi taran iyo qaybta.

Hordhac

Ciwaan hoosaadkani wuxuu la xidhiidhaa adeegsiga jajab toban laha. Waxaa loo qayb-qaybiyaa saddex ciwaan hoosaadyo. Ciwaan hoosaadka ugu horeeya ee 3.5.1 wuxuu la xidhiidhaa isku dhufashada jajab tobanle ee ilaa saddex god oo leh jibbaarka 10, isku dhufashada jajabyada u dhexeeya 0 iyo 1 iyo isku dhufashada jajab tobanlaha ka wayn 1.

Ciwaan hoosaadka saddexaad oo ah 3.5.3 wuxuu la xidhiidhaa isku qaybinta jajab tobanle.

3.5.1 Isu gaynta iyo Kala goynta jajab tobanle ee ilaa 3 god oo jajab tobanle ah

B. Naqtiinka isku gaynta jajab tobanle ee ilaa 2 god.

Gudbinta cashirka

Si aad casharka u bilawdo, marka hore xasuusi ardayda inay ku soo barten iskugaynta jajab tobanle ee ilaa 2 god fasalkii hoose. Waydii ardayda si ay isugu daraan jajab tobanle oo ka caawi ardayda si ay uga jawaabaan su'aalaha, si aad u

xasuusiso waxaad kaga bilawdaa casharka adigoo siinaya hawlgalka 3.8 ee ku yaal buugga ardayga, taasi oo laga soo qaadayo inuu yahay hawlgal naqtiin ah. Ugu dambayntii u dir dhammaan masalooyinka ku qoran layliga 3.8 shaqo fasalku sii ama shaqo guri.

Jawaabaha Hawlgalka 3.8

1. b. $0.3 = \frac{3}{10}$ t. $0.6 = \frac{6}{10}$ j. $\frac{3}{10} + \frac{6}{10} = \frac{9}{10} = 0.9$
 x. haa, $0.3 + 0.6 = 0.9$
2. b. $0.23 = \frac{23}{100}$ t. $0.15 = \frac{15}{100}$
 j. $\frac{23}{100} - \frac{15}{100} = \frac{23-15}{100} = \frac{8}{100} = 0.08$
 x. haa, $0.23 - 0.15 = 0.08$.

T. isku gaynta iyo kala goynta jajab tobanle ilaa 3 god oo jajab tobanle ah

Gudbinta Cashirka

Waxaad ka bilaabi kartaa cashirka adigoo ardayda ka caawinaya inay ka shaqeeyaan shaqo kooxeedka 3.3 iyo hawlgalka 3.9 ee kuyaal buugga ardayga oo waa inay ka jawaabaan.

Ka caawi ardayda siday isugu gayn lahaayeen 1 god oo jajab tobanle 2 god oo jajab tobanle iyo 3 god oo jajab tobanle oo ay ugu gayn lahaayeen 3 god oo jajab tobanle ah. Iyagoo is hoos dhigaya ama aan is hoos dhigaynba. Ka kaalmee ardaydu inay kala jaraan jajab tobanlaha saddexda god ah iyagoo wax soo amaahanaya ama aan soo amaahanaynba, markaana aanay natiijadu ahayn tabane.

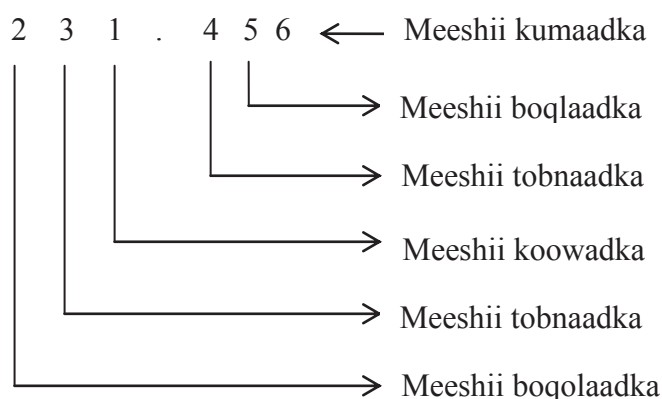
U dir dhammaan masalooyinka ku qoran layliga 3.9 shaqo fasal ahaan iyo shaqo guri.

Jawaabaha Hawlgalka 3.9

1. b. $1.3 = \frac{13}{10}$ iyo $2.1 = \frac{21}{10}$ t. $\frac{13}{10} + \frac{21}{10} = \frac{34}{10}$
 j. $\frac{34}{10} = 3.4$ x. haa, $1.3 + 2.1 = 3.4$
2. b. $0.341 = \frac{341}{1000}$ and $0.127 = \frac{127}{1000}$
 t. $\frac{341}{1000} - \frac{127}{1000} = \frac{214}{1000}$
 j. 0.214
 x. Haa, $0.341 - 0.127 = 0.214$.

Jawaabaha Shaqo-Kooxeedka 3.3

- U qaybi fasalka afar kooxood, hal arday ka door kooxkasta arday kasta waydii inuu akhriyo tirada jajab tobanlaha 231.456, oo uu xoog ugu dhawaaqo xaqiiji inuu arday kastaaba si sax ah u akhriyay sidan oo kale laba boqol sodon iyo kow dhibic afar- shan- lix oo aanu u akhriyin laba boqol sodon iyo kow afar boqol konton iyo lix.
- Ka dooro ama xulo lix arday fasalka oo si bakhtiyaanasiib ah u sii godadka tiradani 231.456 oo ah u sheegaan fasalka.



- Waxay ku xidhan tahay su'aasha 2.

Jawaabaha Layliga 3.8

- | | | | | | |
|----|------------------------|-----|------------------------|----|-----------------------|
| b. | $\frac{23.1}{+32.5}$ | t. | $\frac{0.11}{+0.32}$ | j. | $\frac{4.70}{3.42}$ |
| | $\frac{55.6}{}$ | | $\frac{0.43}{}$ | | $\frac{8.12}{}$ |
| x. | $\frac{0.528}{+2.400}$ | kh. | $\frac{7.459}{+4.507}$ | d. | $\frac{62.05}{+3.74}$ |
| | $\frac{2.928}{}$ | | $\frac{11.966}{}$ | | $\frac{65.79}{}$ |
- | | | | | | |
|----|--------------------|----|----------------------|----|------------------------|
| b. | $\frac{5.1}{-4.4}$ | t. | $\frac{8.59}{-4.64}$ | j. | $\frac{8.701}{-5.815}$ |
| | $\frac{0.7}{}$ | | $\frac{3.95}{}$ | | $\frac{2.886}{}$ |
-

	ℓ	m	n	$\ell + m - n$
b				6.3
t			2.22	
j				0.24
x	52.84			
kh		4.334		

4. Farqiga = $0.91 - 0.20 = 0.71$

5. $30 - 11.25 = 18.75$

Tirada waa 18.75

6.

	Jajab tobanle	Qiimaha meeshii tobnadka	Qiimaha meeshii boqlaadka
b	4563.7	6	5
t	38.95	3	0
j	503.846	0	5

7. Waxay hooyadeed siisay 5.35 kgs.

Waxay hooyadeed siisay 5.35kgs

Waxay walaasheed siisay 9.4 kgs

Wadarta kg ee ay bixisay waa = $5.35 + 9.40\text{kg} = 14.75\text{kg}$

Wadarta kg, u hadhay waa = wadarta kg, ay soo iibsatay – Wadarta kg ay bixisay

$$= 20.5 \text{ kg} - 14.75\text{kg} = 5.7\text{kg}.$$

∴ Waxaa u soo hadhay 5.75kg oo sonkor ah.

8. Wadarta kharashkeeda = kharashka hilibka + kharashka Caanaha + kharashka macmacaanlaha

$$= 48.75 + 24.85 + 2.35 = 75.95 \text{ birr}$$

9. b. wadarta miisaanka labada nin = miisaanka Daa'uud + miisaanka Geedi

$$= 75.6\text{kgs} + 98.45\text{kgs} = 174.05\text{kgs}.$$

t. farqiga culayska labada nin = $98.45\text{kgs} - 75.6\text{kgs} = 22.85\text{kgs}.$

10. wadarta kaydka Faadumo

$$= 695.93 + 381.35 = 1,077.28 \text{ Birr}$$

11. Waxay dhammaantood wada haystaan $4.75 + 3.50 = 8.25\text{birr}.$

3.5.2 Iskudhufashada Jajab tobanle

Gudbinta Cashirka

Waxaad bilaabi kartaa casharka adigoo ku dhiiri galinaya kana caawinaya ardayda si ay uga shaqeeyaan hawlgala 3.10 ee ku yaal buugga ardayga. Markaa ardayda sii

5 ilaa 10 daqiiqo oo ay ku falanqeeyaan, waydiina arday kastaa inuu ka jawaabo su'aalkasta. Ugu danbayntii falanqee jawaabahooda oo sii jawaabaha saxda ah.

U sharax adigoo ardayda waydiinaya hababka kala duwan ee iskudhufashada jajabyada. Ka caawi ardayda si ay isugu dhufaan jajab tobanle ilaa saddex god oo leh jibbaar 10. Gaadhsii ardayda gunaanadka, isku dhufashada jajab tobanle oo lagu dhufto 10 ama jibbaarka 10, waxay noqon kartaa in dhibicdu ay ka dhaqaaqdo dhinaca bidix oo ay u guurto xagga midig hadba inta eber ee tobanka la socda. Markaad intaa dhamayso waxaad udiri layliga 3.9 shaqo fasal ahaan ama shaqo guri.

Jawaabaha Hawlgalka 3.10

- | | | | | |
|----|-----|---|----|--|
| 1. | b. | $\frac{3}{10}$ | t. | $2 \times \frac{3}{10} = \frac{6}{10}$ |
| | j. | $\frac{6}{10} = 0.6$ | x. | $2 \times 0.3 = 0.6$ |
| 2. | b. | $0.4 = \frac{4}{10}$ | t. | $0.5 = \frac{5}{10}$ |
| | j. | $\frac{4}{10} \times \frac{5}{10} = \frac{20}{100}$ | x. | $\frac{20}{100} = 0.20$ |
| | kh) | $0.4 \times 0.5 = 0.20$ | | |

Jawaabaha Layliga 3.9

- 3×3.15
- 10 dhari ama jalxadood waxay ka kooban yihiin $= 10 \times 20.05 = 200.5$ litir
- b. 0.50 t. 0.460 j. 12 x. 5.76 kh. 3.842
- b. 34.2 t. 888 j. 34200 x. 0.3 kh. 0.021
- b. 7.5 t. 74 j. 921 x. 981
- 100 mitir

Kharashka 100 mitir oo balcada ardayda ahi;

$$= 100 \times 23.50 \text{ birr} = 2,350 \text{ birr}$$

3.5.3 Isuqaybinta Jajabyada

Gudbinta Cashirka

Si aad casharka u bilawdo, waydii ardayda tallaabooyinka iskuqaybinta ee jajab tobanle fudud oo loo qaybinayo hal god oo tiro tirsiiimo ah ama u qaybinta hal god oo tiro tirsiiimo ah oo loo qaybiyo jajab tobanle fudud.

Waxaad adeegsan kartaa tusaalayaashan oo kale si aad $4 \div 0.5$ ama $0.6 \div 3$, si aad u bilawdo. 3.11 ee ku yaal buugga ardayga, markaa kadib sii ardayda 10 daqiiqo si ay u falanqeeyaan oo caawi arday kasta si ay uga shaqeeyaan hawlgalka, marka loo eego tallaabooyinka ku taxan buugga ardayga. Ugu dambaynta falanqee jawaabahooda oo sii jawaabta saxda ah. U dir dhammaan masalooyinka ku qoran layliska 3.10, shaqo fasal ahaan ama shaqo guri.

Jawaabaha Hawlgalka 3.11

1. b. 8 t. 0.2 j. 0.46
2. b. 0.75 t. 0.715 j. 0.0715
3. Talaabada 1^{aad}

U badal qaybiya tiro idil adigoo ku dhufanaya qaybiyaha iyo la qaybshahaba 10 ama jibaarka toban

Talaabada 2^{aad}

Isuqeybi adigoo furfuraya

Jawaabaha Layliga 3.10

1. b. 2.5 t. 0.09 j. 1.25
2. b. 0.25 t. 3.8 j. 6
- x. 0.245 kh. 16 d. 9
- 3.

	d	2.3	0.42	1.11	0.8	1.32
b	10d	23	4.2	11.1	8	13.2
t	100d	230	42	111	80	132
j	1000d	2300	420	1110	800	1320

4. Qiimaha 1kg ee tamaandhada ah

$$\frac{55}{5.5} = \frac{55}{5.5} \times \frac{10}{10} = \frac{550}{55} = \frac{55 \times 10}{55 \times 1} = 10$$

Sidaasi darteed qiimaha 1 kg ee tamaandhada ahi waa 10 birr.

5. b. 0.021 t. 0.104 j. 0.000178.

6. Wadarta lacageed ee ay heleen labada maalmood waa= $30.50 + 25.40$
= 55.90birr.

$$\text{Qof kasta qaybtiisu waa} = \frac{\text{Wadarta lacagta}}{2} = \frac{\text{Birr } 55.90}{2} = \text{Birr } 27.95$$

Sidaasi darteed midkiiba qaybtiisu waa 27.95 birr.

Jawaabaha Layliga Guud ee Cutubka 3^{aad}

1. $\frac{5}{6}$ iyo $\frac{71}{100}$
2. $\frac{24}{11}$, $\frac{25}{14}$ iyo $\frac{92}{47}$
3. b. $\frac{34}{51} = \frac{34 \div 17}{51 \div 17} = \frac{2}{3}$ t. $\frac{1}{3}$ j. $\frac{23}{25}$ x. $\frac{3}{8}$ kh. $\frac{8}{3}$
4. b. $\frac{5}{3} = \frac{3+2}{3} = \frac{3}{3} + \frac{2}{3} = 1 + \frac{2}{3} = 1\frac{2}{3}$ t. $4\frac{3}{5}$
j. $2\frac{4}{7}$ x. $3\frac{4}{9}$ kh. $99\frac{1}{9}$
5. b. $\frac{3}{2} = \frac{3 \times 2}{2 \times 2} = \frac{6}{4}$, $\frac{3}{2} = \frac{3 \times 3}{2 \times 3} = \frac{9}{6}$
t. $\frac{16}{14}$, $\frac{24}{21}$ j. $\frac{38}{8}$, $\frac{57}{12}$ x. $\frac{18}{20}$, $\frac{27}{30}$ Kh. $\frac{138}{62}$, $\frac{207}{93}$
6. b. $\frac{14}{30} = \frac{7}{15}$ t. $\frac{16}{30} = \frac{8}{15}$
7. b. $\frac{8}{7}$ t. $\frac{11}{9}$ j. $\frac{29}{24}$
x. $\frac{83}{100}$ kh. $\frac{61}{70}$ d. $\frac{53}{56}$
r. $\frac{52}{105}$ s. $\frac{43}{665}$
8. b. $\frac{39}{77}$ t. $\frac{1}{36}$ j. $\frac{41}{35}$
x. $\frac{7}{40}$ kh. $\frac{13}{42}$
9. b. $\frac{13}{4}$ t. $\frac{41}{8}$ j. $\frac{100}{99}$
x. $\frac{22}{1}$ kh. 1
d. Malaha wax rogaal ah.

10.

	$\ell \times m$	ℓ	m	$\ell \div m$
b	$\frac{35}{48}$	$\frac{7}{8}$	$\frac{5}{6}$	$\frac{21}{20}$
t	$\frac{50}{99}$	$\frac{5}{9}$	$\frac{10}{11}$	$\frac{55}{90} = \frac{11}{18}$
j	$\frac{15}{320}$	$\frac{3}{10}$	$\frac{5}{8}$	$\frac{24}{50} = \frac{12}{25}$
s	$\frac{17}{26}$	$\frac{11}{13}$	$\frac{17}{22}$	$\frac{242}{221}$

11. b. $\frac{5}{12}, \frac{1}{3}, \frac{2}{9}$ t. $1, \frac{3}{11}, \frac{1}{5}, \frac{2}{13}$

12. b. run t. been j. run
x. been.

13. b. 1 t. $\frac{168}{210} = \frac{4}{5}$ j. 5 x. $26\frac{1}{15}$

kh. $5\frac{5}{6}$ d. $10\frac{5}{8}$

14. b. $\frac{5}{12}$ t. $\frac{39}{16}$ j. $\frac{9}{4}$ x. $\frac{168}{215}$

kh. $\frac{14}{9}$ d. $\frac{38}{33}$

15.

		+	-	\times	\div
b	$\left(1, \frac{1}{2}\right)$	$\frac{3}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	2
t	$\left(\frac{3}{10}, \frac{1}{10}\right)$	$\frac{4}{10}$	$\frac{2}{10}$	$\frac{3}{100}$	3
j	$\left(\frac{4}{3}, \frac{5}{9}\right)$	$\frac{17}{9}$	$\frac{7}{9}$	$\frac{20}{27}$	$\frac{12}{5}$
x	$\left(\frac{5}{8}, \frac{3}{40}\right)$	$\frac{28}{40} = \frac{7}{10}$	$\frac{22}{40} = \frac{11}{20}$	$\frac{15}{320} = \frac{3}{64}$	$\frac{25}{3}$
kh	$\left(\frac{3}{5}, \frac{7}{20}\right)$	$\frac{19}{20}$	$\frac{5}{20}$	$\frac{21}{100}$	$\frac{12}{7}$
d	$\left(4, \frac{1}{4}\right)$	$\frac{17}{4}$	$\frac{15}{4}$	1	16

16. b. 6.48 t. 22.06 j. 13.761
x. 2.5 kh. 6.87 d. 9.346
r. 1.38 s. 5.531 sh. 1.323
dh. 12 c. 50.4 g. 0.2
17. 23.80 birr
18. 40.50 birr
19. 141.25 kgs
20. b. 85.85 birr t. 23.40 birr
21. 100
22. $\frac{27.6}{10} = 2.76 = \frac{276}{100} = 2.76$

CUTUB 4 XOG URURIN

HORDHAC

Ujeedada ugu wayn ee cutubkani waa sidii loo dardar galin lahaa aqoonta ardayda ee ku saabsan garaafyada, kuwaas oo ay ku soo barten fasalkii Afraad iyo si loo barto fikirka cel-celiska ee urur qiimayaal la cabiray ah.

Cutubkan waxaa loo sii qaybiyay laba ciwaan hoosaad, ciwaanka la xidhiidha cutubka hore waa in badan oo saamaynta iyo turjumaada garaaf-laydiyeed ah. Ciwaan hoosaadka labaad ee la xidhiidha cel-celiska tirooyinka, wakhti kugu filan qaado adigoo naftaadu si aad u diyaariso, akhrinta iyo ururinta xogta dhabta ah, kaas oo ka shaqaynaya sawirada garaf- laydiyeed iyo xisaabinta cel-celiska.

Ujeedooyinka cutubka

Markuu cutubkani dhamaado ardaydu waxay awoodi doonaan inay :-

- Ka sameeyaan garaaf laydiyeed ka xogta lagu siiyay.
- Turjumaan (akhriyaan) garaaf laydiyeed la sameeyay
- Sharaxaan waxa looga jeedo cel-celiska urur tirooyin idil ah
- Xisaabiyaan cel-celiska xoog lagu siiyay.

Kaabayaasha Waxbarasho ee lagu Taliyay

Marka lagu daro buuga ardayga iyo buugga macalinka waxaa kale oo lagugula talinayaa in aad keento kuwan soo socda, fasalka dhexdiida mar kasta oo uu ciwaanku u baahdo, xaqiiji in kaabayaasha wax-barashadu ay yihiin kuwo cusub, oo ku haboon u jeedada iyo ardaydaada ay tahay.

Warqad-garaafeed qalin qoriyo midaba leh, tamaashiir midabo leh, mastarad iyo xog dhab ah.

4.1 FAAHFAAHIN BADAN OO DHISIDA TURJUMIDA GARAAF LAYDIYEED AH

Wakhtiga loogu talo galay 9 xiisadood

Kartida

Dhamaadka cutubkani ardaydu waxay awoodi doonaan:

- Ka sameeyaan garaaf laydiyeed xogta lagu siiyay
- Inay turjumaan gaaraaf-laydiyeed la sameeyay.

Erayada

- Garaaf-laydiyeed
- Heer/cabir
- Xog
- Dhidibada” X” iyo” Y”.

Hordhac

Cutubkan waxaa inta badan loogu talo galay in la balaadhiyo aqoonta ardaydu ay ka haystaan bandhigida xogta iyagoo adeegsanaya garaaf laydiyeed. Waa in ay ardaydu awoodaan inay ka dhisaan garaaf-laydiyeed xog la siiyay oo ay macneeyaan ama turjumaan garaafyada ay sameeyeen.

Habka Gudbinta Cashirka

Ka bilow casharka hawlgalka 4.1 ee lagugu siiyay buuga ardayga. Caawi ardaydu si ay isugu dayaan su'aalaha oo ha falanqeeyaan. Ku dhiiri gali ardayda in ay sameeyaan garaaf-laydiyeed iyagoo ururinaya xog fudud, kana soo ururinaya nolol maalmeedkooda.

Jawaabaha Shaqo-Kooxeedka 4.1

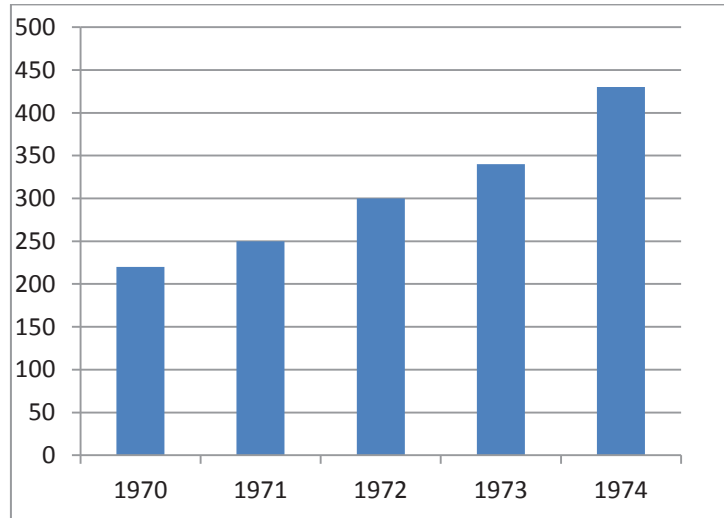
1. Wuxuu fududeeyaa fahanka faraaqa xogta.
2. Waraaqaha jaartiga u qeybi kooxaha, kadibna far inay sameeyaan garaaf laydiyeed cadeynaya da'da ardayda, kadibna ka jawaabaan su'aalaha b iyo t.

Jawaabaha Hawlgalka 4.1

1. Waxaan uga baahan nahay isku habeeynta xogtii la soo uruuriya Isbarbardhiga xogta
2. Weydii ardayda
3. Weydii ardayda

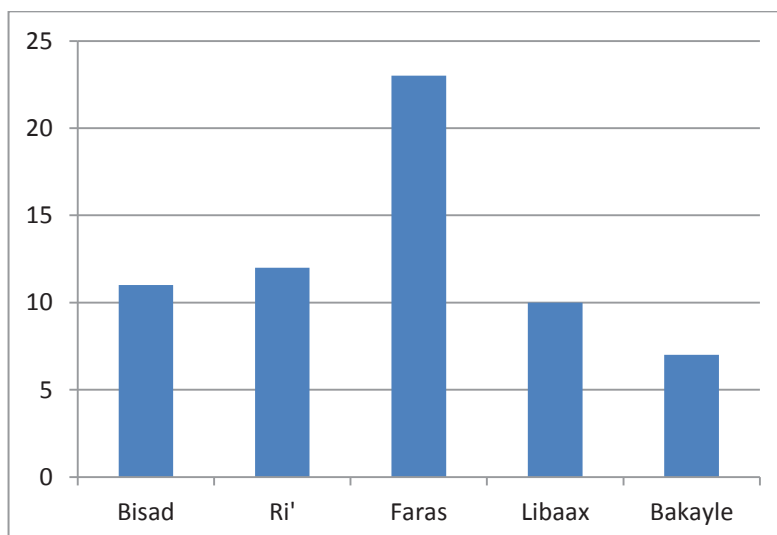
Jawaabaha Layliska 4.1

1. bunkii laga dhoofiyay itoobiya sanadadii u dhexeeyay 1970kii iyo 1974kii .



Sanadka

- b. waxay u dhaxaysaa sanadka 1973 iyo 1974.
 t. $430 - 250 = 180$, intii la dhoofiyay sanadkii 1974 kii waxay ka badan tahay 180, intii la dhoofiyay 1971,
3. b. 30mitir
 t. eucalptus
 j. dhererka ugu dheer ee Eucalptus waa laban laabka Tidka.
4. Cel-celiska cimriga qaar ka mid ah xayawaanka



Xayawaanka

5. b. Aradi t. Akaki
 j. $800,000 + 400,000 + 100,000 = 1,300,000$ dad

4.2 CEL-CELISKA TIROOYINKA

Wakhtiga loogu talo galay 5 xiisadood

Awood Xirfadeed

Qaybtani markay dhamaato ardaydu waxay awoodi doonaan in ay:

- *Sharxaan waxa looga jeedo cel-celiska urur tiro ah.*
- *Xisaabooyin celcelis xog la siiyay.*

Erayo (kalmado)

- Cel-celis
- Wadar
- Diwaan galin (kayd).

Hordhac

Ciwaan hoosaadkan waxaa inta badan loogu talagalay in ardayda loo baro waxa uu yahay macnaha celceliska oo ardayduna ay soo saaraan celceliska xog la siiyay

Habka Gudbinta Cashirka

Ka bilaw cashirka hawlgalka 4.2 ee lagugu siiyay buugaga ardayga. Caawi ardayda si ay isugu dayaan su'aalaha oo ha falanqeeyaan. Kuna dhiiri gali ardayda in ay soo ururiyaan xog, kana soo ururiyaan nolol maalmeedkooda, oo ay soo saaraan celceliska xogta ay soo ururiyeen.

Shaqo kooxeedka 4.2

$$\text{Adeegso kooxda B} = \frac{\text{Wadarta dherarka xubnaha B}}{\text{tirada B}}$$

$$A = \frac{\text{Wadarta dherarka xubnaha A}}{\text{tirada A}}$$

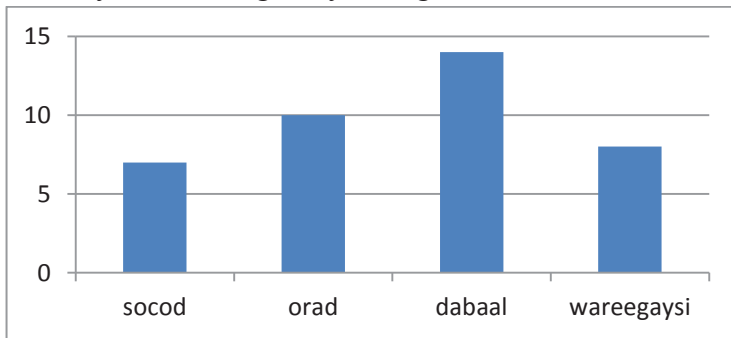
Jawaabaha Layliska 4.2

1. Celceliska heerkulka todobaadka $\frac{18+13+15+22+18+14+12}{7} = 16^{\circ}\text{C}$
2. Celceliska xawaaraha $\frac{45+40+38}{3} = 41\text{km/hr}$
3. Celceliska dhibcaha $\frac{8+10+9+4+3}{6} = 7$

4. Celceliska helida roobka $\frac{1+2+1+1+4+3+2}{7} = 2\text{mm}$
5. Celceliska tirada kabriidka $\frac{43+42+44+47+46+48}{6} = 45$
6. Celceliska dhibcaha $\frac{50+60+45+20+70+90+25+30+40+30}{10} = 46 =$
7. $x = 33$
8. b. 3 t. 12 j. 9 x 35
 kh. 262 d. 1033

Jawaabaha layliska guud

1. garaaf laydiyeed waxaa loo adeegsadaa :-
 - I) xog fiican ka helida garaafka
 - II) isbarbardhigida xogta .
 - III) xalinta masalooyinka
2.
 - I) Iskuhagaajinta xog lagu siiyay
 - II) Doorasha heerka (cabirka) ku haboon.
 - III) Isleekaysiinta ballaca jiidimaha iyo intay isku jiraan oo markastaba la isleekaysiiyo.
 - IV) Ku calaamadaynta dhidibada iyo siinta ciwaan ku haboon garaafka.
3. Tamar ayaa loo adeegsaday howlgalada.



- Hawlgal
- b. i) dabaal ii) socod
 4. b. 14 saacadood t. 15 J. libaax badeed
 5. b. casaan t. buluug iyo akhtar
 j. huruud, liimi x. buluug
 6. Si loo helo qiime kaliya kaasi oo u taagnaada inuu wakiil ka yahay xogta.
 7. I) raadinta wadarta xogta
 II) uqaybinta wadarta tirada xogta.

8. b. celceliska qaybta A = $\frac{12+11+13+11+14+11}{6} = 12$

Celceliska qaybta B = $\frac{15+14+10+11+12+16}{6} = 13$

t. qaybta B

9. b. qiimaha celceliska = $\frac{63+44+44+48+44+44+49}{7} = 48$

t. arbacada

10. b. 25 t. 308 j. 15

CUTUB 5

SHAXANKA JOMATARIGA IYO CABBIRAADA

HORDHAC

Waxyaalaha ugu waawayn ee ardaydu cutubkan ku baran doonaan waa waxoogaa fikradaha aasaasiga ah ee joomatari ah iyo dhismayaasha fudud adigoo isticmaalaya qalabka joomatariga, lammaane kombasyo ah iyo mastarad. Cutubka waxaa loo sii qaybiyaa shan qaybood, taasoo qaybkastaa ay u sii qaybsanto qayb yar yar. Ciwaanada aan cutubka ku qaadan doonaa waa: xariiqyo, xaglo, cabbirada xaglaha, noocyada saddex xagalada, dhidibada wanqarka iyo cabbiraada.

Ujeedooyinka cutubka

Marka cutubkani dhamaado, ardaydu waxay awoodi doonaan in ay:

- Gartaan astaamaha dhidibada wanqarka iyo inay awoodi doonaan in ay aqoontan u isticmaalaan inay sawiri karaan (dhisi) wanqarada.
- Ay kala qaybiyaan xariijimaha iyo xaglaha laba meelood oo isle'eg.
- Gartaan halbeega (digrii) ayna awoodi karaan xaglaha lagu siiyay
- Fahmaan isticmaalina karaan qaacidada lagu soo saaro badedka laydiga iyo labajibbaaranayaasha.
- Fahmaan isticmaalaan qaaciidooyinka loo isticmaalo in lagu dhamaystiro muggaga sanduuyada saddex jibaaranaha wajiyadoodu yihiin laba jibbaarane iyo birisamyada laydiyeed iyadoo la tiranayo inta santiimitir ee seddex jibbaaran

Qalabka kaabeyaasha Loo Xushay Cutubka

Buugga ardayga iyo tilmaaha bare marka laga reebo, waxaa kale oo loo baahan yahay in fasalka dhexdiisa la keeno waxyaalaha (qalabka) marka looga baahdo ciwaanka casharka.

Qalabka: laba jibbaarane, lammaane kombas ah, mastarad, xagal cabbiri, maqasyo, kaararka sabuurada oo khafiif ah, biinan iyo xanjo.

- Shax muujinaysa noocyada xaglaha
- Shax muujinaysa noocyada saddex xagalada.

- Shax muujinaysa sida loo sawiro xariiqyada barbarada ah ee mara bar aan ku dul dhicin xariiq lagu siiyay adigoo isticmaalaya qalabka laba jibbaarka ah iyo mastarada.
- Shax taasoo ina tusaysa talaabooyinka la maro marka la sawirayo xariiq marta bar ku dul taala xariiqda ku qotonta xariiq lagu siiyay iyo bar aan ku dul dhicin xariiqda adigoo isticmaalaya lammaane kombayo ah iyo mastarad.
- Shax ina tusaysa sida xaglaha logu qaybiyo laba meelood oo isle'egyo ah iyo mastarad.
- Shax ka kooban shaxanada joomatariga sida: laydiyada, laba jibbaaranayaasha, saddex xagalada labaalaha ah, saddex xagalada siman, goobooyinka iyo dhidibada kale ee wanqarada.
- Shax ina tusaysa laydiyada iyo laba jibbaaranayaasha iyo qaaciidooyinkooda wareegyada iyo badedka.
- Shax ina tusaysa shabaqyada (gobolada) saddex jibbaaranayaasa (sanduuqyada) iyo birisam laydiyeedyada.
- Shax ina tusaysa saddex jibbaaranayaasha iyo birisam laydiyeedka
- Shax ina tusaysa saddex jibbaaranayaasha iyo birisam laydiyeedka iyo qaaciidooyinkooda mugga.

5.1 XARIIQYADA

Inta xiisadood 8 xiisadood

Waxa ugu yar ee ardayga laga rabaa

Dhammaadka cutub hoosaadkan, ardaydu waxay awoodi doonaan in ay:

- *Sawiraan xariiqyo 18-gooya*
- *Sawiraan xariiqyo barbaro ah*
- *Xariiqda kala badha xariijin*
- *Dhisan xariiqda xariiq ku qotonta xariiq lagu siiyay oo marta bar xariiqda ka mid ah.*
- *Dhisan xariiq ku qotonta xariiq lagu siiyay oo marta bar aan ku dul oolin xariiqda.*

Eray bixin

- Xariiqyada is gooya iyo xariiqyada barbarada ah
- Qalabka laba jibbaaranaha ah
- Lammaane kombasyo
- Mastarad
- Kala badhid xariijin la kala badho
- Xagal qaybshe
- Xariiqyada qotoma
- Dhisid.

Hordhac

Muhimada ciwaankani waa in ay ardayda la qabsadaan joomatariga fudud sawiridiisa iyo dhismayaasha ayagoo isticmaalaya qalabka laba jibbaaranaha ah, lammaane kombayo ah iyo mastarad. Ciwaan hoosaadkan waxaa loo sii qaybiyaa saddex ciwaan hoosaad. Ciwaan hoosaadka kowaad wuxuu ka hadlaa dhismaha xariiqaha is-gooya iyo kuwa barbarada ah adigoo isticmaalaya qalabka laba jibbaaranaha ah iyo mastarada. Ciwaan hoosaadka labaadna wuxuu ka hadlaa kala qaybinta xariijin lagu siiyay loo qaybiyo laba meelood oo isle'eg adigoo isticmaalaya lammaane kombas ah iyo mastarad, ciwaan hoosaadka saddexda wuxuu ka hadlaa dhismaha xariiqyada ku qotoma xariiq lagu siiyay adigoo isticmaalaya lammaane kombasyo ah iyo mastarad.

5.5.1 Dhismaha Xariiqaha Isjara iyo kuwa Barbarada ah

Gudbinta Cashirka

Si ay kuu caawiso ciwaan hoosaadkan waxaad ka bilawdaa, inaad hubiso in ay ardaydu fikrada, inaad hubiso in ay ardaydu fikrad fiican ka haystaan tibxaha ama erayada dhibic, xariiq, xariijin iyo fallaadh ku bilaw ciwaan hoosaadkan adigoo waydiinaya ardayda faraqa u dhexeeya xariiqyada barbarada ah iyo xariiqyada isjara, dabadeed tag bilaw) hawlgalka 5.1, kala dood ardayda su'aalaha hawlgalka ku jira. U ogolaw ardayda inay iskood uga jawaabaan adigoo ku salaynaya jawaabaha ay bixiyaan ardaydu, u soo koob ardayda hawlgalka, u habee fasalka kooxo yar yar una sawir xariiqo barbaro ah oo mara bar lagu siiyay oo aan ku dul-dhicin xariiqda lagu siiyay. Adigoo isticmaalaya qalabka laba jibbaaranaha iyo mastarad. Ardaydu waxay u baahan yihiin inaad caawiso, hubi in arday kastaa horumar ka gaadhay aqoonta sawirada xariiqyada barbarada ah, ayagoo isticmaalaya laba jibbaarane iyo mastarad. Marka ay dhammeeyaan sawirka waxaad siin kartaa layliska 5.1 shaqo fasal ahaan iyo shaqo guri ahaanba.

U hubi si joogto ah ardaydu inay ka shaqeeyaan una sax marka ay ka shaqeeyaan su'aalaha. Ku abaal mari inay ka shaqeeyeen oo ay saxeen su'aalaha.

Jawaabaha Hawlgalka 5.1

1. Wax badan oo aan dhammaanayn
2. Hal
3. Waxa mara bar aan ku dul oolin xariiq lagu siiyay
 - b. waxaa laga samayn (sawiri) karaa xariiqyo aan la soo koobi Karin oo xariiqda lagu siiyay jara.
 - t. Hal xariiq oo kaliya oo barbaro la ah xariiqda lagu siiyay ayaa laga sawiri karaa.

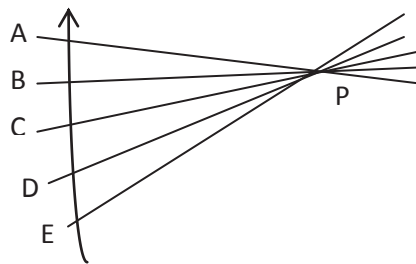
Hadal Kooban oo ku saabsan shaqo Kooxeedka

Ujeedada shaqo kooxeedka 5.1 waa in loo falanqeeyo ardayda talaabooyinka loo baahan yahay marka la sawirayo xariiqaha barbarada ah ayadoo la siticmaalayo qalabka laba jibbaaranaha iyo mastarad. Waxaa lagugula taliyay in aad ardayda caawiso inay fahmaan talaabooyinka loo baahan yahay marka la sawirayo xariiq ayadoo la isticmaalayo qalabyo, marka ay ardaydu ka shaqeeyaan shaqo kooxeedka, hubi in shaqadu u socoto mudada loogu tala galay si caadi ah, caawina marka ay u baahdaan caawimaadaada.

Jawaabaha Layliska 5.1

1. B. \overline{AM} , \overline{RM} iyo \overline{KM}
 - t) haa, barta R.
 - j) hal

2.



Shaxda 5.1

3. b. su'aashani waxay leedahay jawaabo badan, jawaabaha suurto galka ahi waxay noqon karaan:

$$\overline{AG} \parallel \overline{DE}$$

$$\overline{AB} \parallel \overline{OC}$$

$$\overline{EF} \parallel \overline{HG}$$
 - t. Waxaa jira xariiqyo badan oo jara, kuwan soo socdaa waa lammaanayaasha suurto galka ah ee xariiqaha wax jara. \overline{AD} iyo \overline{AB} , \overline{HG} iyo \overline{EF} .
 - j. F
 - x) waxaa jira laba xariiqood oo barbaro la ah \overline{DH} , waana \overline{AG} iyo \overline{CH} .
4. Hal
5. Geesaha gidaarka, sabuurada, geesaha miiska, geesaha buugaagtooda IWM. Waxay noqon karaa jawaabaha su'aasha.
6. b. barta C
 - t. maya, waayo labada xariiqood waxay iska jaraan barta D.
 - j. barta A
7. haa

5.1.2 Kala Qaybinta Xariijin Lagu Siiyay

Gudbinta Cashirka

Intaanad ciwaan hoosaadkan bilaabin hubi in arday kastaa haysto lammaane kombaas ah iyo mastarad, u soo koob isticmaalka komboska iyo mastarada.

- Kombosku waa qalab loo isticmaalo in lagu sawiro goobada ama goobo gobol, haddii ay goobo tahay.
- Mastarada waxaa loo isticmaalaa inay isku xidho xariiq ama xariijin, ka bilaw ciwaan hoosaadka hawlgalka 5.2. u jeedada hawlgalkani waa in ardayda laga waaciyo in xariijintu ay leedahay bar-badhtan, laguna heli karo mastarada ama kombos.

Mastarada ayaa laga doorbidi kombaska. Haddaba aan ka doodno hawlgalka kooxeedka 5.2, aanan doorano jawaabaha hawlgalka. Adigoo ku salaynaya jawaabaha ardaydu heleen, sii jawaabaha saxda ah, su'aalaha hawlgalka, dabadeed ardaydu ha bilaabaan inay laba isle'eg u qaybiyaan xariijin ayagoo isticmaalaya qalabada la sheegay.

Marka ay ardaydu xariiqda kala qaybinayaan waxaa laga yaabaa in ay ku adkaato talaabooyin ama jaranjarooyinkii la marayay, sidaas darteed ku wareeg fasalka, siina taageero ku filan in ay awood u heleen inay dhisaan. U sheeg sababta talaabada koowaad ee dhismaha gacan goobo gobolku uu u noqday mid ka wayn kala badhka xariijinta (xariijinta qaybteeda).

Waydii ardayda maxaa dhici haddii gacanka goobo gobolka ka yar yahay xariijinta badhkeed. Ka dib marka arday kastaa maamulo siduu u dhisi lahaa, waxaad isticmaali kartaa layliska 5.2 shaqo fasal ama shaqo guri ahaan. Ha ilaawin inaad dhibco ku bixiso shaqada ardayda aana saxdo jawaabaha su'aalaha.

Ku hubi fahanka ardayda su'aalo afka ah, hal xidhaale, tijaabo IWM.

Jawaabaha Hawlgalka 5.2

1. In badan oo aan dhamaanayn
2. Badhtanka xariijinta.
3. Xariiqyo badan oo aan dhammaanayn, xariiqda kala qaybisaa waa mid uun.
4. Haa, haa

Jawaabaha Layliska 5.2

1. j) haa
2. j) $EF = \frac{1}{2}BT$
3. Xariiqyo badan oo aan dhammaan, haa.
4. Barta E ayaan noqoneeya badhaha xariijinta BT.

5.1.3 Dhismaha Xariiq ku Qotonta Xariiq lagu siiyay

Gudbinta cashirka

Ka bilow ciwaan hoosaadkan qeexid xariiqyada qotoma, dabadeed isticmaal hawlgalka 5.3, sidii oo hawlgal aad ardayda ku kicinayso dareenkooda. Ujeedada hawlgalku waa in ardayda laga caawiyo inay ku soo gabagabeeyaan in bar ku taala xariiq iyo xariiqda, dabadeed ay xaqiiqdii hal xariiq oo ku qotonta laga sawiri karo. U ogolaw arday in ay dooran karaan jawaabaha ku suurtagal ah su'aalaha. Adigoo ku salaynaya jawaabaha ardaydu doorteen, sii faalo aad ku gabagabaynayso, una gudub dhismaha 2^{aad}.

Ku buuri ardayda in ay raacaan talaabooyinka la marayo marka wax la dhisayo ama la sawirayo. Xariiqaha ku qotoma bar ku taala xariiq lagu siiyay adigoo isticmaalaya qalabka.

Inta ugu suura galsan ee ugu badan hubi arday markay wax dhisayaan (sawirayaan). Caawi arday u baahan inaad caawiso. Haddii aad hubto in ay u dhiseen si sax ah, u ogolow in ay ka shaqeeyaan shaqo kooxeedka 5.2, ayagoo ah kooxo yar-yar

Shaqo kooxeed waxaad u siin kartaa shaqo guri ama haddaa waqti haysato shaqo fasal. Dabadeed sii layliska 5.3, shaqo guri ahaan, u sheeg in arday kastaa ka shaqeeyo shaqo guri marka ka soo shaqeeyaan shaqo gurida ha ilaawin in aad hubiso. Ku buuri abaal marina kuwa saxay shaqo guridaa.

Jawaabaha Hawlgalka 5.3

1. b. in badan oo aan dhammaanayn
t. hal
2. b. in badan oo aan dhamaanayn
t. hal

Hadalkooban oo ku saabsan Shaqo Kooxeedka 5.2

Shaqo kooxeedka 5.2 ardaydu waxay ku baran doonaan sida loo dhiso (sawiro) xariiq ku qotonta bar aan ku dul-dhicin xariiq lagu siiyay. Ardaydu ha uga shaqeeyssn mashruuc ahaan, sidaas darteed waxay horomarin xirfadooda wax dhisida (sawirida). Hubi in arday kastaa fahmay tallaabooyinka la marayo marka wax la dhisayo iyo marka xariiq la sawirayo ayadoo la isticmaalayo qalab.

Jawaabaha Layliska 5.3

3. haa, haddii laba xariiqood oo ku yaal isku sallax (dhul) ay qortaan xariiq isku mid ah, dabadeed labada xariiqood midba mida kale ayay ku qotontaa.

5.2 XAGLAHA IYO CABBIRADA XAGLAHA

Inta xiisadood: 8 xiisadood

Inta ugu yar ee looga baahan yahay in ardaygu fahmo

Dhamaadka ciwaan hoosaadkan ardaydu waxay awoodi doonaan in ay:

- *Qeexaan xagal*
- *Kala saaraan (cadeeyaan) geeska iyo gacmaha xagali leedahay.*
- *Kala saaraan xaglaha iyagoo u eega siday u kala waynyihiin.*
- *Kala qaybiyaan (laba meelood oo isle’eg).*

Eray Bixin

- Xagal
- Gacmaha xagasha
- Geeska xagasha
- Xagal cabire
- Hal beega digrii (darajo)ee xaglaha.
- Xagal fiiqan
- Xagal daacsan
- Xagal quman
- Xagal toosan
- Xagal dhacsan
- Xagal dhamaystiran
- Xagal qaybiye.

Hordhac

Ujeedada ugu muhiimsan ee ciwaan hoosaadkani waa in ardaydu la qabsadaan (bartaan) xaglaha iyo eray bixintooda la xidhiidha. Cutub hoosaadkan waxaa loo sii qaybiyaa saddex ciwaan hoosaad, ka koowaad waa “xaglaha” qaybtan xagal waxaa lagu qeexi doonaa eray bixin la xidhiidhana waa lagu baran doonaa.

Ta labaad ee ciwaan hoosaadkani waa “cabbirada iyo kala saarida xaglaha halka ciwaan hoosaadka qalabka xaglaha lagu cabbiro ayaa lagu baran doonaa iyo waliba halbeega salka u ah cabbirka xaglaha ee digrii ama darajo ayaa lagu qeexi doonaa.

Dabadeed xaglaha waxaa loo kala saari doonaa noocyo kala duwan ayadoo lagu salaynayo cabbirka ciwaan hoosaadkan 3^{aad} waa “xagal qaybiye” ama xagal gooye, ciwaan hoosaadkan ardaydu waxay awoodi doonaan in ay xaglaha laba meelood oo isle’eg u qaybiyaan ayagoo isticmaalaya lammaane kombasyo ah iyo mastarad.

5.2.1 Xaglaha

Gudbinta Cashirka

Ku bilaw ciwaan hoosaadkan hawlgalka 5.4, ardaydu ha ugu doodaan koox ahaan su'aalaha hawlgalka muddo ka dib, ku buuri ardayda in ay socaan jawaabaha ay doorbidayaan. Adigoo ku salaynaya jawaabaha ay siiyeen ardaydu su'aalaha. Qeex xagal in ay tahay xadiga bannaan ee u dhexeeya laba fallaadhood, halka labada fallaadhood ka yihiin gacmaha ee halka ay iska jaraana tahay geeska xagasha.

Markaad xagal qeexo iyo waxyaalaha la xidhiidha ka dib, kala dood siyaabaha kala duwan ee loo magacaabo xagal. Waxaad isticmaali kartaa tusaalayaasha buugga ardayga si aad u kordhiso fahanka ardayda ee xagal iyo erayada la xidhiidha. Dhammaadka cashirka ku qiimee ardayda layliska 5.4, waxaad u isticmaali kartaa layliska shaqo fasal ama shaqo guri.

Hubi fahamka ardayada adigoo waydiinaya su'aalo afka ah, siinaya hal-xidhaalayaal iyo tijaabooyin fudud.

Jawaabaha Hawlgalka 5.4

1. b. haa
t. wareeg buuxa rubucii
j. wareeg buuxa badkii
x) wareeg buuxa
2. haa, waa xagal
3. inta bannaan ee u dhaxaysa gacmaha saacada, maqaska inta furan ee u dhaxaysa IWM.

Jawaabaha Layliska 5.4

1. b) \overline{MN} iyo \overline{ML}
t) M
2. $\angle AOB$, $\angle AOC$, $\angle AOD$, $\angle BOC$, $\angle BOD$ iyo $\angle COD$
3. b. tixgali $\angle GMH$, \overline{MG} iyo \overline{MH} inay yihiin gacmaha M-na tahay Geeska.
t. $\angle GMH$, $\angle GMI$, $\angle GMJ$, $\angle HMI$, $\angle HMJ$ and $\angle IMJ$.
j. maya waayo M waa geeska dhammaan lix xaglood ee ka samaysmay M.
x. $\angle GMH$, $\angle IMJ$, $\angle HMI$.

5.2.2 Cabbirada iyo noocyada Xaglaha

Gudbinta Casharka

Intaanad bilaabin hawlgalka 5.5, ka hor ugu celi qeexida. Dabadeed ardaydu ha kaga doodaan koox ahaan hawlgalka 5.5, in muddo ah u ogolow in ay wax yaalaha ay heleen ay hore ugu socdaan. Adigoo ku salaynaya jawaabaha ardaydu heleen, bar xagal cabiraha (protractor). U sheeg sida loo isticmaalo iyo sida loogu isticmaalo cabbirka iyo sawirka xagasha. Dabadeedna bar halbeega salka u ah xagasha (digrii). Sii waxoogaa tusaalayaal ah oo ku saabsan cabbirada iyo sawirka xaglaha, hubi in arday kastaa garanayo sida loo cabiro, iyo sida loo sawiro xaglaha ayadoo la isticmaalayo xagal cabbire ugu dambaynta sii layliska 5.5 shaqo fasal ahaan ama shaqo guri ahaan.

Jawaabaha Hawlgalka 5.5

1. isticmaalaya mastarada
2. haa, xagal cabbire
3. digrii (ama darajo).

Jawaabaha Layliska 5.5

3. b. $\angle DGE$

Kasaarid Xaglaha

Gudbinta Cashirka

Cashirka waxaad ka bilaabi kartaa hawlgalka 5.6, u habee ardayda kooxo yar-yar, dabadeedna u ogolaw in ay isku dayaan su'aalaha hawlgalka 5.6 una ogolow inay ku socdaan jawaabaha ay u malaynayaa in ay yihiin sax.

Adigoo ku salaynaya jawaabaha ardaydu ay doorbideen, u sheeg ardayda sida xaglaha loogu kala saaro heerar kala duwan. Si ay kuu caawiso in aad kala saarto xaglaha isticmaal saacado marka hore qeex xaglaha gaarka ah sida xagasha eber, xagal quman, xagal toosan iyo xagal dhammaystiran. Dabadeedna qeex xagal fiiqan, xagal daacsan iyo xagal noqod, jaaniskan waxaad u isticmaashaa in aad ardayda tusto sida loo cabbiro ama sawiro xagal noqodka adigoo isticmaalaya xagal cabire laba talaabo oo la maro ka dib u ogolow ardayda in ay cabbiraan iyo sawiraan xagal noqodka ayagoo isticmaalaya xagal cabbire. Ugu yaraan waxaad siin kartaa layliska 5.6, shaqo guri ahaan. Hubi arday kastaa in uu garanayo sida loo kala sooco xaglaha.

Jawaabaha hawlgalka 5.6

1.
 - b) 0°
 - t) 90°
 - j) 180°
 - x) 360°
2.
 - b)
 - i. u dhexeeya 0° iyo 90°
 - ii. u dhexeeya 0° iyo 180°
 - t) u dhexeeya 0° iyo 360°

Jawaabaha Layliska 5.6

1.
 - b) xagal dhacsan
 - t) xagal fiiqan
 - j) xagal daacsan
 - x) xagal Qumane.
- 2.

Xagal	Xagal fiiqan	Xagal daacsan	Xagal dhacsan
110°		✓	
36°	✓		
142°		✓	
1223°			✓
189°			✓
129°		✓	
78°	✓		
179°		✓	
200°			✓

3. Xaglaha (b), (t), (x) waa xaglo fiiqan, xaglaha (j), (kh) iyo (d) waa xaglo noqod
4. Xagal daacsan
5.
 - b) 360°
 - t) 180°
6. 306°
7.
 - b) xagal fiiqan
 - t) xagal daacsan
 - j) xagal toosan
8.
 - b) 90°
 - t) 150°
 - j) 210°

5.2.3. Xagal Qaybiye (xagal gooye)

Gudbinta Cashirka

Ciwaan hoosaadka waxaad ka bilawdaa in aad qeexo qaybiye (xagal gooye), waydii ardayda inta xagal gooye ee xagal lagu siiyay yeelan karto adigoo ku salaynaya jawaabahooda, waxaad u sheegtaa in xagal kastaa sida ay leedahay hal xagal qaybiye waxaanad tustaa sida xagal loogu kala qaybiyo laba meelood oo isleeg ayadoo la isticmaalayo kombas iyo mastarad, si aad u hubiso in ardaydu fahan tay dhismaha 3^{aad}, sii shaqo kooxeedka 5.4, una ogolow inay kacan ka qabasho ku dhisan marka ay ardaydu ka shaqaynayaan shaqo kooxeeda ku wareeg fasalka kana caawi shaqo kooxeeda. Dabadeed sii layliska 5.6, shaqo fasal ahaan ama shaqo guri ahaan, hubi in arday kastaa garanayo sida loo qaybiyo xagal.

5.3 KALA SAARIDA SADDEX XAGALADA

Xiisadaha loo qorsheeyay 5 xiisadood

Karti

Waxa ugu yar ee looga baahan yahay ardaydu marka uu ciwaanku dhamaado, dhamaadka ciwaan hoosaadka ardaydu waxay awoodi doonaan in ay kala saaraan saddex xagalada ayadoo loo eegayo xagasha cabbirkeeda iyo cabbika dhinacyada inta ay le'eg yihiin.

Eray Bixin

- saddex xagal
- dhinaca saddex xagal
- geesaha saddex xagal
- saddex xagal kala duwan
- saddex xagal labaale ah
- saddex xagal siman
- saddex xagal leh xagal fiiqan
- saddex xagal leh xagal daacsan
- saddex xagal quman.

Hordhac

Ciwaan hoosaadkan ardayda waxaa la bari doonaa shaxan aasaas ah oo joomatari oo la yidhaahdo saddex xagal. Waxay cadayn doonaan dhinacyada, geesaha iyo xagal, waxa kale oo ay baran doonaan sida loo magacaabo saddex xagalka ayadoo la isticmaalayo xaglaha geesaha ku qoran, dabadeed waxay kala saari doonaan saddex xagalada ayadoo loo eegayo cabbirka dhinacyada iyo xaglahooda.

5.3.1 Kala Saarida Saddex xagalada

Gudbinta Cashirka

Ku bilaw casharka hawlgalka 5.7, u ogolow ardayda in ay koox-koox uga doodaan hawlgalka 5.7.taageer waxay helaa, adigoo ku salaynaya jawaabaha ardayda qeex saddex xagal, si ay kaaga caawiyaan qeexida saddex xagal ku khasab ardayda inay koox uga shaqee aan hawlgalka 5.5, u sheeg ardayda sida saddexagalada loo kala saaro, ayadoo lagu salaynaayo cabbirka dhinacyada iyo xaglaha koox ee ardayda, una ogolow in koox-koox uga shaqeeyaan 5.6, muddo ka dib waydii waxay heleen adigoo ku salaynaya jawaabaha ardayda ka dooda astaanta muhiimka ah ee saddexagalada, taas oo ah wadarta xaglaha saddexagalada. Markaad dhamayso dooda astaanta wadarta xaglaha saddexagalada sii ardayda layliska 5.7, shaqo guri ahaa, ha Ilaawin in aad hubiso una saxdo saxdo shaqada ardayda.

Jawaabaha Hawlgalka 5.7

2. 3 dhinac, 3gees iyo 3xaglood.
3. Saddexaglada waxaa loo bixiyaa xarfaha ku qoran geesaha.
4. Haa, haa.

Jawaabaha Shaqo Kooxeedka 5.5

ΔPQR , ΔPRQ , ΔRPQ , ΔRQP , ΔQPR , ΔQRP .

Jawaabaha Shaqo Kooxeedka 5.6

1. 180° , haa
2. Haa, 60°
3. Haa, maya.
4. Maya, maya, waayo wadarta saddexaad xaglood way ka waynaan doontaa 180° .
5. Haa, haa, haa.
6. Haa
7. Maya, maya, haa
8. Saddexagal xagal daacsan.

Jawaabaha Layliska 5.7

- | | | | | |
|----|-----|----------------------------|----|------------------------------|
| 1. | b. | Saddexagal aan isle'ekayn | t. | saddexagal labaale ah |
| | j. | saddexagal aan isle'ekayn | x. | saddexagal siman |
| | kh. | saddexagal aan isleekayn | d. | saddexagal aan isleekayn. |
| 2. | b. | saddexagal xagal daacsan | t. | saddexagal quman |
| | j. | saddexagal xagal fiiqan | x. | saddexagal xagal daacsan. |
| 3. | b. | saddexagal aan isleekayn | t. | saddexagal labaale ah |
| | j. | saddexagal aan isleekayn | x. | saddexagal siman. |
| 4. | | 60° | | |
| 5. | b. | saddexaga leh xagal fiiqan | t. | saddexagal leh xagal daacsan |
| | j. | saddexagal quman | | |
| 6. | | 100° | | |
| 7. | b) | maya | t) | maya |
| | j) | maya | x) | haa |
| | kh) | haa | | |

5.4 XARIIQYADA WANQARKA

Xiisadaha loo qoondeeyay 8 xiisadood

Waxa ugu yar ee ardayga looga baahan yahay marka uu casharkan dhameeyo

Dhammaadka casharkan ardaydu waxay awoodi doonaan in ay:

- *Go'aanshaan xariiqyada wanqarka ee shaxan sallax ah oo lagu siiyay.*
- *Sharxaan astaamaha wanqarka.*

Hordhac

Cutub hoosaadkani wuxuu ka hadlayaa (ina siinayaa) shaxano joomatari oo kala duwan, kuwaas oo ku wanqaran xariiqyo, kuwaas oo loo yaqaano dhidibada wanqarka iyo astaamaha, gaarka ah ee shaxanadan wanqaran ee hoos ku qoran.

Gudbinta casharka

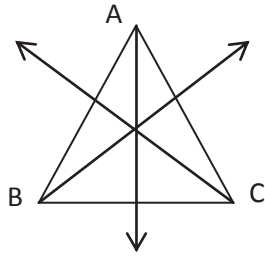
Ku bilaw casharka adigoo tixgalinaya hawlgalka 5.8, u ogolow adrayda in ay ka doodaan hawlgalka iyo ku socdaan jawaabaha ay heleen, ku qor jawaabta arday kastaa bixiyo warqadaha waawayn ee la rog-rogo ama sabuurada. Adigoo ku salaynaya jawaabaha ardayda. Bar una qeex wanqar iyo dhidibada wanqarka, kana jawaab hawlgalka 5.8. waxaad isticmaali kartaa tusaalaha 1 iyo 2 si aad uga dhigto sharaxaad saa'id ah oo ku saabsan tibxihii aad soo qeexday. Hadaad hubtid in ardaydu ay si cad u fahmeen tibaaxaha aad qeexday weydii iyagu way sameeyaan tusaaleyaal kale oo ah waxyaalaha ku wareegsan oo wanqaran dabadeed layliska 5.8 ugu dir shaqo fasal ahaan ama shaqo guri ahaan . ha ilaawin in aad u saxdo ardayda shaqada siina dhibco, in ay ardaydu fahmaan waxaad ku hibin kartaa su,aalo afka ah iyo halxidhaale.

Jawaabaha howlaglka 5.8

1. Qeyb ka mid ah caleenta ee badhtamaha xariiqda dhinac ka xigtaa waxay toos ugu dul-dhacdaa qeybta kale marka laysku laabo.
2. Labada qeybood ee midna ka sareyso xariiqda midna ka hooseeyso, wey is-dulbuuxiyaan midba midka kele, haa, A dusheed, B, dusheed
3. Dhamaanteed waxay ku dul-dhacdaa qeybta kale haa, badhtamuhu isma badalo.
4. Qeybta seddexagalka ka midka ah ee dhinac ka xigta xariiqda dhibcaha ahi waxay ku dul-dhacdaa dhinaca kale. Haa, C dusheed, haa, maya

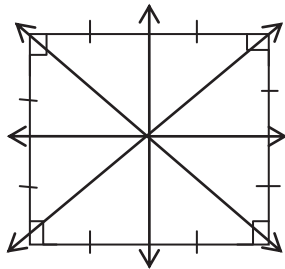
Jawaabaha Layliska 5.8

1. 3 dhidib wanqar
Ogow dhidibkasta oo wanqar wuxuu ku qotomaa dhinac, wuxuuna u qeybiyaa laba meelood oo isle, eg dhinac u taabto,



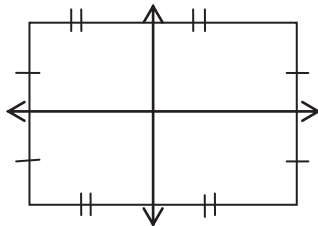
Shaxanka 5.2

2.



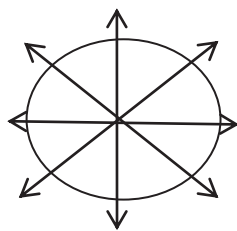
Shaxanka 5.3

3. Laydi aan ahayn labajibaarane, wuxuu leeyahay xaqiiqadii laba dhidib wanqar oo kaliya.



Shaxanka 5.4

4. Goobadu waxay leedahay dhidibo wanqar oo aan la soo koobi karin, dhidib kasta oo mara xudunta goobadu waa dhidib wanqar ay leedahay goobadu.



Shaxanka 5.5

5. b. B, C, D, E, H, I, K, O, X t. A, H, I, O, T, U, V, W, X
 j. H, I, O, X

B. Astaamaha dhidibka wanqaran**Kaabe**

Inta aanad ka hadal astaanta dhidib wanqarka shaxanada, u nakhtiin qeexida dhidib wanqarka iyo wanqarka shaxanada. Dabadeed ha kaga doodeen shaqo kooxeedka 5.7 .u ogolow ardayda in ay hore ugu socdaan (wadaan) qiimeyntooda.

Adigoo ku salaynaya jawaabaha ardayda soo koob shaqo kooxeedka 5.7 dabadeedna ardayda ha ka doodaan howlgalka 5.9 koox ahaan hana ku socdaan jawaabtooda. Adigoo ku salaynaya jawaabaha ardaydu heleen, sheeg labada astaamood ee dhidibka wanqarka. Dabadeedna sii layliska 5.9 shaqo guri ahaan ha ilaawin in aad u saxdo dhibcana ku siiso shaqada ku dhiirigali ardayda su'aalaha saxda ah.

Jawaabaha shaqo kooxeedka 5.7

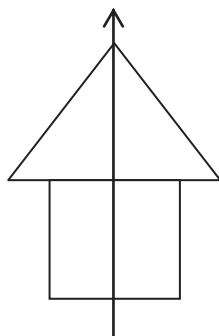
3. haa
4. humaaga walax ee ka samaysma muraayad sallex oo la dul-dhigay xariiqda ku qotonta sallaxa xariiqdu dulmartaa wuxuu la mid yahay walax ku wanqaran xariiqda.

Jawaabaha hawlgalka 5.9

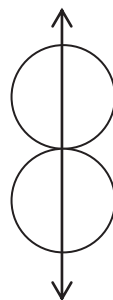
2. b. $AE = EN, BF = FB'$ iyo $CG = GC'$.
3. ℓ waxay ku qotantaa $\overline{AA'}$, $\overline{BB'}$ iyo $\overline{CC'}$
4. dhidib wanqarka labada barood ee P iyo P' waa xariiqda ku qotonta ee labada meelood ee isle, eg u qeybisa xariijinta $\overline{PP'}$.

Jaawabaha Layliska 5.9

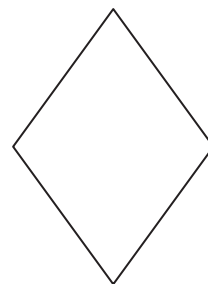
1. b.



t.



j.



x.



Shaxanka 5.6

- | | | | | | | |
|----|----|-------|-----|----------|------|-------|
| 2. | b. | hal | t. | laba | j. | hal |
| 3. | | 15 sm | 4. | 13 sm | | |
| 5. | i. | x | ii. | kh | iii. | b. IV |
| | t. | V | j. | dhidibka | | |

J. Dhismaha dhidibka wanqarka laba barood ay leeyihiin

Kaabaha casharka

Ujeedada ciwaan hoosaadkani waa in ardayda latuso siday u dhisi lahaayeen dhidibka wanqarka laba barood , ardaydu intaanay bilaabin in ay ka shaqeeyaan layliska 5.10 u sheeg ardayda talaabooyinka (jaranjarooyinka) la qaaday marka la dhisayo dhidibka wanqarka, adigoo qaadanaya tusaale aad adigu samaysato.Waxaad isticmaali kartaa tusalayaashan soo socda.

Tusaale 1aad, dhis dhidibka wanqarka ee labada barood ee p iyo p' haddii fogaanta u dhaxaysaa labada barood ay tahay 20 sm

Jawaab

Waxaa jira 4 talaabo oo la maro marka la dhisayo dhidibka wanqarka.

Talaabada 1^{aad}

Sawir $\overline{PP'}$ dherer keeduna yahay 20sm

$\overline{P \quad 20 \text{ sm} \quad P'}$

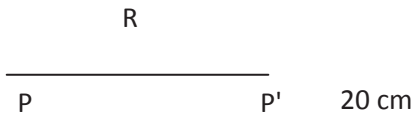
Talaabada 2^{aad}

Adigoo P u isticmaalaya xudunta iyo gacan ka weyn 10sm, goo laba goobo gobol mid ka saraysa iyo mid ka hooseysa

$\overline{P \quad \quad \quad P'}$ $\overline{\quad \quad \quad}$

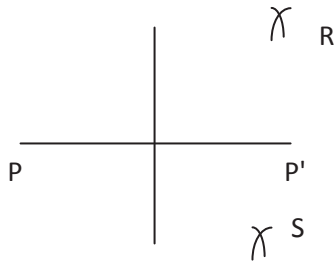
Talaabada 3^{aad}

Adigoo isticmaalaya P' xudun ahaan iyo gacan la mid ah gacankii talaabada 2^{aad} sawir laba goobo gobol oo la kulma (jara) kuwii talaabada 2^{aad}. Ka soo qaad in meesha ay iska jaraan goobo goboladu yihiin R iyo S.



Talaabada 4^{aad}

Isku xidh \overline{RS} . Dabadeed \overline{RS} waa dhidibka wanqarka ee P iyo P'.



Markaad tustid sida loo dhiso dhidibka wanqarka ee laba barood oo kasta ka dib, Ardaydu ha ka shaqeeyaan layliska 5.10 shago fasal ahaan iyo shaqo guri ahaan. Hubi ardaydu inay barten talaabooyinka la maro marka la dhisayo dhidibka wanqarka ee laba barood oo kasta ayagoo isticmaalaya kombas iyo mastarad.

Jawaabaha layliska 5.10

Su'aal kastaa oo ka mid ah layliska 5.10 waxay ku saabsan tahay dhismaha dhidibka wanqarka ee baraha. Sidaas darteed ardaydu ha maraan talaabooyinka 'aan ku soo sheegnay (taxnay) tusaalaha xaga sare iyo inay dhisaan dhidibka wanqarka ayagoo isticmaalaya kombas iyo mastarad.

5.5 CABBIRAADA

Xiisada loogu talo galay: 13 xiisadood

Waxa looga baahan yahay

Dhammaadka ciwaan hoosaadkan ardaydu waxay awoodi doonaan in ay:

- Raadiyaan wareega labajibaaraneyaasha iyo laydiyada.
- Xisaabiyaan (Raadiyaan) Bedadka labajibbaaraneyaasha iyo leydiyada
- Sameeyaan shebaqyada (Gobolada) seddex jibaaranayasha iyo Birisam laydiyeedyada.
- Raadiyaan (helaan) muggaga seddexjibaaraneyaasha iyo Birisam laydi yeedyada ayagoo tirinaya. Inta sentimitir ee seddexjibaaran.

Erayo Cusub

- Laydi
- Lebijibbaarane
- Wareeg
- Bed

- Seddexjibaarane
- Birisam laydiyeed
- Shabaqyada (Gobolada) seddexjibaaranaha
- Mugg
- Helbeeg seddexjibaaran
- Helbeeg lebejibaaran

Hordhac

Ciwaan hoosaadkan cutubku wuxuu ina siinayaa cabbiraado noocyo kala duwan. Cutub hoosaadkan wuxuu u sii qeybsamaa seddex cinwaan oo kele. Ka koowaad wuxuu ku saabsan yahay wareega iyo Bededka labajibaaraney aasha iyo laydiyada. Ka labaadno wuxuu ku saabsan yahay shabaqyada (Gobdada) seddexjibaaraneyaasha iyo Birisam laydiyeedka.

Ka seddexaad ee cutub hoosaadku wuxuu ku saabsan yahay muggaga seddexjibaarane iyo Birisim laydiyeedka.

5.5.1 Birisamyada iyo Bededka labajibbaaraneyasha iyo laydiyada

Gudbinta casharka

Waxaad ku bilaabi kartaa ciwaan hoosaadkan hawlgalka 5.10. Ardaydu ha ka doodaan hawlgalka 5.10 koox ahaan. Muddo yar ka dib weydii Ardayda jawaabaha, ku qor jawaabaha Ardayda sabuurada ama waraaqaha waaweyn ee la rog-rogo. Adiqoo ku salaynayaa jawaabaha Ardaydu door bideen, soo koob hawlgalka 5.10. Waxaad Isticmaali kartaa tusaaleyaasha buugga Ardayda ku qoran si ay aad ugu doodaan ayna Ardaydu u fahmaan wareegyada, hubi in aanay ku wareerin helbeega wareega iyo kabadka. Dabadeed u Isticmaal shaqo Guri layliska 5.11. Una sax shaqada.

Jawaabaha hawlgalka 5.10

1. Laydigu waa Afar-dhinacle labada dhinac ee iska soo horjeedaa isle'eg yihiin xaglahooduna yihiin xaglo quman.
2. Labaji baaranuhu waa laydi 4 tiisa dhinac isle'eg yihiin.
 $P = 4S$ halka S ay tahay dhererka dhinaca
 $A = S^2$ halka S ay tahay dhererka dhinaca
3. Haa, maya
4. Wareega dhinacyada labajibbaarane = $4S$ halbeeg wareega laydi dhererkiisu yahay ℓ ballaciisuna yahay w waa $2(\ell + w)$. Helbeegyada wareegu waa halbeeg.

Jawaabaha layliske 5.11

1. b. 2m t. 40dm j. 50sm x. 4mm
2. b. 16sm 5. 60sm j. 56 mm x. 2(a+b) helbeeg
3. b. 100 sm labajibeeran t. 121sm labajibaaran
j. 144 millimetir labajibaraan x. 225 desimitir labaji baaran
4. b. 18 sentimitir labajibaaran t. 55 sentimitir labajibbaaran
j. 84 sentimitir labajibbaaran x. 156 sentimitir labajibaaran
5. b. 5 sm t. 10 m j. 3sm x. 4 sm
6. 2 sm
7. 80 sentimitir labajibaaran
8. Bedk Gobolka hed haysani = $\left(\begin{array}{c} \text{Bedka laydiga} \\ \text{sare} \end{array} \right) - \left(\begin{array}{c} \text{Bedka} \\ \text{Gudahe} \end{array} \right)$
= 150 – 48 = 102 sentimiitir labajibbaaran
9. 16 sm
10. 5 sm
11. 16 mitir labajibaaran
12. 9 mitir labajibaaran
13. b. 64 sm labajibaaran t. 36 sentimitir labajibaaran
j. 100 sentimitir labajibaaran
14. 1680 mitir
15. Ka soo qaad in dhererka iyo ballaca laydigu yihiin ℓ iyo b siday Isugu xigaan:-
dabadeed $\ell = 26$
laakiin $P = 2(\ell + b) = 2(26 + b) = 6b$
 $\therefore 96 = 6b$
 $b = 16 \text{ sm, hadaba } \ell = 2 \times 16 = 32 \text{ m}$
 $\therefore \text{Bedka laydigu} = \ell \times b = 16 \times 32 = 512 \text{ mitir labajibaaran}$
16. Madaama wareega laydi dhererkiisu yahay l, ballaciisuna w uu lamid yahey:
 $P = 2(\ell + w)$
Kadib $24 = 2(\ell + w)$
 $12 = \ell + w$

Madaama ℓ iyo w ay yihiin abyooneyaal togan dabadeed qiimaha suurto-galka ah ee ℓ iyo w waa 1 iyo 11, 2 iyo 10, 3 iyo 9, 4 iyo 8, 5 iyo 7 iyo 6 iyo 6. Dabadeed waxaa sawiri karnaa lix laydi oo dhinacyadoodu yihiin kuwa xaga sere aan ku sheegnay.

17. Wareega labajibbaarane = $4 \times 5 = 20$ mitir
 Qiimaha hal mitir = 10 Birr
 Dabadeed qiimaha 20 mitir = $20 \times 10 = 200$ Birr
18. b. 22 sentimetir labajbaaran t. 102 mitir labajibaaran
 j. 41 mitir labajibaaran

5.5.2 Shabaqyada (Gobolada) seddexjibbaaranayaasha iyo Birisam laydiyeedka

Gudbinbta Casharka

Ku bilow casharka qeexida seddex jibaarane iyo Birisam layadyeed iyo waliba gobolada ay seddexjibaaranaha iyo Birisimlaydiyeedku ka Samaysmeen. Dabadeed ardaydu ha ka doodaan koox a haan hawlgalka 5.11 u dir Ardayda in ay keenaan fasalka dhexdiisa seddexjibaaranayaasha iyo birisam laydiyeedyo ay ka sameeyeen waraaq adag. dabadeed u dir in ay kala dhigdhiigaan seddexjibbaaranaha iyo birisim laydiyeedka ay sameeyeen, hana fiiriyaan gobolada ay ka sameeyeen. Marka ay fahmaan macnaha gobolada seddexjibaaranayaasha iyo birisam laydiyeedka, u dir inay ka shaqeeyaan layliska 5.12, shago fasal ahaan iyo shago guri ahaan.

Jawaabaha hawlgalka 5.11

- b. Gobolada uu seddexjibaaranuhu ka samaysan yahay marka la kala dhigdhiigo seddexjibaaranda waa isku mid shaxanka.
- t. Labajibaaraneyaalka j. 5 sm iyo 5 sm
- x. 150 sm lebajibbaaran
- kh. Qeybta midabka dooga ah iyo huruudu waa dhinacyada wajiyada seddexjibaaranaha. Midabka casaanku waa salalka seddexjibaaranaha
- d. haa
- r. wadarta bedka wajiyada seddexjibaarane = wadarta bedka gobolada = 150 sm labajibaaran

Jawaabaha Hawlgalka 5.8

- b. Gobolada shexanku waxay la mid yihiin shaxanka lagu siiyey.
- t. Laydiyo
- j. Seddex lemmane oo laydi ahi waxay sameeyaan birisim laydiyeed.
- x. 3 sm iyo 5 sm, 3 sm iyo 5 sm, 4 sm iyo 5 sm.
- kh. 94 sentimitir labajibbaaran
- d. Wadarta wajiyada Birisam laydiyeedku = wadarta bedka gobolada = 94 sm^2
- r. haa

Jawaabaha layliska 5.12

1. Wadarta bedka wajiyada seddexjibbaarane = 216 sm labajibbaaran
2. Wadarta bedka wajiyada birisam laydiyeed = 72 sm
3. Lix gobol oo labajibbaarane waxay sameeyaan seddexjibbaarane.
4. Seddex lammaane oo laydi ahi waxay sameeyaan birisam laydiyeed.

5.5.3 Muggaga Seddexjibbaaraneyaasha iyo Birisam Laydiyeedyada**Gudbinta Casharka**

Ku bilow cinwaan hoosaadkan adigoo xasuusinaya ardayda qeexida sanduuqa seddexjibbaarane iyo birisam laydiyeedka, dabadeedna u qeex waxa uu yahay halbeeg seddexjibbaaran. Qeexida ka dib waxaad weeydiin waa maxay mugga adke marka laga buuxiyo adkaha seddexjibbaarane helbeegyo. U sheeg ardayda tirada seddexjibbaarane halbeeg ee buuxisa adka inay tahay mugga adkaha. Dabadeed qaado tusaaleyaasha buuga ardayga markaa tusaaleyaashaa qaadato kadib sii qaaciidada guud ee muggaga seddexjibbaaraneyaasha iyo birisim laydiyeedyada. Markaad dhemmayso intan ardayda u dir layliska 5.13 shaqo fasal ahaan iyo shaqo guri ahaanba. Hubi in ardaydu fahmeen qaaciida muggaga seddexjibbaaraneyaasha iyo birisam laydiyeedyada iyo halbeega loo isticmaalo si loogu caddeeyo muggaga adkeyaasha.

Jawaabaha layliska 5.13

- | | | | | | | |
|----|----|--------------------|----|--------------------|----|---------------------|
| 1. | b. | 512 sm^3 | t. | 216 sm^3 | j. | 343 sm^3 |
| 2. | b. | 30 sm^3 | t. | 480 sm^3 | j. | 1848 sm^3 |
| 3. | | 4 sm | | | | |
| 4. | | 3 sm | | | | |
| 5. | | 2 sm | | | | |
| 6. | | 4 sm | | | | |

7. 216 sm^3
8. 150 sm^3
9. Halbeeg labajibaaran, halbeeg seddexjibaaran.

Jawaabaha layliska Nakhtinka Cutubka 5aad

1. b. \overline{OF} iyo \overline{FD} , \overline{OE} iyo \overline{FD} iyo \overline{OD} iyo \overline{FD}
t. Barta E j. Haa, barta D.
5. b. ber-badhtanka $\overline{PP'}$
t. haa
- 6.
7. b. Seddexagal aan isle'ekayn t. Seddexagal labaale ah
j. Seddexagal siman
8. 6° , waa seddexagal xagal daacsan
9. b. 20 sm b. 25 sentimitir labajibbaaran
10. b. 3 sm t. 16 sm
11. 1500 qeybood
12. 216 sm^3
13. 8 m^3
14. b. 27 sm^3 t. 125 sm^3 j. 216 sm^3
15. b. 192 sm^3 t. 24 sm^3

MUQARARKA
XISAABTA
FASALKA 5^{AAD}

Waxaa Tarjumay
Cabdisalaad Max'ed

XISAABTA FASALKA 5^{AAD}

HORDHAC

Cilmi-baadhistii iyo waayo-aragnimadii hore waxay si isdabajoog ah u muujinayee in barista xaqqooyinka, xeerarka iyo aragtiyaha aasaasiga ah ee xisaabta haddiiba lagu guulaysto aan keligood lagu gaadhi Karin baahiyaha bulsho iyo taaliin ahaaneed ee waxbarashada xisaabta si joogtaysan. Sidaas oo kale aan lagu gaadhi Karin aragtida barashada asaw ahaaneed ama dabeecadda barashada nuxurka (theory) ee ka dhex jira fasallada, taas oo qaab-dhismeedka. Waxdhigistu ama baristu ay ahayd mid ku salaysan wax-u-sheegid (baraha oo wax u sheega ardayga), barashaduna ahayd mid ku salaysan xusuusasho (ardayga oo xusuusta wixii baruhu u sheegay).

Aragtidii barashada xisaabta eek u salaysanayd. “tirooyinka iyo xisaabintooda” waxay isu bedeshay ‘xisaabtii oo noqotay mid loo adeegsado xallinta mas’aloooyinka ama xallinta dhibaatooyinka bulshada qodobbada ugu waaweyn ee sababay isbedelkaas ku yimid waxbarashada xisaabta waxaa ka mid ahaa:-

- ❖ Xaqqooyinkii iyo xirfaddihii lagu fahmi lahaa macnaha xisaabta oo aan la garanayn ama ahaa kuwo qarsoon oo go’doon ah.
- ❖ Adeegsiga xirfaddaha xisaabaadka (computation skills) iyo xusuusashada xaqqooyinka xisaabta ee lagu helayo jawaabta saxda ah ee furfurista u ah masalada, fahmida macnaha dabiiciga ah ee masalada ayaa markii lagu shaqeeyey xirfaddaha iyo xaqqooyinka waxaa la ogaaday in ay yihiin qalabka lagu furfuro masalada

Xisaabaha lagu baranayo fasalka 5^{aad} waa in ay noqdaan kuwo soo dhisaya ama kor-u-soo-qaadaya aqoonta wixii uu ardaydu hore ugu soo barteen iyo xirfaddaha ay ku soo qaateen (adeegsadeen) waxbarashadooda aasaasiga ah ee heerka 1^{aad} (first cycle of their primary education) ardaydu waa in ay noqdaan

kuwo lagu dhiirigeliyey lagana caawiyey fahamka fikraddaha (macneyaasha), isla markaana ay noqdaan kuwo wax isbara waxna kala barta midba midka kale bareyaasha iyo qoreyaasha buugta ardayda waa in ay ardayda siiyaan fursaddo kala duwan oo u saamaxaya in ay macnaha xisaabta ee ay baranayaan ku dabbakhaan xaaladdha nolol-maalmeedkooda iyaga oo adeegsanaya hawlgallo (waxqabadyo) kala duwan, laydisyo iyo shaqo-kooxeedyo.

Baruhu mar kasta waa in uu ka fiirsadaa waxqabadyada (hawlgallada) xiisagelinaya shaqada ardayda. Cashar kasta oo cusub waa in si qotodheer loogu xidho aqoonta, kartida iyo xirfaddaha ay ardaydu hore u lahaayeen. Fiiro gaar ah waa in la siiyaa qiimeynta natiijada waxbarashada ardayda si waqtiga ku habboon loo ogaado dhaliilaha iyo dhibaatooyinka jira (soo baxay).

Waa in la qaado tallaabooyinka ku habboon (sida naqtiimid, kaalmeyn shakhsi, baadhitaanno dheeraad ah IWM) si dhammaan ardayda looga caawiyo gaadhitaanka ujeeddoyinkii loo dejiyey.

Ujeedooyinka barashada xisaabta fasalka 5^{aad}

Iyada oo ujeedooyinka guud ee barashada xisaabta lagu xidhayo ujeedooyinka loo dejiyey waxbarashada aasaasiga ah ee heerka labaad (second cycle of the primary education) gaar ahaan kuwa xidhiidhka leh, ayaa barashada xisaabta fasalka 5^{aad} waxaa lagu jihaynayaa qodobbada kala ah:-

- ❖ Hourmarinta (kobcinta) kartiyaha iyo xirfadaha ku haboon adeegsiga iyo ku-shaqaynta tirooyinka iyada oo lagu salaynayo aqoontii iyo xirfaddihii ay ku soo barten fasalka 4^{aad}
- ❖ Xoojinta iyo kor-u-qaadidda aqoontooda ku wajahan fikraddaha (macnayaasha) gundhigga u ah joomateriga iyo kartidooda iyo xirfadahooda ku saabsan sawiridda iyo dhisidda dahooda ku saabsan sawiridda iyo dhisidda shaxannada aasaaska u ah joomateriga iyo kartidooda iyo

- xirfadahooda ku saabsan sawiridda iyo dhisidda shaxannada aasaaska u ah joomateriga
- ❖ Awoodsiinta iyo dhiirigelinta ardayda in aqoonti iyo xirfaddihii ay ka helaan dugsigga ay ku dabbakhaan xallinta dhibaatooyinka soo wajahay ama ka hor yinid hawlaha nolol-maalmeedkooda maalinba maalinta ka dambaysa
 - ❖ Ka taageeridda ardayda in ay kobciyaan xiisahooda barashada xisaabta, isla markaana ay la yimaadaan isxilqaan ay isu qalqaalinayaan barasho dheerian oo maaddada xisaabta ah.

Ujeeddoonkaas waxaa lagu haadhi karaa ardayda oo ka qaybqaadata hawlgallo iyo shaqo mashruuc oo si fiican loogu qorsheeyey looguna habeeyey shaqo kooxeed iyo shakhsiyaalba iyo waliba laylisyo ku habboon oo la xulay sida ku shaqaynta doorsoomeyaasha; furfurista isle'egyada iyo dheelliyada; weedh-xisaabeedyo, qiyaasidda iyo cabbiraadda bedadka iyo mugagga, ururinta iyo ku muujinta gataafka ee xogaha fudud iyo sharrax-ka-bixinta garaafaydiyeedkada fudud, IWM

Marka ay dhammaato xisaabta, fasalak 5^{aad} ka dib, noocyada aqoonta, xirfaddaha iyo kartiyaha soo socda waa in lagu guulaystaa gaadhitaankooda.

- ❖ Akhrinta, qoraalka astirada, isbarbardhigga iyo horsanaanta tirooyinka idil ee ka weyn 1,000,000
- ❖ Xallinta dhibaatooyinka nolosha dhabta ah iyada oo la adeegsanayo tirooyinka idil ilaa 1,000,000
- ❖ Isbarbardhigga, horsanaanta iyo adeegsiga jajabyada fudud
- ❖ Jajabyada oo loo tibaaxayo boqolkiiba iyo boqolkiiba oo loo bedelayo jajabyo, jajab-tobanleyaal sidaas oo kale jajabyada iyo jajab-tobanleyaasha oo loo bedelayo boqolkiiba

- ❖ Isugeynta iyo kalagoynta tirooyinka idil iyo jajab-tobanleyaasha leh ilaa 3 god oo barta jajab-tobanle midig ka xiga
- ❖ Soo saarista dhufsane-yaraha ay wadaagaan (dh.Y.W) iyo isir-weynaha ay wadaagaan (I.W.W) tirooyin idil oo lagu siiyey
- ❖ Taranta isirro isle'eg oo loo tibaaxayo jibbaaro iyo ku shaqaynta jibbaarada
- ❖ Isku dhufashada jajab-tobanleyaasha leh, ilaa 3 god oo barta jajab-tobanle midig ka xiga iyo tirooyinka 10,000 iyo 1,000
- ❖ Isuqaybinta tirooyinka idil oo 6 god ah iyo tirooyin idil oo 3 god ah
- ❖ Isuqaybinta jajab-tobanleyaasha leh 3 god oo midig ka xiga barta jajab-tobanle iyo tirooyinka 10,000 iyo 1,000
- ❖ Adeegsiga doorsoomeyaasha u taagan tirooyin
- ❖ Hawraaraha fudud oo loo tibaaxayo tibaaxto xisaabeed
- ❖ Furfurista isle'egyada toosan ee fudud iyo dheelliyada toosan eel eh hal doorsoome
- ❖ Soo saarista wareegga iyo bedka labajibbaaranaha iyo laydiga
- ❖ Qiyaasidda mugga saddex jibbaaranaha iyo biriisam laydiyeedka
- ❖ Cabbiraadda xaglaha iyada oo la adeegsanayo xagal beeg
- ❖ Kala soocodda saddexagallada iyo muujinta xarriiqaha wanqaranka ee saddexagallada, laydiyada iyo labajibbaarabeyaasha
- ❖ Kala badhidda xarriijin iyo xagal lagu siiyey iyada oo la adeegsanayo mastarad iyo gobo-beeg.
- ❖ Sawiirdda garaaf-laydiyeed, sharraxidda garaaf-laydiyeedyada fudud iyo soo saarista celceliska tirooyin (xog) lagu siiyey.

Cutubka 1^{aad}:- Tirooyinka idil iyo afarta xisaab fal (48 xiisadoo)

Ueaddoyinka guud ee cutubka:

Cutubkani marka uu dhammaado kadib, ardayu waxay awood u yeelan doonaan (awood u yeelan karaan)

- i. Fahamka tirooyinka idil iyo aqoon qofodheer oo ku saabsan tirooyinka idil
- ii. Ku shaqaynta afarta xisaabfal ee aasaaska u ah tirooyinka idil
- iii. Aqoonta ay u leeyihiin tirooyinka idil oo ay ku dabbakhaan xallinta dhibaatooyinka ka jira deggaankooda

Dujeeddoyinka gaarka ah ee casharka	Ciwaannad a cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<p>Casharkani marka uu dhammaado ka dib, ardaydu waa in ay:-</p> <ul style="list-style-type: none"> • Akhrin karaan tirooyinka idil ilaa 1,000,000 • Qori karaan astirada tirooyinka idil ilaa 1,000,000 • Isbarbardhigi karaan tirooyinka idil ilaa 1,000,000 • Horsanaan u qori karaan tirooyinka idil ilaa 1,000,000 	<p>1.tirooyinka idil iyo afarta xisaabfal</p> <p>1.1 tirooyinka idil ee ka weyn 1,000,000 (20 x 150)</p> <p>1.1.1 nastiin tirooyinka idil ilaa 1,000,000 (6 x 150)</p>	<ul style="list-style-type: none"> • Ku hoggaami ardayda in ay naqtiin ku sameeyaan tirooyinka idil ilaa 1,000,000 gaar ahaan <ul style="list-style-type: none"> - Akhrinta tiro ah siiyey - Bixinta tusaale ku saabsan tirooyinka idil ee muujinaya nolol maalmeedkooda - Sheegista qiima rugeedka tirooyinka siiyey - Isku aaddinta astirada iyo akhriska tiro kasta oo loo cayimay - Qoridda astirada tirooyinka idil iyo go'aaminta tirade weyn ama tirade yar - Muujinta horsanaanta tirooyinka idil 	<p>Weydii ardayda in ay akhriyaan qoraan, isbarbardhigaan islamarkaana muujiyaan horsanaanta tirooyinka idil ilaa 1,000,000</p>

Dujeeddoyinka gaarka ah ee casharka	Ciwaannad a cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<ul style="list-style-type: none"> • Akhrin karaan tirooyinka idil ee ka weyn 1,000,000 • Qori karaan astirada tirooyinka idil ee ka weyn 1,000,000 • isbarbardhigi 	<p>1.1.2 tirooyinka idil ee ka weyn 1,000,000 (6x150)</p>	<ul style="list-style-type: none"> • casharkan waxa aad ku bilaabi kartaa su'aalo aad weydiinayso ardayda sida:- <ul style="list-style-type: none"> - waa maxay tirade dadweynaha itoobiya - waa maxay tirade shacabka ee deegaanka soomaalida? - Waa maxay fogaanta u dhexaysa dhulka iyo qorraxda? • Marka aad barto ardayda in isugeynta 1 iyo 999,999 ay tahay 1,000,000 kadib ku dhiirigeli ardaydaada in ay soo gabagabeeyaan tirooyinka idil ee ka weyn 1,000,000, kuna hoggaami akhriska, qoraalka, isbarbardhigga iyo horsanaanta tirooyinkaas. • Ka caawi ardayda in ay soo gunnaanadaan in tiro kasta oo tiro idil ah "0" oo aan ahayn "0" ay leedahay horreeya ah "0-1" iyo dambeeya ah "0 + 1" • Ku hoggaami ardayda in ay go'aamiyaan 	<ul style="list-style-type: none"> • Weydii ardayda akhriska qoraalka, isbarbardhigga iyo horsanaanta tirooyinka idil ee ka weyn 1,000,000 • Weydii ardayda in ay soo saaraan horreeyaha iyo dambeeyaha tiro kasta oo la siiyo

Dujeeddoyinka gaarka ah ee casharka	Ciwaannad a cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>qodobbadan hoose</p> <ul style="list-style-type: none"> - Majirto tiro la oran karo waa tirade ugu weyn tirooyinka idil - Eber (0) waa tirade ugu yar tirooyinka idil 	
<p>Casharkani marka uu dhammaado kadib ardaydu waa inay :-</p> <ul style="list-style-type: none"> • Soo saari karaan qiima-rugeedka god kasta oo ka mid ah tirade idil ee la siiyey • Tiro kasta oo la siiyo u qori karaan isugeynta wadarta dhufsaneyaasha 10 • Soo saari karaan horsanaanta tirooyinka idil ee loo cayimay iyaga oo adeegsanaya qiimarugeedka ama xarriiqda tirade midkood 	<p>1.1.3 qiima rugeedka iyo horsanaanta tirooyinka idil (5 xiso)</p>	<ul style="list-style-type: none"> • U ogolow qaar ka mid ah ardayda in ay qaadaan kaadhahka tirade isla markaana ay si saf ahaan ah isu taagaan ardayda horteeda. Kadibna ardayda kale ku hoggaami in ay akhriyaan tiro kasta oo ka mid ah tirooyinka ay ardaydu kor u hayaan. Ku celceli sidaas adiga oo isku bedelaya ardayda kaadhahka haysa • Ka caawi in ay falanqeeyaan qiima rugeed god kasta oo ka mid ah tirade aad siisay, iyaga oo adeegsanaya shaxda qiima rugeedka • Ka caawii ardayda in ay qoraan fidinta tirade idil ee la siiyey iyaga oo adeegsanaya tusaaleyaal sida:- $5286 = 5000 + 200 + 80 + 6$ $= (5 \times 1000) + (2 \times 100) + (8 \times 10)$ 	<ul style="list-style-type: none"> • Sii ardayda laylisyo ku saabsan qiima – rugeedka, korsanaanta iyo fidinta tirooyinka idil

Dujeeddoyinka gaarka ah ee casharka	Ciwaannad a cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>+ 6</p> <ul style="list-style-type: none"> • Ku dhiirigeli ardaydaada in ay tirooyinka idil ku muujiyaan xarriiqda tirade dusheeda, isla markaana ay xarriiqdaas tirade u adeegsadaan isbarbardhigidda iyo horsanaanta tirooyinka idil 	
<p>Casharkani marka uu dhammaado ka dib, ardaydu waa in ay:-</p> <ul style="list-style-type: none"> • Soo sooci karaan tirooyinka dhabanka ah • Soo saari karaan tirooyinka kisiga ah 	<p>1.1.4 tirooyinka dhaban iyo tirooyinka kisi (3 xiso)</p>	<ul style="list-style-type: none"> • Ku hoggaami ardayda in ay kala soocaan tirooyinka dhabanka ah iyo tirooyinka kisiga ah, iyaga oo adeegsanaya Tusaaleyaal ku salaysan khibraddooda, sida:- - Qaybsashada lacag lasiiyey oo ay si isle'eg u qaybsanayaan - In ay isuqaybiyaan kooxo iyaga oo adeegsanaya lambarkooda fasalka, isla markaana kooxda 1^{aad} ka dhigaan ardayda lambarkoodu yahay tiro dhaban ah, kooxda 2^{aad} ay noqoto ardayda lambarkoodu yahay tiro kisi ah:- 	<ul style="list-style-type: none"> • Weydii ardayda in ay taxaan tirooyinka dhabanka ah • Weydii ardayda in ay taxaan tirooyinka kisiga ah

Dujeeddoyinka gaarka ah ee casharka	Ciwaannad a cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<ul style="list-style-type: none"> • Ku dhiirigeli ardayda in ay taxaan qaar ka mid ah tirooyinka ugu horeeya tirooyinka dhabanka ah iyo kuwa ugu horreeya tirooyinka kisiga ah isla markaana ay u fiirsadaan hannaankooda • Ku hoggaami ardayda soo gabagabaynta in:- <ol style="list-style-type: none"> 1. Dhaban + dhaban = dhaban 2. Kisi + kisi = dhaban 3. Kisi + dhaban = kisi = dhaban + kisi 	
<p>Casharkani marka uu dhammaado kadib ardaydu waa in ay</p> <ul style="list-style-type: none"> • Xallin karaan mas'alooyinka isugeynta ah • Xallin karaan mas'alooyinka kalagoynta ah soo sooci karaan astaamaha isugeynta tirooyinka idil 	<p>1.2 xisaabfallada tirooyinka idil</p> <p>1.2.1 isugeynta iyo kalagoynta tirooyinka idil (6 xiso)</p>	<ul style="list-style-type: none"> • u ogolow ardayda in ay ka shaqeeyaan mas'alooyinka isugeynta ah iyo kuwa kalagoynta ah, isla markaana ay hubiyaan wadarta isugeynta iyaga oo a deegsanaya kalagoynta. Sidaas oo kale hubiyaan faraqa kalagoynta iyaga oo adeegsanaya isugeyn. • Ku hoggaami ardayda in ay, naqtiin ku sameeyaan astaanta kala hormarinta iyo 	<ul style="list-style-type: none"> • Sii ardayda laylisyo ku saabsan mas'alooyin isugeyn iyo kalagoynta ah oo weydii in ay ka shaqeeyaan • Weydii ardayda in ay soo soocaan astaamaha isugeynta tirooyinka idil

Dujeeddoyinka gaarka ah ee casharka	Ciwaannad a cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>astaanta hormogelinta ee isugeynta tirooyinka idil</p> <ul style="list-style-type: none"> • Ka taageen ardayda astaanta asalmaddorshaha isugeynta “O” tirooyinka idil oo ah “O”. taas oo ah haddii “X” ay u taagan tahay dhammaan tirooyinka idil markaa “$X + O = O + X = X$” • Ku xiisageli ardayda in ay ka shaqeeyaan weedh xisaabeedyada la xidhiidha nolosha dhabta ah ee ardayda sida:- Tusaale: madbacad ayaa maalintii isniinta waxay daabacday 453,200 buug, maalintii talaadadana waxay daabacday 686,902 buug, arbacadiina 282,462 buug. Haddaba immisa bug ayey madbacaddasi daabacday saddexdaas maalmood? 	
<p>Casharkani marka uu dhammaado kadib ardaydu waa in ay:-</p> <ul style="list-style-type: none"> • Xallin karaan mas’alooyinka 	<p>1.2.2 iskudhufasha da tirooyinka idil (5 xiso)</p>	<ul style="list-style-type: none"> • U ogolow ardayda in ay ka shaqeeyaan mas’alooyinka isku dhufashada ah ee la xidhiidha noloshooda dhabta 	<p>Weydii ardayda in ay adeegsadaan astaamah iskudhufashda si ay u xalliyaan mas’alooyinka</p>

Dujeeddoyinka gaarka ah ee casharka	Ciwaannad a cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
iskudhufashada tirooyinka idil • Soo sooci karaan astaanta kala dhigidda iskudhufashada ee isugeynta		ah ee tirooyinka idil ee ka kooban ilaa 3 god • Ku hoggaami ardayda in ay naqtiin ku sameeyaan astaanta kala hormarinta iyo astaanta hormogelinta ee isku dhufashada tirooyinka idil • U ogolow ardayda in ay falanqeeyaan astaanta kala dhigidda isku dhufashada ee isugeynta • Ku xooji tusaaleyaal si aan u soo gunaanaddo astaamahaas sida:- b) $4 \times 7 \times 5 = (4 \times 7) \times 5 = (4 \times 5) \times 7 = 20 \times 7 = \underline{140}$ t) $23 \times 4 \times 25 = 23 \times (4 \times 25) = 23 \times 100 = \underline{2300}$ J) $43 \times 7 = (40 + 3) \times 7 = (40 \times 7) + (3 \times 7) = 280 + 21 = \underline{301}$ X) $16 \times 9 + 4 \times 9 = (16 + 4) \times 9 = 20 \times 9 = \underline{180}$	iskudhufashada ah
		• Ka caawi ardayda in ay soo bandhigaan astaamaha isku dhufaasada ee 1 iyo	

Dujeeddoyinka gaarka ah ee casharka	Ciwaannad a cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>“0” ee tiro kasta oo tiro idil ah</p> <ul style="list-style-type: none"> • Ku dhiirigeli ardayda in ay ku shaqeeyaan qiimaha ugu dhow ee qiyaas ahaan lagu soo saaro taranta isku dhufashada tirooyinka idil ee aad u badan iyo weliba soo saarista taranta dhabta ah. Waxa aad qaadan kartaa tusaaleyaashan oo kale:- $6127 \times 294 = 6000 \times 300 = 1,800,000$ $6127 \times 294 = 1,801,338 = 1,800,000$ 	
<p>Cashaarkani marka uu dhammaado kadib ardaydu waa in ay:-</p> <ul style="list-style-type: none"> • Isuqaybin karaan tirooyinka idil ee qaybtoodu tahay jajab-toban leyaal (2 god ay midig ka xigaan barta jajab-tobanle) 	<p>1.2.3 isuqaybinta tirooyinka idil (5 xiso)</p>	<ul style="list-style-type: none"> • Ka caawi ardayda in ay si ficil ah uga shaqeeyaan isuqaybinta tirooyinka idil ee aad u badan iyo tiro laba god, saddex god ama afar god ka kooban • Ka taageer ardayda in ay isuqaybiyaan tirooyinka idil, isla markaana ay qaybtooda u tibaaxaan jajab-tobanle ku dhammaada 2 god oo midig ka xiga 	<p>Sii ardayda layliso ku saabsan isuqaybinta tirooyinka idil ee aad u badan iyo tiro laba, saddex ama afar god ah</p>

Dujeedoyinka gaarka ah ee casharka	Ciwaannad a cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		barta jajab-tobanle <ul style="list-style-type: none"> U ogolow ardayda in ay daaha ka qaadaan astaamaha aan raalligelinayn isugqaybinta sida astaanta kala hormarinta (lama kala hormarin karo isuqaybinta laguma sameyn karo hormogelin 	
Casharkani marka uu dhammaado kadib ardaydu waa in ay xallin karaan mas'alooyinka ka kooban dhawr xisaabfal iyo kuwa ku jira bilaha	1.2.4 mas'alooyinka ka kooban dhawr xisaabfal (5 xiso)	<ul style="list-style-type: none"> Fursad u sii ardayda in ay si ficil ah uga shaqeeyaan xallinta mas'alooyinka ka kooban dhawr xisaabfal, isla markaana ay soo saaraan xeerarka ku saabsan sida ay u kala horreeyaan xisaabfallada 	<ul style="list-style-type: none"> Weydi ardayda in ay soo saaraan xeerarka isku xigidda ama kala horreynta ka shaqaynta xisaabfallada kadibna sii layli oo hubi shaqadooda
Casharkani marka uu dhammaado ka dib ardaydu waa in ay:- <ul style="list-style-type: none"> Raadin karaan dhufaneyaasha tirooyinka idil Raadin karaan isirrada tirooyinka idil 	1.2.5 dhufsaneyaasha iyo isirrada tirooyinka idil (4 xiso)	<ul style="list-style-type: none"> Ku dhiirigeli ardayda in ay raadiyaan soona saaraan dhufsaneyaasha tiro kasta oo la siiyo Ku dhiirigeli ardayda in ay raadiyaan, soona saaraan isirrada tiro kasta oo la siiyo 	<ul style="list-style-type: none"> Weydii ardayda in ay qoraan (taxaan) dhufsaneyaasha iyo isirrada tiro aad u cayintay
Casharkani marka uu dhammaado ka dib ardaydu waa in ay:- <ul style="list-style-type: none"> Taranta isku dhufaashada isirro isle'eg u 	1.2.6 jibbaarrada tirooyinka idil (3xiliso)	<ul style="list-style-type: none"> Fursad u sii ardayda in aysi fiican u fahmaan macnaha jibbaarrada iyaga oo adeegsanaya tusaaleyaal kala duwan Ka taageer ardayda 	<ul style="list-style-type: none"> Weydii ardayda in ay iskudhufashada isirro isku mid ah u tibaaxaan jibbaaro, isla markaana ay kala

Dujeeddoyinka gaarka ah ee casharka	Ciwaannad a cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<p>tibaaxi karaan jibbaarro</p> <ul style="list-style-type: none"> • Adeegsan karaan xeerarka jibbaarrada qaarka mid ah 		<p>in ay si ficil ah taranta isirro isle'eg u muujiyaan jibbaarro</p> <ul style="list-style-type: none"> • Ku dhiirigeli ardayda in ay kala soocaan macnaha “jabbaaran”, “sal” iyo “jibbaar”, isla markaana ku hoggaami in ay daahfuraan xeerarka jibbaarrada ee iskudhufashada iyo isuqaybinta leh sal isku mid ah. Waxa aad adeegsan kartaa tusaaleyaashan soo socda iyokuwo la mid ah sida:- $2^2 \times 2^3 = (2 \times 2) \times (2 \times 2 \times 2)$ $= 2 \times 2 \times 2 \times 2$ $\times 2 = 2^5$ $= 2^{2+3} = 2^5$ $\frac{3^4}{3^2} = \frac{3 \times 3 \times 3 \times 3}{3 \times 3} =$ $\frac{3 \times 3}{3 \times 3} \times 3 \times 3$ $= 1 \times 1$ $\times 3 \times 3$ $= 3 \times 3 = 3^2$ $= 3^2 = 3^{4-2}$ <p><u>Fiiro gaar ah:</u> Jibbaarku waa in uu noqdaa abooyne togan sidaas awgeed fadlan ka fogow tusaalayaasha noocan ah sida:-</p> $\frac{3^8}{3^5} = 3^{3-5} = 3^{-2}$	<p>soocaan jibbaar, sal iyo jibbaarro</p> <ul style="list-style-type: none"> • Sii ardayda laylisyo saabsan adeegsiga (dabbarkhaadda) xeerarka jibbaarrada ee isku dhufashada iyo isuqaybinta jibbaarrada leh salal isku mid ah

Cutubka 2^{aad}: adeegsiga doorsoo meyaasha (24 xiisadood)

Ujeeddooyinka guud ee cutubkan:

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

- Xaqiiqsiga u adeegsiga doorsoomeyaasha ee xisaabta
- Fahamka tixaha iyo tixaaxaha xisaabeed iyo fududaynta tixaaxaha xisaabeed
- Soo soocidda isle'egyada, iyo dheeliyada
- Soo saarista qiimeyaasha isle'egyada iyo dheelliyada iyada oo la adeegsanaya habka isku bedelidda

Dujeeddoyinka gaarka ah ee casharka	Ciwaannada cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<p>Casharkani marka uu dhammaado ka dib, ardaydu waa in ay:-</p> <ul style="list-style-type: none"> • Hawraaraha xisaabeed ee fudud u bedeli karaan tibaaxo xisaabeed • Kala sooci karaan tibxo 	<p>2. adeegsiga doorsoo meyaasha</p> <p>2.1 tixaha iyo tixaaxaha aljibrada (17 xiso)</p> <p>2.1.1 tixaha aljibrada iyo qiimaha tixaha</p>	<ul style="list-style-type: none"> • Ka caawi ardayda in ay xaqiiqsadaan adeegsiga doorsoomeyaasha <p>Tusaale:- anigu waxaan ahay “</p> <p>saddex dalool ooh al daloolka tiro = $\frac{1}{3}x$</p> <ul style="list-style-type: none"> - Labalaabka tiro = $2x$ - Wadarta laba tiro = $a + b$ <ul style="list-style-type: none"> • Ku dhiirigeli ardayda in ay sharraxaan macnaha tibxo iyo tixaaxo iyo in xarfahaas loo adeegsanayo tirooyinka ay tahay hab gaaban oo loo qoro xisaabta. Iyaga oo adeegsanaya tusaaleyaal khuseeya dhacdooyinka maalin kasta tusaale ahaan 	<ul style="list-style-type: none"> • Sii ardayda layhisyo ay ky soo saacayaan tixaaxaha aljebraad, iyaga oo ka duulaya tirade tixaha ay ka kooban yihiin • Weydii ardayda in ay hawraaraha xisaabeed tixaaxo xisaabeed iyaga oo adeegsanaya dhacdooyinka maalin kasta ka dhaca agagaarkooda

Dujeeddoyinka gaarka ah ee casharka	Ciwaannada cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>“haddii qiimaha hal ku qalin uu yahay x-birr, markaa waa immisa qiimaha 10 qalin iyo 12 buug?”</p>	
<p>Casharkani marka uu dhammaado ka dib, ardaydu waa in ay:-</p> <ul style="list-style-type: none"> • Fududayn karan tibaaxaha lasiiyey iyaga oo isla doonanaya tibxaha isku midka ah • Soo saari karaan qiimaha tibxaha iyo tibaaxaha iyaga oo tirooyin idil ku bedelaya doorsoomeyaasha la siiyey • Kala sooci karaan tibaaxaha aljebraad iyaga oo ka duulaya tirade tibxaha ay ka kooban yihiin 	<p>2.1.2 qiimaha tibaaxaha fudud ee aljabrada</p>	<ul style="list-style-type: none"> • Ka caawi ardayda in ay fududeeyaan tibaaxaha, iyaga oo isladoonanaya tibxaha isku midka ah kadibna isugeynaya ama kalagoynaya. <p><u>Tusaale</u> $2a + 4b + 5a - b$</p> $= (2a + 5a) + (4b - b)$ $= 7a + 3b$ <ul style="list-style-type: none"> • U ogolow ardayda in ay si ficil ah u qoraan tibaaxaha, isla markaana ay doorsoomeyaasha ku jira tibaaxaha ku bedelaan tirooyin, iyaga ooo adeegsanaya tusaaleyaasha maalin kasta ay la kulmaan • Fursad u sii ardayda in kala soocaan tibaaxaha 	<ul style="list-style-type: none"> • Weydii ardayda in ay fududeeyaan tibaaxa kala duwan • Sii ardayda laylisyo ay ku soo saarayaan qiimeyaasha tibxaha iyo tibaaxaha • Weydii ardayda in ay kala, soocaan tibaax ah hal tibixda ah iyo kuwa laba, tibixda ah

Dujeeddoyinka gaarka ah ee casharka	Ciwaannada cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		hal-tibida ah iyo kuwa laba- tibixda ah:-	
<p>Casharkani marka uu dhammaado ka dib, ardaydu waa in ay:-</p> <ul style="list-style-type: none"> • Kala sooci karaan isle'egyada iyo dheelliyada • Soo saarikaraan furfurista suurfagalka ah ee isle'egyada iyaga oo ka duulaya tirooyinka lasiiyey • Soo saari karaan furfurista suurtagalka ah ee dheelliyada iyaga oo ka duulaya tirooyinka la siiyey • Weedh-xisaabeedyada fudud ee la siiyey u qori karaan isle'egyo ama dheelliyo 	<p>2.2 isle'egyada iyo dheelliyada (7 xiso)</p> <ul style="list-style-type: none"> • Furfurista isle'egyada iyo dheelliyada iyada oo la adeegsanayo habka isku bedelidda 	<ul style="list-style-type: none"> • Fursad u sii ardayda in ay wada falanqeeyaan maanaha isle'eg iyo macnaha dheelli, iyaga oo adeegsanaya tusaaleyaasha maalin kasta ay la kulmaan • Ka ccaawi ardayda in ay sificil ah ugu noqnoqdaan sameynta 9qoridda) isle'egyada fudud iyo dheelliyada fudud ee la xidhiidha arimaha muhiimka ah 9sida HIV, wax soo gadashada, wax iska iibinta iwm) <p><u>Tusaale</u> : anigu waxa aan ka fekeray tiro, waxaan tiradii u geeyey "6" jawaabtaydu (wadartoodu) waxay noqotay 15. Haddaba maxay ahayd tirade aan ka fekeray</p> <ul style="list-style-type: none"> • U fududee ardayda in ay u wada shaqeeyaan 	<ul style="list-style-type: none"> • Weydii ardayda in ay ku siiyaan tusaaleyaal ku saabsan isle'egyada iyo dheelliyada iyada oo ka duulaya dhacdooyinka maalin kasta ay la kulmaan • Sii ardayda laylisyo ku saabsan isle'egyada iyo dheelliyada kuwaas oo ay ku jiraan arimaha muhiimka ah sida dukaanlaha, kaydka iwm

Dujeeddoyinka gaarka ah ee casharka	Ciwaannada cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		lammaane lammaane, kadibna ay isweydiiyaan mas'alooyin fudud sida:- <u>Tusaale</u> : haddii qiimha 3kg oo sonkor ah uu yahay 24 birr, waa immisa qiimaha halkii kg oo sonkor ah?	

Cutubka 3^{aad}: jajabyada, jajab-tobanleyaasha iyo afarta xisaabfal (42 xiso)

Ujeeddooyinka guud ee cutubkan

Cutubkani marka uu dhammaado kadib, ardaydu waxay awood u yeelan doonaan 9awood u yeelan karaan)

- Ogaanshaha noocyada jajabyada
- Fahamka fikradda (macnaha) boqolley iyo xeerarka boqolleyda loogu bedelo jajab iyo jajab- tobanle
- Ogaanshaha habka isbarbardhigidda jajabyada
- Ku shaqaynta afarta xisaabfal ee aasaaska u ah jajabyada iyo jajab-tobanleyaasha

ujeeddooyinka gaarka ah ee casharka	Ciwaannada cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<p>Casharkani marka uu dhammaado ka dib, ardaydu waa in ay:-</p> <ul style="list-style-type: none"> • Kala sooci karaan jajab qummane, jajab-ma-qummane, iyo jajab dhafan, • Jajab-may qummanaha u bedelli karaan jajab-dhafan • Jajabka dhafan u bedeli karaan jajab-ma-qumane 	<p>3. Jajabyada, jajab-tobanleyaasha iyo afarta xisaabfal</p> <p>3.1 noocyada jajabyada (4 xiso)</p>	<ul style="list-style-type: none"> • Xusuusi ardaydaada wixii ay ka soo barten jajabyada adiga oo adeegsanaya walxaha fudud 9sida 2 iyo ½ muus ah ama xataa natiijada imtixaannadooda sida 7 ½ ka mid ah 10 su'aalood) • Fursad u sii ardayda in ay soo bandhigaan macnaha jajab-qumman, jajab-ma-qummane iyo jajab-dhafan. • Ku soo gabagabee adiga oo a deegsanaya 	<ul style="list-style-type: none"> • Weydi ardayda macnaha jajab-qumman, jajab-ma-qummane, iyo jajab-dhafan • Weydii ardayda in ay jajab-ma-qummanaha u bedelaan jajab dhafan. Sidaas oo kale jajabka dhafan u bedelaan jajab-ma-qummane. Isla markaana hubi shaqadooda

ujeeddoyinka gaarka ah ee casharka	Ciwaannada cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>tusaaleyaal kala duwan sida, “haddii barahaagu uu haysto $3 \frac{1}{2}$ oo liin ah, oo arday kasta uu abaalmarin ahaan u siiyo $\frac{1}{2}$ liin ah, markaa immisa arday ayaa abaalmarin helaysa ? taas macnaheedu waxaa weeye “immisa $\frac{1}{2}$ ayaa ku jira $3 \frac{1}{2}$?</p> <ul style="list-style-type: none"> • Ka caawi ardayda in ay jajab-maqummaha u badelaan jajabdhafan. Sidaas oo kale jajabka dhafan u bedelaan jajab-maqummane • Ku hoggaami ardayda in ay taas u soo gunaanadaan sidan $a \frac{b}{c} = \frac{(c \times a) + b}{c}$, halka “a”, “b” iyo “c” ay yihiin tiyooyin tirsiimo, islamarkaana $b < c$. 	

ujeeddoyinka gaarka ah ee casharka	Ciwaannada cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<p>Casharkani marka uu dhammaado ka dib, ardaydu waa in ay:-</p> <ul style="list-style-type: none"> • Boqolleyda u tibaaxi karaan jajab • Boqolleyda u bedeli karaan jajab-tobanle 	<p>3.2 boqolley iyo jajabyada (5 xiso)</p>	<ul style="list-style-type: none"> • Ka gacansii ardayda in ay a deegsadaan laydi loo qaybiyey 100 gabal oo isle'eg, isla markaana ay u fiirsadaan oo sheegaan qaybaha xardhan midbbadooda kala duwan • Ka caawi barashada macnaha boqolley (boqolkiiba, in ay tahay qayb ka mid ah hal shay oo, loo qaybiyey 100 qaybood oo isle'eg • Ku hoggaami ardayda in ay boqolleyda u tibaaxaan jajab iyo jajab-tobanle. Waxa aad adeegsan kartaa tusaaleyaal kala duwan. Sida $85\% = 85/100 = 0.85$ 	<ul style="list-style-type: none"> • Sii ardayda laylisyo ku saabsan boqolleyda oo loo bedelayo jajab iyo jajab-toban
<p>Casharkani marka uu dhammaado ka dib, ardaydu waa in ay:-</p> <p>Isbarbardhigi karaan, isla markaana u qori karaan</p>	<p>3.3 isbarbardhigidda iyo horsanaanta jajabyada (8 xiso)</p>	<ul style="list-style-type: none"> • Casharkan ku biloo naqtiimidda isbarbardhigidda jajabyada leh hooseeye isku mid ah • Ka caawi ardayda in ay isbarbardhigaan 	<ul style="list-style-type: none"> • Sii ardayda laylisyo ku saabsan isbarbardhigidda iyo horsanaanta jajabyada leh hooseeye kala duwan

ujeeddoyinka gaarka ah ee casharka	Ciwaannada cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
horsanaan jajabyada		<p>jajabyada fudud eel eh hooseeye kala duwan, iyaga oo adeegsanaya jajabyo isu dhigma. Adeegso tusaaleyaal kala duwan sida:-</p> <p>Isbarbardhig, $\frac{3}{2}$ iyo $\frac{4}{7}$</p> <p>Jawaab: $\frac{3}{2} = \frac{3 \times 7}{2 \times 7} = \frac{21}{14}$;</p> <p>$\frac{4}{7} = \frac{4 \times 2}{7 \times 2} = \frac{8}{14}$</p> <p>Haddaba $\frac{21}{14} > \frac{8}{14}$ maadaama $21 > 8$ taas macnaheedu waa $\frac{3}{2} > \frac{4}{7}$.</p> <ul style="list-style-type: none"> • Ka gacansii ardayda in ay horsanaan u qoraan laba jajab ama in kabadan iyaga oo u qoraya horsanaan fanata ama horsanaan degta 	

ujeeddoyinka gaarka ah ee casharka	Ciwaannada cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<p>Casharkani marka uu dhammaado ka dib, ardaydu waa in ay:-</p> <ul style="list-style-type: none"> • Isugeyn karaan jajabyada leh hooseeyyaal kala duwan • Kalagoynta karaan jajabyada leh hooseeyyaal kala duwan 	<p>3.4 xisaab fallada jajabyada (13 xiso)</p> <p>3.4.1 isugeynta iyo kalagoynta jajabyada</p>	<ul style="list-style-type: none"> • u ogolow ardayda in ay naqtiin ku sameeyaan isugeynta iyo kalagoynta jajabyada leh hooseeyyaal isku mid ah • ku hoggaami ardayda in ay soo naqtiimaan sida loo raad iyo jajab u dhigma jajabka lagu siiyey • ka caawi ardayda in ay isugeeyaan isla markaana kalagooyaan jajabyada leh hooseeyyaal kala duwan , iyaga oo adeegsanaya jajabyo fudud (marka lagu gudajiro kalagoynta faraqada jajabyadu waa in uu noqdaa jajab togan) • ku dhiirigeli ardayda in ay hantiyaan isla markaana adeegsadaan xeerarka isugeynta iyo kalagoynta jajabyada leh hooseeyyaal 	<ul style="list-style-type: none"> • sii ardayda layhsyo ku saabsan isugeynta iyo kalagoynta jajabyada leh hooseeyyaal kala duwan isla markaana ka hubi in ay raaceen xeerarka isugeynta iyo kalagoynta jajabyada iyo in kale.

ujeeddoyinka gaarka ah ee casharka	Ciwaannada cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>kala duwan ee soo socda:-</p> $1. \frac{a}{b} + \frac{c}{d} = \frac{axd}{bx d} + \frac{bxc}{bx d} = \frac{ad+bc}{bd}$ $2. \frac{a}{b} - \frac{c}{d} = \frac{axd}{bx d} - \frac{bxc}{bx d} = \frac{ad-bc}{bd}$ <p>(ad – bc > 0)</p>	
<p>Casharkani marka uu dhammaado ka dib, ardaydu waa in ay:-</p> <ul style="list-style-type: none"> • soo saari karaan taranta laba jajab ama in ka badan • soo saari karaan qaybta isuqaybinta laba jajab oo kasta 	<p>3.4.2 isku dhufashada iyo isuqaybinta jajabyada</p>	<ul style="list-style-type: none"> • ku hoggaami ardayda in ay si ficil ah u soo saaraan taranta isku dhufashada jajabyada, iyaga oo adeegsanaya xeerkan hoose:- $\frac{a}{b} \times \frac{c}{d} = \frac{axc}{bx d} = \frac{ac}{bd}$ • u ogolow ardayda in ay raadiyaan rogaalka jajabka la siiyey • ka caawi ardayda in ay si ficil ah u soo saran qaybta isuqaybinta jajabyada iyaga ooo adeegsanaya xeerkan hoose:- 	<ul style="list-style-type: none"> • Sii ardayda layliso ku saabsan iskudhufashada iyo isuqaybinta jajabyada, isla markaana ka hubi in ay raaceen xeerarka iskudhufashada iyo isuqaybinta jajabyada iyo in kale

ujeeddoyinka gaarka ah ee casharka	Ciwaannada cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} \times \frac{d}{c}$ $= \frac{a \times d}{b \times c} = \frac{ad}{bc}$	
<p>Casharkani marka uu dhammaado ka dib, ardaydu waa in ay:-</p> <ul style="list-style-type: none"> • Soo saari karaan 	<p>3.5 xisaabfala da jajab-tobanleyaasha (12 xiso)</p> <p>3.5.1 isugeynta iyo</p>	<ul style="list-style-type: none"> • ku bilow casgarkan naqtiimidda isugeynta iyo kalagoynta jajab-tobanleyaasha leh 2 god oo midig ka xiga barta jajab- 	<ul style="list-style-type: none"> • sii ardayda laylisyo ku saabsan isugeynta iyo kalagoynta jajab-tobanleyaasha
<p>Casharkani marka uu dhammaado ka dib, ardaydu waa in ay soo saari karaan tartanta laba jajab tobanle</p>	<p>3.5.2 isku dhufashada jajab-tobanleyaasha</p>	<ul style="list-style-type: none"> • casharkan waxa aad ku bilaabi kartaa falanqaynta isku dhufashada tirooyin jajab-tobanleyaal ah iyo tiro idil ooh al god ah • ka caawi , ardayda in ay soo saaraan tartanta iskudhufashada jajab-tobanleeyaasha leh ilaa 3 god oo midig ka xiga barta tobanle iyo tirooyinka ah jibbaarka 10 sida 10; 100 iyo 1000 • ku dhiirigeli ardayda in ay soo saaraan tartanta isku dhufashada laba jajab- tobanle oo ah jajab-tobanleyaasha u dhexeeyan “0” iyo 	<ul style="list-style-type: none"> • sii ardayda laylisyo ku saabsan isku dhufashada jajab-tobanleyaasha

ujeeddoyinka gaarka ah ee casharka	Ciwaannada cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>1 sida 0.3 x 0.2 ; 0.12 x 0.23 iwm</p> <ul style="list-style-type: none"> • ka caawi ardayda in ay soo saaraan taranta isku dhufashada laba jajab-tobanle oo ah jajab tobanleyaasha ka weyn 1 sida 1.3 x 2.5 ; 3.12 x 2.6 • ka gacansii ardayda in ay falan qeeyaanbarta ay taranta kaga dhacayso barta jajab-tobanle ee dhammaan xaaladdaha kor ku xusan 	
<p>Casharkani marka uu dhammaado kadib ardaydu waa in ay soo saari karaan qaybta, isuqaybinta jajab-tobanleyaasha fudud</p>	<p>3.5.3 isuqaybinta birta jajab-tobanleyaasha</p>	<ul style="list-style-type: none"> • ku hoggaami ardayda in ay wada falanqeeyaan tallaabooyinka isuqaybinta jajab-tobanle fudud iyo tiro tirsiiimo ooh al god ah iyo jajab-tobanle fudud. <p>Waxa aad adeegsan kartaa tusaaleyaal sida (4 ÷ 0.5) ama (0.6 ÷ 3)</p> $4 \div 0.4 = \frac{4}{0.5} \times \frac{10}{10}$ $= \frac{40}{5} = 8$ <ul style="list-style-type: none"> • ka caawi ardayda 	

ujeeddoyinka gaarka ah ee casharka	Ciwaannada cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>inay soo saaraan qaybta isuqaybinta jajab-tobanleyaasha (leh ilaa 3 god oo midig ka xiga barta jajab-tobanle) iyo jibbaarada 10 sida 100; 100; iwm waxa aad adeegsan kartaa tusaaleyaal sida (0.3 ÷ 10; 12. 8 ÷ 100)</p> <ul style="list-style-type: none"> • ka gacansii ardayda in ay ku noqnoqdaan isuqaybinta jajab-tobanleyaasha • u ogolow ardayda in ay falanqeeyaan guuritaanka barta jajab-tobanle isla markaana go'aamiyaan barta ay kaga dhacayso qaybta 	

Cutubka 4^{aad} ururinta iyo muujinta garaafka xogaha /macluumaadka (14 xisadood)

Ujeeddooyinka guud ee cutubkan:

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

- Fahamka sida xogaha loogu muujiyo garaafka fudu
- Ogaanshaha iyo soo saarista celceliska xogaha la siiyey

Dujeeddoyinka gaarka ah ee casharka	Ciwaannada cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<p>Casharkani marka uu dhammaado ka dib, ardaydu waa in ay:-</p> <ul style="list-style-type: none"> • dhisi karaan garaaf-laydiyeedka xogaha ama macluumaadka lasiiyey • sharxi karaan garaaf laydiyeedka dhisan 	<p>4. ururinta iyo muujinta garaafka xogaha</p> <p>4.1 dhisidda iyo sharraxaadda garaaf-laydiyeedka (9 xiso)</p>	<ul style="list-style-type: none"> • ku dhiirigeli ardayda in ay dhisaan garaaf laydiyeedka iyaga oo adeegsanaya xogaha fudud ee ay ka soo ururiyeen noloshooda. Waxa aad tusaaleyaal u qaadan kartaa kuwan soo socda:- <ul style="list-style-type: none"> - tirade dadka ku nool arday kasta gurigooda - tirakoobta dugsiga sida ardayda, bareyaasha iwm • ka caawi ardayda in ay sharrax ka bixiyaan xogaha uu xambaarsan yahay garaaf-laydiyeed dhisan oo la siiyey 	<ul style="list-style-type: none"> • koox-koox u si diraallo (assignment) ku saabsan ka soo ururinta deggaankooda xoga iyo dhisidda garaaf laydiyeedka xogaha ay soo ururiyeentus. Xubnaha guddiyada ka jira dugsiga

Dujeeddoyinka gaarka ah ee casharka	Ciwaannada cutubka qaybaha iyo casharrada	Waxqabadyada baris-barashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<ul style="list-style-type: none"> • sharxi karaan waxa uu yahay celcelka urur tirooyin ah • soo saari karaan celceliska xog la siiyey 	4.2 celceliska tirooyinka (5 xiso)	<ul style="list-style-type: none"> • ku hoggaami ardayda in ay falanqeeyaan waxa uu yahay macnaha celcelis iyaga oo adeegsanaya ururro tirooyin ah • u ogolow ardayda in ay soo saaraan celceliska xog kasta oo la siiyo 	<ul style="list-style-type: none"> • sii ardayda laylisyo ku saabsan soo saarista celceliska tirooyin ama xogo

Cutubka 5^{aad} Cabbiqaadda iyo shaxannada joomateriga (42 xisadood)

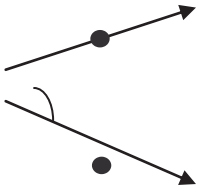
Ujeeddoyinka guud ee cutubkan

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

- Aqoonsiga astaamaha muhiimka ah ee dhidibbada wanqaranka, isla markaana ay ku adeegsan kataan aqoonta ay ku qabanayaan dhismeyaasha
- Kala badhidda xarriijimaha iyo xaglaha
- Aqoonsiga halbeegga digrii iyo awood u yeelashada cabbiriidda cabirka xagal kasta oo la siiyo
- faHamka iyo adeegsiga jidadka lagu soo saaro wareegga iyo bedadka laydiyda iyo labajibbaarabeyaasha

Ujeeddoyinka gaarka ah ee casharka	Ciwaannad a cutubka qaybaha iyo casharrada	Waxqabadyada barisharashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<p>Casharkani marka uu dhammaado ka dib, ardaydu waa in ay:-</p> <ul style="list-style-type: none"> • sawiri karaan xarriiqo isgoynaya • Sawiru karaan, xarriiqo barbarro ah 	<p>5. Cabbirada iyo shaxannada joomateriga</p> <p>5.1 xarriiqaha (8 xiso)</p> <p>5.1.1 dhisidda xarriiqo isgoynaya iyo xarriiqo barbarro ah</p>	<ul style="list-style-type: none"> • Soo bandhig tallaabooyinka sawiridda xarriiqo isgoynaya • Soo bandhig tallaabooyinka sawiridda AB oo ka dusta barta “D” oo ah bar aan ku dul dhicin xarriiqda AB ee lagu siiyey sidan:- <p>Tallaabada 1^{aad} mastaradda dheer ku dhereri xarriiqda AB. Dabadeedna mastaradda oo dhaqaaji ilaa dhinaca gaaban ee mastaraddu uu ka duso barta D.</p> <div style="border: 1px solid black; padding: 2px; width: fit-content;"> <p>Ku sawir sawirka hore ee bogga 12^{aad}</p> </div> <p>Tallaabada 2^{aad} : sawir xarriiq ku dhereran dhinaca gaaban ee mastaradda. Kadibna kor u dhaqaaji mastaradda ee xarriiqdii aad sawirtay ilaa ay gaadho barta D. hadda sawir xarriiq ku dhereran dhinaca dheer ee mastaradda</p>	<ul style="list-style-type: none"> • Weydii ardayda oo hubi in arday kasta uu sawiri karo - Xarriiqo isgoynaya - Xarriiq la barbarro ah xarriiqaad siisay, isaga oo adeegsanaya mastaradda dheer io mastaradda xagasha qumman leh

Ujeeddoyinka gaarka ah ee casharka	Ciwaannad a cutubka qaybaha iyo casharrada	Waxqabadyada barisharashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		<p>Ku sawir sawirka dambe ee bogga 12^{aad}</p> <ul style="list-style-type: none"> • Ku dhiirigeli ardayda in ay si sax u sawiraan - Xarriiqo isgoynaya iyaga oo adeegsanaya mastarad - Xarriiqo barbarro ah iyaga oo adeegsanaya mastaradda dheer iyo mastaradda qumman 	
<ul style="list-style-type: none"> • Kala badhi karaan xarriijin la siiyey 	5.1.2 kala badhidda xarriijin lagu siiyey	<ul style="list-style-type: none"> • Ku hoggaami ardayda in ay falanqeeyaan tallaabooyinka dhisidda kala badhaha xarriijinta • Ku dhiirigeli ardayda in ay si sax ah u dhisaan kala badhaha xarriijin kasta oo la siiyo iyaga oo adeegsanaya mastarad iyo goobo-beeg • Ku hoggaami ardayda go'aaminta in ay jiraan kala badheyaal aan dhammaad lahayn adiga oo siinaya laylisyoo kala duwan 	<ul style="list-style-type: none"> • Weydii ardayda oo xaqiiji in arday kasta uu dhisi karo kala badhaha xarriijinta isaga ooo adeegsanaya mastarad iyo goobo- beeg
<ul style="list-style-type: none"> • Dhidi karaan xarriiq ku qotonta xarriiq lagu siiyey kagana qotonta bar ku taal xarriiqda lagu siiyey disheeda • Dhisi karaan xarriiq kaga 	5.1.3 dhisidda xarriiq ku qotonta xarriiq lagu siiyey	<ul style="list-style-type: none"> • Ku hoggaami ardayda in ay falanqeeyaan, tallaabooyinka dhisidda qotomaha xarriiqda la siiyey • Ka gacansii ardayda in ay si sax ah u dhisaan:- - Xarriiq ku qotonta xarriiq la siiyey kagana qotonta bar ku taal xarriiqda la siiyey dudheeda - Xarriiq ku qotonta xarriiq la siiyey kagana qotonta bar ku taal meel kabaxsan xarriiqda 	<ul style="list-style-type: none"> • Weydii ardayda oo xaqiijo in ay si sax ah u dhisaan xarriiq ku qotonta xarriiq la siiyey, kagana qotonta - Bar ku taal xarriiqada dusheda - Bar ka baxsan xarriiqda la

Ujeeddoyinka gaarka ah ee casharka	Ciwaannada cutubka qaybaha iyo casharrada	Waxqabadyada barisharashada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
qotonta bararka baxsan xarriiqda lagu siiyey		la siiyey iyaga oo adeegsanaya mastarada iyo goobo-beeg	siiyey
<p>Casharkani marka uu dhammaado kadib ardaydu waa in ay:-</p> <ul style="list-style-type: none"> • Qeexi karaan xagal • Soo sooci karaan geeska xagasha iyo dhinacyada xagasha • Magacaabi karaan xagal kasta 	<p>5.2 xagalaha iyo cabbiraada xaglaha (8 xiso)</p> <p>5.2.1 xaglaha</p>	<ul style="list-style-type: none"> • Ka caawi ardayda in ay sharrax ka bixiyaan macnaha xagal, geeska xagasha iyo dhinacyada xagasha • Ka gacansii ardayda sida loo magacaabo xagasha iyo sida loogu asteeyo cabbirka digriiga waxa aad adeegsan kartaa tusaaleyaal sida <ul style="list-style-type: none"> - Magacyada xagashani waa A \sphericalangle AOB; $\hat{A}\hat{O}\hat{B}$; \hat{O} O - Cabbirka xagashan waxaa Loo qorayaa B $M(\sphericalangle$ AOB); $M(\hat{A}\hat{O}\hat{B})$; $M(\hat{O})$ 	<ul style="list-style-type: none"> • Weydii ardayda <ul style="list-style-type: none"> - Qeexidda xagal - Soo soocidda geeska xagasha - Soo soocidda shinacyada xagsha - Magacabista xagasha 
<ul style="list-style-type: none"> • sawiri karaan xagalaha la siiyey iyaga oo adeegsanaya xagal beeg • cabbiri karaan xaglo la siiyey iyaga oo adeegsanaya xagall beeg • kala sooci karaan xaglaha iyaga 	<p>5.2.2 cabbiraadda iyo kale soocidda xaglaha</p>	<ul style="list-style-type: none"> • ku dhiirigeli ardayda in ay ku celceliyaan sawiridda xaglaha, cabbiraada xaglaha iyaga oo adeegsanaya xagal beeg • ku xiisogeli ardayda in ay qalabka joomateriga keenaan fasalka dhexdiisa si ay u adeegsadaan cabbiraadda xaglaha • ku hoggaami ardayda in ay xaglaha la siiyey u kala soocaan xaglo fiisan xaglo fidsan xaglo qumman iwm isla markaana ay tusaaleka 	<ul style="list-style-type: none"> • weydii ardayda oo xaqiiji <ul style="list-style-type: none"> - sawiridda xaglaha - cabbiridda xaglaha - kala soo cidda xaglaha iyaga oo adeegsanaya hababka ku habboon sida sabuuraddi oo ay ku soo bandhigaan

Ujeeddoyinka gaarka ah ee casharka	Ciwaannada cutubka qaybaha iyo casharrada	Waxqabadyada barishada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
oo adeegsanaya cabbirka xaglaha		bixiyaan mid kasta iyaga oo	
<ul style="list-style-type: none"> • Kala badhi karaan xagal la siiyey 	5.2.3 kalabdhidda xagasha	<ul style="list-style-type: none"> • Ku hoggaami ardayda in ay falanqeeyaan tallaabooyinka dhisidda kalabdhaha xasasha • Ka caawi ardayda in ay kalabadhaan xagal la siiyey, iyaga oo adeegsanaya mastarad iyo goobo beeg 	<ul style="list-style-type: none"> • Sii ardayda laylis ku saabsan kalabdhidda xagasha
<ul style="list-style-type: none"> • Kala sooci karaan saddexagallada iyaga oo fiirinaya cabbirka xaglahooda iyo dhererka dhinacyadooda 	5.3 kala soocidda saddexagallada	<ul style="list-style-type: none"> • Ka caawi ardayda in ay kala soocaan saddexagallada, marka laga eego <ul style="list-style-type: none"> - Dhinaca xaglaha oo ah saddexagal fiican, saddexagal fidsan iyo saddexagal qumman - Dhinaca dhinacyada oo ah saddexagal siman, saddexagal labaale ah iyo saddexagal ismale'eka ah - Uogolow ardayda in ay sawiraan saddexagallada iyaga oo fiirinaya xaglahooda iyo dhinacyadooda 	<ul style="list-style-type: none"> • Adeegsa farsamooyinka ku habboon si aadu xaqiijiiso in ardaydu ay kala sooci karaan saddexagallada iyaga oo fiirinaya dhinacyadooda iyo xaglahooda • Weydii in ay ka sameeyaan saddexagallado noocyadooda qalabka laga helo ogagaarkooda
<ul style="list-style-type: none"> • Soo saari karaan xariiqaha wanqaranka ee shaxannada sallaxa ee la 	5.4 xariiqaha wanqaranaka	<ul style="list-style-type: none"> • Bar ardayda macnaha “xariiqda wanqaranka” adiga oo isku laabaya saddexagal labaale ah kadibna muujinaya xariiqdiisa wanqaranka isla markaana uogolow ardayda in 	<ul style="list-style-type: none"> • Weydii ardayda in ay warqadu goo dooyaan shaxanno isku wanqaran, ka dibna ay muujiyaan

Ujeeddoyinka gaarka ah ee casharka	Ciwaannada cutubka qaybaha iyo casharrada	Waxqabadyada barishada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
<p>siiyey</p> <ul style="list-style-type: none"> • Sharxi karaan astaamaha wanqaranak 		<p>ay soo saaraan, sidaas oo kale, xarriiqda wanqaranka ee saddexagal siman iyo labajibbaaranaha</p>	<p>xarriiqaha wanqaranka ayna u soo bandhigaan fasalka</p>
		<ul style="list-style-type: none"> • U ogolow ardayda in ay sawiraan shaxanno isku wanqaran oo lammaane ah oo muujinaya xarriiqda wanqaranka o dabadeedba ay soo bandhigaan astaamahooda • Ka caawi ardayda in ay dhisaan shaxanno isku wanqaran oo fudud iyo xarriiqda wanqaranka ee shaxanno la siiyey 	<ul style="list-style-type: none"> • Weydii ardayda in ay sharrax ka bixiayaan astaamaha shaxannada isku wanqaran
<ul style="list-style-type: none"> • Soo saari karaan wareegga labajibbaaranaha iyo laydiga • Soo saari karaan bedka labajibbaaranaha iyo laydiga 	<p>5.5 cabbiraadda 5.5.1 wareegga iyo bedka labajibbaaranaha iyo laydiga</p>	<ul style="list-style-type: none"> • Ku hoggaami ardayda in ay naqtiin ku sameeyaan wareegga labajibbaaranaha iyo laydig iyaga oo sawiraya, isla markaana cabbiraya • Ku hoggaami ardayda in ay naqtiin ku sameeyaan bedka labajibbaaranaha iyo laydiga, iyagoo a deegsanaya sentimitirro labajibaarab (labajibbaaraneyaal yar-yar oo bedkoodu yahay 15m²) • Fursad u sii ardayda in ay soo dhiraandhiriyaan jidka lagu helo bedka laydiga oo ah “dhererka (dh) lagu dhuftay ballaca (b) laydiga sida “dh x b” • Sidaas oo kale in ay soo dhiraan dhiriyaan jidka lagu helo wareegga laydiga oo ah “2 lagu dhuftay wadarta 	<ul style="list-style-type: none"> • Weydii ardayda in ay raadiyaan wareegga laba jibbaaranaha iyo laydiga • Weydii ardayda in ay raadiyaan soona saaraan bedka laba jibaaranaha iyo laydiga. Iyaga oo u qaybinayo laba jibbaaraneyaal yar yar oo bedkoodu yahay 1m² kadibna jawaabahooda ku caddaynaya isku dhufashao ahaan

Ujeeddoyinka gaarka ah ee casharka	Ciwaannada cutubka qaybaha iyo casharrada	Waxqabadyada barishada iyo qalabyada loo baahan yahay	Tallaabooyinka qiimeynta
		dhererka iyo ballaca laydiga $W = 2 (dh + b)$	
<ul style="list-style-type: none"> • Sameyn karaan wejiyada (shabaqyada) saddex jibbaaranaha iyo biriisamlaydiyeedka 	5.5.2 wejiyada saddex jibbaaranaha iyo biriisam laydiyeedka	<ul style="list-style-type: none"> • Fursad u sii ardayda in ay sameeyaan ama sawiraan wejiyada ah labajibbaaranaha ee saddex jibbaaranaha iyo wajiyada ah laydiyada (qaarkood labajibaarana way noqon karaan ee biriisma laydiyeedka sida ka muuqata jaantuskan hoose <div style="border: 1px solid black; padding: 2px; width: fit-content; margin: 5px auto;"> Ku sawir halkan jaantuska ku sawiran bogga 14^{aad} </div>	<ul style="list-style-type: none"> • Wedii ardayda in ay sameeyaan wejiyada saddex jibbaaranayaal iyo biriisam laydiyeedyo kala duwan
<ul style="list-style-type: none"> • Soo saari karaan mugagga saddex jibbaaranaha iyo biriisam laydiyeedka, iyaga oo tirnaya saddex jibbaaraneyaasha yar yar 	5.5.3 mugga saddex jibbaaraneyaasha iyo biriisam laydiyeedka	<ul style="list-style-type: none"> • Fursad u sii ardayda in ay ku celceliyaan qiyaasidda mugga saddex jibbaaranaha iyo biriisam laydiyeedka • Fursad u sii ardayda in ay soo saaraan mugga saddex jibbaaranaha iyo biriisma laydiyeedka, iyaga oo ku rasaynaya saddex jibbaaranayaal yar yar oo muggoodu yahay 1m^3 	<ul style="list-style-type: none"> • Weydii ardayda in ay sharraxaan farqiga u dhexeeya hal beegga bedka iyo kan mugga • Sii mdayda layliso kala duwan oo ay ku soo saarayaan mugga saddex jibaarnaha iyo biriisam laydiyeedka iyaga oo adeegsanaya tiring iyo rasayn