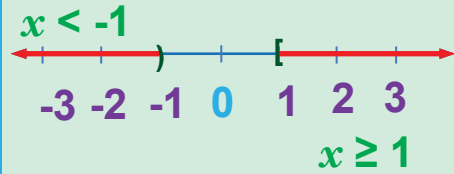


CUTUBKA 2^{AAD}



ISLEEGYADA IYO DHEELIYADA TOOSAN

Ujeedooyina cutubka:

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

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

Tusmooyinka muhiimka ah:

2.1 Furfurista isle'egyada toosan

2.2 Furfurista dheelliyada toosan

Ereyada Muhiimka ah

Soo koobida cutubka

Laylisyo guud

HORDHAC

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

2.1 FURFURISTA ISLE'EGYADA TOOSAN

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

Hawlgal 2.1

- 1 U fiirso miisaan garboolaha ay kafadiisu mid walba saaran tahay 2 kg oo liin ah.
 - i Haddii aad saarto 2 kg oo liin ah kafad walba kadib maxaad ka odhan kartaa dheeliga kafadaha?
 - ii Haddii aad ka qaado $\frac{2}{3}$ kg oo liin ah kafad walba, kadib maxaad ka odhan kartaa dheeliga kafadaha , ama kuu muuqda?
 - iii Haddii aad ka qaado $\frac{1}{2}$ kg oo liin ah kafadda bidix islamarkaana 1kg kafadda midig, maxaad ka odhan kartaa sinaanta dheeliga kafadaha?
 - iv Haddii aad u labanlaabto tirada liinta kilogiraam ahaan ,maxaad ka odhan kartaa sinaanta dheeliga kafadaha?
 - v Maxaad ku soo koobi kartaa kuwa ku muujinsan **i**, **ii** , **iii** iyo **iv** ee sare?
- 2 Ka soo qaad inay fasalka xisaabta ay dhigtaan 60 arday. Tirada ardayda gabdhuhu way ku labanlaabmaan tirada wiilasha fasalka. Soo saar tirada wiilasha iyo tirada gabdhaha fasalka?
- 3 Sheeg tibaaxaha soo socda kuwa ah tibxo isleh

b $3x, 14x^2, 20x$	t $x, -6x, -24x$
j $x, 3a, 6a, -2x$	x $4a^2, 3a^2, -8a^2$
- 4 Kuwa soo socda sheeg kuwa ah isle'egyo toosan.

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

- 5** Fururista isle'egta $x + 5 = 10$ waa
b $x = -5$ **t** $x = 6$ **j** $x = 5$ **x** $x = 7$
- 6** Tee ayaa isle'egyada soo socda furfuristeeda tahay $x = 4$
b $x - 7 = 10$ **t** $2x - 5 = 3$ **j** $x + 5 = -9$ **x** $3x - 10 = 4$
- 7** Haddii $2x + 5 = 15$ islamarkaana $x - 4$ waxay le'eg tahay
b 2 **t** -4 **j** 1 **x** -8
- 8** Hubi in $x = 4$ ay tahay furfurista $6x - 26 = 2$ iyo inayna ahayn
- 9** maxaad samayn haddaad rabtid in aad hubiso tirada lagu siiyey inay tahay furfurista isle'eg toosan iyo in kale.

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

- 1** u geynta iyo ka goynta xaddi isku mid ah labada kafadoodba ma bedaleyso dheeliga kafadaha
- 2** si aynu u hubino in tiro u tahay furfuris ama aysan u ahayn isle'eg lagu siiyey, ku badal tirada meesha doorsoomaha, isla markaana eeg inaad heshay hawraar run ah ama hawraar been ah. Haddii aad hesho hawraar run ah kolkaa tiradaasi waa furfurista haddii kale u ma'aha furfuris.

U fiirso hawraarta leh sansaantan:

$$24 - 10 = 14$$

$$2 + 4 = 6$$

$$5 \times 4 = 20$$

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

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

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

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

Kuwa soo socda waa tusaalooyin ah isle'egyo.

- b** $x = 6$ **t** $\frac{2}{5}y - 6 = \frac{2}{3}y + 2$ **j** $17 - 6x = 20$
- x** $2a^3 + 3b^2 = 6$ **kh** $x - y = 6$ **d** $x^2 - 4 = 0$
- r** $2x + 7 = 5t$

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

kuwa soo socdaa waa tusaalayaal isle'egyo toosan

b $x + 5 = 10$

t $5x - 10 = 3$

j $3x - 12 = 15$

x $\frac{3}{4}x + 6 = 8$

kh $3x - 5 = 5x + 4$

d $\frac{x+4}{3} = 1$

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

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

$3(-2) + 7 = 1$ *-2 ku bedal x*

$-6 + 7 = 1$ *fududeyn*

$1 = 1$ *waa run*

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

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

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

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

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

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

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

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

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

a $x + 5 = 11$

b $x - 7 = -1$

c $2x - 3 = 9$

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

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

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

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

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

Xeerkararka isku dhignaanta qaabdoorinta isle'egyada toosan

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

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

Hawlgal 2.2

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

b Siin: $x - 2 = 4$

$x = 6$

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

$4x = 1$

t Siin: $x + 5 = -3$

$x = -8$

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

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

$3x = -3$

$x = -1$

d Siin: $2x - 8 = 22$

$2x = 30$

$x = 15$

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

$$2x + 21 = 28$$

$$2x = -7$$

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

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

$$2x + 3 = -2$$

$$2x = -5$$

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

Astaamaha isle'ekaanshaha

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

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

i Astaanta isu geynta isle'ekaanta.

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

ii Asaanta kala goynta.

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

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

$$x + b = 0,$$

$$x + b - b = 0 - b, \text{ ka goo } b \text{ labada dhinacba}$$

$$x = -b.$$

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

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

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

i astaanta isku dhufashada

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

ii astaanta isu qeybinta

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

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

Siin: $ax = c$.

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

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

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

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

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

$$ax + b = 0$$

$$ax = -b$$
kagoo b dhinac walba

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

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

Tusaale 1. furfur $4x = 20$

$$x = 5$$
u qeybi 4 dhinac walba

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

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

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

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

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

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

$$2x = 12$$
ku dhufo dhinac kasta 3

$$x = 6$$
u qeybiyey 2 dhinac kasta

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

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

$$4x = -20$$
ka goo 8 dhinac kasta

$$x = -5$$
u qeybi 4 dhinac kasta

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

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

$$4(-5) + 8 = -12 \dots\dots\dots -5 \text{ ku bedal } x$$

$$-20 + 8 = -12 \dots\dots\dots \text{fududeynta tirooyinka}$$

$$-12 = -12 \dots\dots\dots \text{waa run}$$

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

Ogow inaad raacdo tallaabooyinka soo socda furfuridda isle'egyada toosan

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

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

Laylis 2.1

Kaga jawaab su'aalaha 1 iyo 2 af ahaan

1 waa inuu maxay noqdo qiimaha x si ay:

b $x + 12 = -4$

t $2x + 6 = 16$

j $3m - 6 = 3$

x $4x - 20 = 4$

kh $12x + 20 = 104$

d $11x + 110 = -11$

r $23x + (x + 4) = 28$

s $100x + 100 = 100$

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

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

4 Furfur mid walba isle'egyada toosan ee soo socda

b $x + 24 = -13$

d $3a = -4$

c $\frac{4x-2}{3} - x = 12$

t $x - 8 = 30$

r $2x + 5 = 29$

g $10x + 11 = 41$

j $6x = 18$

s $7m - 3 = 4$

f $3x + 2 = -7$

x $3x = 15$

sh $3x - 6 = 9$

q $4(y - 5) + 2y = -26$

kh $24 + t = -24$

dh $4(x - 8) = 26$

k $8m - 10 = 14$

Weedh xisabeedyo kuu hogaamiya isle'egyada Tosan

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

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

Hawlgal 2.3

- 1 Ka fekar tiro x ah. Ka dib,
 - i Qaado saddex laabka tiradii aad ka fekartay islamarkaana qor tibaaxda u taagan
 - ii Ka soo qaad in haddii saddex laabka tiradii aad ka fekartay lagu kordiyo 20, tiradu waxay noqoneysaa 80. Qor isle'egta u taagan masaladani.
 - iii Waa maxay tiradu?
 - iv Sheeg talaabooyinka lagu furfurayo masalada?
- 2 Labanlaabka tiro iyo 4 ayaa ah 50. Raadi tirada islamarkaa hubi tirada aad heshay?
- 3 Tiro iyo 24 ku birsan ayaa ah 15. Raadi tirada oo hubi natiijada aad heshay?.
- 4 10 ayay ka yar tiro waa 15. Raadi tirada oo hubi natiijada aad heshid
- 5 10 ka wayn labalaabka tiro waa 12. Waa maxay tiradu?

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

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

$$x + 8 = 20$$

$$x = 12 \dots\dots\dots \text{ka goo 8 dhinac walba}$$

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

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

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

$$4x = 60$$

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

$$x = 15$$

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

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

$$2x + 5 = 47 \text{ islamarkaana u furfur } x$$

$$2x = 42$$

$$x = 21$$

Sidaas darteed, faadumo waa 21 sano ayey jirtaa

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

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

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

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

Laylis 2.2

1 Furfur mid walba isleegyada toosan ee soo socda

b $x + 10 = -15$

t $x + 12 = 18$

j $y - 7 = 3$

x $10 = x - 10$

kh $7a - 4 = 10$

d $2x + 7 = -11$

r $-21 = 6x + 9$

s $24 = 3x - 1$

sh $10 + 5x = 15$

dh $2x - 6 = 4$

c $5x + 8 = 3$

f $3x + 6 = 6$

q $4x - 12 = 12$

g $6x - 6 = -6$

k $12 = 2x - 4$

l $8x - 4 = 4$

m $2x + 3 = 3$

n $8x - 16 = 24$

w $7y + 14 = -7$

h $3m + 3 = 6$

y $2t + 12 = 2$

a $20 = -20 + 2x$

e $4a - 19 = 5$

i $6 + 1t = 18$

o $6x + 21 = 27$

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

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

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

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

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

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

2.2 FURFURISTA DHEELIYO TOOSAN

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

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

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

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

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

Hawlgal 2.4

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

Waydiimo afka ah:

	<i>Dheeli</i>		<i>qiimayaasha</i>
1	$7x - 8 > 0$	b $x = 2$	t $x = -1$ j $x = 1$ x $x = -2$
2	$3x + 12 < -4$	b $x = -5$	t $x = -6$ j $x = -8$ x $x = -3$
3	$0 \leq \frac{x+4}{5} < 2$	b $x = -2$	t $x = 5$ j $x = -5$ x $x = 7$
4	Kuwa soo socda tee ayaa ah dheeli toosan.		
	b $6 \geq 10$	t $12 > 4$	j $x > 4$
	x $12 = 12$	kh $x < -10$	d $x + 2 > 4$
	r $x - 6 < 5$	s $2x + 4 = 6$	sh $2a^2 - 3a \geq 6$
	dh $3x + 1 \leq 10$	c $4x - 5 > 2x^3$	f $6x + 3 < 11$
	q $4 \leq 2 + x$	g $x + 5 > -6$	l $0 \leq 2x + 6$
	m $12m - 34 \geq -6$		

- 5** waxaad ogtahay $10 < 12$, kadib ka jawaab su'aalaha soo socda
- b** miyey $10 + 3 < 12 + 3$? Sababtee? Faahfaahi
- t** miyey $10 - 14 < 12 - 14$? Sababtee? Faahfaahi
- j** miyey $4 \times 10 < 4 \times 12$? Sababtee? Faahfaahi
- x** miyey $\frac{10}{2} < \frac{12}{2}$? sababtee?
- kh** miyey $-2 \times 10 < -2 \times 12$? Sababtee ama sababtee ayey ku noqon wayday Faahfaahi
- d** miyey $\frac{10}{-2} > \frac{12}{-2}$? sabab? ama sababtee ayey ku noqon weyday haddii ay maya tahay? Faahfaahi
- r** maxaad ku soo koobi saansaanta hawl galada kor ku xusan
- 6** Ka soo qaad 3 kg oo bun ah ayaa saaran kafada bidix islamarkaana 2kg oo bun ah in ay saaran tahay kafadda midig. Waxaad arkaysaa in labada kafadood ayna isku dheeli tirnayn. Ka jawaab mid kasta su'aalaha soo socda.
- b** Haddii aad ku darto laba kg oo bun ah oo kale kafad walba, kafadee ayay saaran yihiin kg (kiiloogaraam) badan oo bun ah? (kafadda bidix mise kafadda midig)
- t** Haddii aad ka qaado hal kiiloogaraam (kg) oo bun ah kafad walba, maxaad ka odhan kartaa miisaanka? Kafaddee ayaa miisaan badan?
- j** Haddii aad laban laabto xaddiga bunka ee kafad walba, kadib isbarbardhig xaddiyada bunka ee kafad walba (kafadee ayay saaran yihiin kilograamy badan oo bun ah?) kafada bidix mise ta midig
- x** Haddii aad ka qaado $\frac{1}{3}$ kg oo bun ah kafad walba. Maxaad ka odhan kartaa miisaanka kafadaha?
- kh** Maxaad kaga soo koobi kartaa weedhaha kor ku xusan eek u hagaya u qaynta iyo ka goynta xaddi mid ah iyo ku dhufashada madoorsoome toga nee xaddiyo aan isle'ekayn labada qeyboodba.
- 7** Siin dheeliga $x + 6 > 24$, kadib
- i** Qor sababta talaabo walba; $x + 6 > 24$
- ii** Ku muuji $x > 18$ xariiq tireedka korkiisa
- iii** Tax ugu yaraan afar tiro oo run ka dhigaya $x + 6 > 24$.

- 8** Siin dheeliga $2(x + 4) > x + 4$, kadib,
- i** Qor sababta talaabo walba: $2x + 8 > x + 4$
- $$2x > x - 4$$
- $$x > -4$$
- ii** Tax ugu yaraan shan tiro oo run ka dhigaya $2x + 8 > x + 4$
- iii** Ku muuji $x > -4$ xariiq tireedka korkiisa .

Dhugo qeexaha soo socda

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

- 1** $ax + b > 0$ **2** $ax + b \geq 0$
- 3** $ax + b \leq 0$ **4** $ax + b \leq 0$

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

Hawlgal 2.5

- 1** $5 > 2$ waa hawraar run ah. (fiiri hadday mid kasta oo ka mid ah kuwan soo socda yihiin run ama been)
- b** $(5 + 3) > (2 + 3)$ *Dhinac kasta u gee 3*
- t** $(5 - 3) > (2 - 3)$ *Dhinac kasta kagoo 3*
- j** $(5 \times 3) > (2 \times 3)$ *Labada dhinac ku dhufo 3*
- x** $\frac{5}{3} > \frac{2}{3}$ *Labada dhinac u qeybi 3*
- 2** $5 > 2$ waa hawraar run ah. Fiiri inay run ama been yihiin kuwan soo socda.
- b** $5 + (-3) > (2 + (-3))$ **t** $5 - (-3) > (2 - (-3))$
- j** $5 \times (-3) > 2 \times (-3)$ **x** $\frac{5}{-3} > \frac{2}{-3}$
- 3** Waa maxay astaamaha aad ku soo bandhigi kartid
- b** U geynta ama ka goynta tiro togan labada dhinac ee isle'eg?
- t** Ku dhufashada labada dhinac tiro togan ee dheeli?
- j** Ku dhufashada labada dhinac ee dheeliga tiro taban?

Xeerka Qaabdoorinta isudhigma ee dheeliyada toosan

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

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

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

Xeerkan waxaa kaloo lagu yidhaa astaamaha dheeliga

Astaamaha dheeliyada

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

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

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

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

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

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

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

Tusaale ahaan:

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

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

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

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

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

$x \leq 27$*fududeyta*

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



Jaan. 2.1

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

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

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

$3x < 36$*fududn ee*

$x < 12$*u qeybi 3 dhinac walba*

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



Jaan. 2.2

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

Furfuris: $\frac{7x+3}{4} \geq 6$ *qor dheeliga asalkiisa*
 $4\left(\frac{7x+3}{4}\right) \geq 4 \times 6$ *Dhinac kasta ku dhifo 4*
 $7x+3 \geq 24$ *fududeynta*
 $7x+3-3 \geq 24-3$ *kagoo 3 labada dhinac*
 $7x \geq 21$ *fududeynta*
 $\frac{7x}{7} \geq \frac{21}{7}$ *dhinac kasta u qaybi 7*
 $x \geq 3$ *fududeynta*
 Sidaa darteed ururka furfuristu waa $\{x : x \geq 3\}$



Jaan. 2.3

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

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

$8(1) - 12 > 9$ *1 ku bedal x*
 $-4 > 9$ *waa been islamarkaana 1 ma aha furfurista dheeliga*
 $8(2) - 12 > 9$ *2 ku badal x*
 $4 > 9$ *taas oo ah been 2 ma aha furfuris*
 $8(3) - 12 > 9$ *ku badal 3 meesha x*
 $24 - 12 > 9$ *$3 \times 8 = 24$*
 $12 > 9$ *dheeligu waa run sababtoo ah 3 waa furfurista dheeliga*
 $8(4) - 12 > 9$ *4 ku badal x*
 $32 - 12 > 9$
 $20 > 9$ *taas oo ah run sababtoo ah 4 waa furfurista dheeliga*

Sidaas darteed, ururka guud dhexdiisa urur-furfuriseedka dheeligu waa $\{3, 4\}$.

Laylis 2.3

- 1 Furfur dheeliga toosan ee soosocda

b $x + 5 > 13$	t $x - 8 < 4$	j $m + 12 \geq 24$
x $6x - 8 > 16$	kh $7x - 2 < -16$	d $10x + 15 \geq -25$
r $2x + 12 > 10$	s $3x + 14 < 5$	sh $6x + 5 \leq -19$
dh $3 + 4x > 15$	l $6m - 12 < -12$	g $3y + 27 > 21$
- 2 Siin dheeliga $4x - 8 \geq 3(x + 2)$
 - i Cadee talaabo walba ee furfurista

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

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

Talaabada 3: $4x \geq 32$

Talaabada 4: $x \geq 8$
 - ii Ku muuji furfurista $x \geq 8$ xariiqtirada korkeeda.
- 3 Raadi furfurista (yada) dheeliga $2x + 4 < x + 3$ adigoo u qaadanaya ururka guud $U = \{-3, -2, 0, 1\}$
- 4 Laylis shaqo kooxeed.
Dheeliyada soo socda u furfur x islamarkaana ku muuji furfurista xariiq tiro korkeeda

b $4(2x + 3) > 3(3x - 2)$
t $\frac{3}{2}(4m - 6) \leq \frac{2}{3}(6m + 3)$
j $2.5x - 4.2 > 8.5 \times 7.5$
- 5 Haddii tiro ka badani afar ay 6 ka yar tahay, kolkaa

b Qor dheeliga si aad u sharaxdo masalada
t Raadi furfurista dheeliga toosan si aad u heshid (su aasha b)
- 6 Tiro ayaa si labanlaab u korodhay min laba kana wayn 8

b Qor dheeliga toosan si aad u furfurtid masaladan
t furfur masaladan si aad u heshid (b)
- 7 Masalooyinka isle'eg toosan iyo dheeliyada oo shaqo kooxeed ahaan lagaga Shaqaynayo.

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

Hoos u tax 1

1 $2n + 15 = 29$

2 $10x + 9 = 69$

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

4 $2d + 19 < 5$

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

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

Hoos u taxa 2

1 $3n - 10 = 11$

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

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

4 $55d + 8 < -27$

5 $15 \leq 6x - 9$

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

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

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

Furfuris: $R > C$

$$125x > 25x + 1000$$

$$100x > 1000$$

$$x > 10$$

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

Laylis 2.4

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


- 3** Daa'uud waxa buugga kaydka ugu jirta Birr 500 bilowgii xagaaga. Waxa u raba inay ugu yaraan Birr 200 ay ku jirto buugga kaydi, ka kolka u xagaangu dhammaanayo. Wuxu Birr 25 tobaad kasta ugala soo baxaa tigidhada shaneemada.
- b** Qor dheeliga u taagnaan karaa xaaladda Daa'uud?
- t** Imisa todobaad ayuu Daa'uud kala soo baxay lacag buuggiisa kayd ka? Sababee jawaabtaada.

Ereyada muhiimka ah

 **Dakhli**

 **Faa'iido**

 **Isku xiga**

 **Ka badan**

 **Qaabdoorinta isudhigma**

 **Ururka furfurista**

 **Dheeli toosan**

 **Guud/urrur guud**

 **Isle'eg toosan**

 **Ka yar**

 **Qiimaha**

Soo Koobida Cutubka

- Isle'egta toosan ee leh hal doorsoome x waa isle'eg toosan oo loo qori karo saansaanta $ax + b = 0$, halka a iyo b ay yihiin tirooyin islamarkaana $a \neq 0$
- Furfuristu waa qiimaha, isleeg toosan oo ah marka aad ku badashid meesha doorsoomaha qiimahawaxay isle'egta ka dhigaya run.
- Urrur furfuriseedka isle'egta toosan waa urrur ka kooban dhammaan qiimaha macquulka ah ee doorsoomaha, kuwaas oo ka dhigaya isle'egta toosan run.
- Astaamaha isle'eg toosan**
U soo qaado a , b iyo c in ay yihiin tirooyin, kadib waxaynu helaynaa kuwa soo socda.

Haddii $a = b$ kadib

i $a + c = b + c$

ii $a - c = b - c$

iii $ac = bc$

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

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

i $ax + b > 0$

ii $ax + b < 0$

iii $ax + b \leq 0$

iv $ax + b \geq 0$

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

7 Astaamaha dheeliga toosan

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

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

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

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

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

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

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

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

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

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

? Lylisyada guud ee Cutubka 2^{aad}

- 1** Furfur isleegyada toosan ee soo socota.
- b** $3m - 12 = 24$ **t** $15y + 20 = 35$ **j** $4 + 5m = -21$
- x** $8t - \frac{5}{4} = \frac{7}{4}$ **kh** $3(2 + m) = -6$ **d** $4(3x - 3) = 12$
- r** $6x - 9 = 15$ **s** $\frac{10x + 2}{3} = 4$
- 2** Raadi furfurista isleegyadan toosan ee soo socda adigoo adeegsanaya urrurka guud ee lagu siiyey
- b** $25x - 23 = 17,$ $U = \{-2, -1, 0, 1, 2\}$
- t** $35 + 21x = 35,$ $U = \{-3, -2, -1, 0\}$
- j** $2x + 3 = 13,$ $U = \{6, 5, 4\}$
- x** $4x - 10 = 2,$ $U = \{1, 2, 3, 4\}$
- 3** Fur fur weedh xisaabeedyadan soo socda adiga oo u dajinaya isle'egyo toosan ahaan
- b** marka afar lagu dhufto tiro waxay kordhaysaa 8, waxa ay la mid tahay 24, waa maxay tiradaasi?
- t** hal la hoos dhigay sadex ka tiro oo loo geyey laba la hoos dhigay shan ka tiro waa 22, raadi tiradaas?
- j** wadarta sadex abyooone togan oo isku xiga waa 24, raadi tirada ugu horeysa.
- x** nin gaadhiyada iibiya ayaa wuxuu bixiyey dulsaar go'an ka 500 birr bishiiba, dheeraad waxaa ku ahaa 2000 dulsaar iibkiiba, imisa ayuu iibin karaa sanadkiiba si uu u helo 100,000 birr sanadkiiba?
- d** dhererka laydi waa sadex jibaarka balaca laydiga haddii wareega laydigu yahay 24 cm, kadib raadi laydiga.
- kh** cabdi waxa uu ubax ka wayn yahay 10 sano, sanadka soo socda cabdi wuxuu noqon laba jibaarka dada ubax imika imisa jir ayey yihiin?

4 Furfur dheeliyada toosan ee soo socda.

b $x - 3 > 4$

t $m + 12 < -10$

j $5 - m > 3$

x $6t + 24 \geq 18$

kh $4m + 12 \leq 4$

d $2(3 - x) > 6$

r $5x - 11 > 4$

s $4x + 9 \leq 17$

sh $25m - 50 > 75$

dh $\frac{2x-14}{3} \leq -2$

c $4t + 3 < 12$

g $3(2x - 2) \leq 24$

f $9t - 3 \leq 4$

q $\frac{1}{2}(4x+1) \geq \frac{5}{2}$

k $10m - 3 \geq 17$

l $31 > 4(2y - 6) + 3y$

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

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

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

Waxay noqon karaan masalooyin dheeraada

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

Joog u taxa 1

1 $2n + 15 = 29$

2 $10x + 9 = 69$

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

4 $2d + 19 < 5$

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

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

Joog u taxa 2

1 $3n - 10 = 11$

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

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