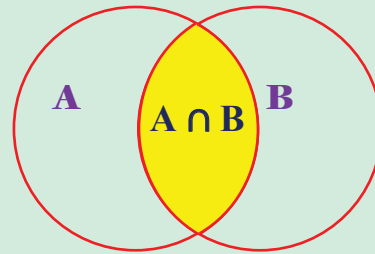


CUTUBKA 1aad



FIKRADAHAAAS AASKA U AH' URURADA

Natiijada Cutubka:

Cutubkan dabadii, ardaydu waxay awoodi doonaan;

- *in ay fahmaan fikraddaha ururada*
- *in ay cadeeyaan iyo gartaan' xidhiidhka ka dhaxeeya ururada*
- *in ay kaga shaqeeyaan ururada labo xisaab falo (dhextaalka iyo isutagga).*

Tusmooyinka ugu muhiimsan:

1.1 Hordhaca ururada

1.2 Xidhiidhka ka dhexeeya ururada

1.3 Xisaab falada ururada

Hubin

Soo koobid

Layliska nakhtiinka ah

HORDHACA

Marwalba waxaynu ka hadalnaa “ururo”noocyo kala duwan leh oo laxidhiidha nolol maalmeedkeena. Tusaale, markii aynu ka hadleyno ardayda fasalka gudahiisa kooxaha kubadda, kooxda idaha iyo riyaha banaanka jooga, raxan shinbiro ah oo geed dushii saaran, ama marwalba markii aan wax walba oo urursan kahadlayno.

Cutubka gudahiisa waxaa lagugu fahansiin doonaa fikirada ururada ugu muhiimsan iyo isticmaalidda tuducyada iyo calaamadaha ururada, dhanka kale waxaad baran xidhiidhka kadhaxeeya qaar ka mid ah ururada iyo xisaab falada ururada aas’ aaska u ah oo ah dhextaalka iyo isutagga, muujinta iyada oo la adeegsanayo jaantusyada feen, iyo waxyaalaha loo adeegsado ururada.

1.1 HORDHACA URURADA

Cutub yaraha 1.1, waxaad ku baran doontaa fikirada ugu muhiimsan ee ururka; macnaha ururka, kutirsanaha ama xubinka ururka, ururka kooban, ururka ma koobanaha ah iyo ururka madhan. Waxaad kaloo baran doontaa qaar ka mid ah tidicyada iyo calaamadaha la xidhiidha ururada iyo sida saxda ah ee loo isticmaalo.

1.1.1 Qeexid Ururka

Hawlgalka 1.1

U fiirso sawiradan soo socda



Jaantuska 1.1

- 1 Waa sidee sida aad u qeexi sawir walba?
- 2 Waa maxay waxa aad ku aragto garoonka kubadda dhexdiisa?
- 3 Waa kee kooxda ugu xubno badan?

Nololmaal meedkeena dhexdeeda waxaan ku baranaa ururo kala duwan.

Qeexid 1.1: Ururku waa shey'yo si hufan (quman) oo qeexan u uruursan. Sheyga ku jira ururka waxaa loogu yeedhaa xubin ama ku tiirsanayaasha ururka.

Tusaale 1:

- ◆ Ururka gabdhaha ee fasalka
- ◆ Ururka ardayda ee dugsiga
- ◆ Ururka beeraleyda ee dagmo
- ◆ Ururka shaqaalaha ee warshada.

Shaqo Kooxeedka 1.1

- 1** Muuji ku tiirsanayaasha ururada soo socda.
 - b** Ururka wiilasha ee fasalkaaga
 - t** Ururka gabdhaha xidhan kabaha madaw ee fasalkaaga.
 - j** Ururka ardayda fir-fircoon ee fasalkaaga.
 - x** Ururka tirooyinka tirsiimo ee ka yar 10.
 - kh** Ururka qaar ka mid ah tirooyinka tirsiimo.
- 2** Intaad isu qeybisaan labo kooxood isbar-bardhiga jawaabihiina aad siiseen su'aasha sare ee 1.
 - b** Ma jireen wax kala duwanaansho ah jawaabihiina? Hadey tahay haa, ka dooda sababta kala duwanaashaha.
 - t** Kala saar ururada sida hufan u qeexan iyo kuwa aan ahayn.
- 3** Qor afar tusaalooyin oo ka mid ah kooxaha sheeyada laga helo agagaarka dugsigaaga ama gurigaaga.

Marka aan dhahno ururku si hufan ama habsan ayuu u qeexan yahay waxaan uga jeedna in ay surtagal tahay in aan shaki la'aan u muujino (cadayno) in shay lagu siiyay uu ururka ka tirsan yahay iyo in kale.

Calaamada ururka

Tidica, { }, waxaa loo isticmaalaa si aan u tusno ururka.

Ururada badanaa waxaa lagu asteeyaa xarfaha waaweyn sida A, B, C, iyo wixii la mid ah.

Bal aan eegno ururka tirooyinka tirsiimo ee ka hooseeya 5.

Waa maxay ku tiirsanayaasha ururkan? Haddii aan ururka ku asteyno A: kadib $A = \{1, 2, 3, 4\}$. Ku tiirsanayaasha waxaa lagu kala soocay hakad (,).
Xaqiiqada 1 in uu yahay ku tiirsanaha ururka A waxaa lagugu tusi karaa sidan: $1 \in A$.

Ma garanaysaa waxa calaamadda \in ay u taagan tahay?

Calaamada \in waa xaraf Giriik ah, halkan waxaynu ku isticmaalnaa si aynu u tusno xubinimada. $1 \in A$ waxaa loo akhrin sida 1 waa xubin ka mid ah ururka A ama 1 waa ku tiirsanaha A.

Waxaad kaloo u qori kartaa: $2 \in A$ si aad u tidhaahdo 2 waa xubin ka mid ah ururka A. 5 ma xubin ka mid ah baa ururka A? Waxaa cad 5 in ayna xubin ka ahayn ururka A, waxaynu u qori karnaa $5 \notin A$, si aynu u dhahno 5 ma'aha xubin ka mida ururka A. Sidaa awgeed, \in waa calaamad xubinimada \notin na waa calaamadda xubin ma'ahaanta..

Tusaale 2: Aan qaadano ururkan D ee soo socda, xubnihiisana ay yihiin ururka tirooyinka tirsiiimo ee u dhaxeeya 3 iyo 9.

$$D = \{4, 5, 6, 7, 8\}.$$

Ururka D wuxuu leeyahay shan xubnood. Waxaa loo qori karaa sida $n(D) = 5$, kaas oo loo akhriyo sida tirada ku tiirsanayaasha ururka D waa 5.

Laylis 1.1

- 1 Kuwan soo socota kooxdee baa si hufan u qeexan? Sabab?
 - b Tirooyinka Kisi ee ka hooseeya 9.
 - t Shinbiraha qurxoon ee laga helo wabi shabeele hareerihisa.
 - j Kooxda gabdhaha qurxoon ee fasalka dhexdiisa.
 - x Kooxda xayawaanaadka duurjoogta ee Itoobiya dhexdeeda.
- 2 Weedhahan soo socda sideen ugu qori karnaa inaga oo isticmaaleyna calaamadaha xisaabta?
 - b Y waa kutiirsanaha ururka S.
 - t Y ma'aha kutiirsanaha ururka S.

- 3** Go'aanso in aad ku qori karto calaamada \in lamaanayaasha dhexdooda iyo in kale.
- b** 6.... {1, 2, 3, 5} **j** 7.... Ururka tirooyinka mutaxan
- t** 24.... {2, 4, 6, 8} **x** 5.... {1, 2, 3, ..., 8}
- 4** Qor tirada kutiirsanayaasha ururadan soo socda.
- b** Ururka tirooyinka idil ee ka yar 4.
- t** $F = \{a, e, i, o, u\}$
- j** Ururka xayawaanaadka afar lugoodlaha laga helo gurigaaga.
- 5** Fiiri ururka B ee soo socda kaas oo natusaya ururka orodyahanada raga ee 10,000 ee metir kuwaas oo ka qaday billad dahabka olombiga caalamka. Magacdooda waxaa lagu siiyay ururka
- $B = \{\text{Mirus, Hayle, Qananisa}\}$
- b** Waa maxay kutiirsanayaasha ururka B?
- t** Ma run baa in magaca Mirus uu yahay $\in B$?
- j** Ma runbaa in magaca dharaartu ay tahay $\in B$?

Urur Madhan

Hawlgalka 1.2

Fiiri ururadan soo socda qor kutiirsanayaasha ururka.

- b** Ururka tirooyinka tirsiiimo ee ka yar 3.
- t** Ururka ardayda fasalkaaga ee da'doodu tahay 12 sano.
- j** Ururka ardayda fasalkaaga ee da'doodu tahay 100 sano.
- x** Ururka xayawaanka afar lugoodlaha gurigiina dhexdiisa.

Markii aad ka jawaabtid su'aalaha sare waxaa laga yaabaa in aad ku aragtid ururo aan lahayn wax kutiirsanayaal ah. Ururada noocaa ah waxaa lagu qeexaa sidan soo socota.

Qeexid 1.2: Ururka aan lahayn wax kutirsanayaal ah ama xubno ah waxaa loogu yeedhaa urur madhan. Ururka madhan waxaa lagu calaamadiyaa $\{ \}$ ama \emptyset .

Tusaale 3: Ururadan soo socda waxay tusaale u yihiin ururada madhan.

- ◆ Ururka ardayda ee galaaskaada dhererkooduna yihiin 4 metir.
- ◆ Ururka ardayda fasalkaada ee da'doodu tahay 100 sano.
- ◆ Ururka dadka ee duuli kara.
- ◆ Ururka leydiga kuwaas oo ah gobo.

Shaqo Kooxeed 1.2

Kuwan soo socda kuweebaa ah ururo madhan? Kala dood asaxaabtaada ku agjooga.

- b** B = ururka caruurta fasalkaaga kuwaas oo leh saddex lugood.
- t** T = ururka tirooyinka mutuxan ee dhaban.
- j** J = ururka fardaha duuli kara
- x** X = Ururka qoraxda, dayax, dhulka
- kh** KH = Ururka leydiga ee ah goobooyinka.

Ururada kooban iyo kuwa ma koobanaha

Hawlgalka 1.3

Imisa ku tiirsanayaal ayay leeyihiin ururadan?

- b** $\{a,e,i,o,u\}$
- t** Ururka tirooyinka idil ee dhaban ee ka yar 10
- j** Ururka tirooyinka idil ee Kisi ee ka yar 10.
- x** Ururka tirooyinka idil.

Qeexid 1.3: Ururka kooban waa ururka leh kutirsanayaal xadidan ama tiro xubno cayiman. Ururka ma koobnaha ah waa ururka leh tiro ku tiirsanayaal ah oo aan xadlahayn.

Tusaale 4:

- b** $B = \{0, 1, 2, 3, \dots, 9\}$ waa urur kooban; wuxuu leeyahay 10 xubnood, taas oo ah, $n(B) = 10$.
- t** $T = \{\text{tirooyinka tirsiiimo ee u dhaxeeya 2 iyo 15}\}$ waa urur kooban (cayiman); ururka T wuxuu leeyahay 12 xubnood, taas oo ah, $n(T) = 12$.
- j** $J = \emptyset$ waa urur kooban (cayiman); ururka J ma laha wax xubin ah, taas oo ah, $n(J) = 0$.
- x** Ururka dhammaan tirooyinka tirsiiimo waa urur ma koobane ah
- kh** Ururka jajabka waa urur makoobna ah.

Laylis 1.2

- Ka bixi afar tusaalooyin oo qeexaya ururka madhan.
- Calaamadahan soo socda kuweebaa u taagan ururka madhan?
b \emptyset **t** $\{\}$ **j** $\{\emptyset\}$ **x** $\{0\}$ **kh** 0
- Imisa xubnood ayay leeyihiin ururadan soo socda?
b $A = \{0\}$ **t** $B = \{1, 2\}$ **j** $C = \{0, 1, 2\}$
x $D = \{0, 1, 2, 3\}$ **kh** $E = \emptyset$
- Fiiri ururka B iyo T ee su'aasha 3 ma yahay $n(A) = n(T)$? Sabab?
- Sidan soo socota ururadee baa ah kuwa kooban iyo kuwa makoobnaha ah?
b Ururka ardayda ee fasalkaada.
t Ururka tirooyinka tirsiiimo ee ka badan 20.
j Ururka gawaadhida caalamka ee 2002T.E.
x Ururka dhibcaha xariiqa googo'an.
kh Ururka tirooyinka dhaban ee tirsiiimo ee u dhaxeeya 2 iyo 4.
r Ururka jajabka ee u dhaxeeya 1 iyo 2.
- Ka soo qaad $B = \{0, 1, 2, 3, \dots\}$.
 $T =$ Ururka tirooyinka dhaban ee tirsiiimo ee u dhaxeeya 30 iyo 40
 $J =$ Ururka tirooyinka tirsiiimo ee ka yar 30 una qeybsama 5 markaa raadi:
b $n(B)$ **t** $n(T)$ **j** $n(J)$

1.2 XIDHIIDHKA Ka DHAXEEYA URURADA

Cutub yarahan dhexdiisa waxaad ku baran doontaa xidhiidhyada ka dhaxeeya labo ururo, hormo ururo, hormo urur quman, ururo isudhigma iyo oruro sle'eg.

1.2.1 Hormo Urur iyo Hormo Urur Quman

Hawlgal 1.4

Bal aan eegno ururada B iyo T ee lagugu siiyay hoos.

$$B = \{a, b, 1, 3, 4\} \text{ iyo } T = \{b, 1, 3\}$$

Isbarbardhig kutirsanayaasha ururka B iyo kutirsanayaasha ururka T.

Waa maxay xidhiidhka aad ku aragtid ee ka dhaxeeya labada urur?

Ka soo qaad $B = \{a, b, c, d, e\}$ iyo $T = \{a, c, d\}$.

Halkan waxaad ku aragtaa xubin walba oo ururka T ah in uu yahay ururka B. tusaalahan dhexdiisa, ururka T waxaa la odhan hormo urur ayuu u yahay ururka B.

Si guud sidan soo socota ayaa lagu qeexi.

Qeexid 1.4: Haddii B iyo T ay yihiin ururo oo isla markaana kutirsane kasta oo ururka B ku jiraa uu ku jiro ururka T markaa waxaan dhahaynaa ururka B hormo urur ayay u tahay ururka T. Xidhiidhkan waxaa lagu asteeyaa $B \subseteq T$, waxa loo akhriyaa B waxay hormo urur u tohay T.

Inaga oo ka duulayna qeexidda 1.4, waxaa la socda hadey jirto hal ku tiirsanaha B oon ahayn ku tiirsanaha ururka T, kadib B uma aha hormo urur T (waxaana loo qori $B \not\subseteq T$). xusuusnaw, ururka madhan wuxuu hormo urur u yahay urur kasta iyo ururka B wuxuu hormo urur u yahay isaga qudhigiisa.

Taas oo ah, haddii B ay tahay urur walba, kadib $\emptyset \subseteq B$ iyo $B \subseteq B$.

Shaqo kooxeedka 1.3

1 Intaad rogatiid kadibna buuxi meelaha madhan

Urur	Tirada ku tiirsanaha (n)	Hormo urur	Tirada hormo urur
\emptyset	0	\emptyset	_____
{a}	1	$\emptyset, \{a\}$	2
{a, b}	2	_____	_____
{a, b, c}	_____	$\emptyset, \{a\}, \{b\}, \{c\}, \{a, b\}, \{a, c\}, \{b, c\}, \{a, b, c\}$	_____

2 Si taxadar leh ugu fiirso tirada hormo ururada ee ku yaala shaxda aad buuxisay.

- b** Maxaad ku aragtay qoyska natusinaya tirada hormo ururada iyo qoyska na tusinaya tirada kutirsanayaasha (n)?
- t** Adoo adeegsanaya xidhiidhka kor laga helay, waa imisa hormo urur ayuu leeyahay ururka {a, b, c, d} ee leh 4 xubnood.
- j** Imisa hormo urur ayuu leeyahay ururka {a, b, c, d, e} ee leh 5 xubnood?

3 Ma qori kartaa qaaciidada u leeyahay tirada hormo ururada ee ururka ee leh xubnaha n?

Tusaale 1: Fiiri ururada M, N, iyo Q ee hoos ku xusan.

$$M = \{2, 3, c, e, 4\}; N = \{2, 3, 4, a, d, 5\}; Q = \{1, 2, 3, c, 4, e, r\}$$

$M \not\subseteq N$, sababtoo ah $C \in M$ laakiin $C \notin N$, $M \subseteq Q$ sababtoo ah dhammaan xubnaha M waxay sidoo kale xubno u yihiin Q.

Hawlgalka 1.5

Si taxadar leh u eeg labadan ururo A iyo B ee hoos lagu siiyay.

$$A = \{w, x, y, 12, 16\} \quad B = \{y, z, 12, 16, w, x\}$$

- b** Ururka A ma u yahay hormo urur ururka B? B hormo urur ma u yahay A? sabab?
- t** Imisa xubnood ayuu leeyahay urur kasta?
- j** Waa kee ururka ugu xubno badan, ma A mise B?

Inaga oo ka anbaqaadeyna hawlgalada kor ku xusan, waxaad ogaan kartaa A in ay u tahay hormo urur B, laakiin B ayna u ahayn hormo urur A. dabecadaha sida ah waxaa lagu qeexi karaa sidan soo socota:

Qeexidda 1.5: Hadey A iyo B ay yihiin ururo oy A hormo urur u tahay B, laakiin B aynan hormo urur u ahayn A, kadib A waxaa ladhihi karaa hormo quman ayay u tahay B. waxaa lagu asteeyaa $A \subset B$ loona akhriyaa “A waxay hormo quman u tahay B”.

Tusaale 2: **b** Hadey $A = \{1, 2, 3, 4, 5\}$ iyo $B = \{3, 4\}$, kadib $B \subset A$ sababtoo ah $B \subseteq A$, laakiin $A \not\subseteq B$.

t Ka soo qaad $R = \{1, 2, 4, 8, a, b, c\}$ iyo $S = \{4, 2, 1, a, 8, b, c\}$, kadib $R \not\subseteq S$. maadaama $R \subseteq S$ iyo waliba $S \subseteq R$.

Laylis 1.3

- 1 J iyo X waa ururo sida hoos ku xusan
 $J = \{\triangle, \diamond, +\}$, $X = \{\diamond, \square, +, \square, \Delta\}$ ururka J ma u yahay hormo urur X?
- 2 Hoos waxaa lagugu siiyay ururka maalmaha todobaadka;
 (Axad, Isniin, Talaado, Arbaco, Khamiis, Jimce, Sabti)
 Qor hormo ururada maalmaha todobaadka ee

b Ka bilawda xarafka A.	t Ku dhammaada xarafka I.
j Ka bilawda xarafka K.	x Ka bilawda xarafka J.
- 3 Ka samee saddex hormo urur ururkan $\{a, b, c, d\}$.
- 4 Ka samee hal hormo urur mid walba oo ka mid ah ururadan soo socda.

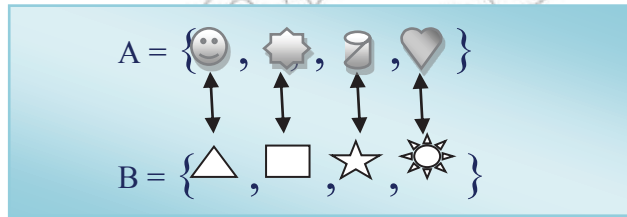
b Ururka ardayda ee galaaskaaga.
t $R = \{w, x, y\}$.
j Ururka tirooyinka tirsiimo ee ka yar 10.
- 5 Tax dhammaan hormo ururada ka suurtagalay ururadan soo socda.

b $A = \{1, 2, 3\}$	t $B = \{5, 9\}$
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- 6 Hadey $A = \{2, K, 4, n, 5\}$, qor labo hormooyinka quman ee A.
- 7 Go'aami ururada K iyo L dhexdooda in lagu qori karo calaamadaha \subset ama K.
- b** $K = \{x \in \mathbb{N} : x \text{ waa tiro mutaxan}\}$; $L = \{2, 3, 5, 7\}$ kadib, K _____ L.
- t** $K = \{c, m, n, o, p\}$; $L = \{l, o, p, m\}$, kadib, L ___ K.
- j** $K = \{t, a, c, t, i, c\}$; $L = \{c, a, t\}$, kadib, L _____ K.
- x** $K = \{x \in \mathbb{N} : x \text{ waxay ka yar tahay } 20\}$;
 $L = \{x \in \mathbb{N} : x \text{ waxay ka yartahay } 10\}$ kadib, L _____ K.
- 8 Ma u yahay ururka ardayda ee fasalkaagu hormo quman marka loo eego ururka ardayda ee dugsigaaga? Sharaxaad ka bixi. Ma u yahay ururka gabdhaha ee fasalkaagu hormo quman marka loo eego ururka ardayda ee dugsigaaga? Sharaxaad ka bixi.

1.2.2 Isudhignaanta iyo Isle'ekaanshaha Ururada

Si taxadar leh u eeg labada ururo A iyo B ee lagugu siiyay hoos



Jaantuska 1.2

Labada ururo A iyo B ma'aha kuwo isle'eg sababtoo ah waxay leeyihiin xubno kala duwan laakiin ururka A iyo B waxay wadaagaan dabeecado. Haddi aan isbarbardhigno Labada ururo, wey isudhigmaan, kadibna waxay noqdaan hal-la-hal.

Hadda bal eeg ururadan C iyo D ee jaantuska 1.3. ma yihiin ururadan C iyo D kuwo isu noqdo hal-la-hal? Hal xubin oo ururka C ayaa baaqi noqday. Sidaa darteed, waxaad arki kartaa ururada C iyo D in ayna iskugu beegnayn mid-mid.



Jaantuska 1.3

Ururada sida A iyo B ee lagu siiyay jaantuska 1.2 ee isugu began mid-mid waxaa loogu yeedhaa ururada isku dhigma.

Qeexidda 1.6: Haddii labo urur A iyo B ay isugu began yihiin mid-mid kolkaa A iyo B waa ururo isku dhigma. Waxaana lagu asteeyaa $A \leftrightarrow B$ iyo loo akhriyaa ururka A waxuu u dhigmaa ururka B.

Tusaale 3: i Fiiri ururada x iyo y ee lagu siiyay hoos.

$x = \{1, 2, 4, a, b, c\}$ iyo $y = \{a, 6, 10, 12, b\}$ ururada x iyo y ma aha kuwo isku dhigma; sababtoo ah isuguma aadano hal-laa-hal.

ii Hadda bal eeg ururada R iyo S ee lagu siiyay hoos

$R = \{2, 4, 6, 8, 10, 12\}$ iyo $S = (R \leftrightarrow S)$, sababtoo ah waxay isugu aadi karaan hal-ilaa-hal.

Hawlgalka 1.6

Si taxadar leh u eeg ururada M iyo N ee lagu siiyay hoos.

$$M = \{1, 3, 7, 8, 9\}; N = \{3, 7, 1, 9, 8\}$$

b Ururka M ma u dhigma ururka N ? Sabab?

t Ururka M hormo urur ma u yahay N ?

j Ururka N hormo urur ma u yahay M ?

Qeexidda 1.7: Haddii A iyo B ay yihiin ururo oo xubin walba oo ururka A ah laga helo ururka B , iyo xubin walba oo ururka B ahna laga helo ururka A , A iyo B waxaa loogu yeedhaa ururo isle'eg. Waxaana lagu asteeyaa $A = B$ waxaana loo akhriyaa ururka A wuxuu le'eg yahay ururka B .

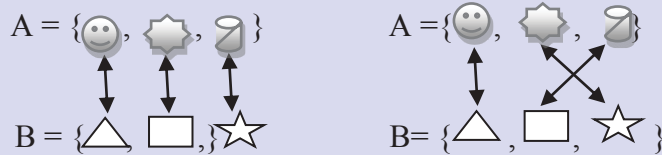
Si ay ururada A iyo B ay u noqdaan kuwo isle'eg, A waa in ay hormo urur u noqoto B , B na waa in ay hormo urur u noqoto A . taas oo ah, hadey $A \subseteq B$ dabadeedna $B \subseteq A$ kolkaa $A = B$.

Tusaale 4: Hadey $A = \{x: x \text{ ay tahay tiro tirsiiimo oo ka yar } 7\}$ iyo

$$B = \{1, 2, 3, 4, 5, 6\}, \text{ dabadeedna } A = B.$$

Laylis 1.4

- 1 Ururada waxaa la isugu aadin karaa wadooyin badan. Jaantuska 1.4 wuxuu natusinayaa labo wado oo la isugu aadiyo ururada isku began. Natusi labo wado oo dheeraad ah oo la isugu aadiyo labadan ururo.



Jaantuska 1.4

- 2 Hoos waxaa ah afar ururo;

$$A = \{a, b, c\}$$

$$B = \{1, 2, 3\}$$

$$C = \{\text{smiley face}, \text{star}, \text{glass}\}$$

$$D = \{\text{smiley face}, \text{star}, \text{glass}, \text{book}\}$$

Waa ururadee kuwa isle'eg?

- 3 Samee labo urur oo ku beegma ururka (buug, qalin qori, tirtire).
 4 Qor lix hormo urur u ah ururka $\{p, q, r, s\}$ kuwaas oo u dhigma ururka $\{1, 2\}$.
 5 Lamaanayaashan ururo ee soo socda kuwee baa isugu aadi kara mid-mid? Tus sida ay u suurtagali karto inay isugu aadaan mid-mid.

b $x =$ ururka dhaban ee tirooyinka tirsiiimo ee ka yar 10.

$y =$ {ururka dhaban ee tirooyinka tirsiiimo ee ka badan 10 laakiin ka yar 20}.

t $P =$ {ururka ardayda ee fasalkaada}

$Q =$ {ururka sanadka ardayda fasalkaada}.

- 6 Sidan soo socota ururadee baa isle'eg? Sabab u yeel.

$A = \{0, 2, 4, 6, 8\}$; $B =$ ururka dhaban ee tirooyinka tirsiiimo ee ka yar 10

$C = \{4, 8, 0, 6, 2\}$; $D = \{4, 8, 6, 2\}$

$E = \{2, 2, 2, 4, 6, 8\}$; $F = \{2, 4, 8, 6\}$.

- 7 Ka soo qaad $A = \{1, 3, 5, 7, 9\}$ iyo $B =$ ururka Kisi ee tirooyinka tirsiiimo ee ka yar 10. Ma tahay $A = B$? Sabab?

1.3 XISAAB FALADA URURADA

Xisaabaadka artimeetikada, waxaad haysataa xisaab falada aasaaska ah sida isugeynta kalagoynta, iskudhufashada iyo isuqaybinta. Xisaab fal kasta waxay ku siin tiro sadaxaad markii labo tiro walba la isu xisaabfalo. Sidoo kale, waxaa jira xisaab falo dhexmara ururada kuwaas oo nasiinaya urur sadaxaad markii la isuxisaabfalo labo urur oo kasta. Cutub yarahan dhexdiisa waxaynu ku baraneynaa labo xisaab falada ururada oo muhiim ah looguna yeedho dhextaal iyo isutag. laakiin intaadan bilaabin wax ku saabsan xisaab falada ururkan bal aan dib isuxusuusino labo siyaabood oo la isugu geeyo tirooyinka.

Xisaabfaladda isugeynta iyo isku dhufashada ee tirooyinka marka laga shaqaynayo waad ogtihiin in markiiba laba tiro oo qudh ah inta la qaato la isugeeyo ama la iskudhufto.

Matalan si aan uhelno wadarta $2 + 3 + 4$ waxa surta gal inaan horta isugeeyno $2 + 3$ si aan u helno wadarta 5.

Kadibna waxaan isugaynaynaa $5 + 4$ si aan u helno 9 oo ah dhamaan wadarta loo baahanyahay.

Hawsha iskudhufashadu na waa la mid oo markiiba laba tiro oo qudhaata ayaa la isku dhuftaa. Sidoo kale markaan ku shaqaynayno xisaabfaladda. Saddax urur markiiba laba urur oo qudhaata ayaan qaadanaynaa oo aan xisaabineynaa.

Waxa jira xeer kale oo tirooyinka muhiim u ah. Waxaad ogsoontahay in wadarta laba tiro oo tirooyinka tirsiiimo ama taranka laba tiro ee tirooyinka tirsiiimo ay had iyo jeer yihiin tiro tirsiiima ah. Matalan $3 + 4 = 7$ sidoo kale $5 \times 8 = 40$. Xisaab yahanadu xeerkan waxay yidhaadaan xeerka oodnaanta. Isugeynta iyo iskudhufashada ee tirooyinka tirsiiimo way ogolyihiin xeerka oodnaanta.

Sidoo kale markaad xisaab fal ku samaysid laba urur natiijadu waa urur kale uun.

1.3.1 Dhextaalka Ururada

Hawlgalka 1.7

Fiiri labadan urur ee soo socda

$A = \{r, s, t, u, v\}$ iyo $B = \{a, r, b, s, c\}$.

Waa xubnahee kuwa laga leeyahay labada ururo A iyo B? Qor urur ka kooban xubnaha ay wadaagaan labaduba A iyo B.

Ururka ka kooban xubnaha ay wadaagaan ururada A iyo B waxaa loogu yeedhaa dhextaalka ururada A iyo B.

Qeexidda 1.8: Dhextaalka labo ururo A iyo B waa ururka dhammaan xubnihiisu ay wadaagaan ururada A iyo B. waxaa lagu asteeyaa $A \cap B$ loona akhriyaa “A dhextaalka B”.

U fiirso faraaqa u dhaxeeya “ururada xidhiidhkaleh” iyo “dhextaalka” labada urur. Sharaxaadan soo socota ayaa kaa caawin doonta in aad fahantid faraaqa u dhaxeeya.

Halkan waxaa ah labo urur;

$$C = \{1, 2, 3\} \text{ iyo } D = \{2, 3, 4\}$$

Ururada C iyo D waxay leeyihiin xubno ay wadaagaan, magac ahaan 2 iyo 3. Ururada noocan ah waxay leeyihiin dhextaal. Ururka ka sameysma iyada oo laqaadanayo xubnaha ay wadaagaan waxaa loogu yeedhaa dhextaal. Tusaale, dhextaalka labada urur C iyo D waa ururka $\{2, 3\}$. Wadada gaaban ee loo qoro tan waa; $C \cap D = \{2, 3\}$. Calaamada \cap waxaa loo akhriyaa dhextaal.

1.3.2 Isutaga ururada

Sida dhextaalka oo kale, waa xisaab falka ururada ee aasaasiga ah. Sida odhaahyada “Isutaga shaqaalaha” ama “isutaga ardayda; erayga midaw, waxaa loo adeegsadaa ururo, wuxuuna qeexayaa xisaabfalka isutaga.

Hawlgalka 1.8

Fiiri labadan urur ee soo socda;

$$A = \{\text{Cabdi, Cali, Khadar, Xasan}\}; B = \{\text{Hodan, Xamda, Xasan, Faadumo}\}$$

Qor ururada ka kooban dhammaan xubnaha laga leeyahay midkood A ama B, ama labaduba A iyo B.

Qeexidda 1.9: Isutagga labada ururo A iyo B waa dhammaan xubnaha ku jira A, ama ku jira B, ama ku jira labaduba A iyo B. waxaa lagu asteeyaa $A \cup B$ loo akhriyaa sida ‘A kudarsantay B’.

Isutagga labada ururo waa urur kale oo $A \cup B$ uu calaamad u yahay ururka ka sameysmay labada urur A iyo B.

- Tusaale 1:b** Hadey $A = \{1, 3, 5, 7\}$ iyo $B = \{2, 4, 6\}$,
kadib $A \cup B = \{1, 2, 3, 4, 5, 6, 7\}$.
- t** Hadey $C = \{a, b, c\}$ iyo $D = \{d, e, f, g\}$
kadib $C \cup D = \{a, b, c, d, e, f, g\}$.

Shaqo kooxeed 1.4

Ka soo qaad $A = \{3, 4, 5, 6\}$ iyo $B = \{5, 6, 7\}$.

- b** Imisa xubnood ayay leeyihiin urur kaste A iyo B?
- t** Imisa xubnood ayuu leeyahay ururka $A \cup B$?
- j** Ma u baahaneynaa in aan isudarno tirada u leeyahay urur kasta si aan u helno tirada xubnaha isutaga?

Hadda fiiri tusaalooyinkan soo socda;

Hadey $C = \{1, 3, 5, 9\}$ iyo $D = \{2, 4, 6, 8\}$,

kadib $C \cup D = \{1, 2, 3, 4, 5, 6, 7, 8, 9\}$

Waxaad kaloo heli

$$n(C) = 5; n(D) = 4; n(C \cup D) = 9; n(C) + n(D) = n(C \cup D) = 5 + 4 = 9$$

Sidaa awgeed, $n(C \cup D) = n(C) + n(D)$

Tusaalahan dhexdiisa, markii labada urur ay yihiin kuwo aan wadaagin wax xubno ah waxaynu helnay tirada xubnaha isutaga in ay la mid tahay wadarta tirada xubnaha urur kasta.

Sida aanu ka arki karno shaqo kooxeedka 1.4 iyo tusaalaha sare, waxaanu odhan karnaa; tirada xubnaha isutaga labada ururo waxay la mid tahay wadarta tirada urur kasta hadey labada urur ayna lahayn waxkulana, haddii kale marwalba tira ahaan waxay isdhimi inta tirada xubnaha dhextaalka. Taasi macna ahaan labo urur oo walba A iyo B oo dhextaal leh:

$$n(A \cup B) = n(A) + n(B) - n(A \cap B)$$

Tusaale 2:

- b** Ka soo qaad $A = \{2, 4, a, b, 6\}$ iyo $B = \{c, d, 2, r, 4\}$.
Kadib, $A \cup B = \{2, 4, a, b, 6, c, d, r\}$ iyo $(A \cap B) = \{2, 4\}$
 $n(A) = 5; n(B) = 5; n(A \cup B) = n(A) + n(B) - n(A \cap B) = 5 + 5 - 2 = 8$

- t** Hadey $A = \{\text{Cabdi, Cali, Axmed, Badri}\}$ $B = \{\text{Ubox, Sitra, Badri, Sahra}\}$
 $A \cup B = \{\text{Cabdi, Cali, Axmed, BAdri, Ubox, Sitra, Sahra}\}$
 $A \cap B = \{\text{Badri}\}$
 $n(A) = 4; n(B) = 4; n(A \cap B) = 1;$
 $n(A \cap B) = 7 = 8 - 1 = n(A) + n(B) - n(A \cap B)$

Laylis 1.5

- 1** Tax xubnaha dhextaalka ee ururadan lammaan.
b $A = \{a, b, c, d, e\}; B = \{a, e, i, o, u\}$
t $A = \{x \in \mathbb{N} : x \text{ aytahay tiro mutaxan oo ka yar } 10\};$
 $B = \{y \in \mathbb{N} : y \text{ aytahay tiro Kisi oo ka yar } 10\}$
j $A = \{\text{bisad, lo', fardo, geel}\}; B = \{\text{libaax, shabeel, maroodi}\}$
- 2** Qor ururada ka dhasha dhextaalka ururadan soo socda.
b haddi $B \subseteq T$; kadib $B \cap T = \underline{\hspace{2cm}}$ **t** $A \cap \emptyset = \underline{\hspace{2cm}}$
j haddii $A \subset R$, kadib $A \cap R = \underline{\hspace{2cm}}$
- 3** Tax xubnaha isutaga ururada lamaanaha ah ee soo socda.
b $A = \{a, b, c, d\}; B = \{b, d, e, f\}$
t $X = \{2, 4, 6, 8, 10\}; Y = \{3, 6, 9, 12\}$
j $P = \{2, 4, 6, 8, 10\}; Q = \{\Delta, \triangle, \square\}$.
- 4** Sidan soo socota buuxi ado tixraacaya ururada gudaha su'aasha (3) ee kore?
b $n(A \cup B) = \underline{\hspace{2cm}}$ **t** $n(X \cup Y) = \underline{\hspace{2cm}}$ **j** $n(P \cup Q) = \underline{\hspace{2cm}}$
- 5** Hadey $X =$ ururka wiilasha ee galaaska fasalka 6^{aad}
 $Y =$ ururka wiilasha kubadda cagta ee fasalkaada 6^{aad}.
Haddii $n(X) = 22, n(Y) = 9$ iyo $n(X \cap Y) = 4$, kadib raadi $n(X \cup Y)$.
- 6** Waxaa lagu siiyay $n(X) = a, n(Y) = b$, iyo $n(X \cap Y) = C$, qor xeerka guud ama qaacidada $n(X \cup Y)$.
- 7** Haddii $A = \{2, 4, 6, 8\}, B = \{1, 3, 5\}$, iyo $C = \{a, b, c, d\}$, kadib raadi
b $A \cup B$ iyo $B \cup A$. Ma yahay $A \cup B = B \cup A$?
t $(A \cup B) \cup C = A \cup (B \cup C)$. Ma yahay $(A \cup B) \cup C = A \cup (B \cup C)$?

1.3.3 Jaantuska feen

Cashiradii hore dhexdooda, waxaad ku soo baratay sida loogu isticmaalo tuducyada iyo xidhiidhada ka dhaxeeya ururada. Casharkan gudhiisa, waxaad ku baran doontaa sidii ururada, xidhiidhada ka dhaxeeya ururada loogu soo bandhigi lahaa iyada oo la adeegsanayo jaantuska feen (magacan wuxuu ka yimid nin filoo-soofi biritishna ah oo la odhan jiray Joon Feen 1834 – 1923). Jaantuska feen dhexdiisa, ururada waxaa lagu soo bandhigay muuqaalo, badanaa gobo iyo muuqaalka ukunta. Ku tirsanayaasha ururka waxaa lagu habeeyay goobada dhexdeeda.

Tusaale 3: waxaa lagu siiyay ururka P oo tirooyinka kisi ee u dhaxeeya 9 iyo 19, sawir oo ku habee jaantuska feen si aad u bandhigtid ururka P oo, tus dhammaan ku tirsanayaasha ururka P jaantuska feen dhexdiisa.

Furfuris: Tax xubnaha P.

$$P = \{11, 13, 15, 17\}. \text{ Xusuusnaw 'u dhaxeeya'}$$

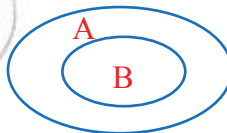
Kuma jiraan 9 iyo 19.

Sawir goobo ama muuqaal ukun wax leh. Ku habee P. kadhig xubnaha P sida lagugu tusay [sawirka 1.5](#).



Jaantuska 1.5

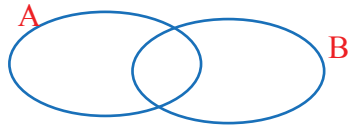
Waxaa jira wadooyin badan oo lagu cadeyn karo xidhiidhada ururada iyada oo la adeegsanayo jaantuska feen. Hadaad taqaantid, tusaale, taas dhammaan xubnaha B waa xubnaha A ama $A \cap B = B$ ama $A \cup B = A$, kadib waxaad sawiri kartaa B ku dhex jirta A sida lagugu tusay [jaantuska 1.6](#) dhexdiisa.



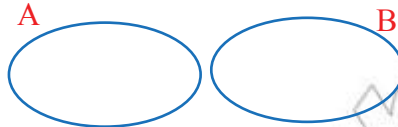
Jaantuska 1.6 ($B \subseteq A$)

Sidoo kale, waxaad sawiri kartaa A dhinaca kaga daahan B, hadaad taqaanid qaar ka mid ah xubnaha A waxay sidoo kale xubno u yihiin B ama $A \cap B \neq \emptyset$ ama

$n(A \cap B) \neq 0$. fiiri [jaantuska 1.7](#).

Jaantuska 1.7 ($A \cap B \neq \emptyset$)

Waxaad kaloo sawiri kartaa labo urur A iyo B oon lahayn wax kulan haddii aad aqoon u leedahay midda ah majiraan wax xubno oo A laga leeyahay B ama $A \cap B = \emptyset$ ($A \cap B = 0$). fiiri jaantuska 1.8.

Jaantuska 1.8 ($A \cap B = \emptyset$)

Tusaale 4: Sawir jaantuska feen si aad ugu soo bandhigtid xidhiidhka ka dhexeeya ururada:

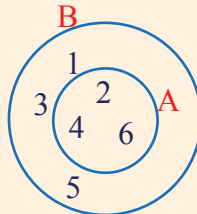
$$A = \{2, 4, 6\} \text{ iyo } B = \{1, 2, 3, 4, 5, 6\}.$$

Furfuris: (fiiri jaantuska 1.9)

Talaabada 1: sawir goobada A oo ku dhexjirta goobada B,

Talaabada 2: ku qor ku tiirsanayaasha gudaha goobada A.

Talaabada 3: ku qor xubnaha ku soo hadhay gudaha goobada B, ee ka baxsan A.



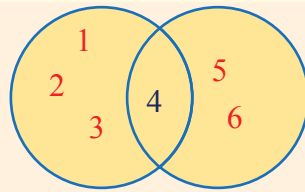
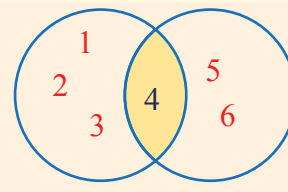
Jaantuska 1.9

Tusaaleyaashan soo socda, waxaad ku arki doontaa sidii aad ugu soo bandhigi lahayd ururada dhextaalka iyo isu tagga adoo adeegsanaya jaantuska feen.

Tusaale 5: b Haddii $A = \{1, 2, 3, 4\}$ iyo $B = \{4, 5, 6\}$,

$$\text{kadib } A \cup B = \{1, 2, 3, 4, 5, 6\} \text{ iyo } A \cap B = \{4\}$$

$A \cup B$ iyo $A \cap B$ waxaa lagu soo bandhigay qeybaha la hadheeyay ee jaantuska feenka soo socda kuna yaala jaantuska 1.10.

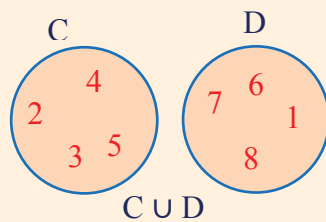
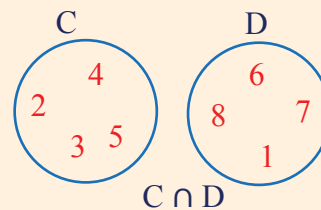
 $A \cup B$  $A \cap B$

Labada ururba waxay wadaagaan xubno.

Jaantuska 1.10

- t Haddii $C = \{2, 3, 4, 5\}$ iyo $D = \{1, 6, 7, 8\}$,
kadib $C \cup D = \{1, 2, 3, 4, 5, 6, 7\}$ iyo $C \cap D = \emptyset$

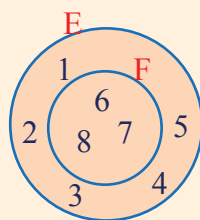
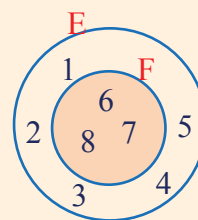
$C \cup D$ iyo $C \cap D$ waxaa lagu soo bandhigay qeybaha lahadheeyay (hadheeyan) ee jaantuska feenka soo socda ee ku yaala jaantuska 1.11:

 $C \cup D$  $C \cap D$

Labada ururo wax xubno ah mawadaagaan.

Jaantuska 1.11

- j Haddii $E = \{1, 2, 3, 4, 5, 6, 7, 8\}$ iyo $F = \{6, 7, 8\}$, kadib
 $E \cup F$ iyo $E \cap F$ waxaa lagu muujiyay qeybaha daahan ee jaantuska feenka soo socda ee gudaha jaantuska 1.12:

 $E \cup F$  $E \cap F$

Ururka F wuxuu hormo urur oo (quman) u yahay ururka E.

Jaantuska 1.12

F.G: b Dhextaalka labo urur oo kasta oon lahayn wax wadaag ah waa urur madhan.

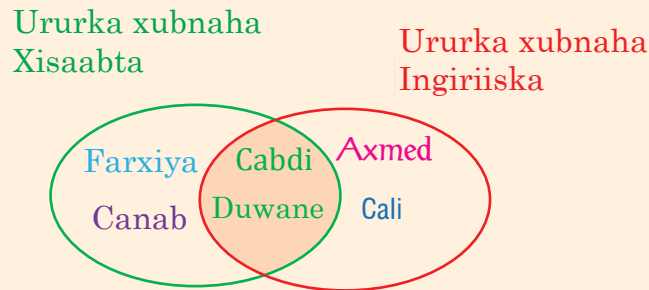
Tusaale ururka C iyo D ee kor lagu siiyay, $C \cap D = \emptyset$

t Hadduu yahay A urur kasta, kadib $A \cup \emptyset = A$, iyo $A \cap \emptyset = \emptyset$

j Haddii $F \subseteq E$, kadib $E \cup F = E$ iyo $E \cap F = F$

Tusaale 6: Qaar ka mid ah dugsiyada ayaa ururka M (xisaabta) waxaa xubno ka ah Duwane, Cabdi, Farxiya, iyo Canab, iyo ururka E (Ingiriiska) waxaa xubno ka ah Axmed, Duwane, Cali, Cabdi.

Furfuris: Isticmaal jaantuska feen si aad u muujisid xaalada.



Jaantuska 1.13

Jaantuska feen ee sare (Jaantuska1.13) qeybta hadhaysan waxay natuseysaa Cabdi iyo Duwane in ay yihiin xubnaha ka midka ah labadaba xisaabta iyo ingiriiskaba; Farxiya iyo Canab waa xubnaha xisaabta kali ah meesha Axmed iyo Calina ka yihiin ingiriiska kali ah.

Laylis 1.6

1 Sawir jaantuska feen si aad u tustid xidhiidhaha ka dhaxeeya hormo ururada ardayda fasalkaaga ee soo socda.

$F = \{x: x \text{ waa ardayda fasalkaada}\}$

$M = \{y: y \text{ waa ardayda dhadig ee fasalkaada}\}$

$R = \{z: z \text{ waa ardayda dhadig ee fasalkaada da'dooduna ka hooseyso 13 sano}\}$

$P = \{w: w \text{ waa ardayda dhadig ee da'doodu u dhaxeeyso 10 ilaa 12 sano ee fasalkaada}\}$

2 Tus xidhiidhka ka dhaxeeya ururadan lamaan ee soo socda adeegsanaya jaantuska feen.

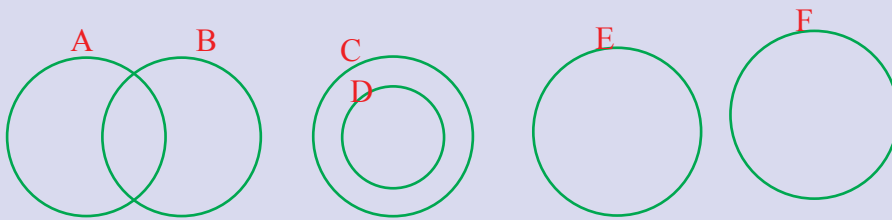
b Ururka laba jibaaranada iyo ururka laydiyada

t Ururka goobada iyo ururka laydiyada.

3 Koobiyeey ama rog jaantuska 1.14 oo hadhee qeybaha tilmaamaya

b Dhextaalka

t Isutagga talaabo walba.



Jaantuska 1.14

4 Isticmaal jaantuska feen si aad u xalisid masalooyinkan soo socda. Huteelka salaam ee ku yaala addis-ababa ayaa mar waxaa lagu sameeyay daraasaad ku saabsan 75 qof oo macaamiisha Huteelka ka mid ah. Natiijadii waxaa lahelay, 35 ka mid ah dadka iney jecelyihiin bariis, 41 ay jecelyihiin baastada, iyo 11 qofna ay jecelyihiin labadaba bariiska iyo baastada. Imisa qof ayaana jecleyn labadaba bariiska iyo baastada?

5 Makhaayad shaah ku dhexyaala dugsi ayaa kala weydiiyay 36 arday waxa ay xiseeyaan ee cabitaanadan kala ah: kooko koolo, Faanto, Isbirayd, natiijadii waxaa lagu taxay hoos.

<i>Tirada ardayda</i>	<i>Waxa ay xiiseeyaan</i>
25	Koka koola
20	Isbirayd
15	Faanto
2	Saddexdaba
1	Ma xiiseeyaan saddexdaba
15	Koko koole/Isbirayd
8	Faanto ama kooko koole
3	Isbirayd bas ah

b Sawir jaantuska feen oo lagu soo bandhigo jawaabaha

t Imisa arday ayaa jecel faantada kali ah?

j Imisa arday ay jecel faantada ama isbirayda

x Waa maxay labada cabitaano ee ay tahay in loo dalbo makhaayada? Sharaxaad ka bixi.

🔑 Hubin

→ TaaganCalaamadaha lagu isticmaalay ururada	→ Dhextaalka ururada
→ Fikirada Ururada	→ Hormo urur
→ Hormo urur oo quman	→ Isutagga ururada
→ Jaantuska feen	→ Ku tiirsane/xubinka ururka
→ Kumuujinta/Kubandhigidda ururada jaantus	→ Calaamada ururka: $\{ \} \in, \notin, \neq, \emptyset$ ama $\{ \}$
→ Urur	→ Ururada aan waxba wadaagin
→ Ururada isku dhegma	→ Ururada isle'eg
→ Ururka aan cayinayn	→ Ururka cayiman/xadidan
→ Ururka madhan	→ Xidhiidhka ka dhaxeeya Ururada
→ Xidhiidhyada: $\subseteq, \not\subseteq, =$	→ Xisaab falada aas'aasiga ah ee ururada
→ Xisaab falka ururada: \cap, \cup	

📖 Soo Koobidda Cutubka

1 Ururku waa waxyaalo/sheeyo si fiican oo qeexan isugu ururay.

Tusaale: b Ururada dhibcaha dhabanka.

$$t \quad A = \{1, 3, 5, 7, 9\}$$

2 Sheeyada ku jira ururka dhexdiisa waxaa loogu yeedhaa ku tirsanayaal ama xubnaha ururka, \in waa calaamada xubinimada, iyo \notin waa calaamada xubin ma noqoshada.

Tusaale: haddii $A = \{2, 4, 6\}$, kadib $2 \in A$, $4 \in A$, iyo $6 \in A$, laakiin $5 \notin A$.

3 Ururka madhan waa urur aan lahayn wax xubno ah; laguna calaamadiyo \emptyset ama $\{ \}$.

Tusaale: ururka tirooyinka Kisi ee tirsiimo ee u qeybsama 2.

4 Ururka koobana ah waa ururka xubnihiisu ay cayiman yihiin.

Tusaale: $\{1, 2, 3\}$ ururka aan koobnayn waa ururka aan xubnihiisu cayineyn,

Tusaale: $\{1, 2, 3, \dots\}$.

5 Ururka A wuxuu hormo urur u yahay B haddii xubin walba oo A ah uu xubin u yahay B. calaamada hormo urur waa \subseteq . Haddii A ayna hormo urur u ahayn B, waxaynu qori $A \not\subseteq B$.

Tusaale: haddii $A = \{1, 3, 5\}$ iyo $B = \{2, 4, 6\}$

6 Ururada aan wadaaga lahayn waa ururo ayna ka dhaxeeynin wax xubin ah.

Tusaale: $A = \{1, 3, 5\}$ iyo $B = \{2, 4, 6\}$ ma laha wax wadaag ah.

$$A \cap B = \emptyset$$

7 Ururka A wuxuu hormo quman u yahay ururka B haddii $A \subseteq B$ laakiin $B \subseteq A$.

Tusaale: haddii $A = \{a\}$, $B = \{a, b, c\}$, kadib $A \subseteq B$

8 Ururada isle'eg waa ururo sida xubno isku mid ah. $A = B$ haddii $A \subseteq B$ isla markaana $B \subseteq A$

Tusaale: Haddii $A = \{1, 3, 5, 7\}$ iyo

$$B = \{x \in \mathbb{N} : x \text{ ay tahay tiro Kisi oo ka yar } 9\}$$

$$\text{Kadib } A = B$$

9 Ururada isudhigma waa ururo isugu aadan mid-mid. Calaad isku isudhignaantu waa $A \leftrightarrow B$.

Tusaale: Hadey $A = \{1, 3, 5, 7, 9\}$ iyo $B = \{0, 2, 4, 6, 8\}$, kolkaa $A \leftrightarrow B$.

10 Dhextaalka labada urur A iyo B waa urur ka kooban xubnaha ay wadaagaan ururada A iyo B. Calamadiisu waa \cap . $A \cap B$ waxaa loo akhriyaa A dhextaal B.

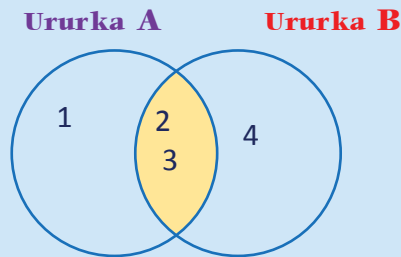
Tusaale: haddii $A = \{1, 2, 3\}$ iyo $B = \{2, 3, 4\}$, kolkaa $A \cap B = \{2, 3\}$.

11 Isu tagga labada urur A iyo B waa urur ka kooban dhammaan xubnaha A iyo xubnaha B. calamadiisu waa \cup . $A \cup B$ waxaa loo akhriyaa "A utagay B".

Tusaale: haddii $A = \{1, 2, 3\}$ iyo $B = \{2, 3, 4\}$, kadib $A \cup B = \{1, 2, 3, 4\}$.

- 12** Jaantuska feen waa sawiro lagu muujinayo ururada loona isticmaalo si loo muujiyo xidhiidhaha ururada ka dhexeeya iyo xisaab falada ururada.

Tusaale: haddii $A = \{1, 2, 3\}$ iyo $B = \{2, 3, 4\}$, kadib $A \cap B = \{2, 3\}$ waxaa lagu muujin qeybta hadheysan ee jaantuska feen ee ku dhexyaala jaantuska 1.15.



Jaantuska 1.15

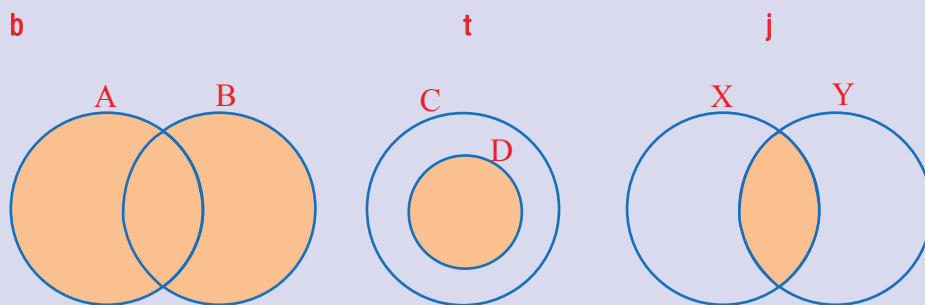
? Layliska Nakhtiinka ee Cutubka 1^{aad}

- 1** Sidan soo socota keebaa si fiican u qeexan? Sabab u yeel
 - b** Ururka Wiilasha quruxdasan ee dugsiga.
 - t** Ururka shaqalada yar ee alifbeetada ingiriiska.
 - j** Ururka dhibcaha Kisi.
- 2** Kala saar ururka xadidan iyo ka aan xadidneyn,
 - b** $A = \{1, 3, 5, 7, \dots\}$
 - t** $B =$ ururka midhaha bunka ku jira gadbadda 100kg.
 - j** $C =$ ururka tirooyinka tirsiiimo ee kaweyn 9.
 - x** $x = \{\text{ardayda fasalka } 6^{\text{aad}} \text{ ee itoobiya}\}$
- 3** Qor labo hormo urur u ah ururka $A = \{4, 5, 6\}$
- 4** Ku qor calaamada saxda ah (\in ama \subset)

b $5 \in \{1, 3, 5, 7\}$	t $\{7\} \subset \{1, 3, 5, 7\}$	j $\emptyset \in \{0\}$
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- 5** Ka soo qaad $A = \{2, 3, 4, 5, 6\}$ iyo $B = \{4, 5, 6, 7\}$, Raadi?

b $A \cup B$	t $A \cap B$
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- 6 Kuwan soo socda kuwee baa ah urur madhan?
- b** Ururka ardayda fasalkaaga ee dhererkoodu yahay 3 metir.
- t** Ururka dhibcaha dhaban
- j** Ururka ayda duusha
- x** Ururka tirada Kisiee u dhaxeeya 13 iyo 15.
- 7 Tilmaan kuwan soo socda midda ah run ama been
- b** Ururka $\{1, 2, 3\}$ wuxuu hormo quman u yahay $\{1, 2, 3\}$.
- t** Urur kasta wuxuu isu yahay hormo urur
- j** Ururka $\{2, 4\}$ wuxuu hormo quman u yahay $\{2, 4\}$.
- x** Ururka madhan wuxuu hormo u yahay urur kasta oo lagu siiyay A.
- 8 Haddii $A = \{a, b, c, d\}$ iyo $B = \{1, b, 2, x\}$, kadib keebaa ah run?
- b** $A \cup B = \{a, d\}$ **t** $A \cap B = \{1, a, 2, b, c, d\}$
- j** $\{2, d\} \subseteq A$ **x** $A \cap B = \{a, d\}$.
- 9 Ka soo qaad $X = \{1, 2, 5, 7\}$ iyo $Y = \{2, 5, 6, 8\}$.
Sawir jaantuska feen si aad u tustid;
- b** $X \cup Y$ **t** $X \cap Y$
- 10 Qor ururka lagugu tusay qeybta hadheeyan ee jaantuska feen kaste ee ku dhex jira jaantuska 1.16



Jaantuska 1.16