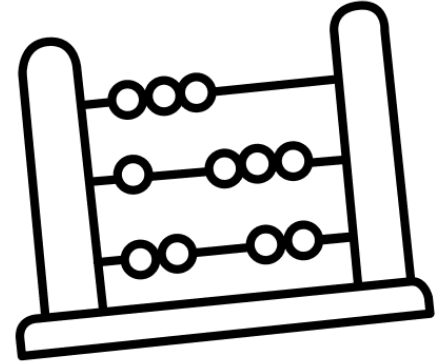


Hubinta liistiga natiijooyinka suurtagalka ah



Maths

Cutub: Itimaalka (Probability): itimaalka aragtiga (theoretical probabilities)

Natiijo

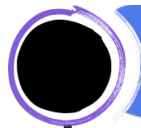
Waxaan si nidaamsan u liisin karaa dhammaan natiijooyinka suurtagalka ah ee hal ama in ka badan dhacdo (event).

Tijaabo (trial) waa imtixaan go'an oo keliya.

Natiijo (outcome) waa natijada tijaabo (trial).

Marka la liisayo natiiyooyinka si nidaamsan, waxaa loo qoraa si loo hubiyo in dhammaan natiiyooyinka la diiwaangeliyo.

Hubinta liistiga natiijooyinka suurtagalka ah



Liistiga natiijooyinka: tijaabooyin hal-heer iyo laba-heer ah

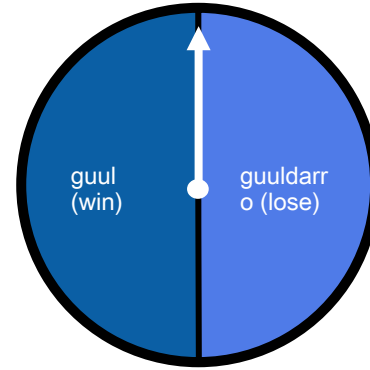


Liistiga natiijooyinka tijaabooyin saddex-heer ah

Liistiga natiiyooyinka: tijaabooyin hal-heer iyo laba-heer ah

Cabdi wuxuu u wareejiyay wareegga (spinner) hal mar. Waa maxay natiiyooyinka suurtagalka ah?

Tan waxaa si rasmi ah loo qori karaa: $\xi = \{W, L\}$

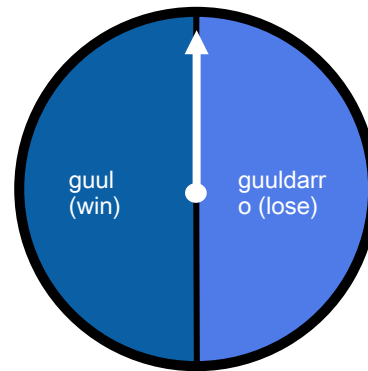


halkaas oo W u taagan yahay 'guul (win)' iyo L u taagan yahay 'guuldarro (lose)'.

Liistiga natiijooyinka: tijaabooyin hal-heer iyo laba-heer ah

Cabdi wuxuu u wareejiyay wareegga (spinner) laba jeer. Waa maxay natiijooyinka suurtagalka ah?

guul guul, guul
guuldarro, guuldarro
guul, guuldarro
guuldarro

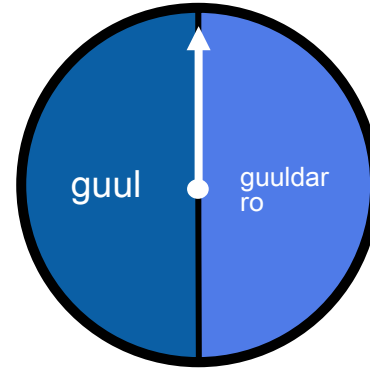


Tan waxaa si rasmi ah loo qori karaa: $\xi = \{WW, WL, LW, LL\}$

Taxista natiijooyinka: tijaabooyin hal-heer iyo laba-heer

Natiijooyinkan waxaa loo taxay si gaar ah. Nidaamkee ayaa loo adeegsaday si loo dalbado natiijooyinka?

guul guul, guul
guuldarro, guuldarro
guul, guuldarro
guuldarro

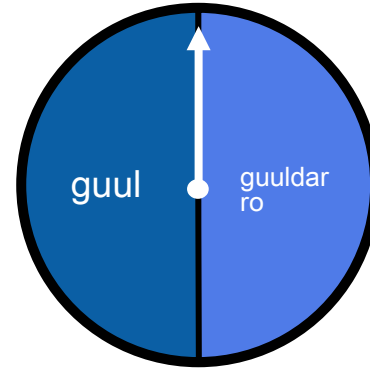


Marka hore, waxay taxaysaa dhammaan natiijooyinka suurtagalka ah ee wareegga koowaad uu yahay 'guul'.

Taxista natiijooyinka: tijaabooyin hal-heer iyo laba-heer

Natiijooyinkan waxaa loo taxay si gaar ah. Nidaamkee ayaa loo adeegsaday si loo dalbado natiijooyinka?

guul guul, guul
guuldarro, guuldarro
guul, guuldarro
guuldarro

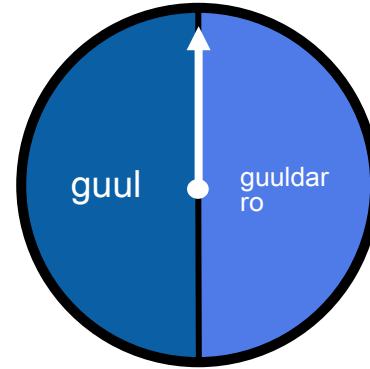


Kadibna waxay taxaysaa dhammaan natiijooyinka suurtagalka ah ee wareegga koowaad uu yahay 'guuldarro'.

Taxista natiijooyinka: tijaabooyin hal-heer iyo laba-heer

Natiijooyinkan waxaa loo taxay si gaar ah. Nidaamkee ayaa loo adeegsaday si loo dalbado natiijooyinka?

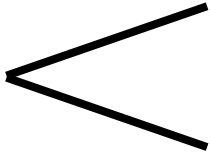
guul guul, guul
guuldarro, guuldarro
guul, guuldarro
guuldarro



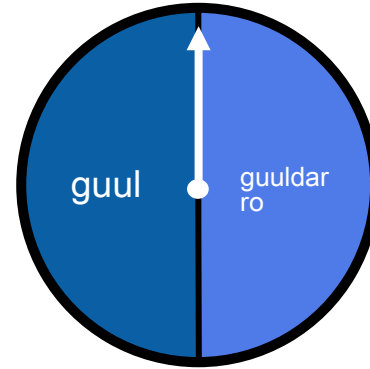
Wareegyada labaad waxay isku bedbedelaan 'guul' iyo 'guuldarro' mar kasta.

Taxriista natiijooyinka: tijaabo hal-heer iyo laba-heer

Layla waxay leedahay qaab kale oo ay ku sharaxdo nidaamka taxista natiijooyinka labada wareeg.

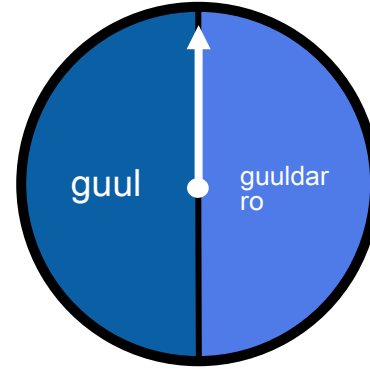
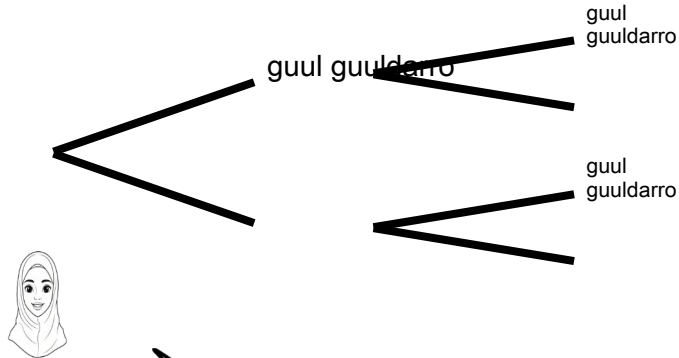


Marka hore waxaan taxay dhammaan natiijooyinka wareegga koowaad...



Taxriista natiijooyinka: tijaabo hal-heer iyo laba-heer

Layla waxay leedahay qaab kale oo ay ku sharaxdo nidaamka taxista natiijooyinka labada wareeg.



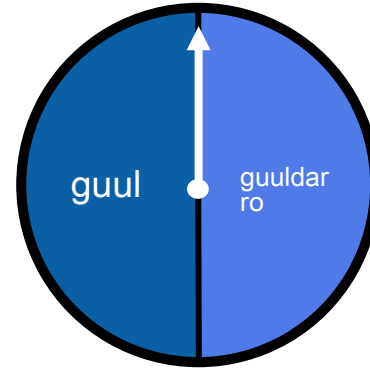
Natiijo kasta, waxaan taxay dhammaan natiijooyinka suurtoogalka ah ee wareegga labaad.

Taxriista natiijooyinka: tijaabo hal-heer iyo laba-heer

Layla waxay leedahay qaab kale oo ay ku sharaxdo nidaamka taxista natiijooyinka labada wareeg.



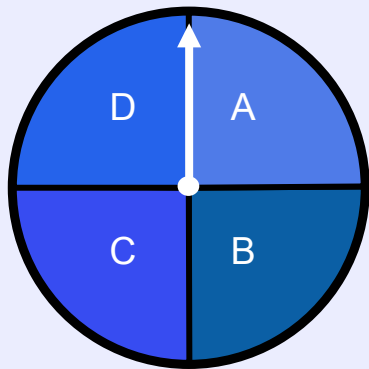
guul guul, guul
guuldarro, guuldarro
guul, guuldarro
guuldarro



Kadib waxaan raacay faraha jid kasta oo ka mid ah laamaha si aan u abuuro liistayda.

Tani waxay noqon kartaa mid adag marka la taxayo natiijooyin badan.

Axmed wuxuu isticmaalayaa nidaam uu ku qoro dhammaan natiijooyinka suurtagalka ah marka wareegga (spinner) hoos ku qoran la laba jeer wareejiyo.



AA, AB, AC, AD, BA, BB, BC, BD, , ... CA

Waa maxay natijada xigta ee nidaamka Axmed?

CA

Qorista natiijooyinka: tijaabooyin hal-heer iyo laba-heer ah (one-stage and two-stage trials)

Lacab (coin) baa la rogaa oo dhiman (die) caadi ah oo lix dhinac leh baa la duubaa (rolled).



Qor dhammaan natiijooyinka suurtagalka ah.

H1, H2, H3, H4, H5, H6,

T1, T2, T3, T4, T5, T6

1) Waxaa jira laba xidhmo (decks) oo kaarar (cards) ah.

Xidhmada A (0 ilaa 2):	0	1	2							
Xidhmada B (0 ilaa 9):	0	1	2	3	4	5	6	7	8	9

- a) Qor dhammaan natiijooyinka suurtagalka ah ee soo saarista kaar (card) ka yimid Xidhmada A.
- b) Qor dhammaan natiijooyinka suurtagalka ah ee soo saarista kaar (card) ka yimid Xidhmada B.
- c) Qor dhammaan natiijooyinka suurtagalka ah ee soo saarista hal kaar (card) oo ka mid ah xidhmo kasta.
- d) Sharax nidaamka aad u isticmaashay inaad ku qorto dhammaan natiijooyinka qaybta (c).

2) Halkan waxaa ah liis makhaayad (restaurant menu) oo ah laba cunto (courses). Macmiil (customer) wuxuu doortaa hal bilow (starter) iyo hal cunto weyn (main course).

a) Qor dhammaan natiijooyinka suurtagalka ah ee cuntada macmiilka. b) Sharax nidaamka aad u isticmaashay inaad ku qorto dhammaan natiijooyinka qaybta (a).

Bilowga
(Starters)

Soup (S)

Calamari (C)

Meatballs (M)

Cuntooyinka
weyn (Mains)

Lasagne (L)

Ravioli (R)

Bolognese (B)

Pizza (P)

1) Waxaa jira laba xirmo oo kaarar ah.

Xirmada A (0 ilaa 2):

0	1	2
---	---	---

Xirmada B (0 ilaa 9):

0	1	2	3	4	5	6	7	8	9
---	---	---	---	---	---	---	---	---	---

a) Qor dhammaan natiijooyinka suurtagalka ah ee kaarka laga soo bixiyo Xirmada A.

0, 1, 2

b) Qor dhammaan natiijooyinka suurtagalka ah ee kaarka laga soo bixiyo Xirmada B.

0, 1, 2, 3, 4, 5, 6, 7, 8, 9

c) Qor dhammaan natiijooyinka suurtagalka ah ee kaar laga soo bixiyo xirmo kasta.

00, 01, 02, 03, 04, 05, 06, 07, 08, 09,
10, 11, 12, 13, 14, 15, 16, 17, 18, 19,
20, 21, 22, 23, 24, 25, 26, 27, 28, 29

d) Sharax nidaamka aad u adeegsatay si aad u taxdo dhammaan natiijooyinka qaybta (c).

Tusaale: Ku bilow 0 oo ka yimid Xirmada A iyo 0 oo ka yimid Xirmada B. Kordhi qiimaha (value) kaarka Xirmada B mar kasta ilaa dhammaan la isticmaalo. Kordhi qiimaha (value) kaarka Xirmada A 1, ka dib ku celi habkaas.

(sida tirinista)

2) Halkan waxaa ah liis maqaaxi oo ah laba cunto. Macmiil wuxuu doortaa hal cunto bilow ah

a) Tax dhammaan natiijooyinka suurtagalka ah ee cuntada macmiilka.

SL, SR, SB, SP, CL, CR, CB, CP, ML, MR, MB, MP

b) Sharax nidaamka aad u adeegsatay si aad u taxdo dhammaan natiijooyinka qaybta (a).

Tusaale: Ka bilow shayga kore ee koorsada kasta. Ka shaqee shay kasta oo koorsada weyn (main course) ah si nidaamsan ilaa aad ka gaadho dhamaadka liiska. U gudub shayga xiga ee liiska bilowga (starter) oo mar kale ka shaqee shay kasta oo liiska koorsada weyn (main course) ah. Ku celi ilaa bilowga (starter) ugu dambeeya uu lammaane yahay koorsada weyn (main course) kasta.

<u>Cuntooyinka bilowga</u>	
Soup	(S)
Calamari	(C)
Meatballs	(M)
<u>Mains</u>	
Lasagne	(L)
Ravioli	(R)
Bolognese	(B)
Pizza	(P)

Qaabka casharka

Hubinta liisinta natiijooyinka suurtagalka ah



Liisinta natiijooyinka: tijaabooyin hal-marxalad ah iyo laba-marxalad ah



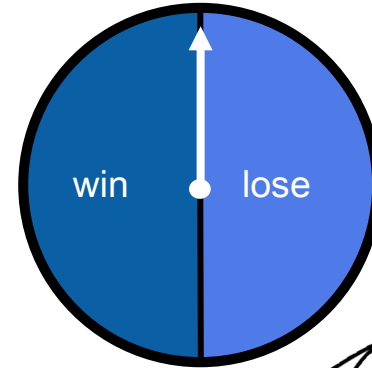
Liisinta natiijooyinka tijaabooyinka saddex-marxalad ah

Liisinta natiijooyinka tijaabooyinka saddex-marxalad ah

Natiijooyinka suurtagalka ah ee ka iman kara wareejinta (spinning) wareejiyaha (spinner) laba jeer ayaa hoos ku qoran.

Sidee loo isticmaali karaa kuwan si loo liisiyo dhammaan natiijooyinka suurtagalka ah marka wareejiyaha (spinner) la wareejiyo (spin) saddex jeer?

win win, win lose,
lose win, lose lose



Caasha

Natiijo kasta oo hadda jirta, waxaa jira laba natiijo oo ku saabsan waxa wareejinta (spin) dheeraadka ah noqon karto.

Qorista natiijooyinka tijaabooyinka saddex heer ah

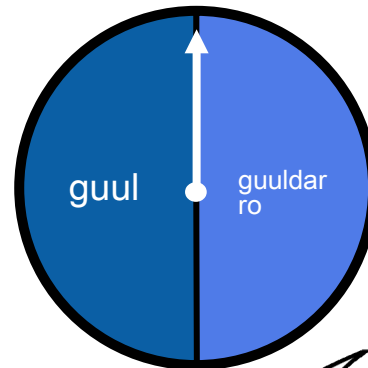


Natijiyooyinka suurtagalka ah ee ka iman kara wareejinta (spinning) wareejiyaha (spinner) laba jeer ayaa hoos ku qoran.

Sidee loo isticmaali karaa si loo qoro dhammaan natiijooyinka suurtagalka ah marka wareegga la rogo saddex jeer?

guul guul guul guul guul guul guul guul guul guul
guul guul guul guul guul guul guul guul guul guul
guul guul guul guul guul guul guul guul guul guul

guul guul guuldarro, guul guul guuldarro
guuldarro, guuldarro guul guuldarro,
guuldarro guuldarro guuldarro



Caasha

Waxaan koobiyeyn karaa mid kasta oo ka mid ah natiijooyinka aan hore u haysto.

Kadibna qor 'guul' ka dib hal natiiyo iyo 'guuldarro' ka dib koobiigeeda.

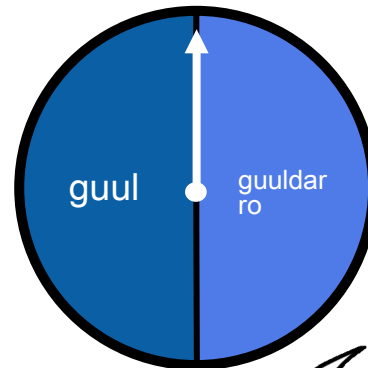
Qorista natiijooyinka tijaabooyinka saddex heer ah

Natiijooyinka suurtagalka ah ee ka soo baxa rogista wareegga laba jeer ayaa hoos ku qoran.

Sidee loo isticmaali karaa si loo qoro dhammaan natiijooyinka suurtagalka ah marka wareegga la rogo saddex jeer?

guul guul guul, guul guul
guuldarro, guul guuldarro guul,
guul guuldarro guuldarro,

guuldarro guul guul, guuldarro guul
guuldarro, guuldarro guuldarro guul,
guuldarro guuldarro guuldarro

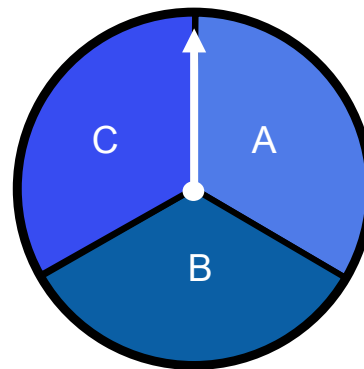


Caasha

Ama waxaan tixgelin karaa rogista koowaad inay tahay rogista dheeraadka ah, marka waxaan ku qoraa natiijooyinka dheeraadka ah bilowga mid kasta.

Nuur wuxuu rogi doonaa wareegga saddex jeer. Wuxuu rabaa inuu qoro dhammaan natiijooyinka suurtagalka ah. Sidee buu si nidaamsan u samayn karaa?

AAA AAB
AAC



Waxaan ku bilaabi karaa AAA.

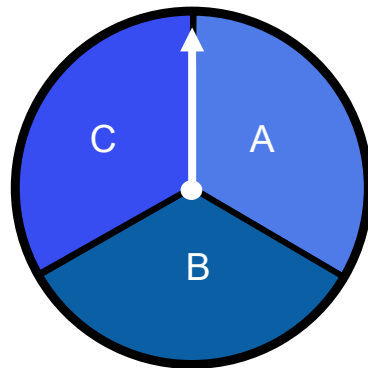
Kadibna ku wareeji suurtagalnimada kala duwan ee wareegga saddexaad: A ilaa B ilaa C

Nuur wuxuu ku wareejinayaa wareejiyaha (spinner) saddex jeer. Wuxuu doonayaa inuu qoro dhammaan natiijooyinka suurtoogalka ah. Sidee buu si nidaamsan (systematically) u samayn karaa?

AAA AAB
AAC

ABA ABB
ABC

ACA ACB
ACC



Waxaan markaas nuqul ka qaadan karaa dhammaan saddexda natiijo, oo ku wareejiyaa suurtoogalnimada kala duwan ee wareegga labaad: A ilaa B ilaa C

Nuur wuxuu ku wareejinayaa wareejiyaha (spinner) saddex jeer. Wuxuu doonayaa inuu qoro dhammaan natiijooyinka suurtoogalka ah. Sidee buu si nidaamsan (systematically) u samayn karaa?

AAA AAB
AAC

BAA BAB
BAC

CAA CAB
CAC

ABA ABB
ABC

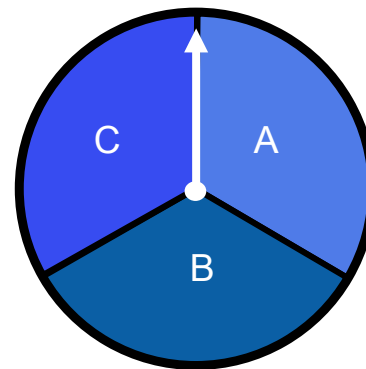
BBA BBB
BBC

CBA CBB
CBC

ACA ACB
ACC

BCA BCB
BCC

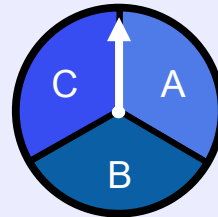
CCA CCB
CCC



Kadib, waxaan nuqul ka qaadan karaa dhammaan natiijooyinka ilaa hadda oo ku wareejiyaa suurtoogalnimada kala duwan ee wareegga koowaad.

Liis garaynta natiijooyinka tijaabooyinka saddex heer ah (Listing outcomes for three-stage trials)

Lacag baa la rogaa, saxaraha lix dhinac ah waa la duubaa, iyo wareegga hoose waa la wareejiyaa.



Qor saddexda natiijo ee kale ee suurtagalka ah.

H1A, H1B, H1C, H2A, H2B, H2C, H3A, H3B, H3C,

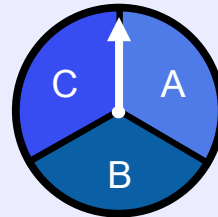
H4A, H4B, H4C, H5A, H5B, H5C, H6A, H6B, H6C,

T1A, T1B, T1C, T2A, T2B, T2C, T3A, T3B, T3C,

T4A, T4B, T4C, T5A, T5B, T5C, , , ,

Liis garaynta natiijooyinka tijaabooyinka saddex heer ah (Listing outcomes for three-stage trials)

Lacag baa la rogaa, saxaraha lix dhinac ah waa la duubaa, iyo wareegga hoose waa la wareejiyaa.



Qor lixda natiijo ee kale ee suurtagalka ah.

H1A, H2A, H3A, H4A, H5A, H6A, T1A, T2A, T3A, T4A, T5A, T6A,

H1B, H2B, H3B, H4B, H5B, H6B, T1B, T2B, T3B, T4B, T5B, T6B,

H1C, H2C, H3C, H4C, H5C, H6C,

____, _____, _____, _____, _____, _____

1) Lacag la rogay waxay leedahay laba natiijo: 'madax' (H) iyo 'dabo' (T).

Dhammeystir liiska dhammaan natiijooyinka suurtagalka ah marka lacag la rogo saddex jeer.

HHH HHT

2) Kooxda kubbadda gacanta waxay ciyaartaa saddex kulan. Kulankasta, kooxdu waxay ku guulaysan kartaa (W), way lumisaa (L) ama waxay barbaraysaa (D).

Liis dhammaan natiijooyinka suurtagalka ah ee natiijooyinka saddexda kulan.

3) Halkan waxaa ah liiska maqaayadda ee saddex cunto. Macmiilku wuxuu doortaa hal bilow, hal cunto oo weyn, iyo hal macmacaan.

Liis dhammaan natiijooyinka suurtagalka ah ee cuntada macmiilka. Waxaad adeegsan kartaa jawaabahaaga Hawsha A si ay kuu caawiyaan.

Bilowga (Starters)

Maraq (Soup) (S)

Calamari (C)

Meatballs (M)

Cuntooyinka weyn (Mains)

Lasagne (L)

Ravioli (R)

Bolognese (B)

Pizza (P)

Desserts

Ice cream (I)

Tiramisu (T)

1) Qadaasho la rogay waxay leedahay laba natiijo (outcome): 'madax' (H) iyo 'dabo' (T).

Dhammeysti liiska dhammaan natiijooyinka (outcomes) suurtoogalka ah marka qadaasho la rogo saddex jeer.

HHH HHT

HTH HTT

THH THT

TTH TTT

2) Koox kubbadda-net-ka (netball) waxay ciyaartaa saddex kulan. Kulankiiba, kooxdu waxay ku guulaysan kartaa (W), laga badin kartaa (L) ama barbar (D) dhigi kartaa.

Liis dhammaan natiijooyinka (outcomes) suurtoogalka ah ee natiijooyinka saddexda kulan.

WWW
WWL WWD

LWW LWL
LWD

DWW
DWL
DWD

WLW WLL
WLD

LLW LLL
LLD

DLW DLL
DLD

WDW WDL
WDD

LDW LDL
LDD

DDW DDL
DDD

3) Halkan waxaa ku yaal liis cunto oo ah saddex cunto. Macmiil wuxuu doortaa hal bilow, hal

Qor dhammaan natiijooyinka suurtagalka ah ee cuntada macmiilka. Waxaad adeegsan karta caawiso.

SLI, SRI, SBI, SPI, SLT, SRT, SBT,
SPT,

CLI, CRI, CBI, CPI, CLT, CRT, CBT,
CPT,

MLI, MRI, MBI, MPI, MLT, MRT,
MBT, MPT

Bilooowga (Starters)

Maraq (S)
(Soup)

Calamari (C)

Meatballs (M)

Cuntooyinka weyn (Mains)

Lasagne (L)

Ravioli (R)

Bolognese (B)

Pizza (P)

Macmacaan (Desserts)

Jalaato (Ice cream)

Tiramisu (T)

- Natiijooyinka suurtagalka ah ee tijaabo hal-marxaleed ah waa la taxan karaa.
- Natiijooyinka suurtagalka ah ee tijaabo dhowr-marxaleed ah sidoo kale waa la taxan karaa.
- Haysashada nidaam sida loo kala hormariyo natiijooyinka waxay noqon kartaa mid waxtar leh marka la taxayo natiijooyinka tijaabooyinka dhowr-marxaleedka ah.
- Nidaamyo kala duwan ayaa la isticmaali karaa marka la taxayo natiijooyinka.