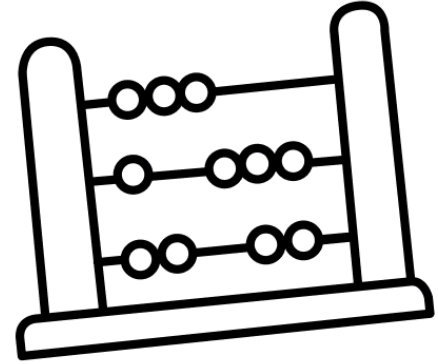


Isticmaalista liisaska si loo muujiyo natiijooyinka laba dhacdo



Maths

Cutub: Itimaalka (Probability): natiijooyinka suurtagalka ah

Natiijo

Waxaan si nidaamsan u heli karaa dhammaan natiiyooyinka suurtagalka ah ee laba dhacdo anigoo liis ku qoraya.

Marka la liis garaynayo natiijooyinka si nidaamsan, waxaa loo qoraa si loo hubiyo in dhammaan natiijooyinka la qoray.

Qaabka casharka

Isticmaalista liisaska si loo muujiyo natiijooyinka laba dhacdo



Natiijooyinka suurtagalka ah ee tijaabo laba heer ah



Liis garayn nidaamsan (Systematic listing)



Liis garaynta natiijooyinka laba dhacdo

Haddii aan rognno dhees (dice) lix dhinac ah oo cadaalad ah, natijjooyinka suurtagalka ah waa {1, 2, 3, 4, 5, 6}.

Haddii aan rognno qadaadiic (coin) cadaalad ah, natijjooyinka suurtagalka ah waa {madax, dabo}.

Haddii aan si random ah u dooranno xaraf alifbeetada, natijjooyinka suurtagalka ah waa {a, b, c, d, e, f, g, h, i, j, k, l, m, n, o, p, q, r, s, t, u, v, w, x, y, z}.

Waxaan si fudud u liis garayn karnaa natijjooyinka tijaabo hal heer ah.

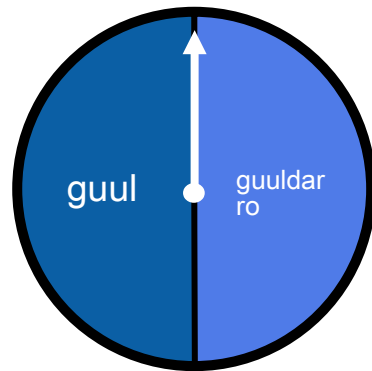
Haddii aan laba jeer wareejinno wareejintan (spinner), waa maxay natiijooyinka suurtagalka ah?

guul, guul

guuldarro, guuldarro

guuldarro, guul

guul, guuldarro



Haddii aan wareejiyo wareeggan laba jeer, maxay yihiin natijjooyinka suurtoogalka ah?

guul, guul

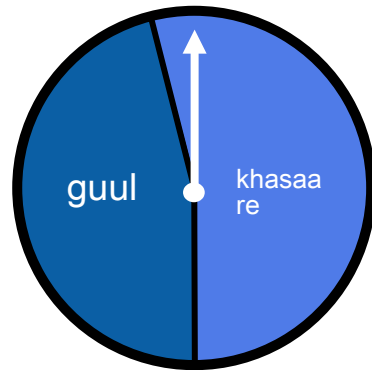
khasaare, khasaare

khasaare, guul

guul, khasaare

Wareegyadu way kala duwan yihiin, maxay natijjooyinku isku mid yihiin?

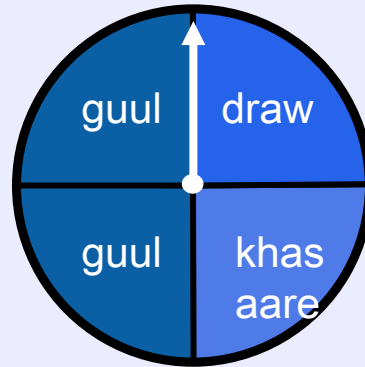
Wareegyadu waxay leeyihiin natijjooyin isku mid ah, laakiin suurtoogalnimada natijjooyinka ayaa isbeddeshay.



Natiiyooyinka suurtagalka ah ee tijaabo laba heer ah

Mid ka mid ah wareegyadan soo socda, marka laba jeer la wareejiyo, ma laha meel muunad (sample space) ah {guul/guul, khasaare/khasaare, guul/khasaare, khasaare/guul}?

Wareeg kasta wuxuu leeyahay saddex natiiyo oo suurtagal ah, halkii laba.



Haddii aan wareejinno wareeggan laba jeer, waa maxay natijjooyinka suurtagalka ah?

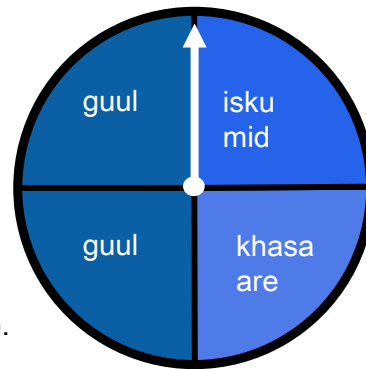
U qaad guul W, khasaare L, iyo isku mid D.

Natijjooyinka suurtagalka ah waa {WW, LL, DD, WD, LW, DL, WL, DW, LD}.

Marka wareeggan wuu ka duwan yahay natijjooyinkiisa?



Haa, waxaa jiri doona natijjooyin badan oo suurtagal ah oo ku jira meesha muunadda (sample space).



Haddii aan wareejinno wareeggan laba jeer, waa maxay natijjooyinka suurtagalka ah?

Guul ha noqoto W, guuldarro L, barbaro D.

Natijjooyinka suurtagalka ah waa {WW, LL, DD, WD, LW, DL, WL, DW, LD}.

Ma muhiim inay jiraan laba qaybood oo 'guul' ah oo wareegga ku yaal?

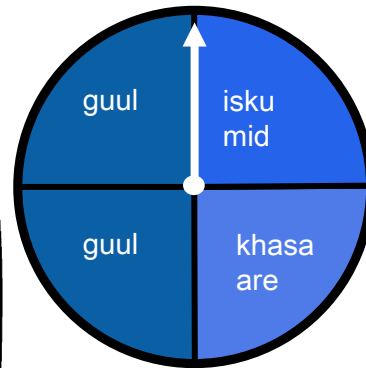


Caasha

Ma aha natijjooyinka suurtagalka ah, laakiin waxay ka dhigan tahay in natijjooyinka 'guul' ay u badan yihiin in lagu soo dego.



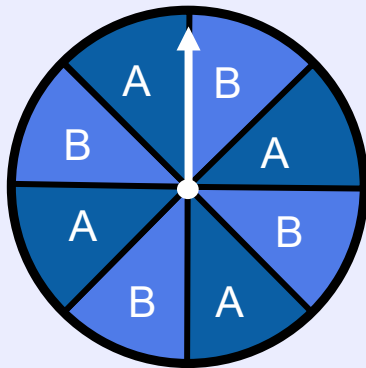
Layla



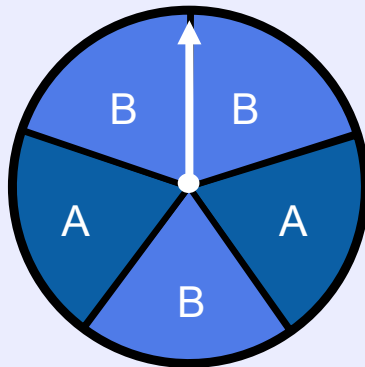
Natijjooyinka suurtagalka ah ee tijaabo laba marxaladood ah

Wareeg (spinner) ayaa laba jeer la wareejiyay. Natijjooyinka suurtagalka ah waa {AA, BA, AB, BB}. Kee ka mid ah wareegyadan ayaa laga yaabaa inuu ahaa?

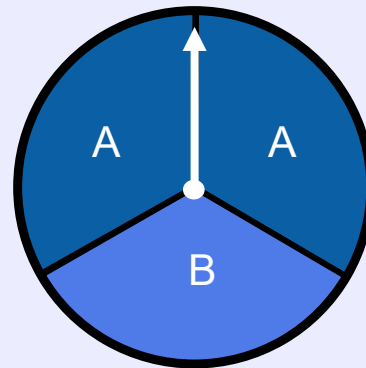
Dhammaantood, wareeg kastaa wuxuu leeyahay laba natiijo oo suurtagal ah A ama B, marka tijaabo (2 wareeg) la sameeyo waxaa jira afar natiijo oo suurtagal ah.



a ✓



b ✓

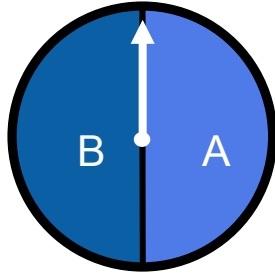


c ✓

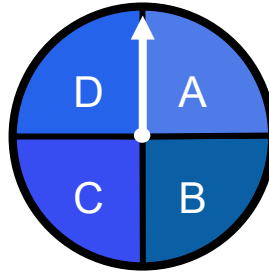
Yacquub wuxuu u socdaa inuu wareejiyo wareegga A iyo wareegga B labadaba tijaabadiisa.



wareegga A



wareegga B



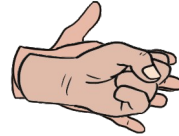
Waa maxay natijjooyinka suurtagalka ah ee Yacquub heli doono?

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

Natiijooyinka suurtagalka ah ee tijaabo laba marxaladood ah

Haddii laba qof ay ciyaarayaan 'dhagax, warqad, maqas'.

Waa maxay natiijo suurtagal ah?



dhagax
warqad
maqas

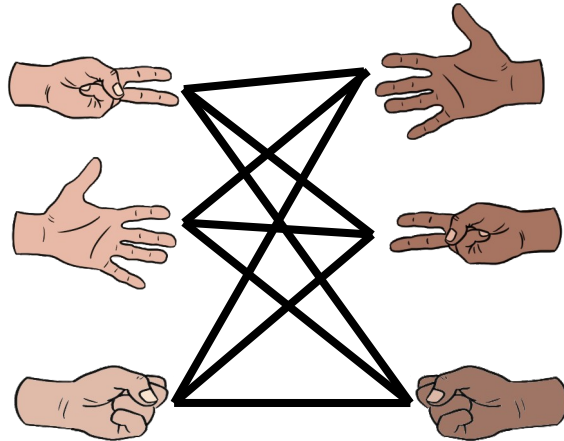


dhagax
warqad
maqas

Haddii laba qof ay ciyaarayaan 'dhagax, warqad, maqas'.

Waa maxay dhammaan natijjooyinka suurtagalka ah?

U qaad dhagax r, warqad p iyo maqas s:
pr
sp
rr



Miyaanay 'sp' iyo
'ps' isku natijjo
ahayn?



Nuur

Maya, waa isku
isku-dhafan
(combination).



Isra

1)

Yacquub wuxuu qoray qaar ka mid ah natiijooyinka suurtagalka ah, marka la doorto hal kaad oo ka mid ah xirmo kasta.

a) Maxay yihiin natiijooyinka uu Yacquub ka seegay liiskiisa?

b) Waa maxay natiijooyinka uu Yacquub ku celceliyay?

Jawaabaha:

Qaybta 2

Xirmo 1



1)

Yacquub wuxuu qoray qaar ka mid ah natiijooyinka suurtagalka ah, marka la dooranayo hal kaar oo ka mid ah qayb kasta.

a) Maxay yihiin natiijooyinka uu Yacquub ka seegay liiskiisa?

b) Waa maxay natiijooyinka uu Yacquub ku celceliyay?

Jawaabaha:

Qaybta 2

Qaybta 1



Qaabka casharka

Isticmaalka liisaska si loo muujiyo natiijooyinka laba dhacdo (events)



Natiijooyinka suurtagalka ah ee tijaabada laba marxaladood ah



Liis garayn nidaamsan (Systematic listing)



Liis garaynta natiijooyinka laba dhacdo (events)

Makhaayaddu waxay leedahay menu laba cunto ah. Waxaad doorataa hal cunto oo bilow ah (starter) iyo hal cunto oo ka mid ah qaybta cuntada weyn (main course).

Bilow (Starter)

Booqoshaa toonta (G)

Halloumi qaniinyo (H)

Cuntada weyn (Main)

Bacon cheeseburger (B)

Kalluun iyo baradho (F)

Kari khudradeed (V)

Waa maxay labada cunto ee suurtoogalka ah?



Cali

GB, HV, HB, GF, HF, GV



Axmed

GB, GF, GV, HB, HF, HV

GB, HB, GF, HF, GV, HV



Suad

Yaa liiskiisu ugu yar nidaamka?

Makhaayaddu waxay leedahay laba cunto oo go'an. Waxaad doorataa mid ka mid ah cuntooyinka bilowga ah iyo mid ka mid ah qaybta cuntada weyn.

Bilow (Starter)

Garlic mushrooms (G)

Halloumi bites (H)

Weed

(Main)

Bacon cheeseburger (B)

Fish and chips (F)

Vegetable curry (V)

Waa maxay labada cunto ee suurtoogalka ah?



Cali

GB, HV, HB, GF, HF, GV

Liiska Cali ma aha nidaamsan. Wuxuu ku boodaa cuntooyinka bilowga iyo kuwa weyn ee kala duwan.

Waxay u horseedi kartaa natijoyooyin la seegay ama ku celis.

Makhaayaddu waxay leedahay liis cunto oo laba qaybood ah. Waxaad doorataa mid ka mid ah cuntada bilowga ah iyo mid ka mid ah cuntada weyn.

Cunto bilow
(Starter)

Mushroom toon (G)

Halloumi qaniinyo (H)

Cunto weyn
(Main)

Bacon cheeseburger (B)

Kalluun iyo baradho (F)

Khudrad curry (V)

Maxay liisaska Suad iyo Axmed uga fiican yihiin?



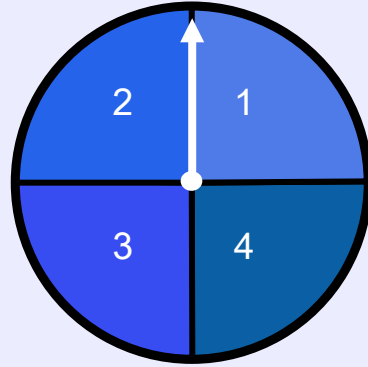
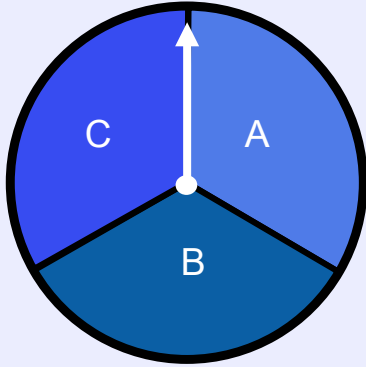
Suad waxay si nidaamsan u heshay natiijooyinka cuntada bilowga ah.



Axmed wuxuu si nidaamsan u helay natiijooyinka cuntada weyn kasta.

Liis nidaamsan (Systematic listing)

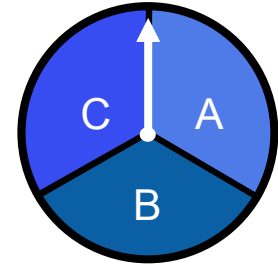
Labada wareeg (spinners) waa la wareejiyaa. Dhammeysti liiska natiijooyinka.



{A1, A2, A3, A4, B1, B2, B3, B4, ,
' C1 ' } C2 C3 C4

1) Lix-geesood (six-sided dice) oo caddaalad ah iyo wareegga (spinner) la tusay ayaa la rogayaa oo la wareejiyaa isla mar.

- a) Liis garso natiijooyinka si nidaamsan
- b) Immisa natiijo ayaa jira?



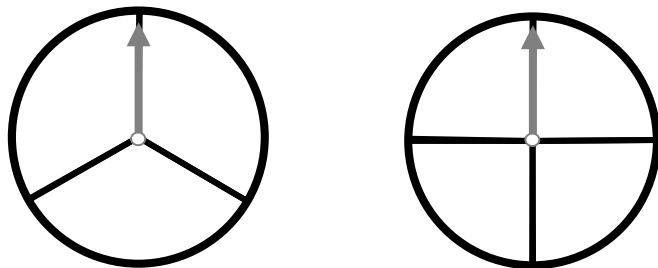
2) Lacag (coin) caadil ah iyo lix-gees (dice) caadil ah ayaa si isku mar ah loo tuuraa oo loo rogaa.

- a) Liis garso natiijooyinka (outcomes) si nidaamsan
- b) Immisa natiijooyin (outcomes) ayaa jira?

3) Laba wareeg (spinners) ayaa la rogi doonaa.

Natijjooyinka suurtagalka ah waa $\{A1, A2, A3, B1, B2, B3, C1, C2, C3\}$.

Dhammeystir wareegyada (spinners).

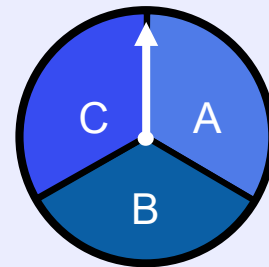


1) Lix-gees (dice) caadil ah iyo wareegga (spinner) la muujiyay ayaa si isku mar ah loo rogaa oo loo tuuraa.

a) Liis garso natiijooyinka (outcomes) si nidaamsan

{1A, 1B, 1C, 2A, 2B, 2C, 3A, 3B, 3C, 4A, 4B, 4C, 5A, 5B, 5C, 6A, 6B, 6C}

ama {A1, A2, A3, A4, A5, A6, B1, B2, B3, B4, B5, B6, C1, C2, C3, C4, C5, C6}



b) Immisa natiijooyin (outcomes) ayaa jira?

18: 6 natiijo oo kala duwan oo ka yimaada lix-geeska (dice) iyo 3 natiijo oo kala duwan oo ka yimaada wareegga (spinner)

2) Lacag (coin) caadil ah iyo lix-gees (dice) caadil ah ayaa si isku mar ah loo tuuraa oo loo rogaa.

a) Liis garso natiijooyinka (outcomes) si nidaamsan

{1H, 1T, 2H, 2T, 3H, 3T, 4H, 4T, 5H, 5T, 6H, 6T}

ama {H1, H2, H3, H4, H5, H6, T1, T2, T3, T4, T5, T6}

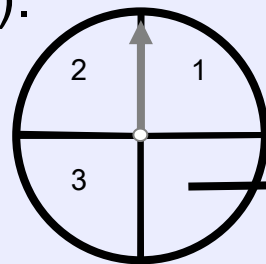
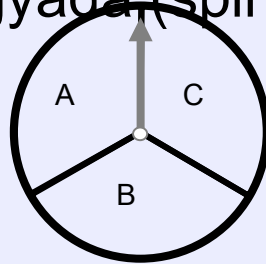
b) Immisa natiijooyin (outcomes) ayaa jira?

12: 6 natiijo oo kala duwan oo ka yimaada lix-geeska (dice) iyo 2 natiijo oo kala duwan oo ka yimaada lacagta (coin)

3) Laba wareeg (spinners) ayaa la rogi doonaa.

Natijjooyinka suurtagalka ah waa {A1, A2, A3, B1, B2, B3, C1, C2, C3}.

Dhammee wareegyada (spinners).



Mid kasta oo ka mid ah 1, 2 ama 3

Qaabka casharka

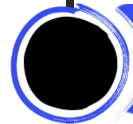
Isticmaalka liisaska si loo muujiyo natiijooyinka laba dhacdo (events)



Natiijooyinka suurtagalka ah ee tijaabo laba marxaladood ah (two stage trial)



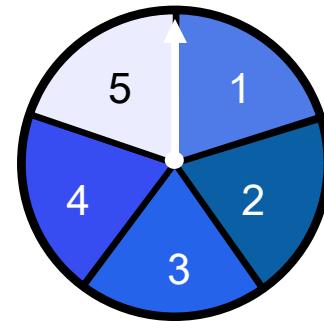
Liis garayn nidaamsan (Systematic listing)



Liis garaynta natiijooyinka laba dhacdo

Haddii wareeggan (spinner) la wareejiyo, natiijooyinka suurtagalka ah waa $\{1, 2, 3, 4, 5\}$.

Isra iyo Cabdi waxay ciyaarayaan ciyaar. Isra waxay heleysaa dhibic (point) haddii ay ku soo baxdo tiro koowaad (prime number), Cabdina wuxuu heleysaa dhibic haddii ay ku soo baxdo tiro kisi (odd number).



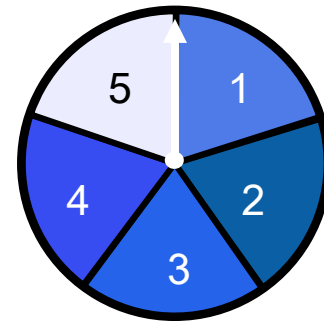
Meelaha natiijooyinka (sample space) ka mid ah, natiijooyin tee ayaa qayb ka noqon kara dhacdooyinka soo socda?

Dhacdo 1: Isra waxay heleysaa dhibic

Dhacdada isku dhafan (combined event) ee ah in Isra ama Cabdi ay heleen dhibic.

Haddii wareeggan (spinner) la wareejiyo, natiijooyinka suurtagalka ah waa {1, 2, 3, 4, 5}.

Isra iyo Cabdi waxay ciyaarayaan ciyaar. Isra waxay heleysaa dhibic (point) haddii ay ku soo baxdo tiro koowaad (prime number), Cabdina wuxuu heleysaa dhibic haddii ay ku soo baxdo tiro kisi (odd number).



Meelaha natiijooyinka (sample space) ka mid ah, natiijooyin tee ayaa qayb ka noqon kara dhacdooyinka soo socda?

Dhacdo 1: Isra waxay heleysaa dhibic

$$\text{Isra} = \{2, 3, 5\}$$

Dhacdo 2: Cabdi wuxuu helayaa dhibic

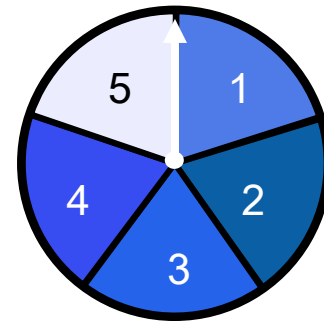
$$\text{Cabdi} = \{1, 3, 5\}$$

Dhacdada isku dhafan ee Cabdi iyo Caasha labaduba helaan dhibic.

$$\{3, 5\}$$

Haddii wareegtan la wareejiyo, natiijooyinka suurtagalka ah waa {1, 2, 3, 4, 5}.

Caasha iyo Cabdi waxay ciyaarayaan ciyaar. Caasha waxay heshaa dhibic haddii ay ku dhacdo tiro asal ah (prime number), Cabdina wuxuu helayaa dhibic haddii ay ku dhacdo tiro khayaali ah (odd number).



Laga soo bilaabo meesha muunadda (sample space), natiijooyinka kee baa qayb ka noqon lahaa dhacdooyinka soo socda?

Dhacdo 1: Caasha waxay heshaa dhibic

$$\text{Caasha} = \{2, 3, 5\}$$

Dhacdo 2: Cabdi wuxuu helayaa dhibic

$$\text{Cabdi} = \{1, 3, 5\}$$

Dhacdada ay Caasha kaliya hesho dhibic?

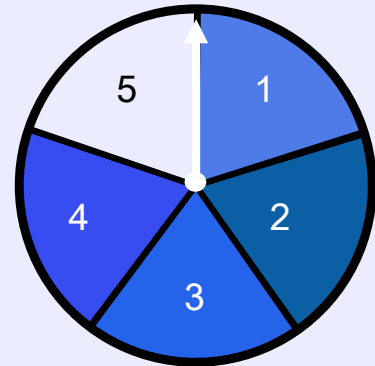
$$\{2\}$$

Liis garaynta natiijooyinka laba dhacdo

Caasha iyo Cabdi waxay ciyaarayaan ciyaar. Caasha waxay heshaa dhibic haddii ay ku dhacdo 'tiro asal ah' (prime number), Cabdina wuxuu helayaa dhibic haddii ay ku dhacdo 'tiro khayaali ah' (odd number).

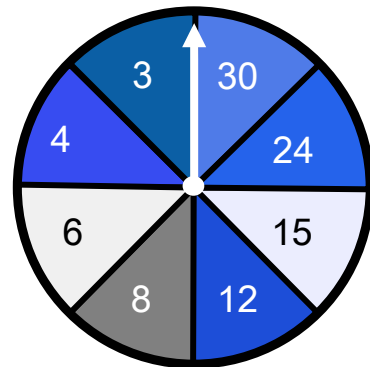
Laga soo bilaabo meesha muunadda (sample space), natiijooyinka kee baa qayb ka noqon lahaa dhacdada aan Caasha iyo Cabdi midna helin dhibic?

Natijada kaliya ee aan ahayn asal (prime) iyo khayaali (odd) waa {4}.



Haddii wareegtan la wareejiyo, natiijooyinka suurtagalka ah waa {3, 4, 6, 8, 12, 15, 24, 30}.

Suad iyo Axmed waxay ciyaarayaan ciyaar. Suad waxay heshaa dhibic haddii ay ku dhacdo 'factor of 24' (qaybiyaha 24), Axmedna wuxuu helayaa dhibic haddii ay ku dhacdo 'multiple of 3' (tiro ku dhufan 3).



Waxaan liis garayn karnaa natiijooyinka siinaya Suad dhibic.

Suad: qaybiyaha 24 = {3, 4, 6, 8, 12, 24}

Waxaan liis garayn karnaa natiijooyinka siinaya Axmed dhibic.

Axmed: tirada ku dhufan 3 = {3, 6, 12, 15, 24, 30}

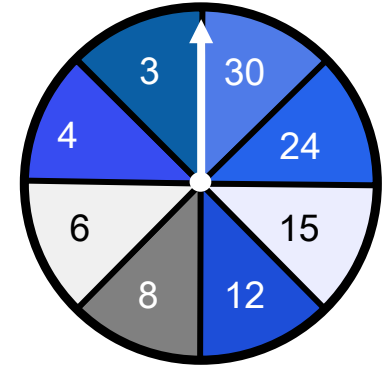
Suad: qaybiyeyaasha 24 = {3, 4, 6, 8, 12, 24}

Axmed: tirooyinka isku dhufashada 3 = {3, 6, 12, 15, 24, 30}

Natiijooyinka keena dhibic Suad iyo Axmed?

Natiijooyinka aan keenin dhibic Suad ama Axmed?

Ma jiraan natiijooyin uu Suad ama Axmed aan ku lahayn go'yahooda. Midna Suad ama Axmed = $\emptyset$



— Calaamaddani waxay ka dhigan tahay 'go' madhan (empty)

Liisinta natiijooyinka laba dhacdo

Luuq (dice) lix dhinac ah oo caddaalad ah ayaa la rogayaa. Liis kee baa muujinaya natiijooyinka 'rogista tiro siman iyo qaybiye 20'?

a {1, 2, 4, 5, 6}

Kani waa liiska natiijooyinka tirooyinka siman ama qaybiyeyaasha 20.

b {2, 4} ✓

c {3}

Kani waa liiska natiijooyinka aan ahayn tiro siman iyo qaybiye 20 midna.

1) Layla iyo Cali waxay ciyaarayaan ciyaar iyagoo isticmaalaya wareeggan (spinner). Layla waxay ku guuleysataa dhibic haddii ay ku soo baxdo qaybiye 10, Calina wuxuu ku guuleystaa dhibic haddii ay ku soo baxdo tiro asli ah (prime number).

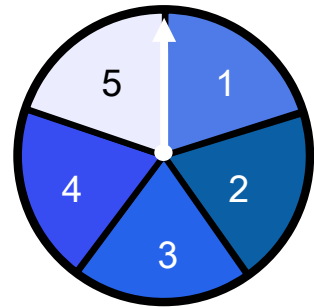
a) Liis garo natiijooyinka ku guuleysta Layla dhibic.

b) Liis garo natiijooyinka ku guuleysta Cali dhibic.

c) Liis garo natiijooyinka marka Layla iyo Cali midna uusan ku guuleysan dhibic.

d) Liis garo natiijooyinka marka Layla iyo Cali labaduba ku guuleystaan dhibic.

e) Liis garo natiijooyinka marka Layla ku guuleysato dhibic, laakiin Cali uusan ku guuleysan.



1) Layla iyo Cali waxay ciyaarayaan ciyaar iyagoo isticmaalaya wareeggan (spinner). Layla waxay ku guuleysataa dhibic haddii ay ku soo baxdo qaybiye 10, Calina wuxuu ku guuleystaa dhibic haddii ay ku soo baxdo tiro asli ah (prime number).

a) Liis garo natiijooyinka ku guuleysta Layla dhibic.

$\{1, 2, 5\}$

b) Liis dhibcaha (points) ee Cali uu ku guuleysto.

$\{2, 3, 5\}$

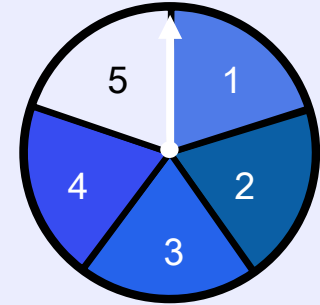
c) Liis natiijooyinka marka aan Layla iyo Cali midna dhibic (point) helin.

d) Liis natiijooyinka marka Layla iyo Cali labaduba dhibic (point) heleen.

e) Liis natiijooyinka marka Layla dhibic (point) hesho, laakiin Cali ma helo.

$\{2, 5\}$

$\{1\}$



Isticmaalka liis nidaamsan (systematic listing) ayaa u badan inuu keeno liis aan qalad lahayn marka loo eego liis aan nidaamsanayn.

Natiijooyinka laba dhacdo (events) waxaa la qori karaa si gooni gooni ah, iyo sidoo kale si isku dar ah.