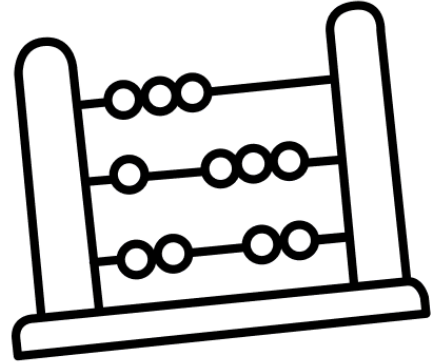


Isbarbardhigga mataalaadaha natiijooyinka in ka badan laba dhacdo

Maths

Cutub: Itimaalka (Probability): natiijooyinka suurtagalka ah



Natiijo

Waxaan aqoonsan karaa natiijada isku midka ah dhammaan matalaadaha kala duwan.

Erayada muhiimka ah

Shaxda natiijooyinka (Natiijada table) waa shax muujisa dhammaan natiijooyinka suurtagalka ah.

Jaantusyada geedka (Tree diagrams) waa matalaad loo isticmaalo qaabaynta su'aalaha tirakoobka/itimaalka. Laamuhu waxay matalaan dhacdooyin ama natiijooyin kala duwan.

Laan kasta oo ka mid ah geedka natiijooyinka waxay muujisaa natiijo suurtagal ah oo ka timid dhacdo ama heer tijaabo ah. Geedka natiijooyinka oo dhamaystiran wuxuu muujiyaa dhammaan natiijooyinka suurtagalka ah.

Jaantusyada Venn (Venn diagrams) waa matalaad loo isticmaalo qaabaynta su'aalaha tirakoobka/itimaalka. Caadi ahaan goobo ayaa loo isticmaalaa inay matalaan dhacdooyinka.

Qaabka casharka

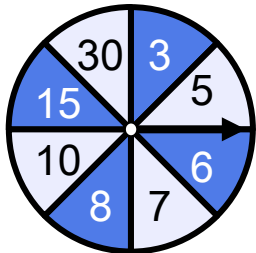
Isbarbardhigga matalaadaha natiijooyinka in ka badan laba dhacdo



Isticmaalka jaantusyo kala duwan oo loogu talagalay dhacdooyin badan



Tijaabooyin heerar badan leh oo leh liisaska iyo geedaha natiijooyinka



spinner

Suad waxay wareejin doontaa spinner-kan oo tixgelin doontaa natiijooyin kala duwan oo uu spinner-ku ku degi karo.

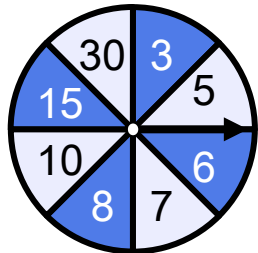
	M3	ma aha M3
M5	15, 30	5, 10
ma aha M5	3, 6	7, 8

Isticmaalka shaxda natiijooyinka ayaa aad ugu fiican kala soocista natiijooyinka spinner-ka ee laba dhacdo!



Suad

Tusaale ahaan, shaxdan dhacdooyinka waxay muujinaysaa natiijooyinka ay yihiin tirooyin 3 (M3) iyo tirooyin 5 (M5).



wareejiye
(spinner)

Laakiin maxaa dhacaya haddii aad sidoo kale rabto inaad natiijooyinka u kala saarto iyadoo loo eegayo inay yihiin kuwa qallafsan (odd) ama siman (even)?
Sidee buu u ekaan lahaa shaxda natiijada (outcome table)?



Nuur

Ma hubo, sababtoo ah...

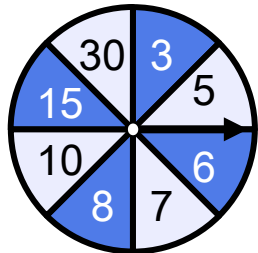
Safafka (rows) waxay muujinayaan hal dhacdo (event),
tiirarka (columns)na waxay muujinayaan mid labaad.

Sidee ku muujin kartaa dhacdo saddexaad (third event)?



Suad

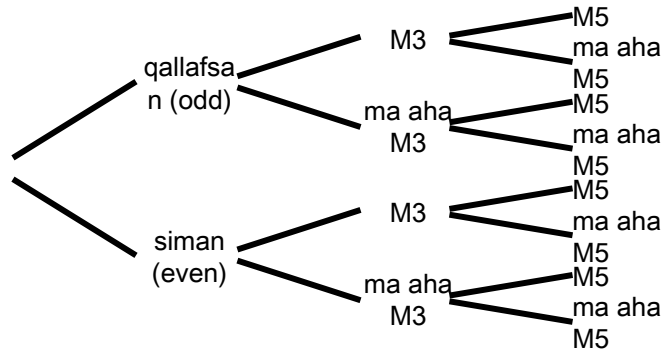
	M3	ma aha M3
M5	15, 30	5, 10
ma aha M5	3, 6	7, 8



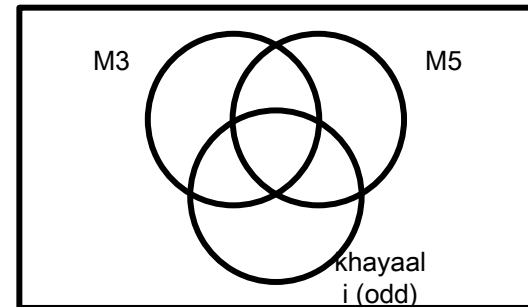
wareejiye
(spinner)

Shaxda natiijada (outcome table) waxay u kala saari kartaa natiijooyinka kaliya laba dhacdo oo kala duwan.

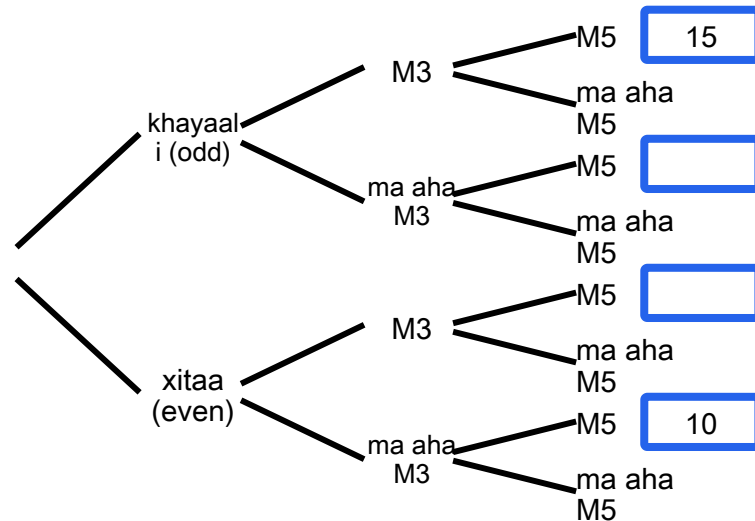
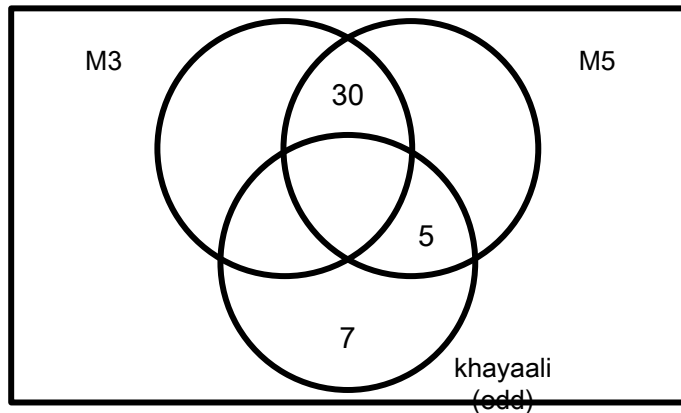
	M3	ma aha M3
M5	15, 30	5, 10
ma aha M5	3, 6	7, 8



Halka geed natiijeed (outcome tree) oo leh saddex lakab oo laamo (three layers of branches) uu muujin karo saddex dhacdo.

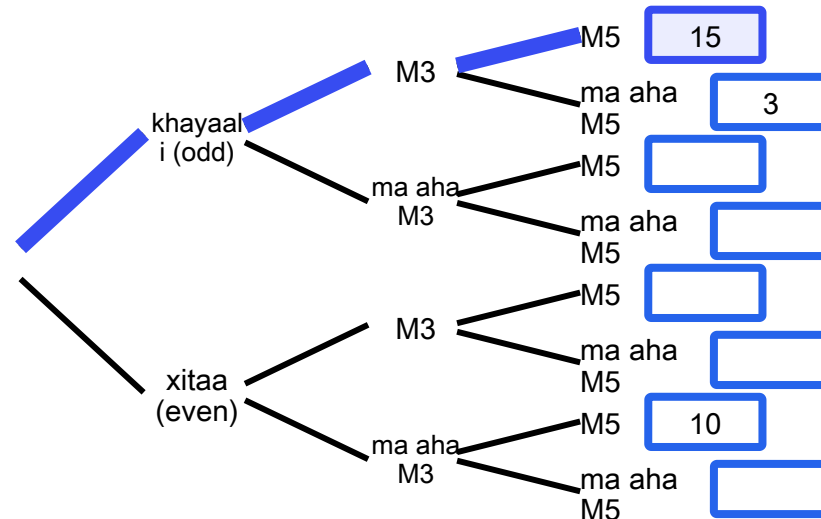
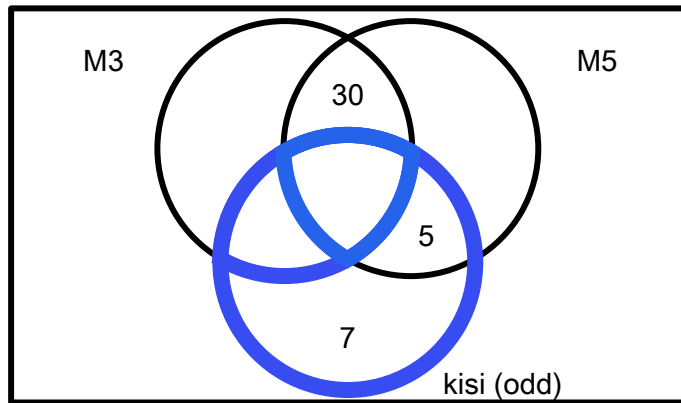


Jaantuska Venn ee leh saddex goobo ayaa sidoo kale muujin kara saddex dhacdo.



Si loo wareeji natiijada jaantus kale, waa in aan eegno halka ay ku taallo jaantuska hadda.

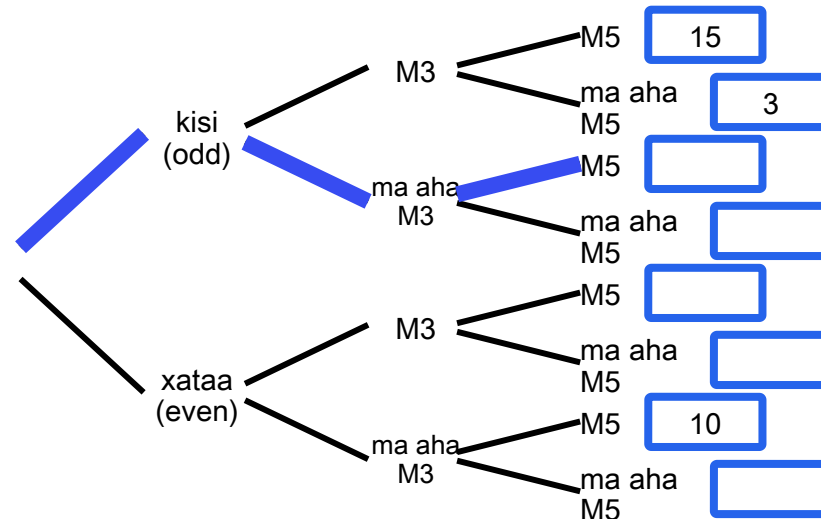
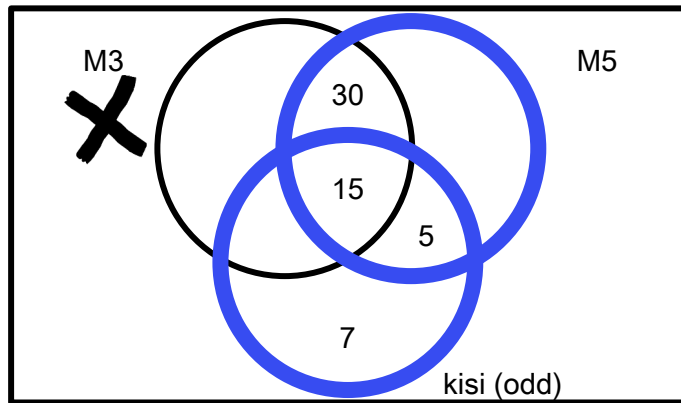
Jawaabaha:



Natiijada 15 ee geedka natijada (outcome tree) waa...



Sidaas darteed 15 waxay geli doontaa isgoyska (intersection) saddexda goobo ee jaantuska Venn.

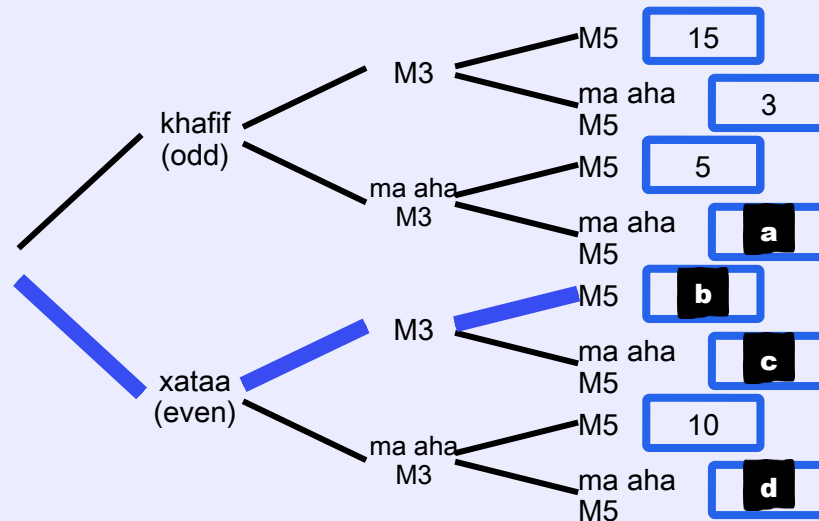
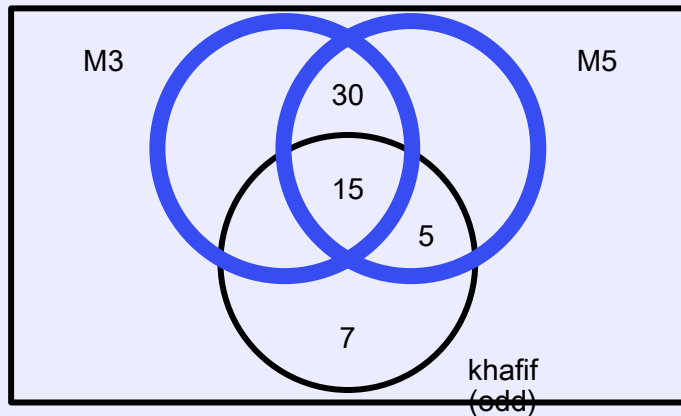


Halka natiijada 5 ee jaantuska Venn ay tahay...



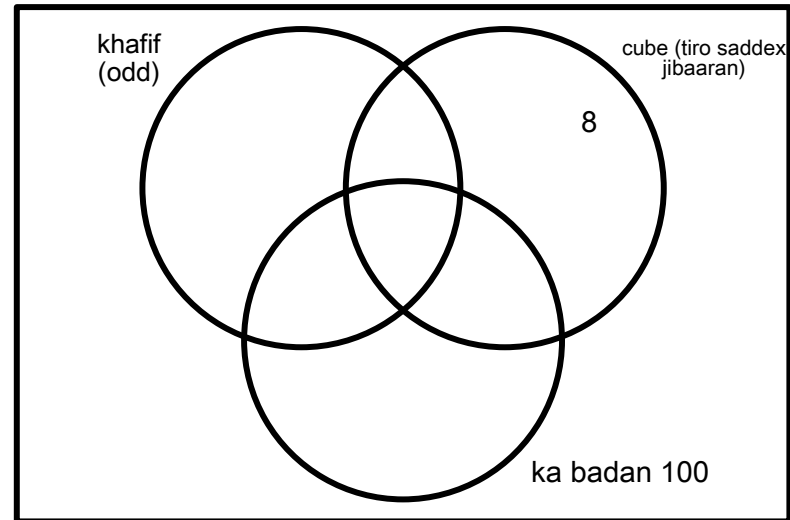
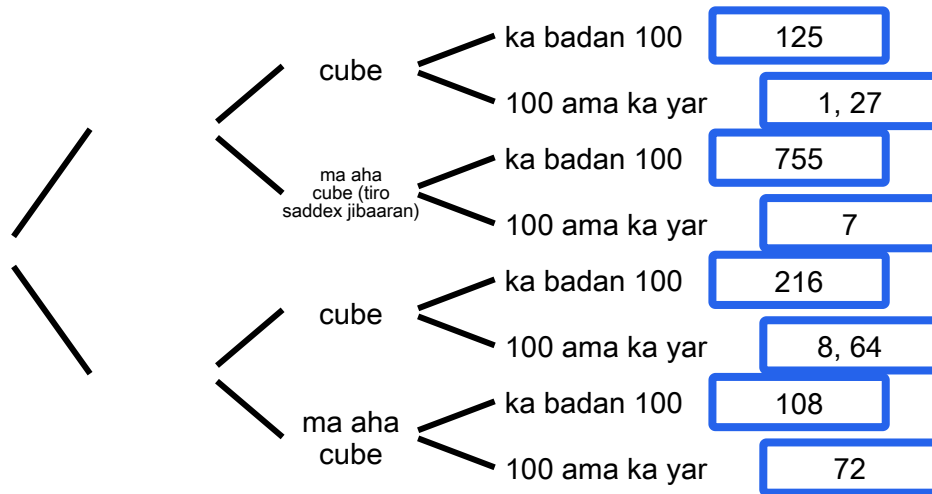
Sidaas darteed 5 waxay ku jiri doontaa dhamaadka laamaha soo socda:

kisi (odd) → ma aha M3 → M5



Halkee ayay natijada 30 (Venn diagram) ku tagi doontaa geedka natijada (outcome tree)?

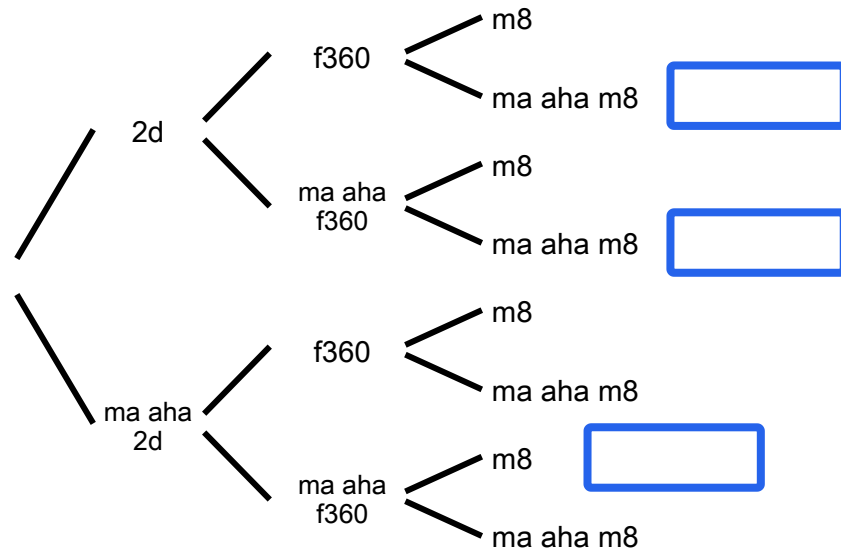
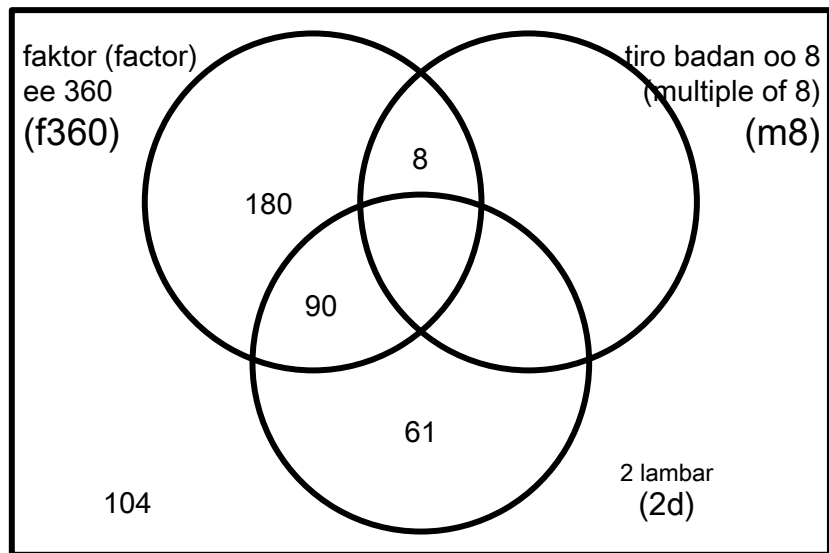
1) Isticmaal geedka natijada si sax ah loo buuxiyay, buuxi jaantuska Venn ee aan dhammaystirnayn.



Jawaabaha:

khafif (odd) xataa (even)

2) Jaantuska Venn iyo geedka natiijada labaduba waxay matalaan isku dhacdooyin isku mid ah oo loogu talagalay wareeg. Buuxi dhammaan natiijooyinka maqan ee labada matalaad.



Jawaabaha:

24

16

8

3,

7,

madax		
	guul	khasaare
guduud	Caasha	
aan guduud		Saciid

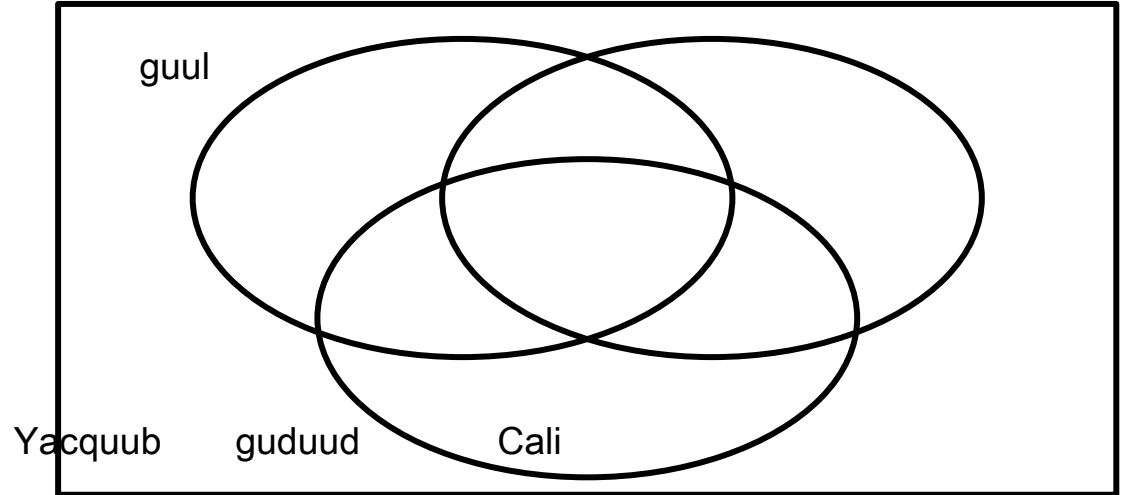
dabo		
	guul	khasaare
guduud	Cabdi	
aan guduud		

Jawaabaha:

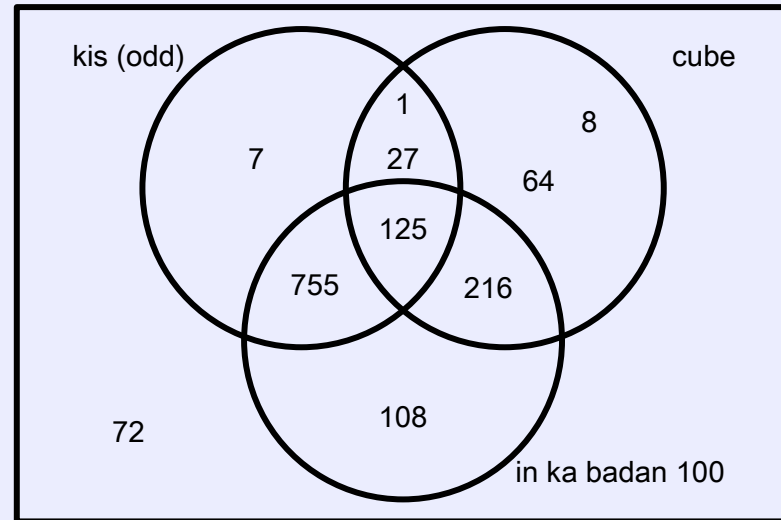
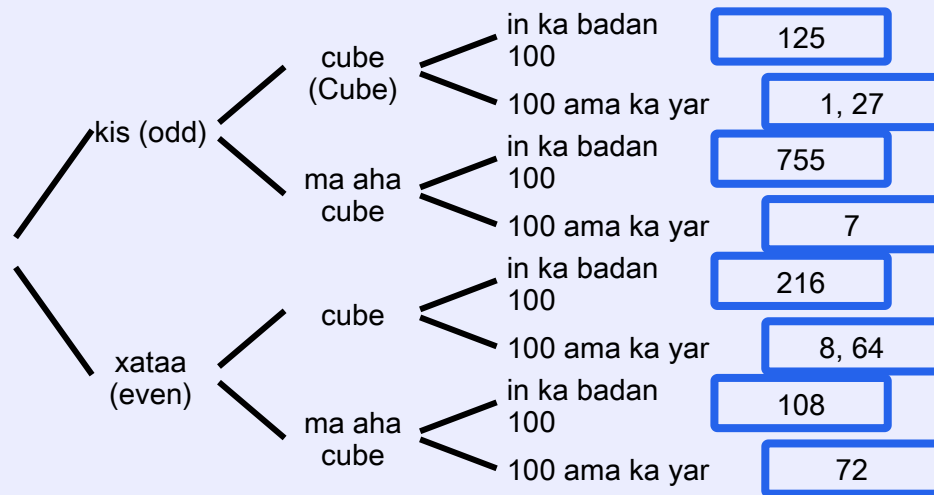
madax Nuur Layla Isra

3) Halka hal shax natijadu aysan muujin karin saddex dhacdo oo ka mid ah tijaabo, laba shax oo natiiyo ah ayaa kara.

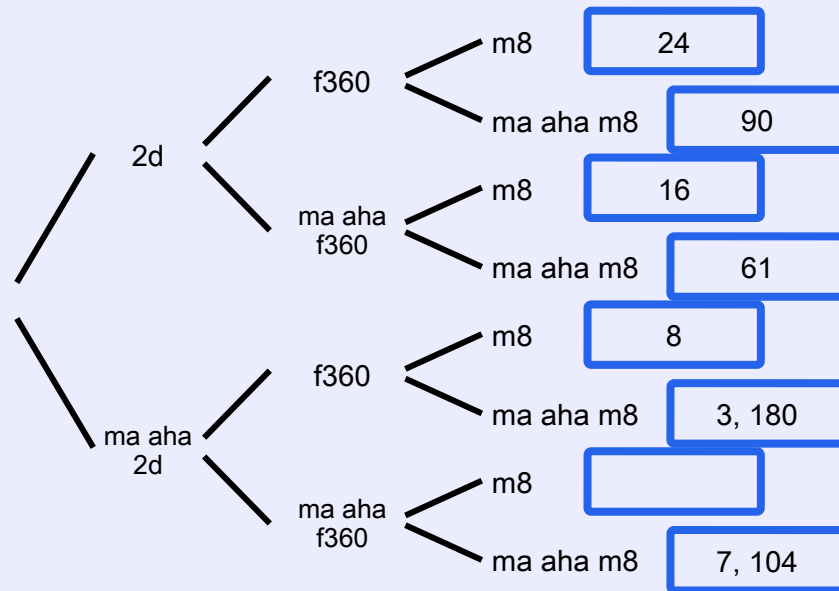
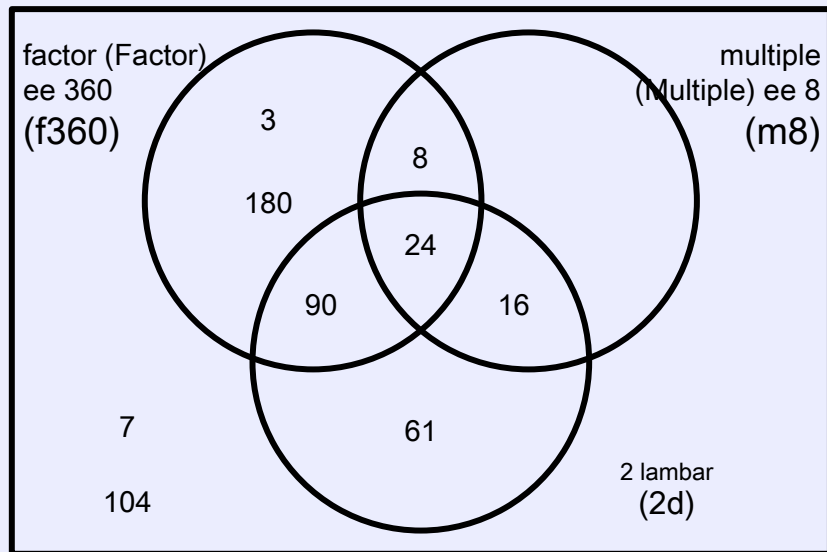
Buuxi dhammaan natiiyooyinka maqan ee labada shax natijada iyo jaantuska Venn labadaba.



1) Isticmaal geedka natijada si sax ah loo buuxiyey, buuxi jaantuska Venn ee aan dhammaystirnayn.



2) Jaantuska Venn iyo geedka natiijada labaduba waxay u taagan yihiin isku dhacdooyin oo ah spinner. Buuxi dhammaan natiijooyinka maqan ee labada matalaad.

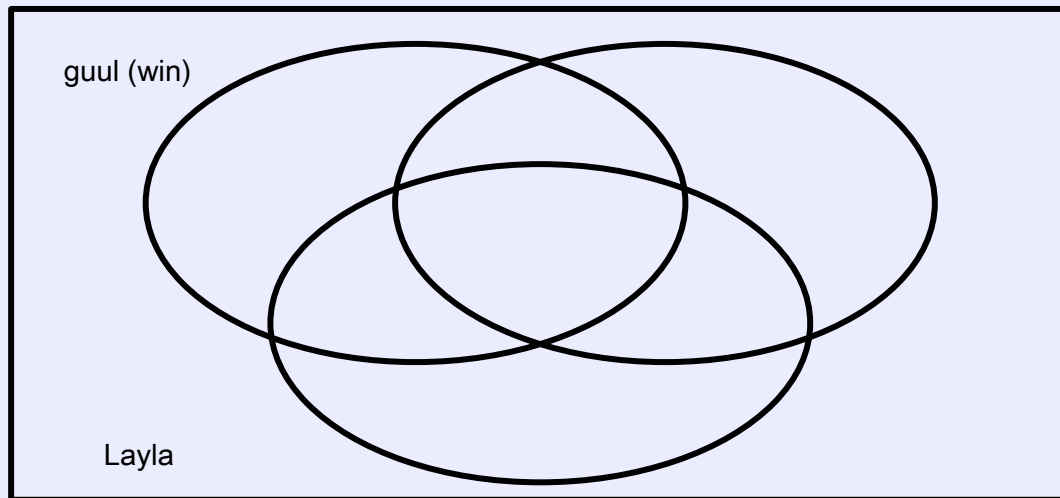


3) Halka hal shax natiijo (outcome table) aysan muujin karin saddex dhacdo oo ka yimid tijaabo (trial), laba shax natiijo ayaa kara.

Buuxi dhammaan natiijooyinka maqan labada shax natiijo iyo jaantuska Venn (Venn diagram).

madax		
	guul	khasaare
guduud	Caasha	Yacquub
ma aha guduud (red)	Nuur	Saciid

dabo (tails)		
	guul (win)	guuldarro (lose)
guduud (red)	Cabdi	Cali
ma aha guduud (red)	Isra	Layla



Jawaabaha:

madax
(heads)

Nuur

Isra

Saciid

Caasha

Yacquub

Cabdi

guduud (red)

cashar.so

Qaabka casharka

Isbarbardhig matalaadyada natiijooyinka in ka badan laba dhacdo



Isticmaal jaantusyo kala duwan dhacdooyin badan



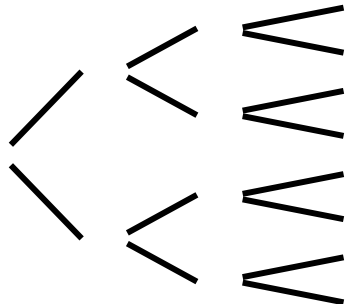
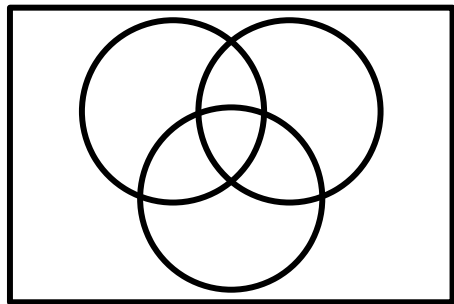
Tijaabooyin heerar badan oo leh liis iyo geedo natiijo (outcome trees)

Marka, markaan kala saareyno saddex dhacdo oo tijaabo ah, waxaan isticmaali karnaa:

Laakiin ma isticmaali karnaa labada jaantus markaan si nidaamsan u taxayno natiijooyinka tijaabo saddex heer ah?



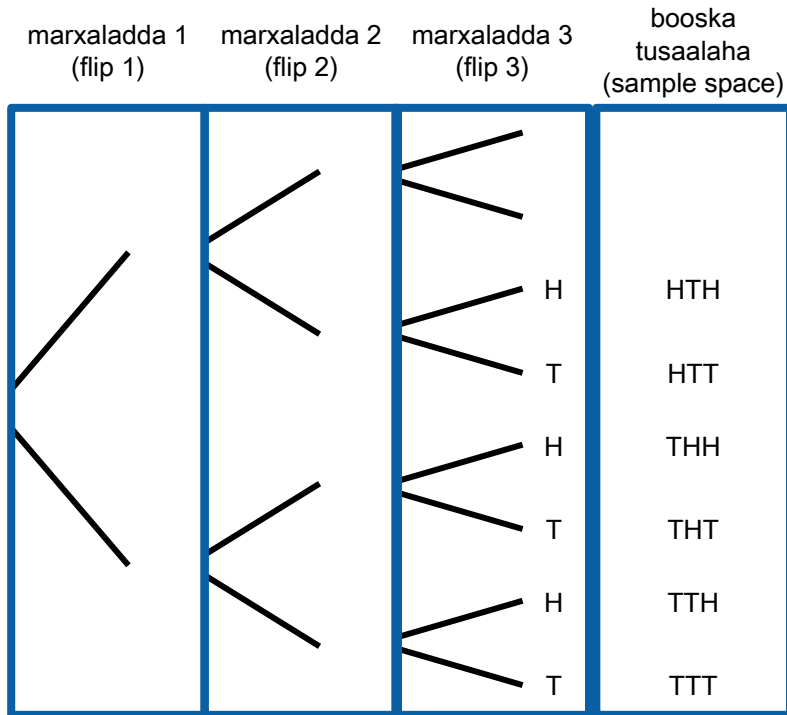
Nuur



Sida rogista lacagtan (coin) caddaaladda ah saddex jeer?



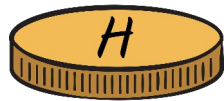
lacag (coin) = {madax, dabo}



Waxaa suurto gal ah in la isticmaalo geed natiijo (outcome tree) si nidaamsan loo taxo dhammaan natiijooyinka tijaabo saddex marxaladood ah.

Lakab kasta oo laamo ah wuxuu matalaa heer. Marka, waxaa suurto gal ah in lagu daro lakabyo dheeri ah oo loogu talagalay tijaabo afar ama shan marxaladood ah.

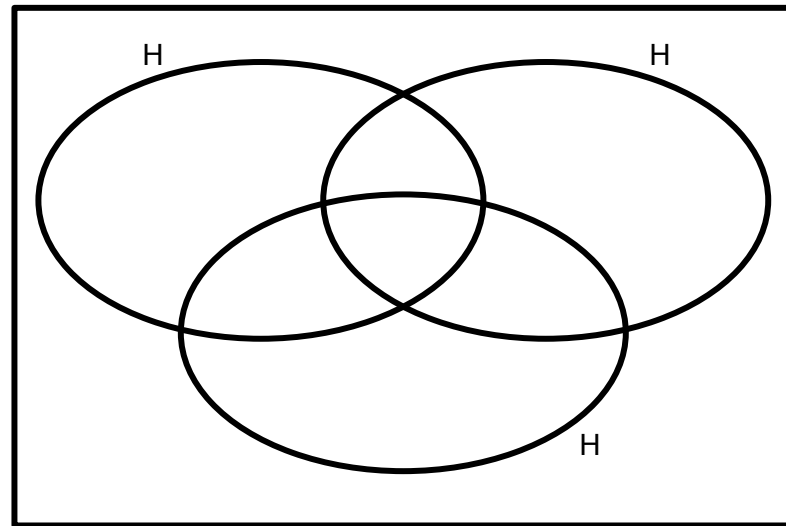
Booska tusaalaha (sample space) ee laga sameeyay geedka natiijada waa liis dhammaan isku-dhafka suurto gal ka ah ee saddex jeer oo lacag la tuuray.



lacag = {madax, dabo}

Si kastaba ha ahaatee, ma suurto galna in la isticmaalo jaantus Venn (Venn diagram) si nidaamsan loo helo dhammaan natiijooyinka tijaabo saddex marxaladood ah.

Sababtoo ah jaantuska Venn (Venn diagram) wuxuu ka caawin badan yahay marka la kala saarayo natiijooyinka hore loo yaqaan.

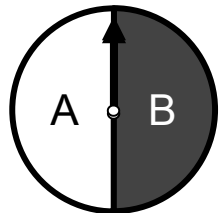




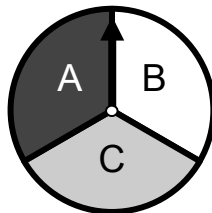
Nuur

Oh, marka waxaad kaliya ku tusin kartaa tijaabooyin saddex-heer ah iyadoo la adeegsanayo geed natiijo?

Oh, dabcan!
Xulashooyinka kee ayaad u malaynaysaa inuu ka fiican yahay: geedo natiijo ama liis?



wareegga 1



wareegga 2



qadaadiic

Waa had iyo jeer ikhtiyaar inaad qorto liis natiijooyin, ilaa aad si nidaamsan u samayn karto.

Uma malaynayo inay jirto jawaab sax ah, waxay ku xirnaan doontaa su'aasha. Waxaa ugu fiican inaad ku tababarto labadaba.



Suad

Su'aashan hubinta, waa inaad qortaa liis natiijooyin ka dibna dhammaystirtaa geedka natiijada.

Haddii aad haysato saaxiib kuu dhow, weydii inuu sameeyo mid ka mid ah, adiga oo sameynaya kan kale.

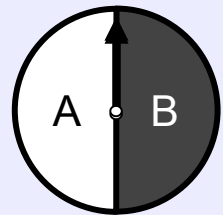
Tijaabooyin heerar badan leh oo leh liis iyo geedo natiijo



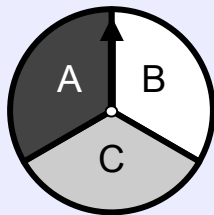
Hubi

Wareeg kasta waa la wareegi doonaa hal mar,
qadaadiicdana waa la tuuri doonaa hal mar.

Qor dhammaan natiijooyinka tijaabadan adigoo
qoraya liis iyo/ama buuxinaya geedka natiijadan.



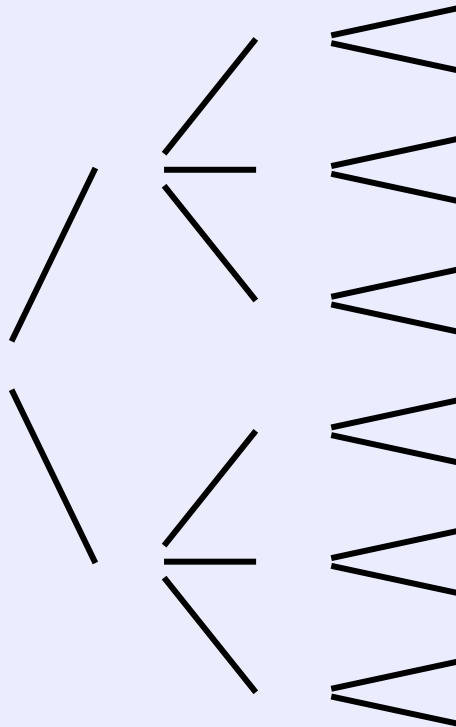
wareegga 1



wareegga 2



qadaadiic



meel muunad (sample space)



Liiska natiijooyinka ee Nuur
ilaa hadda

G C I
S P B
G L B
S C B
G P B
???



Nuur

Waxaan bilaabay inaan qoro liiska
natiijooyinka cunto saddex-cunno ah,
laakiin hadda waan ku xannibanahay.

Ma suurtagal tahay in la isticmaalo
geed natiijooyin ah si loo
dhammaystiro liiska oo loo saxo
qaladaadayga?

Tijaabooyin heerar badan leh oo leh liisaska iyo geedaha natiijooyinka

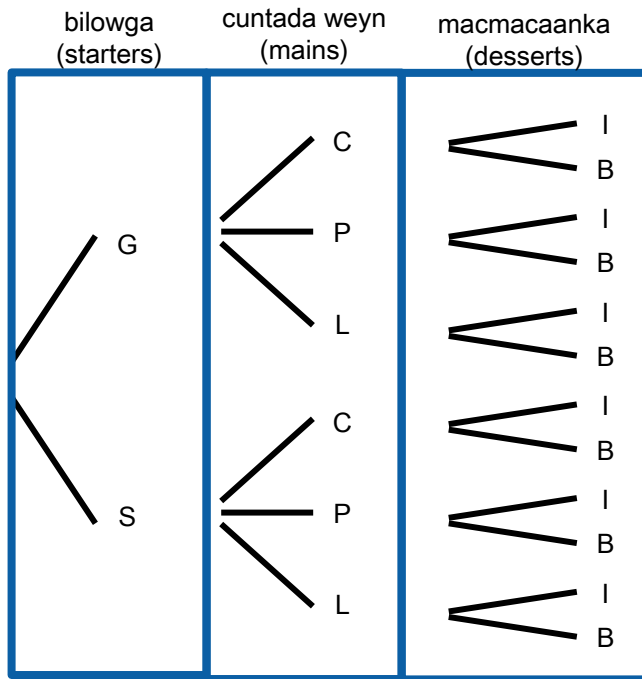
Haddii aan rabno inaan abuurno meel muunad ah (sample space) oo dhammaan natiijooyinka ka yimaada liis aan dhammaystirnayn, waa inaan u qaadano in natiijo kasta oo heer kasta ah ay mar hore ku xusan tahay meel liiska.

Tusaale ahaan, waa inaan u qaadano in labada bilow (starters) kaliya ay yihiin S (salad) iyo G (gyoza dumplings).

Liiska natiijooyinka ee
Nuur ilaa hadda

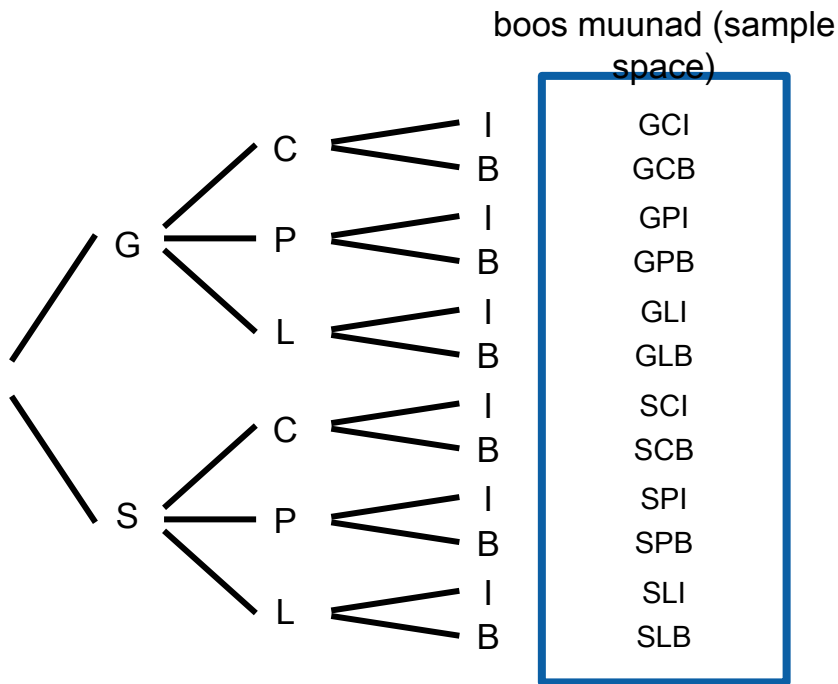
G C I
S P B
G L B
S C B
G P B
???

Aynu dhisno lakab kasta oo ka mid ah laamaha. Waxaan ku bilaabi karnaa bilowga halkaas oo aan ku hayno doorashooyinka (G) Gyoza ama S (Salad).



G	C	I
S	P	B
G	L	B
S	C	B
G	P	B
???		

Waa suurtagal in la qaato liis aan dhammaystirnayn oo natiijooyin ah oo la aburo meel muunad ah (sample space) oo dhammaan natiijooyinka iyadoo la isticmaalayo geed natiijooyin.

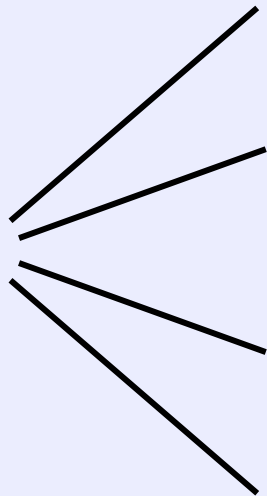


G C I
S P B
G L B
S C B
G P B
???

Tijaabooyin heerar badan leh oo leh liis iyo geedo natiijo (outcome trees)

Liiskani wuxuu muujinayaa qayb ka mid ah liiska natiijooyinka tijaabo saddex heer ah. Suad waxay rabtaa inay tijaabadan ku muujiso geed natiijo (outcome tree).

Immisa laan (branch) ayay leedahay lakabka koowaad ee geedka natiijada?



D	1	T
B	2	T
C	2	H
A	1	T

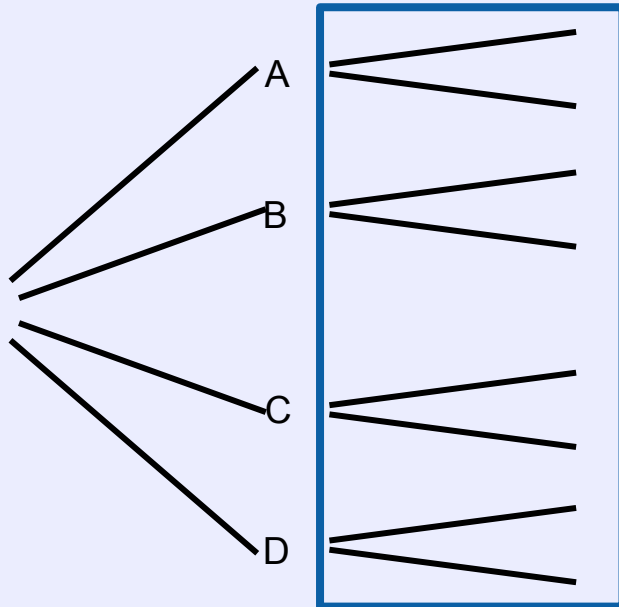
Tijaabooyin heerar badan leh oo leh liis iyo geedo natiijo (outcome trees)



Hubi

Liiskani wuxuu muujinayaa qayb ka mid ah liiska natiijooyinka tijaabo saddex heer ah. Suad waxay rabtaa inay tijaabadan ku muujiso geed natiijo (outcome tree).

Immisa laan (branch), guud ahaan, ayay tahay inay ku jiraan lakabkan?



8 laan (branches), guud ahaan.
Heerka labaad ee tijaabadan, waxaa jira laba natiijo oo keliya (1 iyo 2).
Sidaa darteed, waxaa jira laba laan (branches) oo ka soo baxa mid kasta oo ka mid ah afarta laan ee heerka 1aad.

D	1	T
B	2	T
C	2	H
A	1	T

1) Cuntada saddex cunno (three-course meal) waxay ka kooban tahay hal bilow (starter), hal cunto weyn (main), iyo hal macmacaan (dessert).

Adigoo abuuraya geed natiijo (outcome tree), tax dhammaan cuntooyinka saddexda-cunno ee suurtoalka ah.

Cuntooyinka bilowga
Maraq Yaanyo (Tomato Soup)
Rooti Toos (Garlic Bread)

Cuntooyinka weyn
Baasto Carbonara (Pasta Carbonara)
Rooti Kalluun (Fish Pie)
Gnocchi Isbinaash (Spinach Gnocchi)

Macmacaan
Jalaato Fanil (Vanilla Ice Cream)
Keeg Shukulaato (Chocolate Cake)
Banana Split

2) Cuntada laba cunno (two-course meal) waxay ka kooban tahay mid ka mid ah:

hal cunno bilow ah iyo hal cunno weyn
hal cunno weyn iyo hal macmacaan

Abuur laba liis oo natiijooyin ah si aad u hesho dhammaan suurtoalnimada cuntada laba cunno (two course meals).

3) Immisa cunto saddex-cunno ayaa ka badan cuntooyinka laba-cunno?

4) Isra waxay bilowday inay qorto liis natiijooyin tijaabo saddex heer ah.

Natiijo kasta oo ka mid ah heer kasta oo tijaabada ah waxaa lagu matalay ugu yaraan hal mar liiska Isra ee aan dhammaystirnayn.

Sawir oo dhammaystir geed natiijo (outcome tree) si aad u abuurto meel muunad (sample space) dhammaan natiijooyinka.

4 A T

4 R T

1 F T

7 R H

7 A H

7 K H

1) Cunto saddex-cunno waxay ka kooban tahay hal cunno bilow ah, hal cunno weyn, iyo hal macmacaan.

Bilowga (Starters)

Maraq Yaanyo (Tomato Soup)

Rooti Toon (Garlic Bread)

Cuntada Weyn (Mains)

Pasta Carbonara

Rooti Kalluun (Fish Pie)

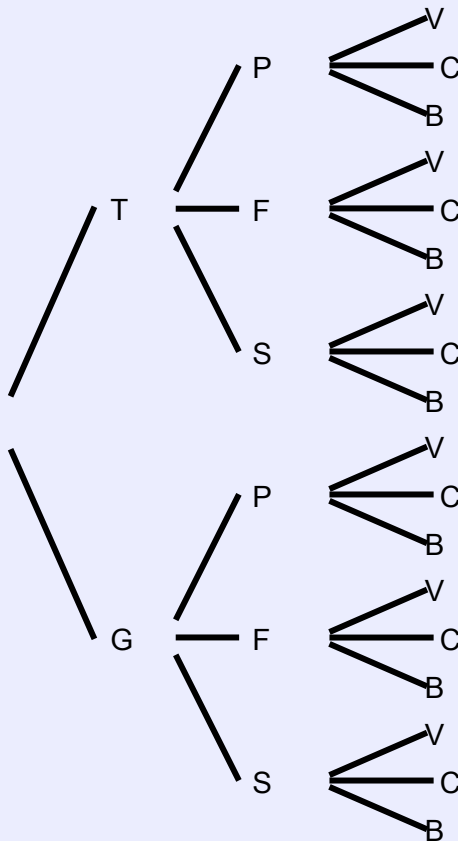
Spinach Gnocchi

Macmacaanka (Desserts)

Jalaato Vanilla (Vanilla Ice Cream)

Keega Shukulaato (Chocolate Cake)

Moos la Kala Qaybiyey (Banana Split)



TPV
TPC
TPB
TFV
TFC
TFB
TSV
TSC
TSB
GPV
GPC
GPB
GFV
GFC
GFB
GSV
GSC
GSB

booska tijaabada (sample space)

18 natiijo (outcomes)

2) Cunto laba-cunto ah waxaa laga sameeyaa mid ka mid ah:

Bilowga

Maraq Yaanyo
Rooti Toos

Cuntooyinka Waaweyn

Baasta Carbonara
Rooti Kalluun
Gnocchi Isbinaaj

Macmacaan

Jalaato Fanil
Keeg Shukulaato
Banana Split

hal bilow (starter) iyo hal cunto weyn (main)
hal cunto weyn (main) iyo hal macmacaan
(dessert)

Samee laba liis oo natiijooyin ah si aad u hesho
dhammaan cuntooyinka laba-cunto ee
suurtagalka ah.

bilow (starter)
cunto weyn (main)

T	P
T	F
T	S
G	P
G	F
G	S

cunto weyn (main)
macmacaan
(dessert)

P	V
P	C
P	B
F	V
F	C
F	B
S	V
S	C
S	B

$6 + 9 = 15$ natiijooyin (outcomes)

3) Immisa cunto saddex-cunto ah ayaa ka badan cuntooyinka laba-cunto ah?

Bilowga (Starters)

Maraq Yaanyo (Tomato Soup)
Rooti Toon (Garlic Bread)

Cuntooyinka Waaweyn (Mains)

Baasto Carbonara (Pasta Carbonara)
Rooti Kalluun (Fish Pie)
Isbinaaj Gnocchi (Spinach Gnocchi)

Macmacaanka (Desserts)

Jalaato Fanili (Vanilla Ice Cream)
Keeg Shukulaato (Chocolate Cake)
Moos Jalaato (Banana Split)

Waxaa jiray 18 cunto saddex-cunto ah, halka ay jireen 15 cunto laba-cunto ah.

Waxaa jiray 3 cunto oo dheeri ah oo seddex qaybood ah.

4) Isra waxay bilowday inay qorto liiska natiijooyinka tijaabo saddex heer ah.

Natiijo kasta oo ka mid ah heer kasta oo tijaabada ah waxaa lagu muujiyay ugu yaraan hal mar liiska Isra ee aan dhammaystirnayn.

Sawir oo dhammaystir geed natiijooyin ah si aad u abuurto meel saami ah oo dhammaan natiijooyinka.

4 A T

4 R T

1 F T

7 R H

7 A H

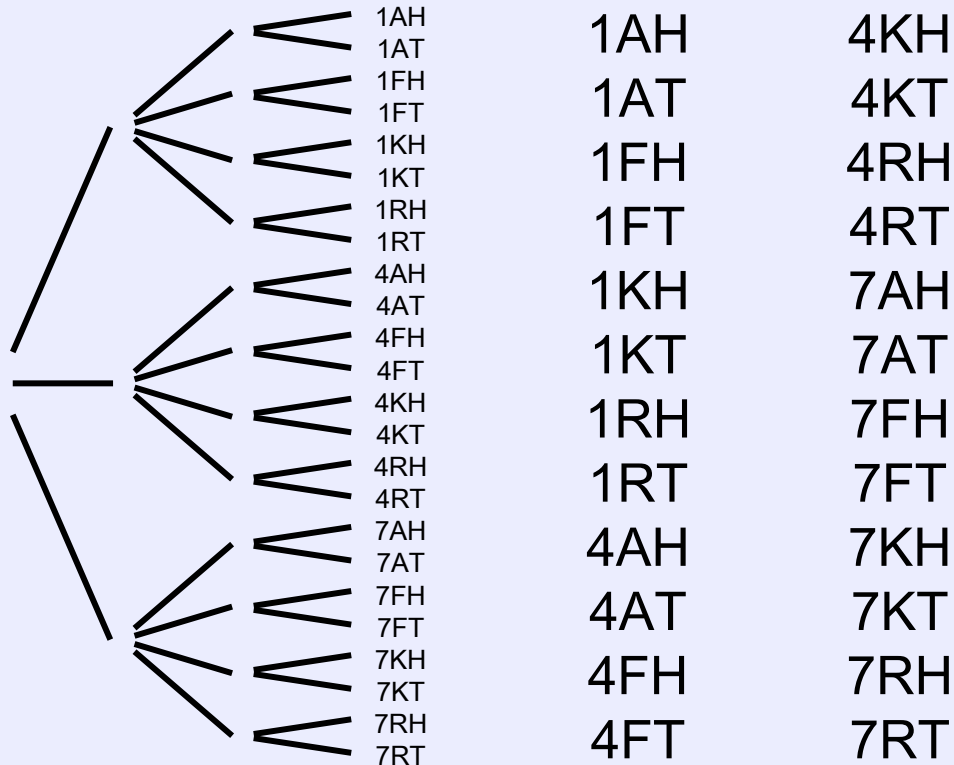
7 K H

Hawsha B Tijaabooyin heerar badan leh oo leh liis iyo geedo natiijooyin

Waa kuwan 24 natiijada.

Waxaa jiray:

seddex natiijo oo heerka koowaad ee dhacdada
afar natiijo oo heerka labaad ee dhacdada
laba natiijo oo heerka saddexaad ee dhacdada



Soo koobid

Geedaha natiijada (outcome trees) oo leh saddex lakab oo laamo ah iyo jaantusyada Venn (Venn diagrams) oo leh saddex goobo ayaa labadaba loo isticmaali karaa in lagu kala saaro natiijooyinka tijaabo saddex dhacdo.

Inkastoo shaxda natiijada (outcome table) aan loo isticmaali karin tan, laba shax oo natiijo ah ayaa la isticmaali karaa.

Hase yeeshee, jaantusyada Venn (Venn diagrams) looma isticmaali karo in si nidaamsan loo qoro natiijooyinka tijaabo laba ama saddex heer ah.

Liisaska iyo geedaha natiijada (outcome trees) waxaa loo isticmaali karaa in si nidaamsan loo qoro natiijooyinka tijaabooyinka heerar badan leh, iyo geed natiijada ayaa loo isticmaali karaa in lagu dhammaystiro liis aan dhammaystirnayn oo natiijooyin ah.