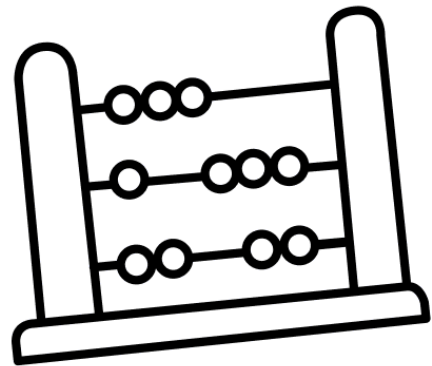


Isbarbardhigga matalaadaha natiijooyinka laba dhacdo

Maths

Cutub: Itimaalka (Probability): natiijooyinka suurtagalka ah



Natiijo

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

Erayada muhiimka ah

Shaxda natiijooyinka (outcome table) waa shax muujinaysa dhammaan natiijooyinka suurtagalka ah.

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

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

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

Isbarbardhigga matalaadaha natiijooyinka laba dhacdo



Gudbinta macluumaadka jaantusyada dhexdooda



Isticmaalka jaantusyo badan

Bilowga (Starters)

Maraq Yaanyo (T)

Rooti Toon (G)

Cuntooyinka waaweyn (Mains)

Baasto Carbonara (P)

Buste Kalluun (F)

Gnocchi Isbinaaj (S)

Waxaan awood u leeyahay inaan qaato macluumaadka heerarka dhacdada, sida doorashada bilowga iyo cuntada weyn ee liiska...



Nuur

Nuur wuxuu dooran doonaa bilow iyo cunto weyn.

Waa maxay natiijooyinka suurtagalka ah ee xulashadooda?

Bilowga (Starters)

Maraq Yaanyo (T)
Rooti Toos (G)

Cuntada Guud (Mains)

Pasta Carbonara (P)
Fuurad Kalluun (F)
Spinach Gnocchi (S)

TP
TF
TS
GP
GF
GS

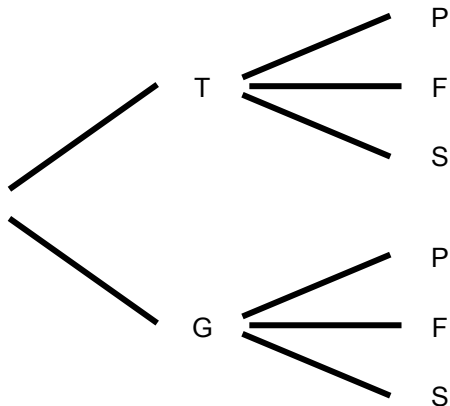
booska muunadda (sample space)

Oo liis garayso dhammaan natijoooyinka suurtagalka ah,



Nuur

	P	F	S
T	TP	TF	TS
G	GP	GF	GS



TP
TF
TS
GP
GF
GS

Waxaan u malaynayaa haa.
Waxaad isticmaali kartaa madaxyada
(headers) shaxda natijada (outcome table)
si aad u ogaato walxaha liiska cuntada.
Tusaale ahaan...

Laakiin ma suurtagal baa in jaantus mid
kale oo aan dhamaystirnayn lagu
dhammaystiro, iyada oo aan liiska cuntada
(menu) aanu caawin?

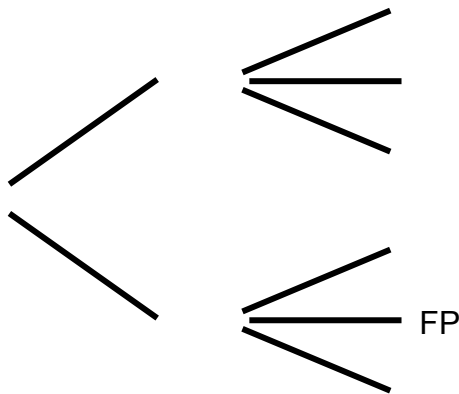


Suad

	P	F	S
T	TP	TF	TS
G	GP	GF	GS



Nuur



Waa sax!

Hadda geedka natijadaagu waa buuxsamay, waxaad sidoo kale dhammaystiri kartaa meesha muunadda (sample space).



Suad

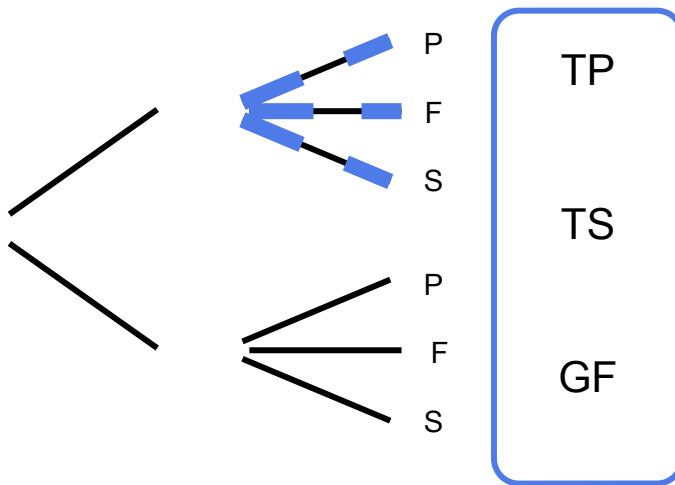
	P	F	S
T	TP	TF	TS
G	GP	GF	GS

Iyo cinwaannadan lakabka labaad ee laamaha.

Waan ogahay tan sababtoo ah waxaa jira saddex laamood iyo saddex cinwaan.



Nuur



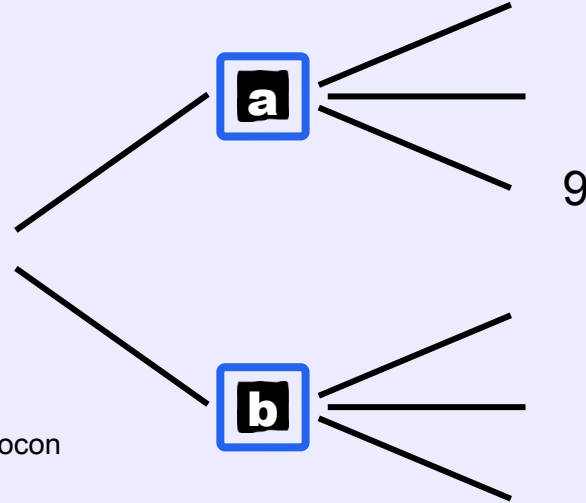
Ka wareejinta macluumaadka jaantusyada dhexdooda

Lacag ayaa la tuuray, iyo wareeg (spinner) ayaa la wareejin doonaa.
Shaxda natiijada iyo geedka natiijada labaduba waxay muujinayaan isku tijaabo.

Maxaa geli lahaa labada meelood ee bannaan ee geedka natiijada?

	1	7	9
madax	h1	h7	h9
dabo	t1	t7	t9

Madaxa iyo dabada waxay u kala socon
karaan labada dhinac.



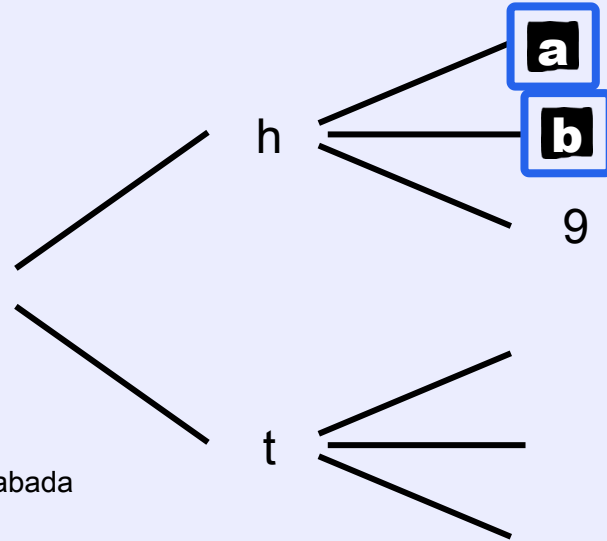
Ka wareejinta macluumaadka jaantusyada dhexdooda

Lacag ayaa la tuuray, iyo wareeg (spinner) ayaa la wareejin doonaa.
Shaxda natiijada iyo geedka natiijada labaduba waxay muujinayaan isku tijaabo.

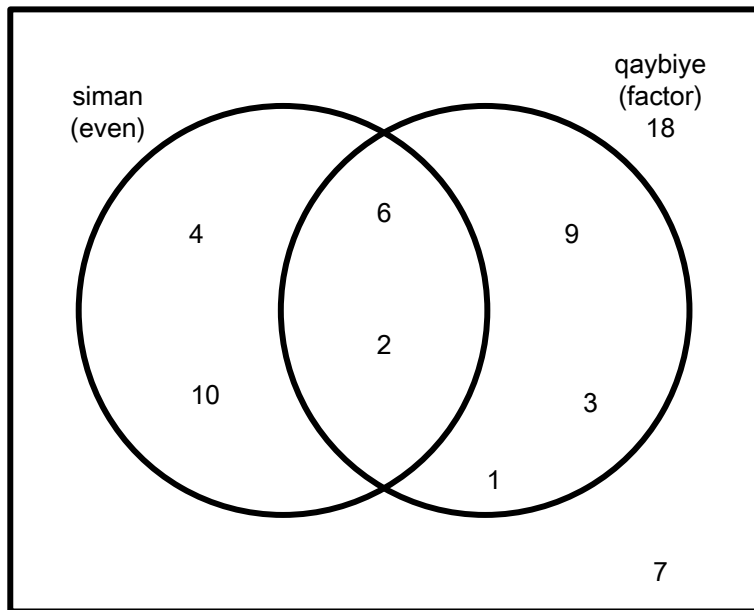
Maxaa geli lahaa labada meelood ee bannaan ee geedka natiijada?

	1	7	9
madax	h1	h7	h9
dabo	t1	t7	t9

1 iyo 7 waxay u kala socon karaan labada dhinac.



Waxaa suurtoagal ah in jaantus saxan oo keliya la isticmaalo si loo hubiyo qaladaadka jaantus kale oo si qaldan loo buuxiyay.



Axmed wuu wareejin doonaa wareeg (spinner) oo natiijooyinku yihiin:

{1, 2, 3, 4, 6, 7, 9, 10}



Axmed

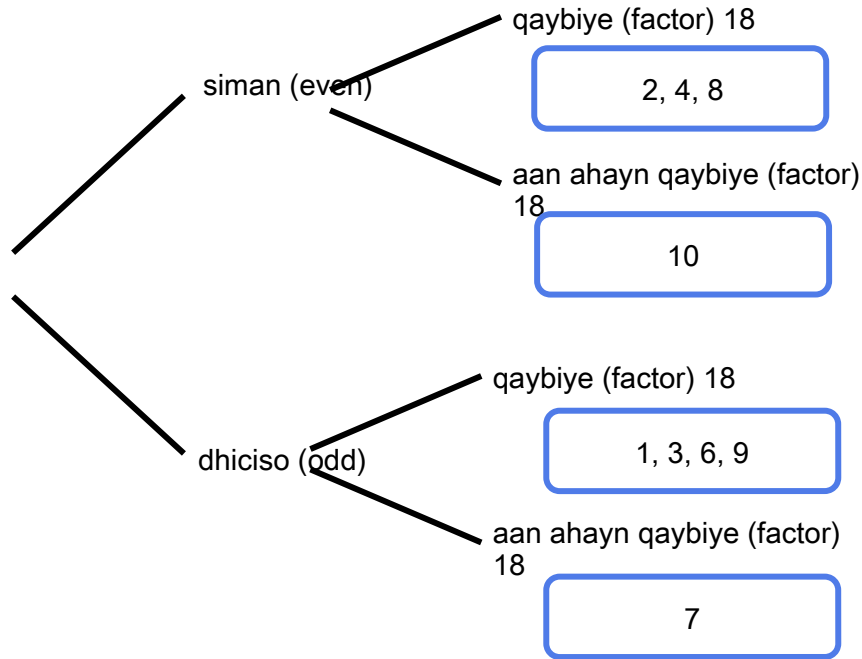
Axmed wuxuu tixgelinayaa dhacdada in wareeggu ku soo degto tiro siman (even number) iyo dhacdada in ay ku soo degto qaybiye (factor) 18.

Axmed wuxuu dhacdooyinkan si sax ah u muujiyay jaantuskan Venn.

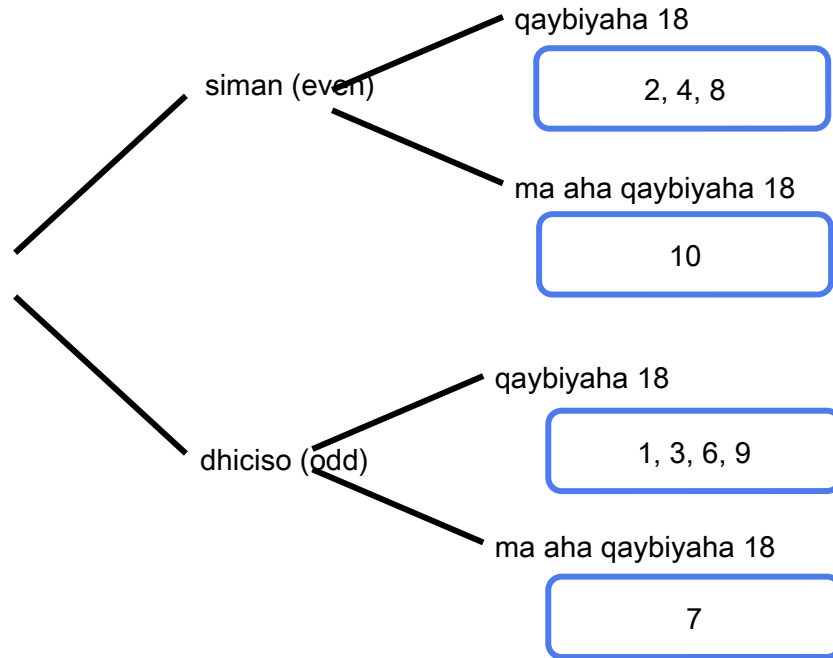
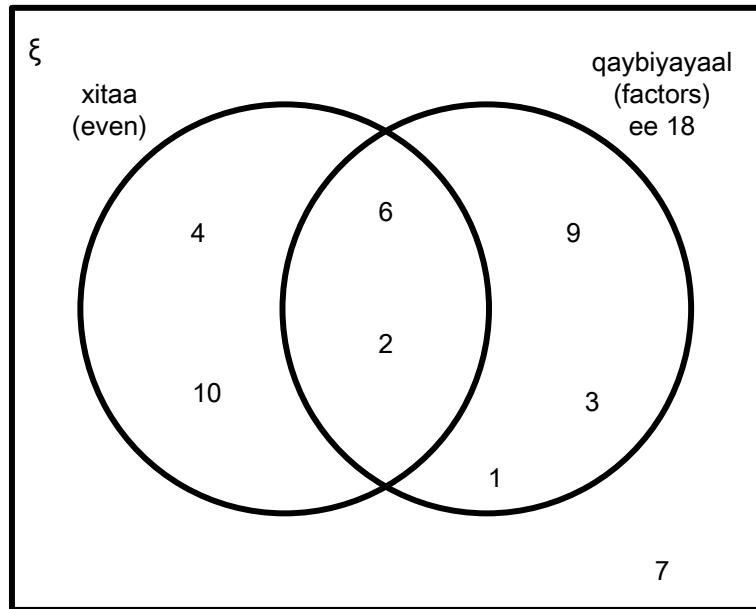
Axmed wuxuu wareejin doonaa wareeg (spinner) oo natiijooyinku yihiin:

{1, 2, 3, 4, 6, 7, 9, 10}

Nuur wuxuu wareejin doonaa isla wareegga Axmed, laakiin wuxuu dhacdooyinka tijaabada ku muujinayaa geed natiijoed (outcome tree).



Nuur

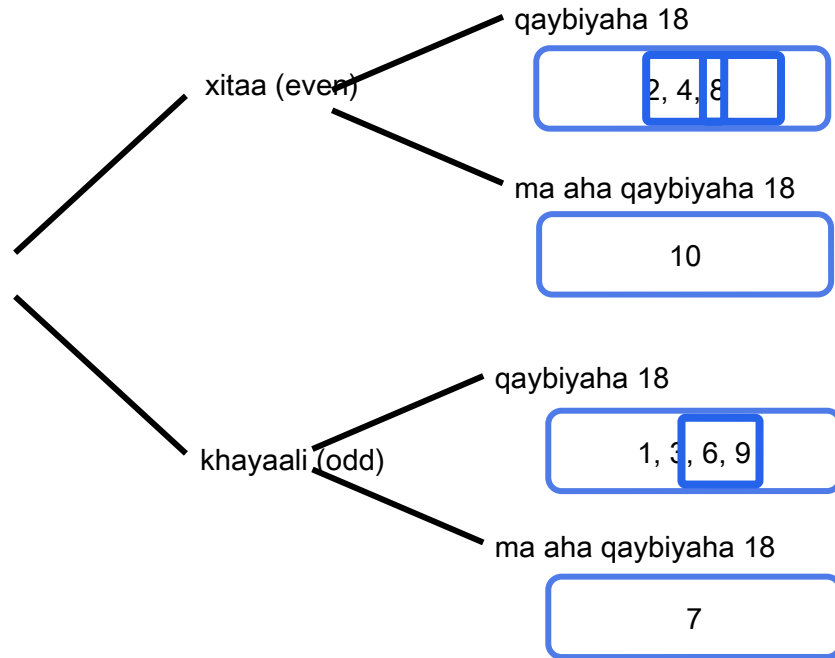
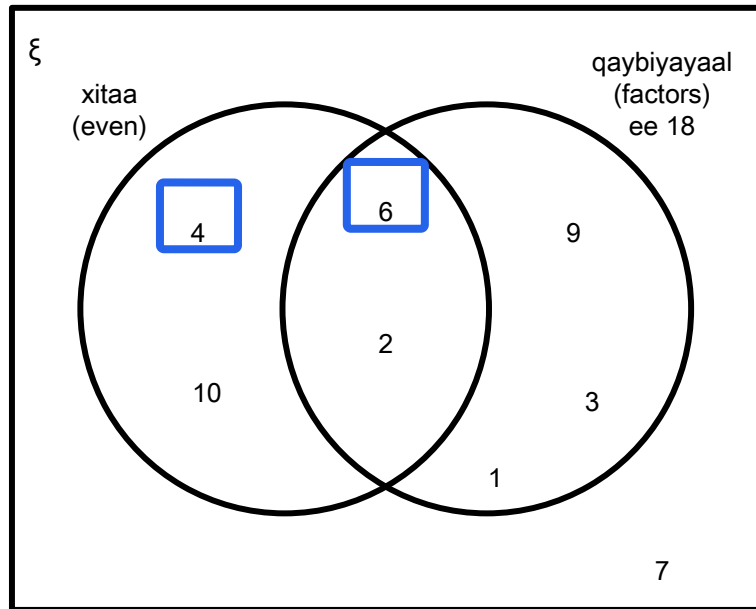


Axmed

Jaantuska Venn ee Axmed waa sax buuxa, halka geedka natiijada ee Nuur uusan ahayn. Markaad isbarbardhigto labada jaantus, hel saddexda qalad ee Nuur.



Nuur



Axmed

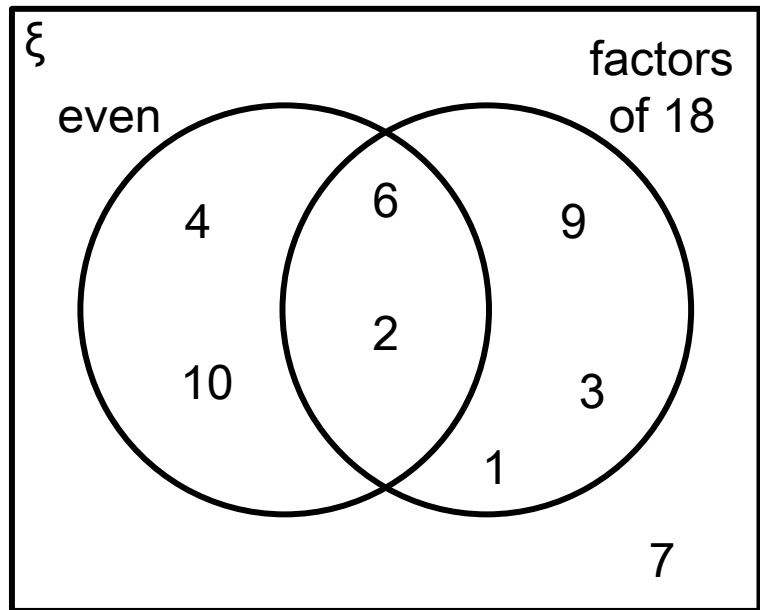
8 ma aha qayb (factor) 18, mana aha natiijo (outcome) spinner-ka.

4 waa xittaa (even) laakiin ma aha qayb (factor) 18.



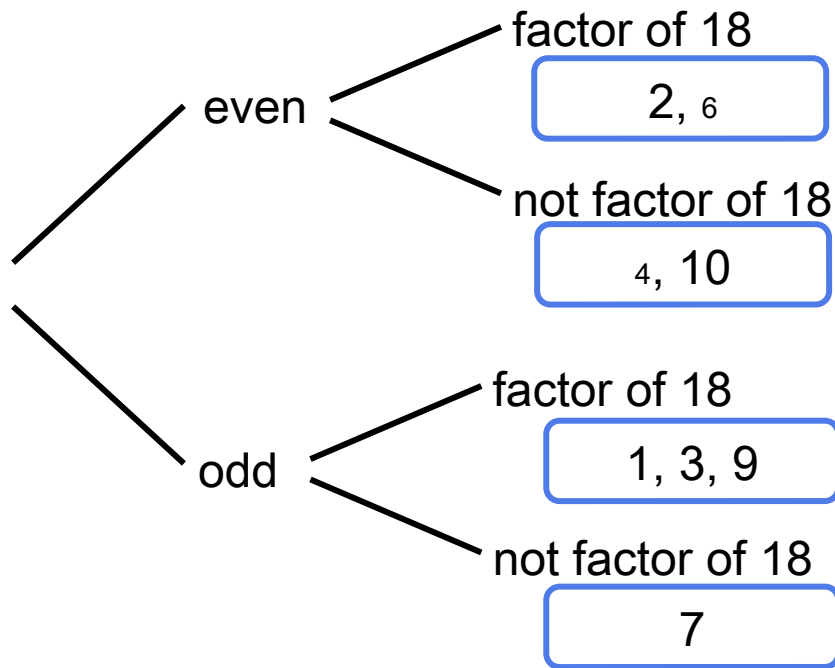
Jun

Transferring information between diagrams



Alex

Jun wuxuu saxay geedka natijada (outcome tree).
All outcomes are in the correct location.



Jun

Gudbinta macluumaadka u dhexeeya jaantusyada



Hubi

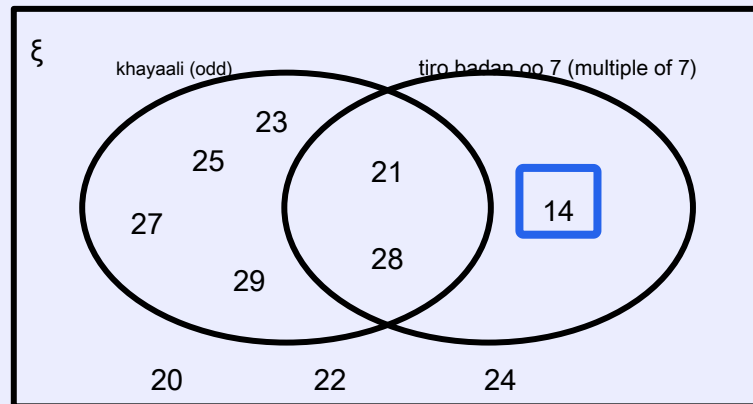
Andeep wuxuu ku duubi doonaa xabad (dice) oo leh tirooyin (integers) 20 ilaa 29.

Andeep iyo Laura waxay eegaan dhacdooyinka (events) in xabaddu ku dhacdo tiro kisi (odd) iyo tiro ka badan 7 (multiple of 7).

Andeep correctly shows the outcomes of these events on an outcome table, but Laura makes three mistakes in her Venn diagram.

Natiijo (outcome) kee ee jaantuska Venn (Venn diagram) waa in aanu gabi ahaanba ku jirin?

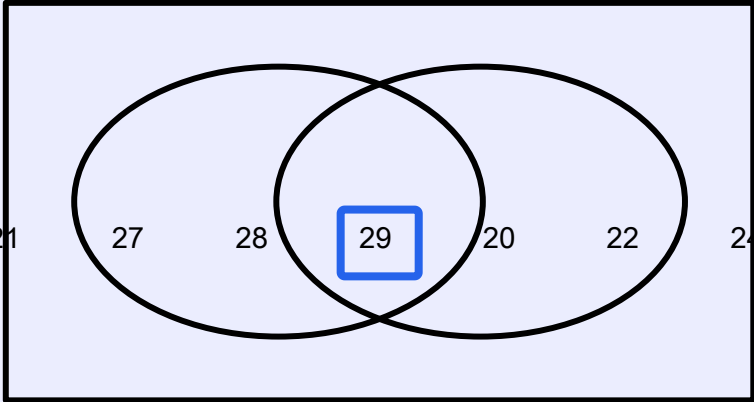
	tiro badan (multiple) oo 7	ma aha tiro badan oo 7
khayaali (odd)	21	23, 25, 27, 29
xigto (even)	28	20, 22, 24, 26



Cali wuxuu ku tuurayaa sac (dice) oo leh tirooyin 20 ilaa 29.
Cali iyo Layla waxay eegaan dhacdooyinka sac ku soo baxo tiro khayaali ah iyo tiro badan oo 7.
Cali wuxuu si sax ah u muujiyaa natiijooyinka dhacdooyinkan shaxda natijada, laakiin Layla waxay sameysaa saddex qalad jaantuska Venn.

Natiijooyinka jaantuska Venn kee baa meel khaldan?

	tiro badan (multiple) oo 7	ma aha tiro badan oo 7
khayaali (odd)	21	23, 25, 27, 29
Jawaabaha:		
ξ xigto (even)	tiro badan oo 7 (multiple of 7) 28	khayaali (odd) 23 20, 22, 24, 26



Gudbinta macluumaadka u dhexeeya jaantusyada



Hubi

Cali wuxuu ku tuurayaa sac (dice) oo leh tirooyin 20 ilaa 29.

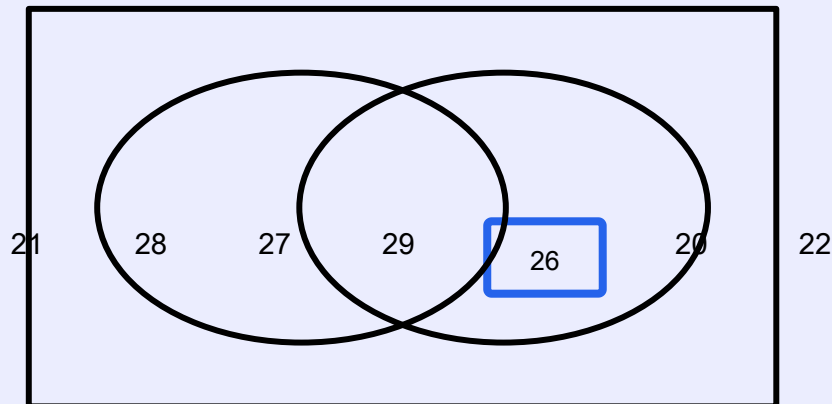
Cali iyo Layla waxay eegaan dhacdooyinka sac ku soo baxo tiro khayaali ah iyo tiro badan oo 7.

Cali wuxuu si sax ah u muujiyay natiijooyinka dhacdooyinkan miiska natiijooyinka, laakiin Layla waxay ku sameysay saddex qalad jaantuskeeda Venn.

Natiijooyinka jaantuska Venn waa maxay ka maqan?

	tiro badan (multiple) oo 7 ah	ma aha tiro badan oo 7
kisi (odd)	21	23, 25, 27, 29
Jawaabaha:		
ξ xataa (even)	adan oo 7 (multiple of 7) 28	kisi (odd) 23 20, 22, 24, 26

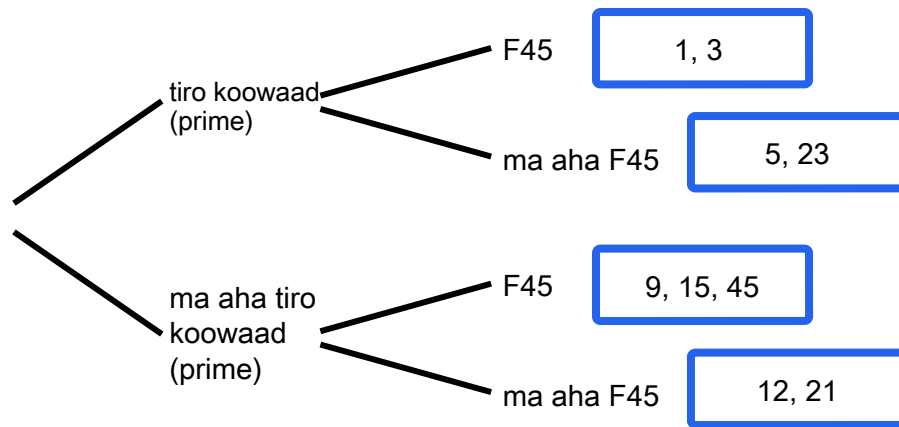
25



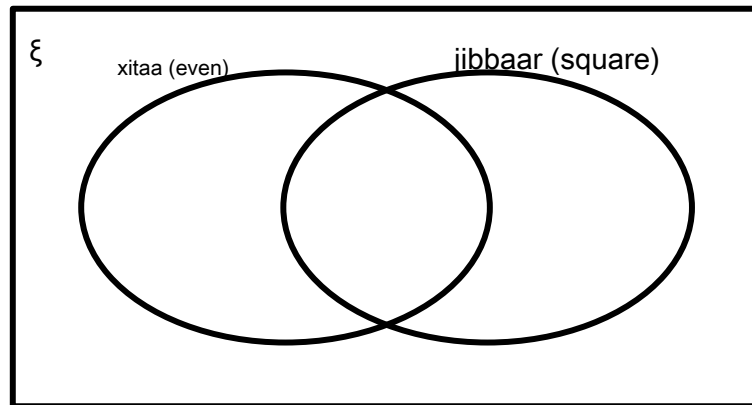
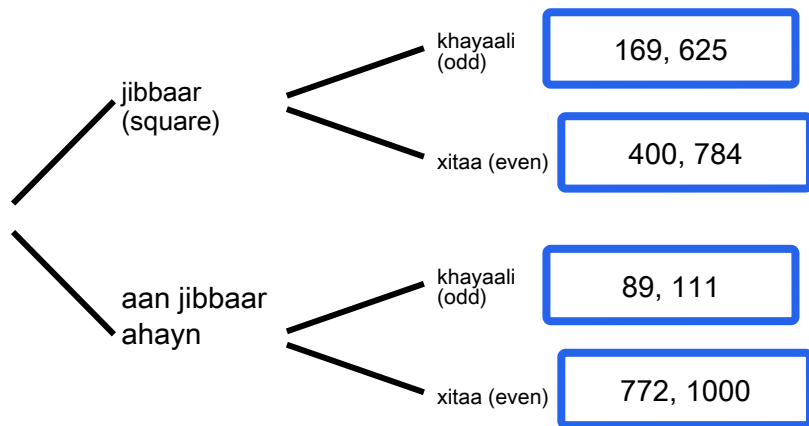
1) Yacquub iyo Layla waxay soo gudbiyeen shaqo guri oo muujinaysa natiijooyinka laba dhacdo oo ka yimid tijaabo iyadoo la adeegsanayo matalaado kala duwan.

Isticmaal miiska natiijooyinka ee Yacquub si sax ah u qoran si aad ugo gooyso qalad kasta oo ku jira geedka natiijooyinka oo u qor waxa qaldan ee geedka natiijooyinka.

	qaybiye (factor) oo 45 (F45)	ma aha qaybiye (factor) oo 45
tiro koowaad (prime)	3, 5	7, 23
ma aha tiro koowaad (prime)	1, 9, 15, 45	12



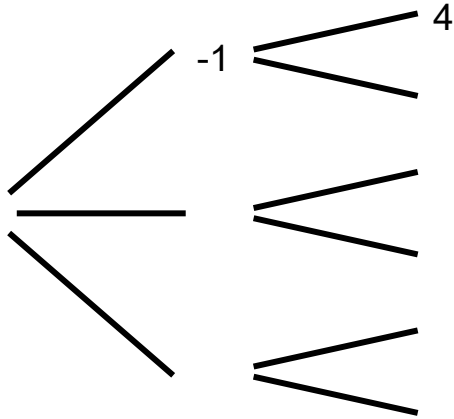
2) Geedkan natiijooyinka wuxuu si sax ah u muujinayaa laba dhacdo oo ka yimid tijaabada wareejinta wareegto leh 8 natiihood. Isticmaal geedkan natiijada si aad u buuxiso jaantuska Venn ee muujinaya isku tijaabo.



3) Geedka natiijada iyo shaxda natiijadu waxay muujinayaan isku tijaabo laba heer ah: laba wareeg (spinners) oo la wareejiyay (mid kasta hal mar) iyo natiijooyinkooda oo la isku daray.

Labada jaantusba waa sax, laakiin waxaa ka maqan macluumaad qaar.

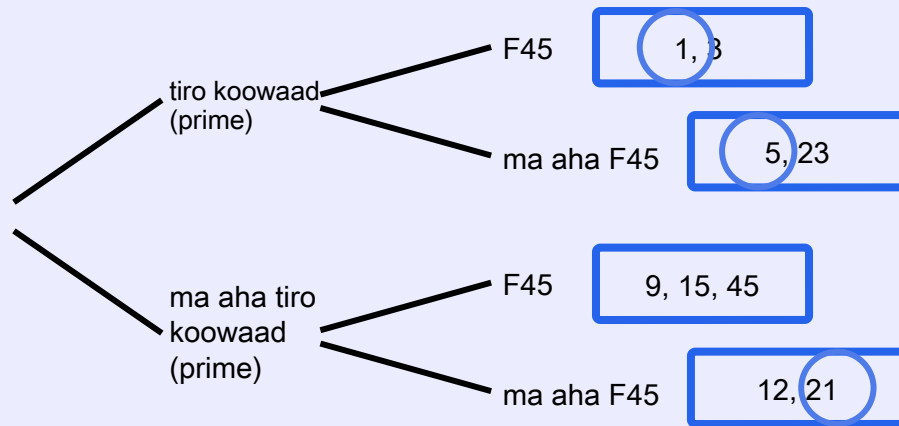
Shaxda natiijadu waxay muujinaysaa meesha natiijooyinka ka dib isku darka. Buuxi labada jaantus.



+			3
		8	10

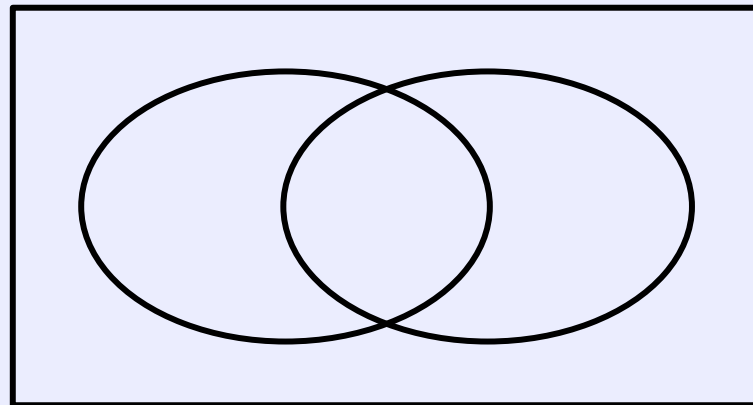
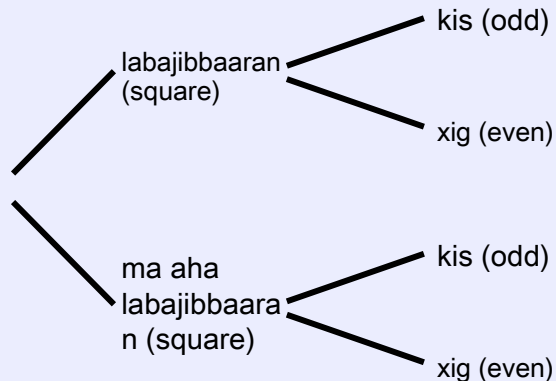
1)
1 ma aha tiro asal ah (prime number).
5 sidoo kale waa qaybiye (factor) 45.
7 waa maqan - waa inay tahay tiro asal ah oo aan ahayn qaybiyaha 45.
21 waa in laga saaro, maadaama aysan ahayn natijada tijaabada.

	qaybiye (factor) 45 (F45)	aan qaybiye ahayn 45
asal (prime)	3, 5	7, 23
ma aha tiro koowaad (prime)	1, 9, 15, 45	12



2) Geedka natiijada (outcome tree) wuxuu si sax ah u muujinayaa laba dhacdo oo ka mid ah tijaabada lagu wareejinayo wareejiye (spinner) leh 8 natiijo.

Isticmaal geedkan natiijada si aad u dhamaystirto jaantuska Venn (Venn diagram) oo muujinaya isla tijaabada.



Jawaabaha:

169, 625
625 1000

ξ labajibbaaran (square)
89, 111 784

xig (even)
400, 784
772, 1000 89

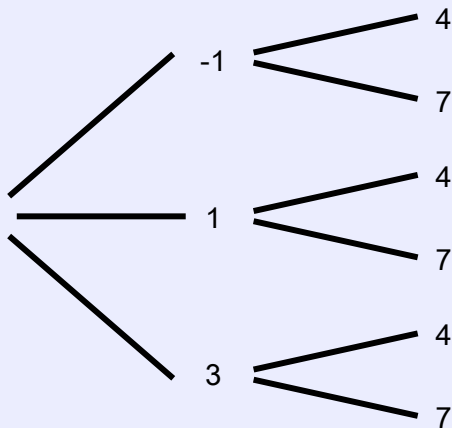
169 772 400
111



3) Geedka natijada (outcome tree) iyo shaxda natijada (outcome table) waxay muujinayaan isla tijaabada laba-heerka ah: laba wareejiye (spinners) oo la wareejiyo (mid kasta hal mar) natiiyooyinkoodana la isku daro.

Jaantusyada labaduba waa sax yihiin, laakiin waxaa ka maqan xog qaar.

Shaxda natijada waxay muujinaysaa booska muunadda (sample space) natiiyooyinka kadib isku-darka. Dhamaystir labada jaantus.



+	-1	1	3
4	3	5	7
7	6	8	10

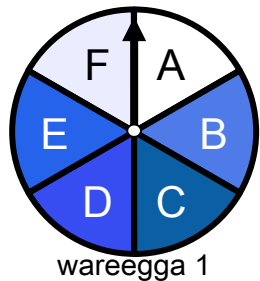
Isbarbardhigga matalaadaha natiijooyinka laba dhacdo



Gudbinta macluumaadka u dhexeeya jaantusyada



Isticmaalka jaantusyo badan



Laakiin waa adag tahay in la doorto.
Goorma ayuu jaantus ka fiican yahay mid kale?



Suad



Waa wax aad faa'iido u leh inaad haysato jaantusyo kala duwan oo badan!

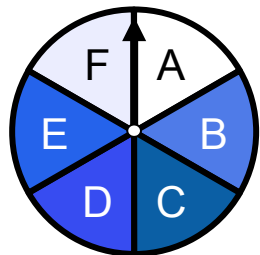


Nuur

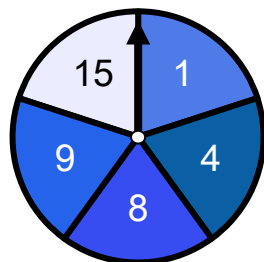
Oo ma waxaa had iyo jeer suurtagal ah in la isticmaalo jaantus kasta xaalad kasta?



Axmed



wareegga 1



wareegga 2

A, 15
E, 15
F, 15
E, 1
C, 8
D, 15
F, 9
A, 4
E, 4

← B, 9

F, 4
B, 8
D, 1
A, 8
D, 9
C, 4
A, 9
B, 15
E, 9
C, 15
D, 4
A, 1
F, 1
B, 1
D, 8
F, 8
C, 1
E, 8
C, 9
B, 4

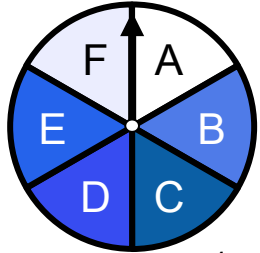
ARROO

Laakiin waxaan u arkayaa samaynta liis mid aad u adag haddii ay jiraan natiijooyin badan oo heer kasta oo tijaabo ah!

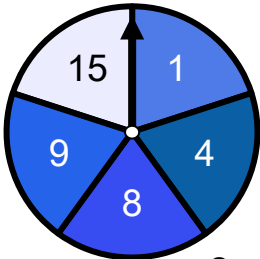


Suad

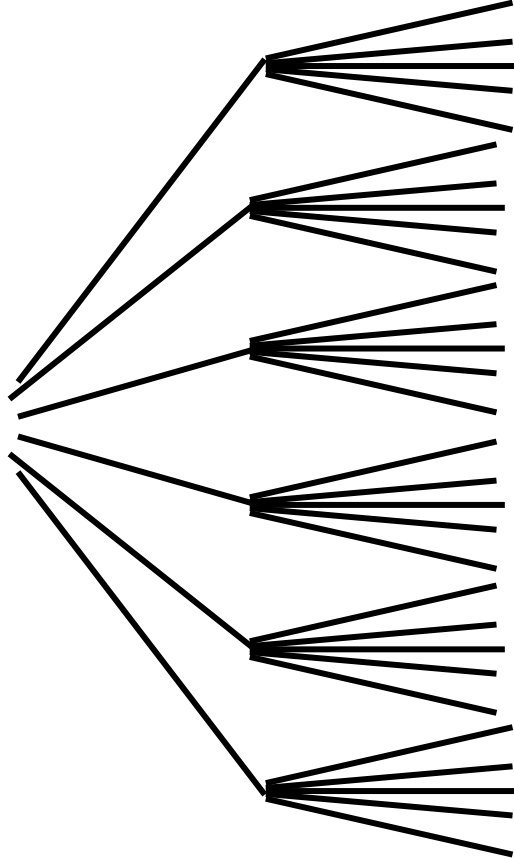
Waa aad u adag tahay in la ogaado haddii aan seegay natiijo.



wareegga 1



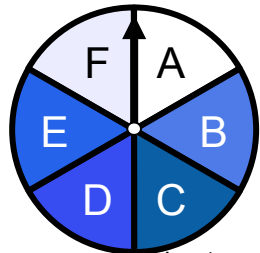
wareegga 2



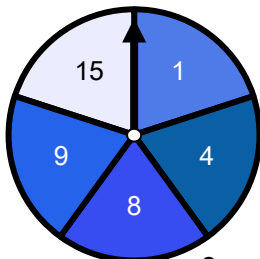
Oo sawiridda geed natiijooyin ah waxay noqon kartaa mid aad u adag haddii ay jiraan laamo badan!



Suad



wareejiyaha 1
(spinner 1)



wareejiyaha 2
(spinner 2)

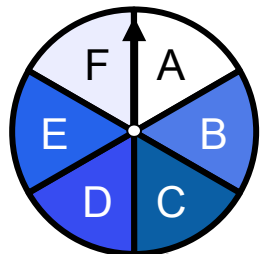
	A	B	C	D	E
1	A1	B1	C1	D1	E1
4	A4	B4	C4	D4	E4
8	A8	B8	C8	D8	E8
9	A9	B9	C9	D9	E9
15	A15	B15	C15	D15	E15

Waan ogahay inay weli suurto gal tahay in la qoro natiijooyinka oo dhan iyadoo la isticmaalayo liis ama geed natiijo (outcome tree)...

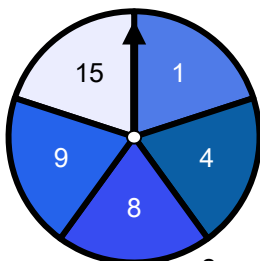


Suad

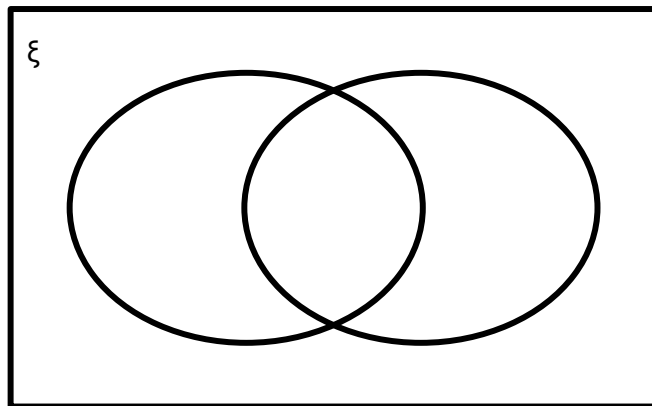
Laakiin waxaan doorbidaa inaan sawiro miis natiijo (outcome table).



wareejiyaha 1
(spinner 1)



wareejiyaha 2
(spinner 2)



... Hmm, laakiin ma suurto gal baa in la sawiro mid labadan wareejiye (spinner)?

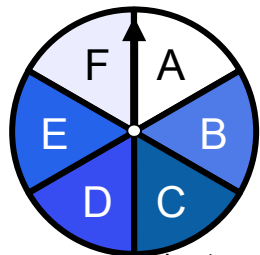


Axmed

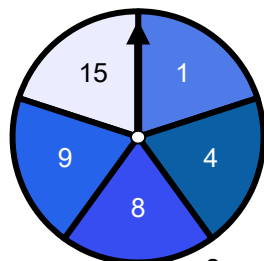
Waxaan u malaynayaa inaad jaantuska Venn (Venn diagram) u isticmaali karto oo keliya noocyada su'aalaha gaarka ah.



Nuur



wareejiyaha 1
(spinner 1)



wareejiyaha 2
(spinner 2)

Jaantusyada Venn (Venn diagrams) aad bay u waxtar u leeyihiin kala-saarista natiijooyinka tijaabada (trial) dhacdooyinka (events).

Tusaale ahaan, wareejiyaha 2 (spinner 2) ayaa la wareejin doonaa hal mar. Waa maxay natiijooyinka dhacdooyinka (events) ah in wareejiyuhu ku soo degto lambar siman (even) ama labajibbaaran (square)?

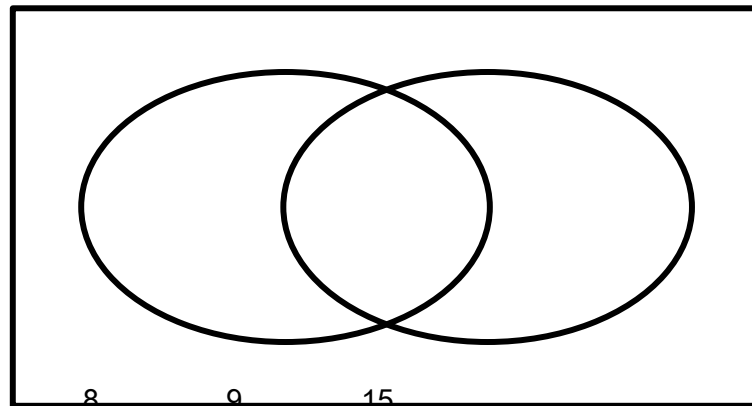
Jawaabaha:

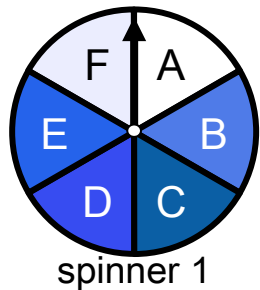
ξ labajibbaaran
(square)

siman (even)

1

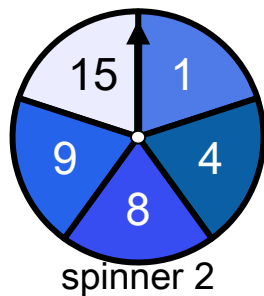
4





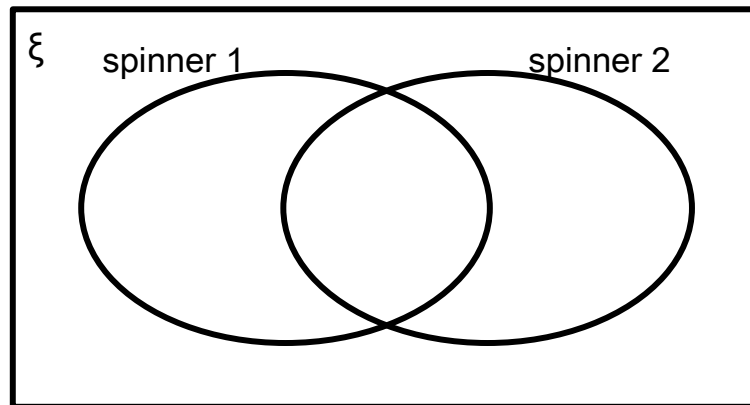
Si kastaba ha ahaatee, jaantusyada Venn ma aha kuwo waxtar u leh in si nidaamsan loo qoro dhammaan natiijooyinka tijaabo laba heer ah.

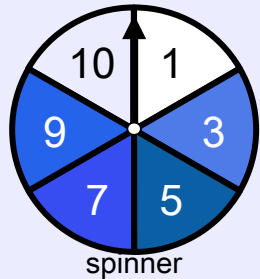
Tusaale ahaan, ma jiro hab nidaamsan oo lagu qoro dhammaan natiijooyinka jaantuska Venn haddii spinner 1 iyo spinner 2 la wareejiyo hal mar mid kasta.



Xagee ayay natiijada {A8} ku tagi doontaa jaantuskan Venn?

???



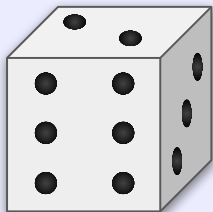


Yacquub wuxuu wareeji doonaa spinner-ka oo wuxuu duubi doonaa dies-kan caadiga ah ee 6 dhinac ah oo tirooyinka 1 ilaa 6 ku qoran yihiin wejigiisa.

Kee mid ka mid ah kuwan ayaa Yacquub u isticmaali karaa si nidaamsan u qoro dhammaan natiijooyinka tijaabadan laba heer ah?



Yacquub



dice



a

liis



b

jaantuska natiijada



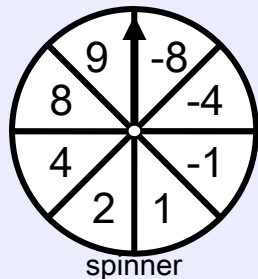
c

geedka natiijada

d

jaantuska Venn

Jaantusyada Venn ma aha kuwo waxtar u leh si nidaamsan loo qoro natiijooyinka tijaabo laba heer ah ama ka badan.



Yacquub wuu wareejiyaa wareejiyahan (spinner) wuxuuna tixgelinayaa dhacdooyinka ah in wareejiyuhu ku soo degto tiro taban (negative number) iyo tiro kisi (odd number).

Midkee ka mid ah kuwani ayuu Yacquub u isticmaali karaa si uu si nidaamsan ugu qoro dhammaan natiijooyinka labadan dhacdo?



Yacquub



jadwalka natiijooyinka
(outcome table)

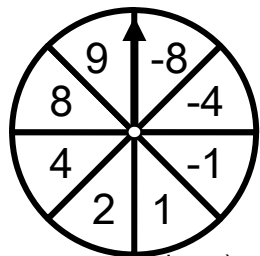
geedka natiijooyinka (outcome
tree)

Kuwani oo dhami waxay kaa caawiyaan kala-saarista
natiijooyinka dhacdooyin kala duwan.

Jawaabaha:

liis

jaantuska Venn (Venn
diagram)

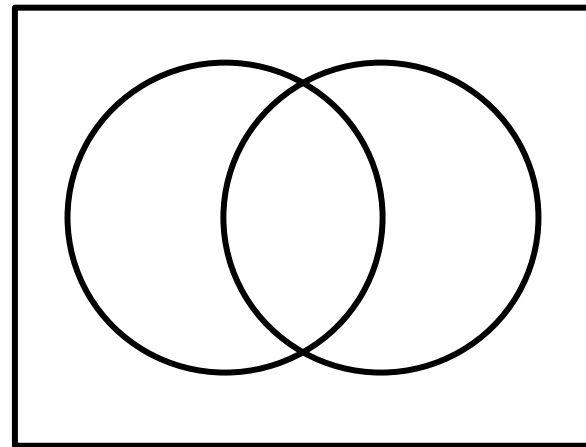
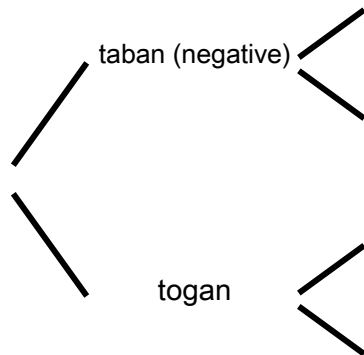


wareeg (spinner)

1) Yacquub wuu wareejiyaa wareejiyahan (spinner) wuxuuna tixgelinayaa dhacdooyinka ah in wareejiyuhu ku soo degto tiro taban (negative number) iyo tiro kisi (odd number).

- a) Buuxi jaantus kasta oo labadan dhacdo ah.
b) Qor jumlad sharraxaysa jaantuska aad doorbidayso.

	taban (negative)	togan (positive)
kisi (odd)		
xigsi (even)		



Jawaabaha:

ε taban (negative) kisi (odd) kisi (odd) xigsi (even) kisi (odd) xigsi (even)

2) Suad waxay dooran doontaa cunto bilow ah iyo cunto weyn.

a) Adigoo dooranaya laba matalaad oo kala duwan, qor natiijooyinka suurtagalka ah ee cuntada Suad.

b) Qor jumlad sharraxaysa sababta aad u dooratay labadaas matalaad.

Cuntooyinka bilowga

Maraq Leek

Rooti Prawn

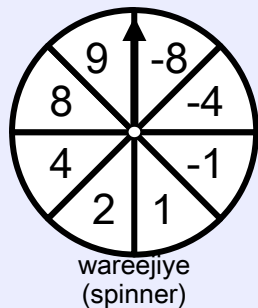
Cuntooyinka weyn

Lasagne Hilibka Lo'da

Bastada Adhiga (Shepherd's
Pie)

Burger Digaag

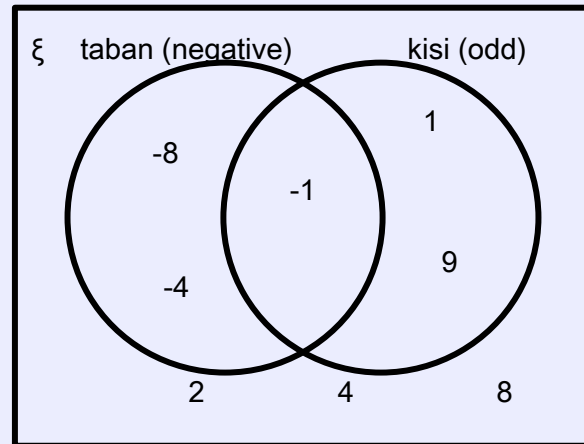
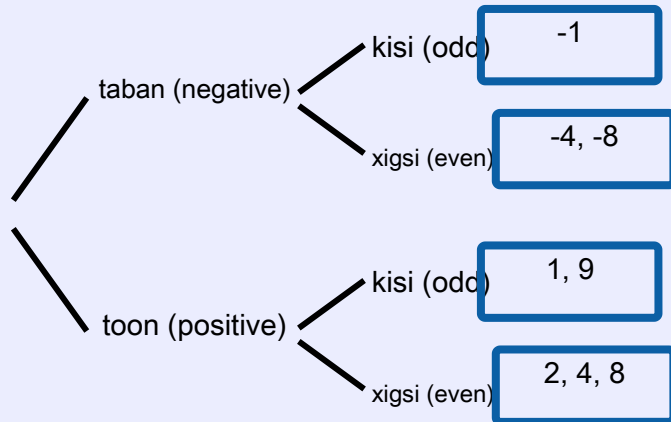
Curry Yaanyo



1) Yacquub wuxuu wareejiin doonaa wareeggan (spinner) wuxuuna tixgelin doonaa dhacdooyinka in wareeggu ku soo degayo tiro taban iyo tiro khayaali ah.

- a) Buuxi jaantus kasta oo loogu talagalay labadan dhacdo.
b) Qor jumlad sharraxaysa jaantuska aad doorbidayso.

	taban	togan
khayaali (odd)	-1	1, 9
xigsi (even)	-4, -8	2, 4, 8



Hawsha B Isticmaalka jaantusyo badan (multiple diagrams)



Jawaab

2) Suad waxay dooran doontaa cunto bilow ah iyo cunto weyn.

a) Adoo dooranaya laba matalaad oo kala duwan, qor natiijooyinka suurtagalka ah ee cuntada Suad.

Cuntooyinka bilowga (Starters)

Maraq Leek (Leek Soup)
Rooti Prawn (Prawn Toast)

Cuntooyinka weyn (Mains)

Lasagne Hilib (Beef Lasagne)
Bastada Adhiga (Shepherd's
Pie)
Burger Digaag (Chicken
Burger)
Curry Yaanyo (Tomato Curry)

Matalaadahan ayaa laga yaabaa in la doorto:
liis (listing), shax natiijo (outcome table), iyo
geed natiijo (outcome tree)

Halkan waxaa ah tusaale shax natiijo (outcome table) oo matalaysa tijaabadan laba-tallaabo ah.

	B	S	C	T
L	LB	LS	LC	LT
P	PB	PS	PC	PT

b) Qor jumlad sharraxaysa sababta aad u dooratay labadaas matalaad.

2) Suad waxay dooran doontaa cunto bilow ah iyo cunto weyn.

b) Qor jumlad sharraxaysa sababta aad u dooratay labada matalaad (representations).

Cuntooyinka Bilowga (Starters)

Maraq Lees (Leek Soup)
Rooti Prawn (Prawn Toast)

Cuntooyinka Waaweyn (Mains)

Lasagne Hilib (Beef Lasagne)
Bastada Adhiga (Shepherd's
Pie)
Burger Digaag (Chicken
Burger)
Curry Yaanyo (Tomato Curry)

Liiska (List) - tirada isku-dhafka suurtoogalka ah waa yar tahay, liisaskuna way fudud yihiin in la qoro.

Shaxda natiijada/geedka (Natiijada table/tree) - waxay fududeysaa in la arko inaan helay dhammaan isku-dhafka suurtoogalka ah.

Soo koobid

Waa suurto gal in macluumaadka laga wareejiyo jaantus liisaya natiijooyinka tijaabo ama laba dhacdo jaantus kale.

Liisaska (Lists), shaxda natiijada, iyo geedka natiijada (outcome trees) dhammaantood waxaa loo isticmaali karaa si nidaamsan in liis la sameeyo dhammaan natiijooyinka suurto gal ah ee tijaabo laba-tallaabo ah (two-stage trial).

Inkasta oo jaantusyadani dhammaantood loo isticmaali karo tijaabo kasta oo laba-tallaabo ah, jaantus mid ah ayaa laga yaabaa in laga doorbido mid kale iyadoo ku xiran duruufaha.

Liisaska (Lists), shaxda natiijada, geedka natiijada (outcome trees), iyo jaantusyada Venn (Venn diagrams) dhammaantood waxaa loo isticmaali karaa in natiijooyinka tijaabo loo kala saaro dhacdooyin (events).