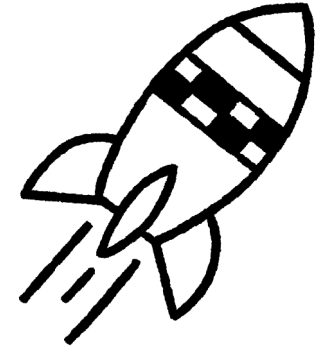


Kala duwanaansho joogto ah: maaraynta iyo falanqaynta xogta

Sayniska

Cutub: Kala duwanaansho (farqiga u dhexeeya noocyada)



Natiijo

Waxaan ku sawiri karaa xogta kala duwanaanshaha joogtada ah ee histogram-ka waxaanan soo jeedin karaa sababaha suurtagalka ah ee kala duwanaanshaha.

Erayada muhiimka ah

kala duwanaansho joogto ah

Kala duwanaansho qaadan kara mid ka mid ah qiimayaal badan oo ku kala duwan xad joogto ah.

garaaf xariiq (line graph)

Garaaf muujinaya xog joogto ah oo loo sawiray dhibco isku xiran xariiq.

histogram

Garaaf muujinaya xog joogto ah oo loo kala saaray xaddiyo oo loo sawiray tiirar taabanaya.

deegaanka (environment)

Qodobo ku xeeran noolaha (organism) saameeya astaamihiisa.

hidde (genetic)

La xidhiidha maaddada hidde-sidaha (DNA) iyo hiddo-wadaha uu qofku leeyahay.

Qaabka casharka

Kala duwanaansho joogto ah: maaraynta iyo falanqaynta xogta



Sawirista xogta joogtada ah



Falanqaynta xogta iyo gabagabada

Waxaa jira kala duwanaansho u dhexeeya shakhsiyaadka gudaha noocyada.

Qaar ka mid ah astaamaha waxay leeyihiin kala duwanaansho joogto ah.

Astaamaha leh kala duwanaansho joogto ah waxaa lagu qiyaasaa qiimayaal tiro.

Dhererka iyo cufka waa tusaalayaal.

Waxay qaadan karaan qiyam badan (laga yaabee qiyam aan xad lahayn) oo ku dhex jira kala duwanaansho joogto ah (continuous range).



tufaaxa way ku kala duwan yihiin cufkooda (mass)

Qorsheynta xogta joogtada ah (continuous data)



Waa maxay kala duwanaanshaha joogtada ah (continuous variation)?

a

Kala duwanaansho qaybsan (categorical) (loo qaybiyey qaybo gaar ah).

b

Kala duwanaansho dhacda wakhti kasta.

c

Kala duwanaansho qaadan karta mid ka mid ah qiyam badan oo ku dhex jira kala duwanaansho joogto ah (continuous range).



Qorsheynta xogta joogtada ah (continuous data)

Indho-indhaynta kala duwanaanshaha joogtada ah (continuous variation) waxay ina siinaysaa faafin cabbiro ah oo ku dhex jira kala duwanaansho joogto ah (continuous range).

Tixgeli dhererka shan arday oo Sannadka 8 ah:

Arday	Dhererka (cm)
A	138
B	144
C	161
D	136
E	149

Haddii aan cabbirno 100 arday oo Sannadka 8 ah, waxaan heli lahayn qiyam aad u badan oo ku dhex jira kala duwanaanshaha 136 – 161 cm, iyo laga yaabee qaar ka baxsan kala duwanaanshahan.

Haddii aan ku cabbirno saxnaan (precision) weyn, waxaan diiwaangelin karnaa dhererka ilaa mm-ka ugu dhow, taasoo soo saari karta qiyam badan oo suurtagal ah.

Way adag tahay in la arko qaababka (patterns) xogta (data) ku jira.

Kooxaynta xogta (data) ee kala duwanaanshaha (ranges) waxay naga caawisaa inaan aragno qaababka (patterns).

Arday	Dhererka (cm)
A	138
B	144
C	161
D	136
E	149

Jawaabaha:

0

0

Dhererka waxaa loo kooxeyay kala duwanaansho (ranges).

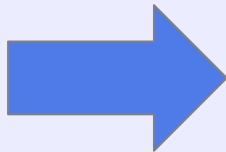


Dhererka (cm)	Soo noqnoqoshada (Frequency)
130 – 139	2
140 – 149	2
150 – 159	
160 – 169	1
170 – 179	

Qorsheynta xogta (data) joogtada ah (continuous data)

Kooxay xogta (data) u kala qaybi (ranges).

Arday	Dhererka (cm)
F	167
G	152
H	149
I	150
J	165
K	156
L	178



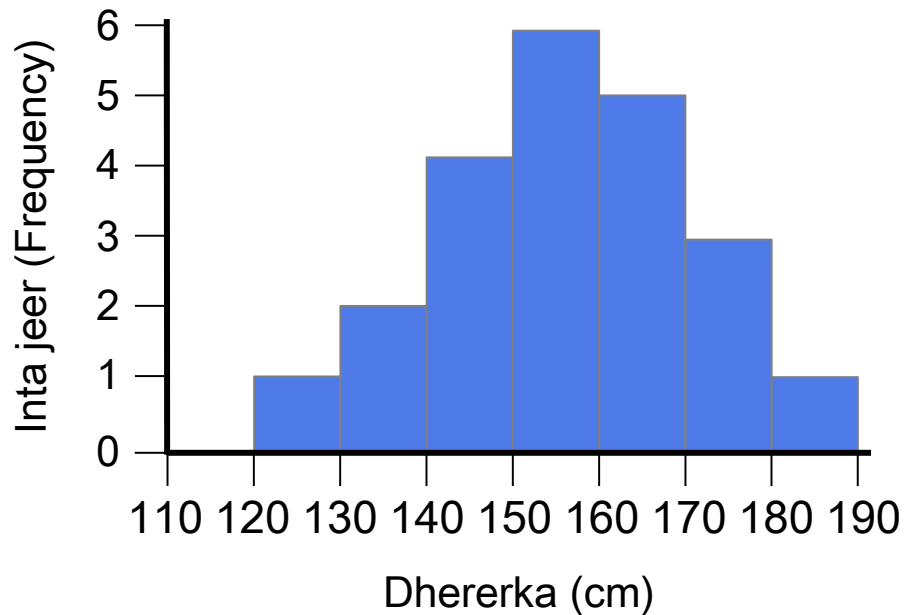
Dhererka (cm)	Inta jeer (Frequency)
130 – 139	
140 – 149	
150 – 159	
160 – 169	
170 – 179	

Qorsheynta xogta (data) joogtada ah (continuous data)

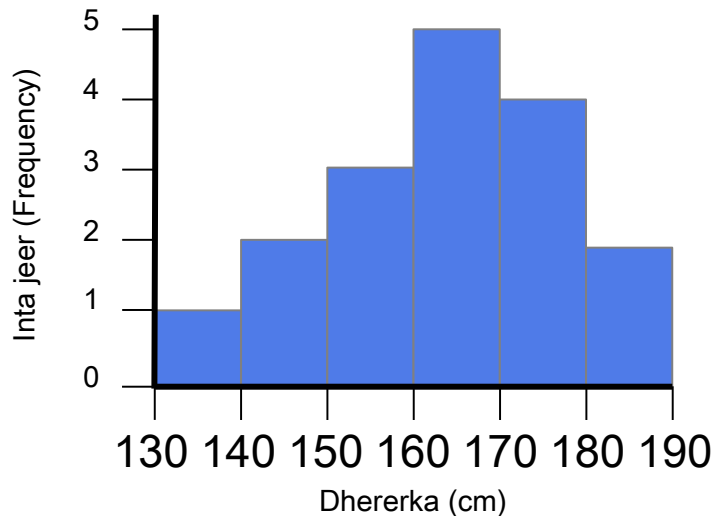
Haddii aan haysano xog (data) badan, waxaan ku sawiri karnaa qaybaha (ranges) iyo inta jeer (frequencies) jaantus (graph) si ay u fududaato in la arko isbeddellada (trends) iyo qaababka (patterns).

Noocan xogta (data) waxaa loo sawiraa jaantus (histogram).

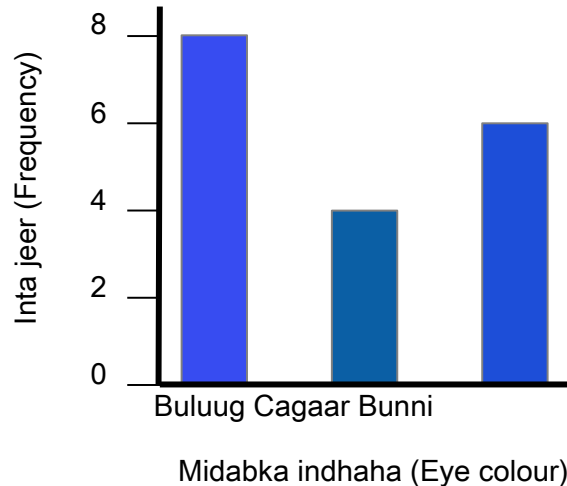
Jaantuska (histogram) wuxuu muujiyaa qaybaha xogta (data ranges), iyadoo inta jeer (frequencies) loo sawiray tiirar (columns) taabanaya.



Jaantuska (histogram) wuu ka duwan yahay jaantuska (bar chart).



Jaantuska (histogram) wuxuu muujiyaa xog (data) joogto ah (continuous) oo ku qaybsan tiirar (columns) taabanaya.



Jaantuska (bar chart) wuxuu muujiyaa xog (data) aan joogto ahayn (discontinuous) oo ku qaybsan qaybo (categories) tiirar (columns) aan taabanayn.

Qorsheynta xogta (data) joogtada ah (continuous data)



Isticmaal ereyada sanduuqa ku qor si aad u dhamaystirto jumladaha.

qaybaha (categories) joogtada ah (continuous) kala go'a (discontinuous) kala duwanaanshaha (ranges)

Jaantuska 'histogram' wuxuu muujiyaa xogta _____

oo lagu sawiray _____ sida tiirar istaaban.

Jaantuska 'bar chart' wuxuu muujiyaa xogta _____

oo lagu sawiray _____ sida tiirar aan istaaban.

Jawaabaha:

joogtada ah (continuous)

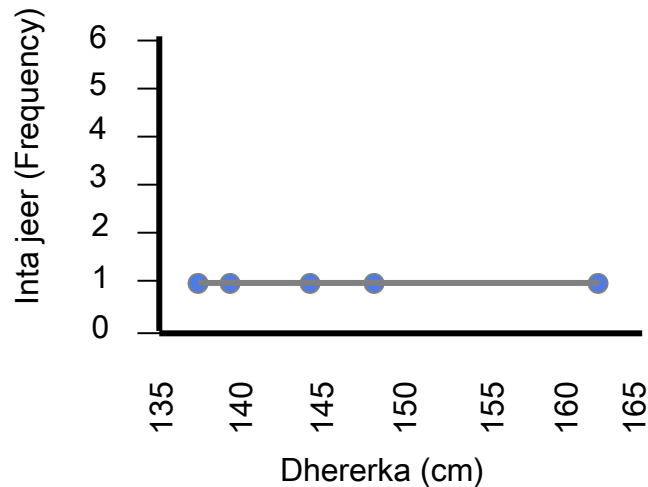
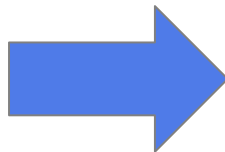
kala duwanaanshaha (ranges)

kala go'a (discontinuous)

qaybaha (categories)

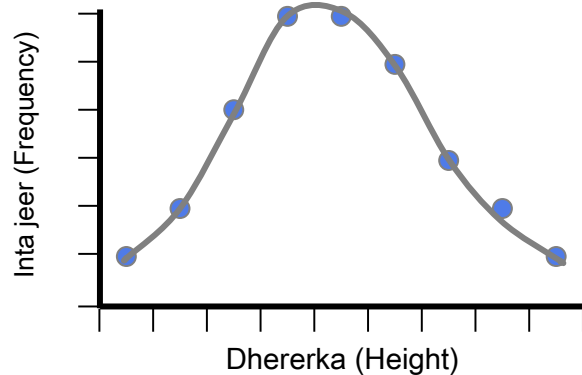
Xogta joogtada ah (continuous data) waxaa sidoo kale loo soo bandhigi karaa jaantus xariiq (line graph).

Arday	Dhererka (cm)
1	138
2	144
3	161
4	136
5	149



Sawiridda xogtan sidan oo kale ma caawinayso marka ay jiraan dhibco xog oo yar.

Haddii aan haysanno xog badan, jaantus xariiq (line graph) wuxuu noqon karaa mid waxtar leh.

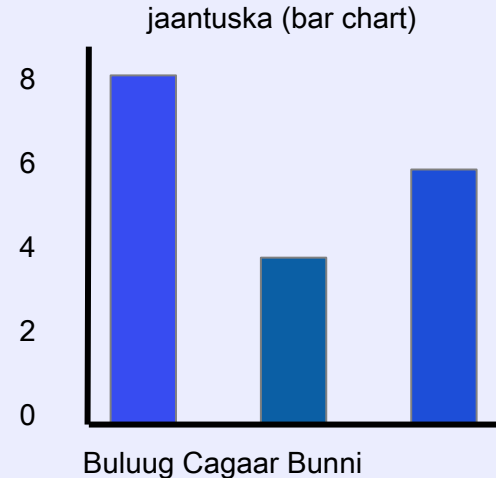
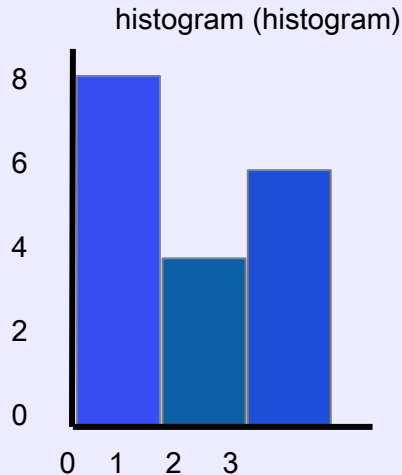
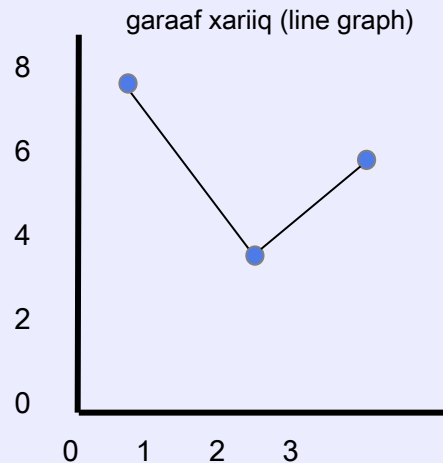


Ku daridda xariiqda ugu habboon (line of best fit) dhex maraysa dhibcaha sawiran waxay fududaynaysaa in la arko isbeddellada iyo qaababka.

Tusaalahan:

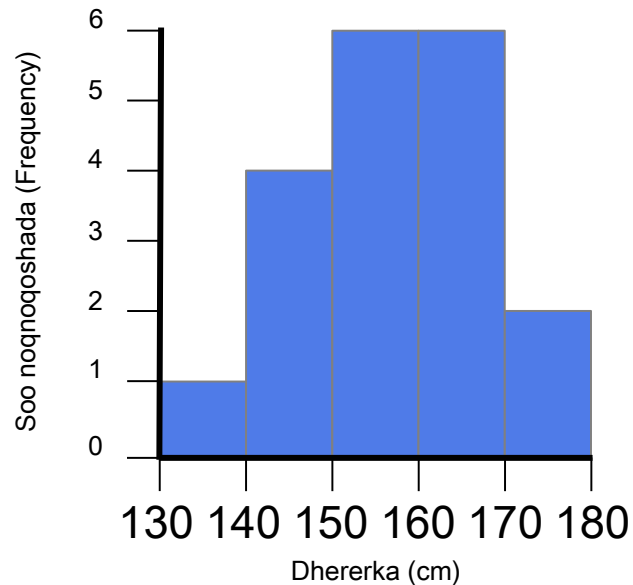
- Dhererka dhexda ee kala duwan ayaa ah kuwa ugu badan.
- Dad aad u gaaban ama aad u dheer ayaa aad u yar.

Garaafkee ama garaafyadaas ayaa ku habboon in lagu sawiro xogta joogtada ah (continuous data)?



Waxaan u soconaa inaan sawirno histogram (histogram) ee xogta joogtada ah (continuous data).

Dhererka (cm)	Soo noqnoqoshada (Frequency)
130 – 139	1
140 – 149	4
150 – 159	6
160 – 169	6
170 – 179	2



Sawirista xogta joogtada ah (continuous data)

Si loo habeeyo xogta loogu talagalay sawirista:

1. Samee jaantus (table) oo ah kala duwanaanshaha xogta, tusaale ahaan:
 - dhererka oo loo qaybiyay 10 cm oo kala duwan.
2. Xog kasta oo shakhsi ah u gudub oo ku tiri (tally) qaybta saxda ah.

Arday	Dhererka (cm)	Dhererka (cm)	Tiri (Tally)	Dherer (Height) (cm)	Inta jeer (Frequency)
1	138	130 – 139		130 – 139	2
2	144			140 – 149	2
3	161	150 – 159		150 – 159 //	0

Jawaabaha:

3. U beddel tiriyada (tallies) tirooyin.

Si loo sameeyo histogram (histogram):

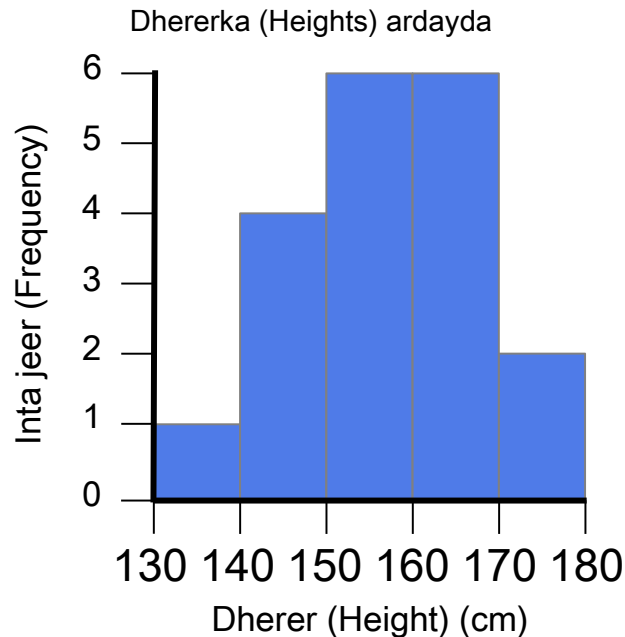
1) Sawir dhidibka x (x-axis) (dherer (height)):

- U qoondee tiir (column) qayb kasta. Waa inaysan jirin farqi (gap) u dhexeeya tiirarka.
- Ku dar calaamado (labels) tiir kasta, iyo calaamad (label) dhidibka.

2) Sawir dhidibka y (y-axis) (inta jeer (frequency)):

- Hubi in tirooyinku kor u kacayaan kordhin isle'eg (evenly-spaced increments).
- Sawir tiirarka (columns) ilaa dhererka (height) saxda ah.
- Midabee ama hoos ka hadh (shade) tiirarka.
- Calaamadee (Label) dhidibka.

3) Ku dar cinwaan (title) garaafka (graph).

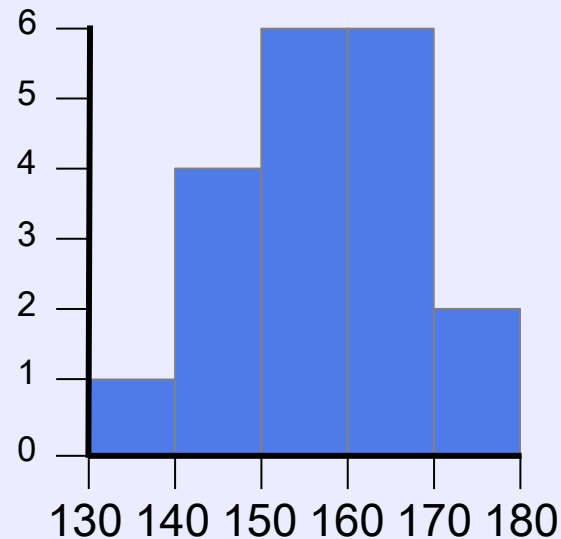


Calaamadee (label) kee baa dhigi doona dhidibka y (y-axis)?

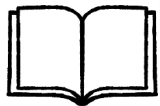
a Inta jeer (Frequency) ✓

b Dherer (Height)

c Kala duwanaansho (Range)



Waxaa laga yaabaa inaad urursatay xogtaada joogtada ah (continuous data) oo aad qorsheyn karto.



Haddii kale, isticmaal xogta ceyriinka ah (raw data) ee ku qoran warqadda shaqada (worksheet).

1) U beddel xogtaada ceyriinka ah xog soo noqnoqota (frequency data) iyadoo la adeegsanayo kala duwanaansho (ranges) ku habboon, adigoo isticmaalaya tirid (tally).

2) Sawir histogram (histogram) si aad u muujiso xogta. Hubi in garaafkaagu uu leeyahay:

- dhidibyo calaamadsan (labelled axes);
- miisaan ku habboon (appropriate scale);
- xariijimo toos ah oo lagu sawiray xisaabiyaha (ruler) iyo qalin (pencil);
- cinwaan (title).



- 1) Xogtaada soo noqnoqota (frequency data) waxay u ekaan kartaa tusaalooyinkan:

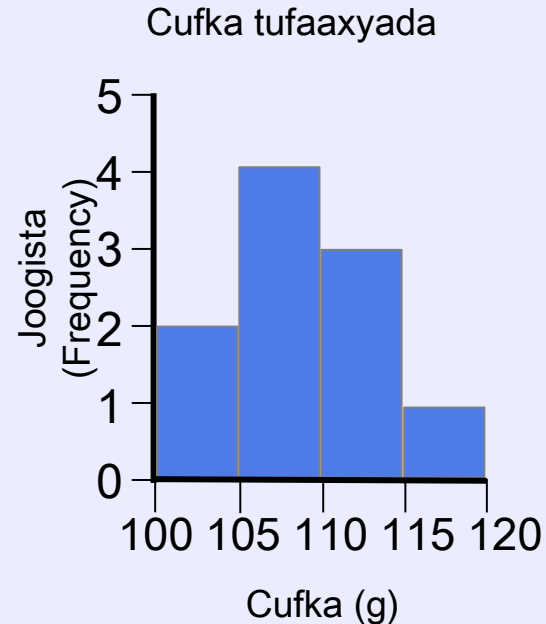
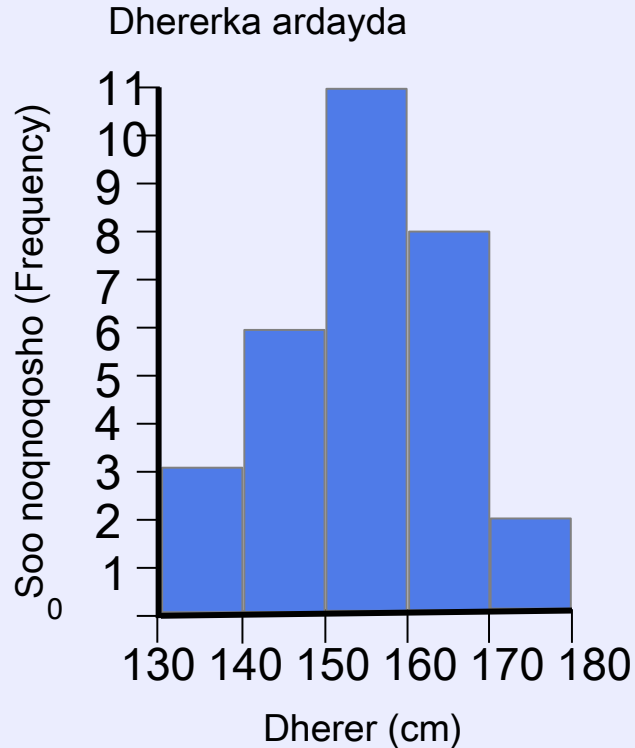
Dhererka ardayda (Heights of students)

Dherer (cm)	Soo noqnoqosho (Frequency)
130 – 139	3
140 – 149	6
150 – 159	11
160 – 169	8
170 – 179	2

Cufisyada tufaaxyada (Masses of apples)

Cufis (g)	Soo noqnoqosho (Frequency)
100 – 104	2
105 – 109	4
110 – 114	3
115 – 119	1

2) Histogram-kaagu (histogram) wuxuu u ekaan karaa tusaalooyinkan:



Qaabka casharka

Kala duwanaanshaha joogtada ah: maaraynta iyo falanqaynta xogta



Qorista xogta joogtada ah (Plotting continuous data)

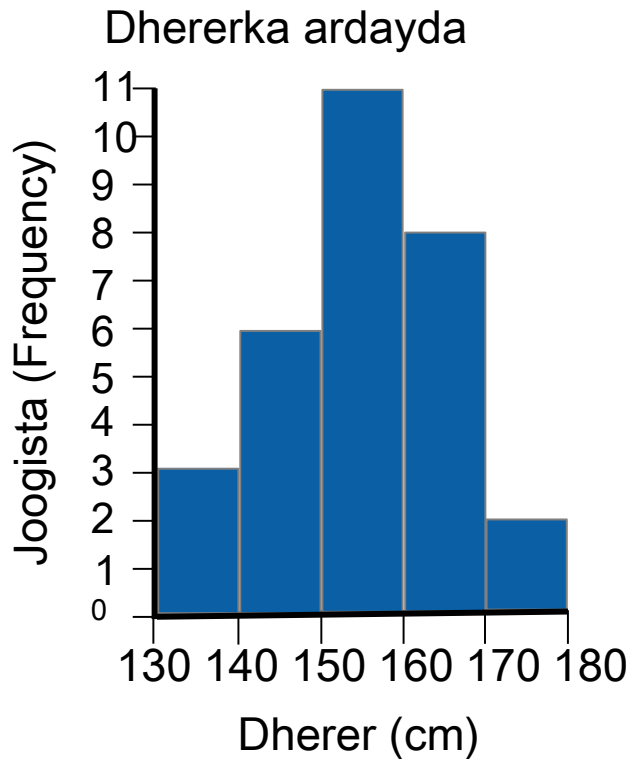


Falanqaynta xogta iyo gabagabada

Waxaan ku qeexi karnaa xogta histogram-ka anagoo ka bilaabayna kala-dhaca ugu joogista badan (most frequent range) annagoo dibadda uga shaqaynayna:

11 arday oo fasalka ku jira ayaa dhexeeyay 150 iyo 159 cm dherer, taas oo ahayd tan ugu badan.

Dhererka labada dhinacba wuu ka yaraa, iyadoo 130–139 cm (3 arday) iyo 170–179 cm (2 arday) ay ahaayeen kuwa ugu yar.



Laga soo bilaabo histogram-ka, soo koobiddee ayaa ugu habboon?

a

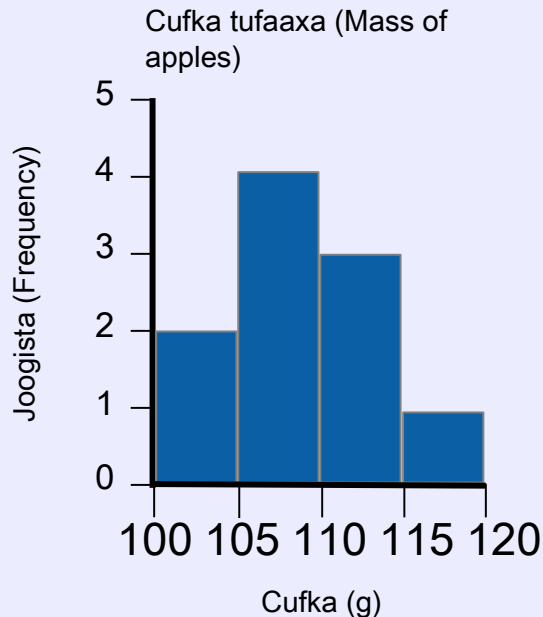
Kala-duwanaanta cufka (range) ee la diiwaangeliyay waxay ahayd 19 g.

b

Tufaaxyada badankood waxay miisaankoodu ahaa inta u dhaxaysa 106 g iyo 110 g.

c

3 tufaax ayaa ahaa kuwa ugu fudud ama ugu culus.



Falanqaynta xogta iyo gabagabada (Data analysis and conclusion)

Waxaa jira arrimo badan oo saameeya astaamaha noole (organism):



hishidaha
(genetics)



deegaanka (environment)



doorashada hab-nololeedka
(lifestyle choices)

Falanqaynta xogta iyo gabagabada (Data analysis and conclusion)

Kala-duwanaanshaha joogtada ah (Continuous variation) waxaa badanaa saameeya arrimo badan, oo ay ku jiraan hidh-sidaha (genetics) iyo deegaanka (environment) / hab-nololeedka (lifestyle).

Dhererku waa tusaale kala-duwanaanshaha joogtada ah (continuous variation):

- Dhererkaaga ugu sarreeya wuxuu ku xiran yahay hidde-yadaada (genes).
- Waxaa sidoo kale saameeya hab-nololeedkaaga (lifestyle), gaar ahaan cuntadaada.
- Uma badna inaad gaadho dhererkaaga ugu sarreeya haddii aad ku noolaan lahayd aag cuntadu liidato oo cuntada xaddidan tahay.



Falanqaynta xogta iyo gabagabada (Data analysis and conclusion)

Run mise been?

Wareegga jirrida geedka waa inuu saameeyaa oo kaliya hidde-yada geedka (genes).



Run



Been



Sabab u sheeg jawaabtaada

a

Astaamaha leh kala-duwanaanshaha joogtada ah (continuous variation) waxaa badanaa saameeya arrimo deegaanka (environmental factors).



b

Astaamaha leh kala-duwanaanshaha joogtada ah (continuous variation) waxaa keena oo kaliya hidh-sidaha (genetics).

1) Falanqee xogtaada oo qor gabagabo.

Gabagabadaadu waa inay:

- Sharaxdo isbeddellada xogta (trends).
- Soo jeediso nooca kala-duwanaanshaha (variation) ee xogtu muujinayso.
- Soo jeediso sababta kala-duwanaanshaha (variation).
- Soo jeediso waxa laga yaabo inaanu sabab u ahayn kala-duwanaanshaha (variation).

1) Falanqee xogtaada (data) oo qor gunaanad (conclusion).

Gunaanadkaagu (conclusion) waxaa laga yaabaa inuu u ekaado tan:

- 11 arday oo fasalka ku jira ayaa dhexyaacay 150 iyo 159 cm, taas oo ahayd tan ugu badan.
- Dhererka labada dhinacba wuxuu ahaa mid aan caadi ahayn, iyadoo 130–139 cm (3 arday) iyo 170–179 cm (2 arday) ay ahaayeen kuwa ugu yar.
- Ardayga ugu dheer wuxuu ahaa 173 cm, kan ugu gaabanna wuxuu ahaa 136 cm; kala duwanaansho (range) ah 37 cm.
- Tani waa tusaale kala duwanaansho joogto ah (continuous variation).
- Kala duwanaanshaha dhererka waxaa sababi kara hiddo-wadaha (genetics) shakhsiyaadka iyo qaab nololeedkooda, oo ay ku jiraan cuntada (diet).

1) Falanqee xogtaada (data) oo qor gunaanad (conclusion).

Gunaanadkaagu (conclusion) waxaa laga yaabaa inuu u ekaado tan:

- 4 tufaax ayaa culeyskoodu ahaa inta u dhaxaysa 106 iyo 110 g, taas oo ahayd tan ugu badan.
- Hal tufaax oo kaliya ayaa culeyskiisu ahaa inta u dhaxaysa 116 iyo 120 g, labana inta u dhaxaysa 101 iyo 105 g.
- Tufaaxa ugu culus wuxuu ahaa 117 g, kan ugu fududna wuxuu ahaa 101 g; kala duwanaansho (range) ah 16 g.
- Tani waa tusaale kala duwanaansho joogto ah (continuous variation).
- Kala duwanaanshaha culeyska waxaa sababi kara hiddo-wadaha (genetics) geedka tufaaxa iyo deegaanka (environment), oo ay ku jiraan cimilada (weather) iyo helitaanka biyaha (water).

- **Kala duwanaanshaha joogtada ah (Continuous variation) ee sifada (feature) waa la qiyaasi karaa oo loo sawiri karaa sida histogram (histogram) ama garaaf xariiq (line graph).**
- Histogram (Histogram) wuxuu soo bandhigaa xog joogto ah (continuous data) oo ku qaybsan xaddiyo (ranges) oo loo sawiray tiirar (columns) taabanaya.
- Xog-yaraha (small data sets), histogram (histogram) oo muujinaya joogteynta (frequency) xaddiyada (ranges) xogta ayaa ku habboon garaaf xariiq (line graph).
- Kala duwanaanshaha joogtada ah (Continuous variation) wuxuu leeyahay arrimo saameeya oo dhowr ah, oo ay ku jiraan hiddo-wadaha (genetics), deegaanka (environment) iyo qaab nololeedka (lifestyle).

