

"ANIMAL KINGDOM"

Hadza



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SIMBA



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*by*

SAM AHMED



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with thanks to  
Richard Griscom  
Andrew Harvey  
Kirk Miller



Hadza language

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- spoken near Lake Eyasi in Tanzania



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- Hadza people (*Hadzabe*) have been called "the last hunter-gatherer society in Africa"

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2. **athuitcha slimibii** *the men's axe (for collecting honey)*
3. **panjubeema popho** *the male impala's l. transvaalensis tubers*
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vowel changes?

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# Word order: Possession Owner

1. chutisa zzokwanako the giraffe's neck
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11. athobeema sleme the man's axes (for splitting firewood)
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19. wiriko ?
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21. mu'a
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- A. tails (e.g., of leopards)
- B. thin twig
- C. horns (e.g., of dik-diks)
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Word order: Possession Owner

possession ends in sa  
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possession ends in sa (i)tcha



owner ends in ko bii

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owner ends in ko bii

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bii- + -itcha > biitcha?

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u ↔ o

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| 21. mu'a     | C. horns (e.g., of dik-diks) |
| 22. zzahubii | D. short, thick root         |

23. gariko
24. makubii
25. hazzakeko
26. dongobee
27. zzahoko
28. nqibii

29. the flamingo's leg
30. the zebra's V. pseudolablab tuber
31. the male impalas' horns
32. the female strangers' thick stick
33. the boys' tall cooking pot
34. the impala's long, thin roots

bii- + -itcha > biitcha?

vowel changes?

i ↔ e

u ↔ o

- |                               |  |
|-------------------------------|--|
| 1. chutisa zzokwanako         | the giraffe's neck                         |
| 2. athuitcha slimibii         | the men's axe (for collecting honey)       |
| 3. panjubeema popho           | the male impala's l. transvaalensis tubers |
| 4. do'aikuitcha sisimbii      | the lions' V. macrorhyncha tuber           |
| 5. uphukwabiitcha zzokwanabii | the male giraffes' legs                    |
| 6. chutikoma beggau           | the male elephant's neck                   |
| 7. uthumeketa dlakwebee       | the girls' spear                           |
| 8. makokoma erati             | the boy's short, wide cooking pot          |
| 9. midlabiisa neeko           | the baboon's bones                         |
| 10. dungubii na hazzake       | the male thief's male zebras               |
| 11. athubeema sleme           | the man's axes (for splitting firewood)    |
| 12. uphukwakosa beggauko      | the elephant's leg                         |
| 13. shumusa nqeko             | the female leopard's V. pseudolablab vine  |
| 14. gogogogoma uhuyiti        | the male stranger's flamingo               |
| 15. uthumesa dlakweko         | the girl's long spear                      |
| 16. do'aisa sesemeko          | the female lion's V. macrorhyncha vine     |
| 17. midlaitcha niibii         | the male baboons' bone                     |
| 18. garibiiteta akhwitibee ?  | the women's lorries                        |

Word order: Possession Owner

possession ends in sa/itcha/eta  
 ←→  
 owner ends in ko/bii/bee

- |              |                              |
|--------------|------------------------------|
| 19. wiriko ? | A. tails (e.g., of leopards) |
| 20. roobee ? | B. thin twig                 |
| 21. mu'a     | C. horns (e.g., of dik-diks) |
| 22. zzahubii | D. short, thick root         |

23. gariko
24. makubii
25. hazzakeko
26. dongobee
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bii- + -itcha > biitcha?  
 vowel changes?  
 i ↔ e  
 u ↔ o

- |                                |  |
|--------------------------------|--|
| 1. chutisa zzokwanako          | the giraffe's neck                         |
| 2. athuitcha slimibii          | the men's axe (for collecting honey)       |
| 3. panjubeema popho            | the male impala's l. transvaalensis tubers |
| 4. do'aikuitcha sisimibii      | the lions' V. macrorhyncha tuber           |
| 5. uphukwa biitcha zzokwanabii | the male giraffes' legs                    |
| 6. chutikoma beggau            | the male elephant's neck                   |
| 7. uthumeketa dlakwebee        | the girls' spear                           |
| 8. makokoma erati              | the boy's short, wide cooking pot          |
| 9. midlabiisa neeko            | the baboon's bones                         |
| 10. dungubii na hazzake        | the male thief's male zebras               |
| 11. athobeema sleme            | the man's axes (for splitting firewood)    |
| 12. uphukwakosa beggauko       | the elephant's leg                         |
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| 15. uthumesa dlakweko          | the girl's long spear                      |
| 16. do'aisa sesemeko           | the female lion's V. macrorhyncha vine     |
| 17. midlaitcha niibii          | the male baboons' bone                     |
| 18. garibieta akhwitibee ?     | the women's lorries                        |

19. wiriko ?
20. roobee ?
21. mu'a
22. zzahubii

- A. tails (e.g., of leopards)
- B. thin twig
- C. horns (e.g., of dik-diks)
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Word order: Possession Owner

possession ends in sa/itcha/eta/ma  
 ←→  
 owner ends in ko/bii/bee/∅

bii- + -itcha > biitcha?  
 vowel changes?  
 i ↔ e  
 u ↔ o

- |                               |  |
|-------------------------------|--|
| 1. chutisa zzokwanako         | the giraffe's neck                         |
| 2. athuitcha slimibii         | the men's axe (for collecting honey)       |
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| 5. uphukwabiitcha zzokwanabii | the male giraffes' legs                    |
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| 8. makokoma erati             | the boy's short, wide cooking pot          |
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| 11. athubeema sleme           | the man's axes (for splitting firewood)    |
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| 13. shumusa nqeko             | the female leopard's V. pseudolablab vine  |
| 14. gogogogoma uhuyiti        | the male stranger's flamingo               |
| 15. uthumesa dlakweko         | the girl's long spear                      |
| 16. do'aisa sesemeko          | the female lion's V. macrorhyncha vine     |
| 17. midlaitcha niibii         | the male baboons' bone                     |
| 18. garibiiteta akhwitibee ?  | the women's lorries                        |

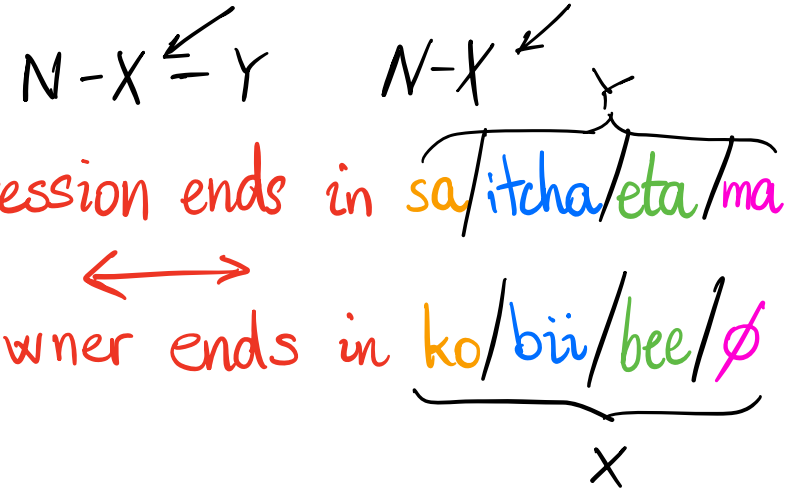
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- A. tails (e.g., of leopards)
- B. thin twig
- C. horns (e.g., of dik-diks)
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Word order: Possession Owner



bii- + -itcha > biitcha?

vowel changes?

i ↔ e

u ↔ o

- |                               |  |
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| 1. chutisa zzokwanako         | the giraffe's neck                         |
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| 4. do'aikuitcha sisimbii      | the lions' V. macrorhyncha tuber           |
| 5. uphukwabiitcha zzokwanabii | the male giraffes' legs                    |
| 6. chutikoma beggau           | the male elephant's neck                   |
| 7. uthumeketa dlakwebee       | the girls' spear                           |
| 8. makokoma erati             | the boy's short, wide cooking pot          |
| 9. midlabiisa neeko           | the baboon's bones                         |
| 10. dungubii na hazzake       | the male thief's male zebras               |
| 11. athubeema sleme           | the man's axes (for splitting firewood)    |
| 12. uphukwakosa beggauko      | the elephant's leg                         |
| 13. shumusa nqeko             | the female leopard's V. pseudolablab vine  |
| 14. gogogogoma uhuyiti        | the male stranger's flamingo               |
| 15. uthumesa dlakweko         | the girl's long spear                      |
| 16. do'aisa sesemeko          | the female lion's V. macrorhyncha vine     |
| 17. midlaitcha niibii         | the male baboons' bone                     |
| 18. garibiiteta akhwitibee ?  | the women's lorries                        |

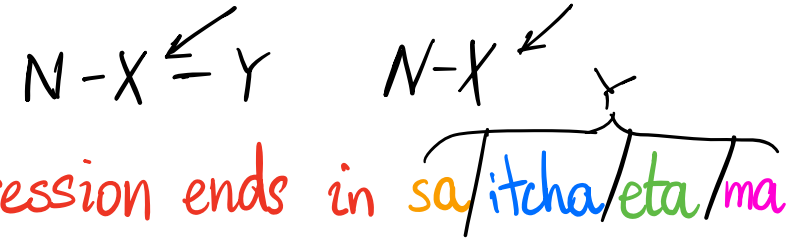
19. wiriko ?
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22. zzahubii

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- B. thin twig
- C. horns (e.g., of dik-diks)
- D. short, thick root

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Word order: Possession Owner



But what do these suffixes express??

bii- + -itcha > biitcha?

vowel changes?

i ↔ e

u ↔ o

- |                               |  |
|-------------------------------|--|
| 1. chutisa zzokwanako         | the giraffe's neck                         |
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| 4. do'aikuitcha sisimbii      | the lions' V. macrorhyncha tuber           |
| 5. uphukwabiitcha zzokwanabii | the male giraffes' legs                    |
| 6. chutikoma beggau           | the male elephant's neck                   |
| 7. uthumeketa dlakwebee       | the girls' spear                           |
| 8. makokoma erati             | the boy's short, wide cooking pot          |
| 9. midlabiisa neeko           | the baboon's bones                         |
| 10. dungubii na hazzake       | the male thief's male zebras               |
| 11. athubeema sleme           | the man's axes (for splitting firewood)    |
| 12. uphukwakosa beggauko      | the elephant's leg                         |
| 13. shumusa nqeko             | the female leopard's V. pseudolablab vine  |
| 14. gogogogoma uhuyiti        | the male stranger's flamingo               |
| 15. uthumesa dlakweko         | the girl's long spear                      |
| 16. do'aisa sesemeko          | the female lion's V. macrorhyncha vine     |
| 17. midlaitcha niibii         | the male baboons' bone                     |
| 18. garibiiteta akhwitibee ?  | the women's lorries                        |

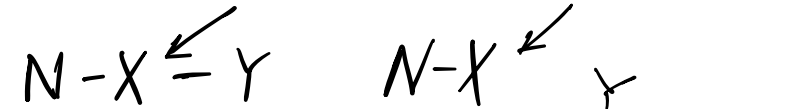
19. wiriko ?
20. roobee ?
21. mu'a
22. zzahubii

- A. tails (e.g., of leopards)
- B. thin twig
- C. horns (e.g., of dik-diks)
- D. short, thick root

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Word order: Possession Owner



possession ends in sa/itcha/eta/ma

owner ends in ko/bii/bee/∅

- ko    - bii    - bee    ∅

bii- + -itcha > biitcha?  
vowel changes?  
i ↔ e  
u ↔ o

- |                               |  |
|-------------------------------|--|
| 1. chutisa zzokwanako         | the giraffe's neck                         |
| 2. athuitcha slimibii         | the men's axe (for collecting honey)       |
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| 4. do'aikuitcha sisimbii      | the lions' V. macrorhyncha tuber           |
| 5. uphukwabiitcha zzokwanabii | the male giraffes' legs                    |
| 6. chutikoma beggau           | the male elephant's neck                   |
| 7. uthumeketa dlakwebee       | the girls' spear                           |
| 8. makokoma erati             | the boy's short, wide cooking pot          |
| 9. midlabiisa neeko           | the baboon's bones                         |
| 10. dungubii na hazzake       | the male thief's male zebras               |
| 11. athubeema sleme           | the man's axes (for splitting firewood)    |
| 12. uphukwako sa beggauko     | the elephant's leg                         |
| 13. shumusa nqeko             | the female leopard's V. pseudolablab vine  |
| 14. gogogogoma uhuyiti        | the male stranger's flamingo               |
| 15. uthumesa dlakweko         | the girl's long spear                      |
| 16. do'aisa sesemeko          | the female lion's V. macrorhyncha vine     |
| 17. midlaitcha niibii         | the male baboons' bone                     |
| 18. garibiiteta akhwitibee ?  | the women's lorries                        |

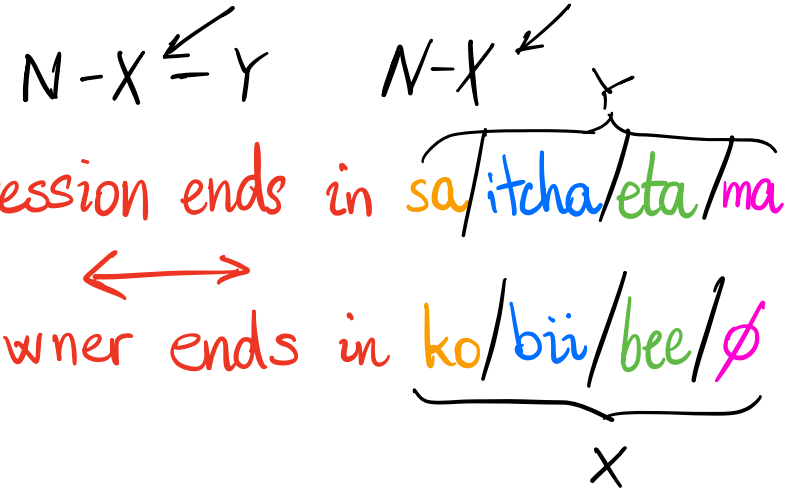
19. wiriko ?  
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- A. tails (e.g., of leopards)  
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Word order: Possession Owner



- ko	- bii	- bee	∅
giraffe	men		neck
neck	lions		axe (honey)
	male giraffes		male elephant
	legs		

bii- + -itcha > biitcha?

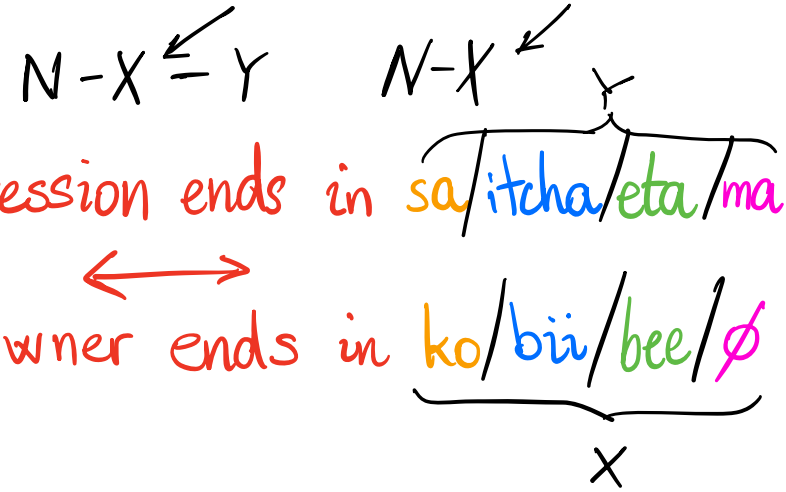
vowel changes?

i ↔ e  
 u ↔ o

1. chutisa zzokwanako
2. athuitcha slimibii
3. panjubeema popho
4. do'aikuitcha sisimbii
5. uphukwa biitcha zzokwanabii
6. chutikoma beggau
7. uthumekeeta dlakwebee
8. makokoma erati
9. midlabiisa neeko
10. dungubii na hazzake
11. athubeema sleme
12. uphukwakosa beggauko
13. shumusa nqeko
14. gogogogoma uhuyiti
15. uthumesa dlakweko
16. do'aisa sesemeko
17. midlaitcha niibii
18. garibiiteta akhwitibee?

- the giraffe's neck  
 the men's axe (for collecting honey)  
 the male impala's I. transvaalensis tubers  
 the lions' V. macrorhyncha tuber  
 the male giraffes' legs  
 the male elephant's neck  
 the girls' spear  
 the boy's short, wide cooking pot  
 the baboon's bones  
 the male thief's male zebras  
 the man's axes (for splitting firewood)  
 the elephant's leg  
 the female leopard's V. pseudolablab vine  
 the male stranger's flamingo  
 the girl's long spear  
 the female lion's V. macrorhyncha vine  
 the male baboons' bone  
 the women's lorries

Word order: Possession Owner



- ko      - bii      - bee      ∅

giraffe      men      neck?

neck?      lions      axe (honey)

male giraffes      male elephant

legs

- A. tails (e.g., of leopards)
- B. thin twig
- C. horns (e.g., of dik-diks)
- D. short, thick root

19. wiriko?
20. roobee?
21. mu'a
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bii- + -itcha > biitcha?

vowel changes?

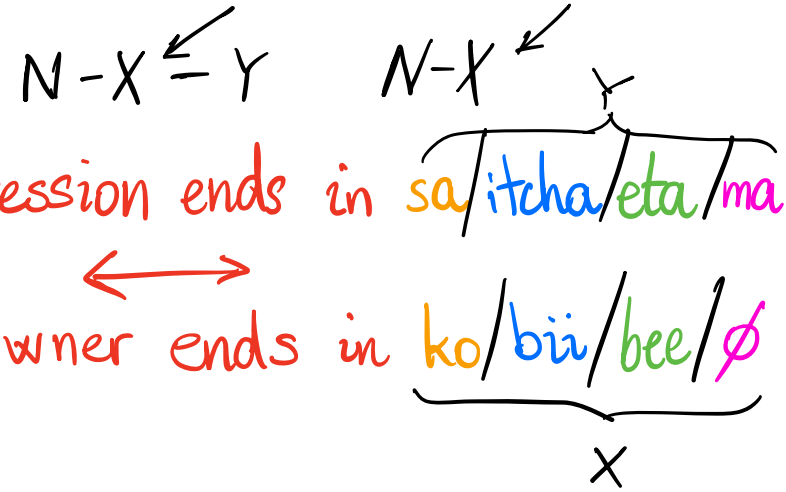
i ↔ e

u ↔ o

- chutisa zzokwanako
- athuitcha slimibii
- panjubeema popho
- do'aikuitcha sisimbii
- uphukwa biitcha zzokwanabii
- chutikoma beggau
- uthumeketa dlakwebee
- makokoma erati
- midlabiisa neeko
- dungubii na hazzake
- athubeema sleme
- uphukwako sa beggau ko
- shumusa nqeko
- gogogogoma uhuyiti
- uthumesa dlakweko
- do'aisa sesemeko
- midlaitcha niibii
- garibiiteta akhwitibee ?

- the giraffe's neck  
 the men's axe (for collecting honey)  
 the male impala's l. transvaalensis tubers  
 the lions' V. macrorhyncha tuber  
 the male giraffes' legs  
 the male elephant's neck  
 the girls' spear  
 the boy's short, wide cooking pot  
 the baboon's bones  
 the male thief's male zebras  
 the man's axes (for splitting firewood)  
 the elephant's leg  
 the female leopard's V. pseudolablab vine  
 the male stranger's flamingo  
 the girl's long spear  
 the female lion's V. macrorhyncha vine  
 the male baboons' bone  
 the women's lorries

Word order: Possession Owner



- wiriko ?
- roobee ?
- mu'a
- zzahubii
- gariko
- makubii
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- A. tails (e.g., of leopards)  
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 D. short, thick root

- ko	- bii	- bee	∅
giraffe	men	girls	<u>neck</u> ?
<u>neck</u> ?	lions	axes (fw)	axe (honey)
spear	male giraffes		male elephant
S.W.C.P.	legs		boy
baboon	bones		male thief
	male zebras		man

bii- + -itcha > biitcha?

vowel changes?

i ↔ e

u ↔ o

1. chutisa zzokwanako
2. athuitcha slimibii
3. panjubeema popho
4. do'aikuitcha sisimbii
5. uphukwa biitcha zzokwanabii
6. chutikoma beggau
7. uthumekeeta dlakwebee
8. makokoma erati
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11. athubeema sleme
12. uphukwakosa beggauko
13. shumusa nqeko
14. gogogogoma uhuyiti
15. uthumesa dlakweko
16. do'aisa sesemeko
17. midlaitcha niibii
18. garibiiteta akhwitibee?

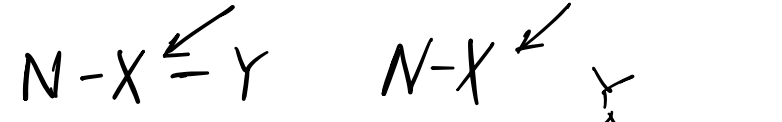
- the giraffe's neck
- the men's axe (for collecting honey)
- the male impala's l. transvaalensis tubers
- the lions' V. macrorhyncha tuber
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- the boy's short, wide cooking pot
- the baboon's bones
- the male thief's male zebras
- the man's axes (for splitting firewood)
- the elephant's leg
- the female leopard's V. pseudolablab vine
- the male stranger's flamingo
- the girl's long spear
- the female lion's V. macrorhyncha vine
- the male baboons' bone
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19. wiriko?
20. roobee?
21. mu'a
22. zzahubii
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- A. tails (e.g., of leopards)
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Word order: Possession Owner



possession ends in sa/itcha/eta/ma



- ko	- bii	- bee	∅
giraffe	men	girls	<u>neck</u> ?
<u>neck</u> ?	lions	axes (fw)	axe (honey)
spear	male giraffes		male elephant
S.W.C.P.	legs		boy
baboon	bones		male thief
	male zebras		man

bii- + -itcha > biitcha?

vowel changes?

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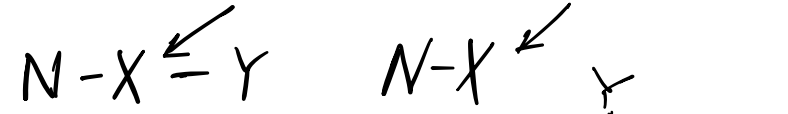
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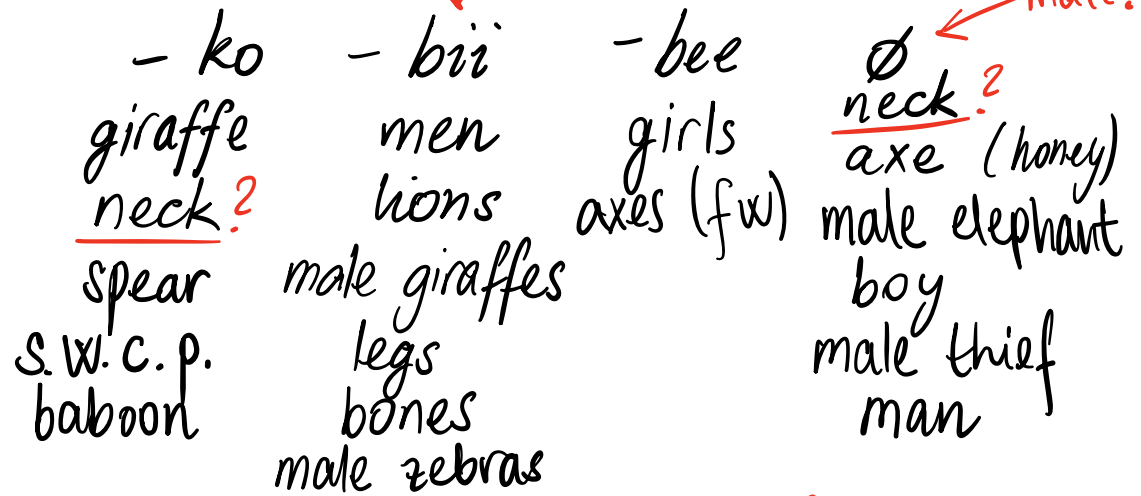
Word order: Possession Owner



possession ends in sa/itcha/eta/ma

owner ends in ko/bii/bee/∅

plurals?



bii- + -itcha > biitcha?

vowel changes?

i ↔ e

u ↔ o

1. chutisa zzokwanako
2. athuitcha slimibii
3. panjubeema popho
4. do'aikuitcha sisimbii
5. uphukwa biitcha zzokwanabii
6. chutikoma beggau
7. uthumekeeta dlakwebee
8. makokoma erati
9. midlabiisa neeko
10. dungubii na hazzake
11. athobeema sleme
12. uphukwakosa beggauko
13. shumusa nqeko
14. gogogogoma uhuyiti
15. uthumesa dlakweko
16. do'aisa sesemeko
17. midlaitcha niibii
18. garibiiteta akhwitibee?

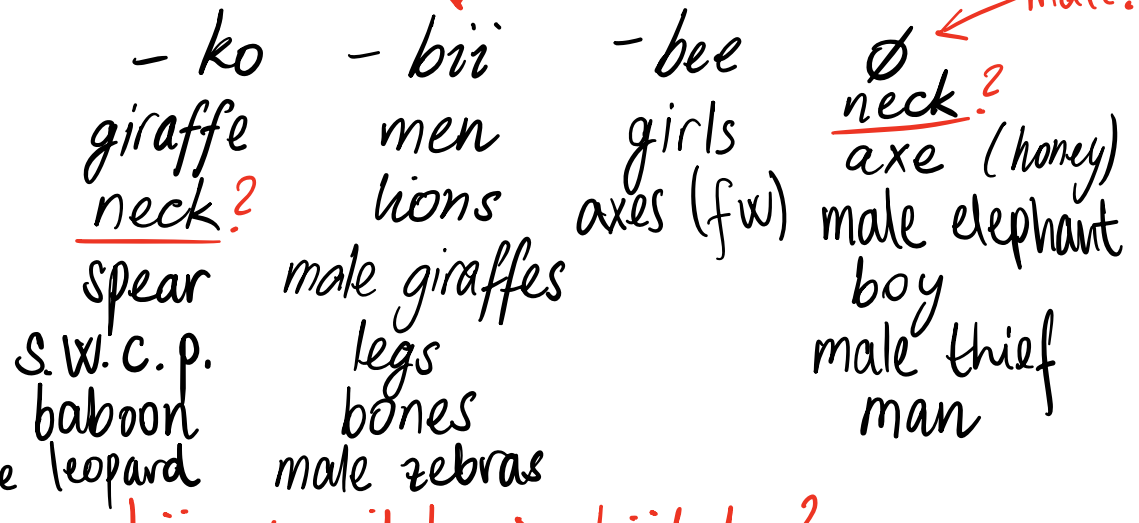
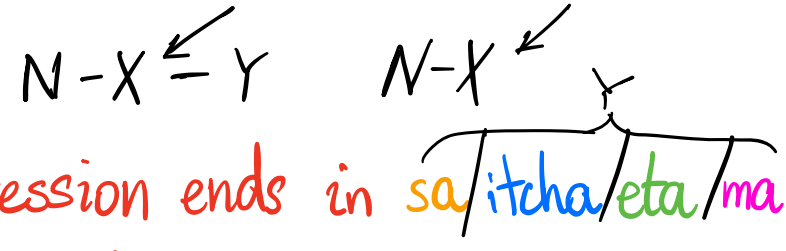
- the giraffe's neck  
 the men's axe (for collecting honey)  
 the male impala's l. transvaalensis tubers  
 the lions' V. macrorhyncha tuber  
 the male giraffes' legs  
 the male elephant's neck  
 the girls' spear  
 the boy's short, wide cooking pot  
 the baboon's bones  
 the male thief's male zebras  
 the man's axes (for splitting firewood)  
 the elephant's leg  
 the female leopard's V. pseudolablab vine  
 the male stranger's flamingo  
 the girl's long spear  
 the female lion's V. macrorhyncha vine  
 the male baboons' bone  
 the women's lorries

19. wiriko?
20. roobee?
21. mu'a
22. zzahubii
23. gariko
24. makubii
25. hazzakeko
26. dongobee
27. zzahoko
28. nqibii

- A. tails (e.g., of leopards)
- B. thin twig
- C. horns (e.g., of dik-diks)
- D. short, thick root

29. the flamingo's leg
30. the zebra's V. pseudolablab tuber
31. the male impalas' horns
32. the female strangers' thick stick
33. the boys' tall cooking pot
34. the impala's long, thin roots

Word order: Possession Owner



bii- + -itcha > biitcha?

vowel changes?

i ↔ e  
 u ↔ o

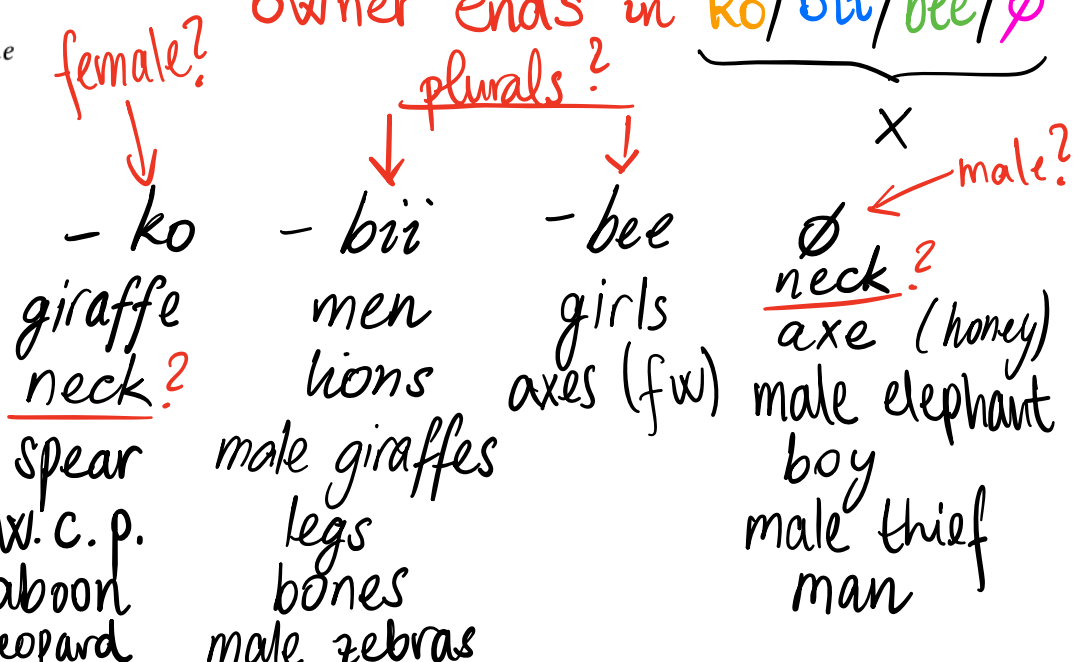
- chutisa zzokwanako
- athuitcha slimibii
- panjubeema popho
- do'aikuitcha sisimbii
- uphukwa biitcha zzokwanabii
- chutikoma beggau
- uthumekeeta dlakwebee
- makokoma erati
- midlabiisa neeko
- dungubii na hazzake
- athobeema sleme
- uphukwakosa beggauko
- shumusa nqeko
- gogogogoma uhuyiti
- uthumesa dlakweko
- do'aisa sesemeko
- midlaitcha niibii
- garibiiteta akhwitibee?

- the giraffe's neck  
 the men's axe (for collecting honey)  
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 the male giraffes' legs  
 the male elephant's neck  
 the girls' spear  
 the boy's short, wide cooking pot  
 the baboon's bones  
 the male thief's male zebras  
 the man's axes (for splitting firewood)  
 the elephant's leg  
 the female leopard's V. pseudolablab vine  
 the male stranger's flamingo  
 the girl's long spear  
 the female lion's V. macrorhyncha vine  
 the male baboons' bone  
 the women's lorries

- wiriko?
- roobee?
- mu'a
- zzahubii
- gariko
- makubii
- hazzakeko
- dongobee
- zzahoko
- nqibii
- the flamingo's leg
- the zebra's V. pseudolablab tuber
- the male impalas' horns
- the female strangers' thick stick
- the boys' tall cooking pot
- the impala's long, thin roots

- tails (e.g., of leopards)
- thin twig
- horns (e.g., of dik-diks)
- short, thick root

Word order: Possession Owner



bii- + -itcha > biitcha?

vowel changes?

i ↔ e  
 u ↔ o

1. chutisa zzokwanako
2. athuitcha slimibii
3. panjubeema popho
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12. uphukwakosa beggauko
13. shumusa nqeko
14. gogogogoma uhuyiti
15. uthumesa dlakweko
16. do'aisa sesemeko
17. midlaitcha niibii
18. garibiiteta akhwitibee?

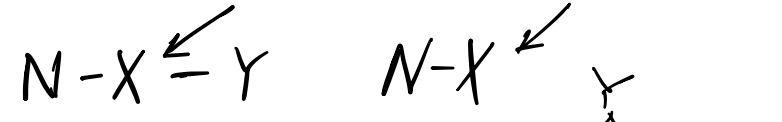
- the giraffe's neck  
 the men's axe (for collecting honey)  
 the male impala's l. transvaalensis tubers  
 the lions' V. macrorhyncha tuber  
 the male giraffes' legs  
 the male elephant's neck  
 the girls' spear  
 the boy's short, wide cooking pot  
 the baboon's bones  
 the male thief's male zebras  
 the man's axes (for splitting firewood)  
 the elephant's leg  
 the female leopard's V. pseudolablab vine  
 the male stranger's flamingo  
 the girl's long spear  
 the female lion's V. macrorhyncha vine  
 the male baboons' bone  
 the women's lorries

19. wiriko?
20. roobee?
21. mu'a
22. zzahubii
23. gariko
24. makubii
25. hazzakeko
26. dongobee
27. zzahoko
28. nqibii

- A. tails (e.g., of leopards)
- B. thin twig
- C. horns (e.g., of dik-diks)
- D. short, thick root

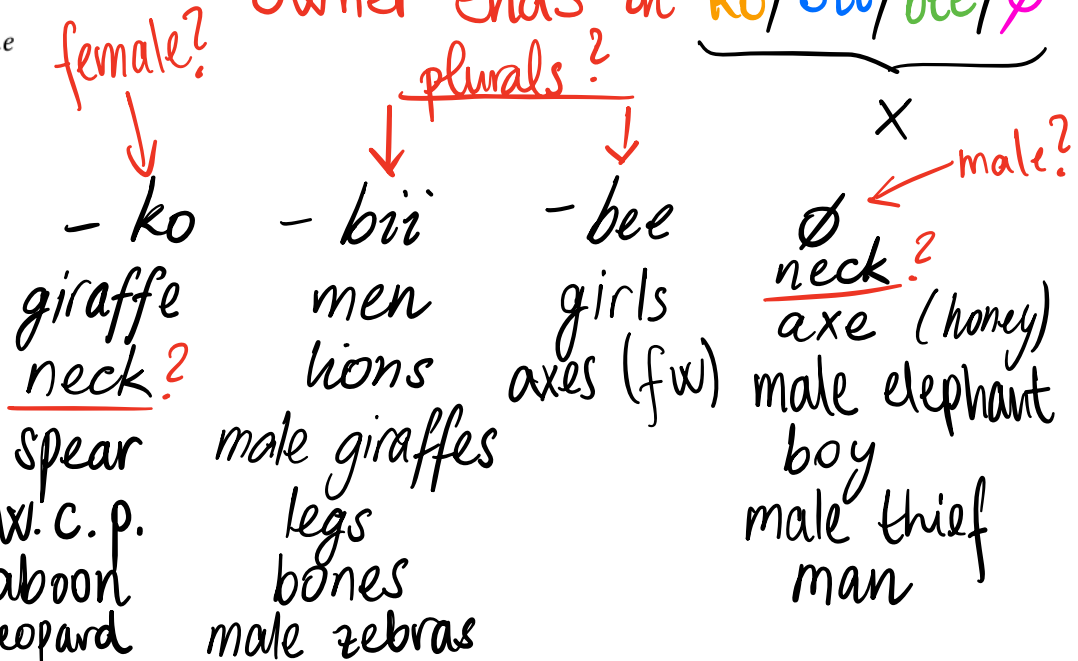
29. the flamingo's leg
30. the zebra's V. pseudolablab tuber
31. the male impalas' horns
32. the female strangers' thick stick
33. the boys' tall cooking pot
34. the impala's long, thin roots

Word order: Possession Owner



possession ends in sa/itcha/eta/ma

owner ends in ko/bii/bee/∅



... female leopard     bii- + -itcha > biitcha?

vowel changes?  
 i ↔ e  
 u ↔ o

1. chutisa zzokwanako
2. athuitcha slimibii
3. panjubeema popho
4. do'aikuitcha sisimbii
5. uphukwa biitcha zzokwanabii
6. chutikoma beggau
7. uthumekeeta dlakwebee
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11. athobeema sleme
12. uphukwakosa beggauko
13. shumusa nqeko
14. gogogogoma uhuyiti
15. uthumesa dlakweko
16. do'aisa sesemeko
17. midlaitcha niibii
18. garibiiteta akhwitibee?

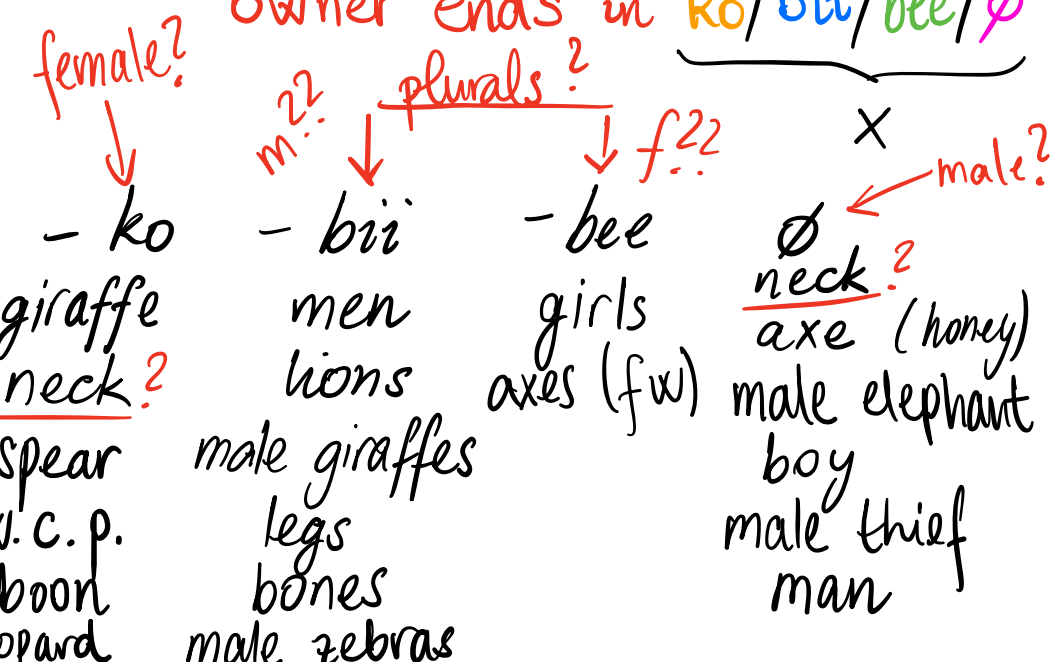
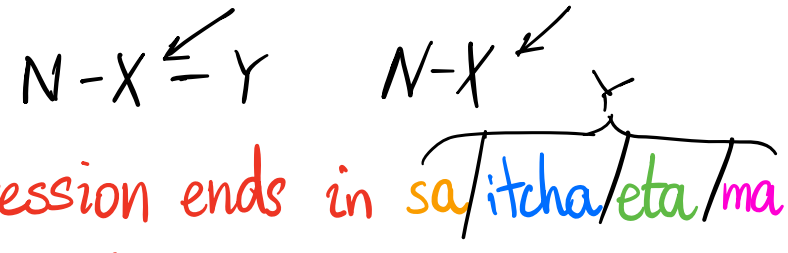
- the giraffe's neck  
 the men's axe (for collecting honey)  
 the male impala's l. transvaalensis tubers  
 the lions' V. macrorhyncha tuber  
 the male giraffes' legs  
 the male elephant's neck  
 the girls' spear  
 the boy's short, wide cooking pot  
 the baboon's bones  
 the male thief's male zebras  
 the man's axes (for splitting firewood)  
 the elephant's leg  
 the female leopard's V. pseudolablab vine  
 the male stranger's flamingo  
 the girl's long spear  
 the female lion's V. macrorhyncha vine  
 the male baboons' bone  
 the women's lorries

19. wiriko?
20. roobee?
21. mu'a
22. zzahubii
23. gariko
24. makubii
25. hazzakeko
26. dongobee
27. zzahoko
28. nqibii

- A. tails (e.g., of leopards)
- B. thin twig
- C. horns (e.g., of dik-diks)
- D. short, thick root

29. the flamingo's leg
30. the zebra's V. pseudolablab tuber
31. the male impalas' horns
32. the female strangers' thick stick
33. the boys' tall cooking pot
34. the impala's long, thin roots

Word order: Possession Owner



... female leopard     bii- + -itcha > biitcha?

vowel changes?  
 i ↔ e  
 u ↔ o

1. chutisa zzokwanako the giraffe's neck
2. athuitcha slimibii the men's axe (for collecting honey)
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4. do'aikuitcha sisimbii the lions' V. macrorhyncha tuber
5. uphukwa biitcha zzokwanabii the male giraffes' legs
6. chutikoma beggau the male elephant's neck
7. uthumeketa dlakwebee the girls' spear
8. makokoma erati the boy's short, wide cooking pot
9. midlabiisa neeko the baboon's bones
10. dungubii na hazzake the male thief's male zebras
11. athobeema sleme the man's axes (for splitting firewood)
12. uphukwako sa beggauko the elephant's leg
13. shumusa nqeko the female leopard's V. pseudolablab vine
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15. uthumesa dlakweko the girl's long spear
16. do'aisa sesemeko the female lion's V. macrorhyncha vine
17. midlaitcha niibii the male baboons' bone
18. garibiiteta akhwitibee? the women's lorries

19. wiriko?
20. roobee?
21. mu'a
22. zzahubii

23. gariko
24. makubii
25. hazzakeko
26. dongobee
27. zzahoko
28. nqibii

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- A. tails (e.g., of leopards)
- B. thin twig
- C. horns (e.g., of dik-diks)
- D. short, thick root

Word order: Possession Owner

$N-X \leftarrow Y$      $N-X \leftarrow Y$

possession ends in sa/itcha/eta/ma

owner ends in

	f.	m.
sg.	-ko	-ø
pl.	-bee	-bii

f: e. neck

spear

s. w. c. p.

axes (fw)

tuber

giraffe  
baboon

m: g. neck

axe (honey)

long spear

vine

bone

lions  
flamingo

bii- + -itcha > biitcha?

vowel changes?

$i \leftrightarrow e$

$u \leftrightarrow o$

1. chutisa zzokwanako the giraffe's neck
2. athuitcha slimibii the men's axe (for collecting honey)
3. panjubeema popho the male impala's I. transvaalensis tubers
4. do'aikuitcha sisimbii the lions' V. macrorhyncha tuber
5. uphukwa biitcha zzokwanabii the male giraffes' legs
6. chutikoma beggau the male elephant's neck
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8. makokoma erati the boy's short, wide cooking pot
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12. uphukwako sa beggauko the elephant's leg
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14. gogogogoma uhuyiti the male stranger's flamingo
15. uthumesa dlakweko the girl's long spear
16. do'aisa sesemeko the female lion's V. macrorhyncha vine
17. midlaitcha niibii the male baboons' bone
18. garibiiteta akhwitibee? the women's lorries

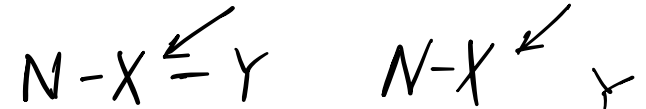
19. wiriko? A. tails (e.g., of leopards)
20. roobee? B. thin twig
21. mu'a C. horns (e.g., of dik-diks)
22. zzahubii D. short, thick root

23. gariko
24. makubii
25. hazzakeko
26. dongobee
27. zzahoko
28. nqibii



29. the flamingo's leg
30. the zebra's V. pseudolablab tuber
31. the male impalas' horns
32. the female strangers' thick stick
33. the boys' tall cooking pot
34. the impala's long, thin roots

Word order: Possession Owner



possession ends in sa/itcha/eta/ma



owner ends in

	f.	m.
sg.	-ko	-∅
pl.	-bee	-bii

f: e. neck  
spear  
s. w. c. p.  
axes (fw)

m: g. neck  
axe (honey)  
long spear  
vine

tuber

bone

giraffe  
baboon

lions  
flamingo

bii- + -itcha > biitcha?

vowel changes?

i ↔ e

u ↔ o

- chutisa zzokwanako the giraffe's neck
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- uthumesa dlakweko the girl's long spear
- do'aisa sesemeko the female lion's V. macrorhyncha vine
- midlaitcha niibii the male baboons' bone
- garibiiteta akhwitibee? the women's lorries

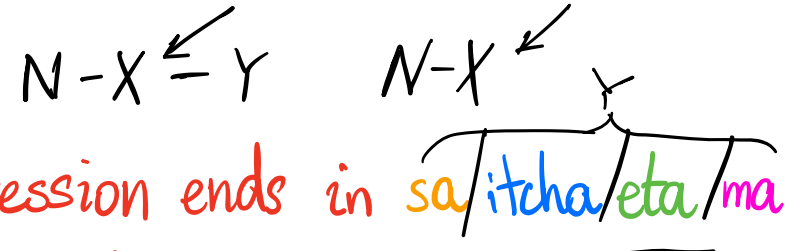
- wiriko?
  - roobee?
  - mu'a
  - zzahubii
- A. tails (e.g., of leopards)  
 B. thin twig  
 C. horns (e.g., of dik-diks)  
 D. short, thick root

- gariko
- makubii
- hazzakeko
- dongobee
- zzahoko
- nqibii



- the flamingo's leg
- the zebra's V. pseudolablab tuber
- the male impalas' horns
- the female strangers' thick stick
- the boys' tall cooking pot
- the impala's long, thin roots

Word order: Possession Owner



owner ends in

	f.	m.
sg.	-ko	-ø
pl.	-bee	-bii

f: e. neck  
 spear  
 s. w. c. p.  
 axes (fw)

m: g. neck  
 axe (honey)  
 long spear  
 vine

tuber

bone

giraffe  
 baboon

lions  
 flamingo

bii- + -itcha > biitcha?

vowel changes?

i ↔ e

u ↔ o

THE SUFFIXES MAY DESCRIBE SHAPES!

- chutisa zzokwanako the giraffe's neck
- athuitcha slimibii the men's axe (for collecting honey)
- panjubeema popho the male impala's I. transvaalensis tubers
- do'aikuitcha sisimbii the lions' V. macrorhyncha tuber
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- chutikoma beggau the male elephant's neck
- uthumeketa dlakwebee the girls' spear
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- gogogogoma uhuyiti the male stranger's flamingo
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- do'aisa sesemeko the female lion's V. macrorhyncha vine
- midlaitcha niibii the male baboons' bone
- garibiiteta akhwitbee? the women's lorries

- wiriko
  - roobee
  - mu'a
  - zzahubii
- D  
C  
B  
A**

- tails (e.g., of leopards)
- thin twig
- horns (e.g., of dik-diks)
- short, thick root

- gariko
- makubii
- hazzakeko
- dongobee
- zzahoko
- nqibii



- the flamingo's leg
- the zebra's V. pseudolablab tuber
- the male impalas' horns
- the female strangers' thick stick
- the boys' tall cooking pot
- the impala's long, thin roots

Word order: Possession Owner



possession ends in sa/itcha/eta/ma

owner ends in

	f.	m.
sg.	-ko	-ø
pl.	-bee	-bii

f: e. neck  
spear  
s. w. c. p.  
axes (fw)  
tuber

m: g. neck  
axe (honey)  
long spear  
vine  
bone

giraffe  
baboon

lions  
flamingo

bii- + -itcha > biitcha?

vowel changes?

i ↔ e

u ↔ o

- chutisa zzokwanako
- athuitcha slimibii
- panjubeema popho
- do'aikuitcha sisimbii
- uphukwa biitcha zzokwanabii
- chutikoma beggau
- uthumekeeta dlakwebee
- makokoma erati
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- shumusa nqeko
- gogogogoma uhuyiti
- uthumesa dlakweko
- do'aisa sesemeko
- midlaitcha niibii
- garibiiteta akhwitibee?

- the giraffe's neck  
 the men's axe (for collecting honey)  
 the male impala's l. transvaalensis tubers  
 the lions' V. macrorhyncha tuber  
 the male giraffes' legs  
 the male elephant's neck  
 the girls' spear  
 the boy's short, wide cooking pot  
 the baboon's bones  
 the male thief's male zebras  
 the man's axes (for splitting firewood)  
 the elephant's leg  
 the female leopard's V. pseudolablab vine  
 the male stranger's flamingo  
 the girl's long spear  
 the female lion's V. macrorhyncha vine  
 the male baboons' bone  
 the women's lorries

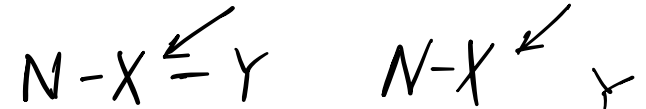
- wiriko
  - roobee
  - mu'a
  - zzahubii
- D  
C  
B  
A

- tails (e.g., of leopards)
- thin twig
- horns (e.g., of dik-diks)
- short, thick root

- gariko
- makubii
- hazzakeko
- dongobee
- zzahoko
- nqibii

- the flamingo's leg
- the zebra's V. pseudolablab tuber
- the male impalas' horns
- the female strangers' thick stick
- the boys' tall cooking pot
- the impala's long, thin roots

Word order: Possession Owner



possession ends in sa/itcha/eta/ma



owner ends in

	f.	m.
sg.	-ko	-ø
pl.	-bee	-bii

f: e. neck  
 spear  
 s. w. c. p.  
 axes (fw)  
 tuber

m: g. neck  
 axe (honey)  
 long spear  
 vine  
 bone

giraffe  
 baboon

lions  
 flamingo

bii- + -itcha > biitcha?

vowel changes?

i ↔ e

u ↔ o

- chutisa zzokwanako
- athuitcha slimibii
- panjubeema popho
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- uphukwa biitcha zzokwanabii
- chutikoma beggau
- uthumeketa dlakwebee
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- dungubii na hazzake
- athobeema sleme
- uphukwakosa beggauko
- shumusa nqeko
- gogogogoma uhuyiti
- uthumesa dlakweko
- do'aisa sesemeko
- midlaitcha niibii
- garibiiteta akhwitibee?

- the giraffe's neck  
 the men's axe (for collecting honey)  
 the male impala's I. transvaalensis tubers  
 the lions' V. macrorhyncha tuber  
 the male giraffes' legs  
 the male elephant's neck  
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 the boy's short, wide cooking pot  
 the baboon's bones  
 the male thief's male zebras  
 the man's axes (for splitting firewood)  
 the elephant's leg  
 the female leopard's V. pseudolablab vine  
 the male stranger's flamingo  
 the girl's long spear  
 the female lion's V. macrorhyncha vine  
 the male baboons' bone  
 the women's lorries

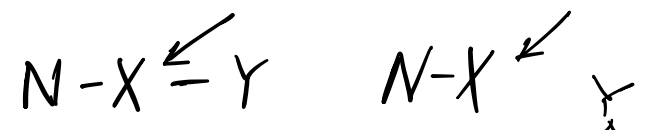
- wiriko
  - roobee
  - mu'a
  - zzahubii
- D  
C  
B  
A

- tails (e.g., of leopards)
- thin twig
- horns (e.g., of dik-diks)
- short, thick root

- gariko
- makubii
- hazzakeko
- dongobee
- zzahoko
- nqibii

- the flamingo's leg
- the zebra's V. pseudolablab tuber
- the male impalas' horns
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Word order: Possession Owner



possession ends in sa/itcha/eta/ma

owner ends in

	f.	m.
sg.	-ko	-ø
pl.	-bee	-bii

f: e. neck  
 spear  
 s. w. c. p.  
 axes (fw)  
 tuber  
 giraffe  
 baboon

m: g. neck  
 axe (honey)  
 long spear  
 vine  
 bone  
 lions  
 flamingo

vowel changes?

$i \leftrightarrow e$   
 $u \leftrightarrow o$

·bii- + -itcha > biitcha

1. chutisa zzokwanako
2. athuitcha slimibii
3. panjubeema popho
4. do'aikuitcha sisimbii
5. uphukwabiitcha zzokwanabii
6. chutikoma beggau
7. uthumeketa dlakwebee
8. makokoma erati
9. midlabiisa necko
10. dungubii na hazzake
11. athobeema sleme
12. uphukwakosa beggauko
13. shumusa nqeko
14. gogogogoma uhuyiti
15. uthumesa dlakweko
16. do'aisa sesemeko
17. midlaitcha niibii
18. garibiiteta akhwitbee ?

- the giraffe's neck  
 the men's axe (for collecting honey)  
 the male impala's l. transvaalensis tubers  
 the lions' V. macrorhyncha tuber  
 the male giraffes' legs  
 the male elephant's neck  
 the girls' spear  
 the boy's short, wide cooking pot  
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 the male thief's male zebras  
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 the girl's long spear  
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 the male baboons' bone  
 the women's lorries

Word order: Possession Owner



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vowel changes?

i ↔ e

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"inherent gender"?

·bii- + -itcha > biitcha

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  20. roobee
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- D  
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- A. tails (e.g., of leopards)
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15. uthumesa dlakweko the girl's long spear
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18. garibiiteta akhwitibee? the women's lorries

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Why is it  
 zzokwanabii,  
 and not  
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31. the male impalas' horns — ruubiitcha puphubii
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Animals and genders

# Animals and genders

f  
giraffe, impala, zebra,  
elephant, baboon

m  
lion, leopard,  
flamingo

# Animals and genders

f  
giraffe, impala, zebra,  
elephant, baboon

carnivorous

m  
{ lion, leopard,  
flamingo

# Animals and genders

f  
giraffe, impala, zebra,  
elephant, baboon

large + domestic grass-eaters  
spiders, termites

carnivorous

m  
{ lion, leopard,  
flamingo

snakes, long/thin insects  
wasps, bees

# Animals and genders

f  
giraffe, impala, zebra,  
elephant, baboon

large + domestic grass-eaters  
spiders, termites

---

species of plants

hair

sun, day

rifle *khooko*

shallow baobab *merekako*  
cave

*carnivorous*

m  
{ lion, leopard,  
flamingo

snakes, long/thin insects  
wasps, bees

---

twigs, berries, fruits

diseases

moon, night

bow *khoo*

deep baobab  
cave *mereka*

Even more animals

## Even more animals

Apart from the names used in the problem, animals have a second set of *celebratory* names, e.g.

zebra  
giraffe  
lion

dongoko  
zzokwanako  
seseme

*hantayii*  
*hawayii*  
*hubuwee*



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dongoko  
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*hantayii*  
*hawayii*  
*hubuwee*



lit. *eater*

(se-seme = REDUP ~ eat)

"Animal Kingdom" was graded by:

"Animal Kingdom" was graded by:



Ksenia



↑  
Ellie  
← Dan



Jan

"Animal Kingdom" was graded by:



Ksenia



↑  
Ellie

←  
Dan



Jan



# Statistics

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- You considered this problem to be the **easiest**...

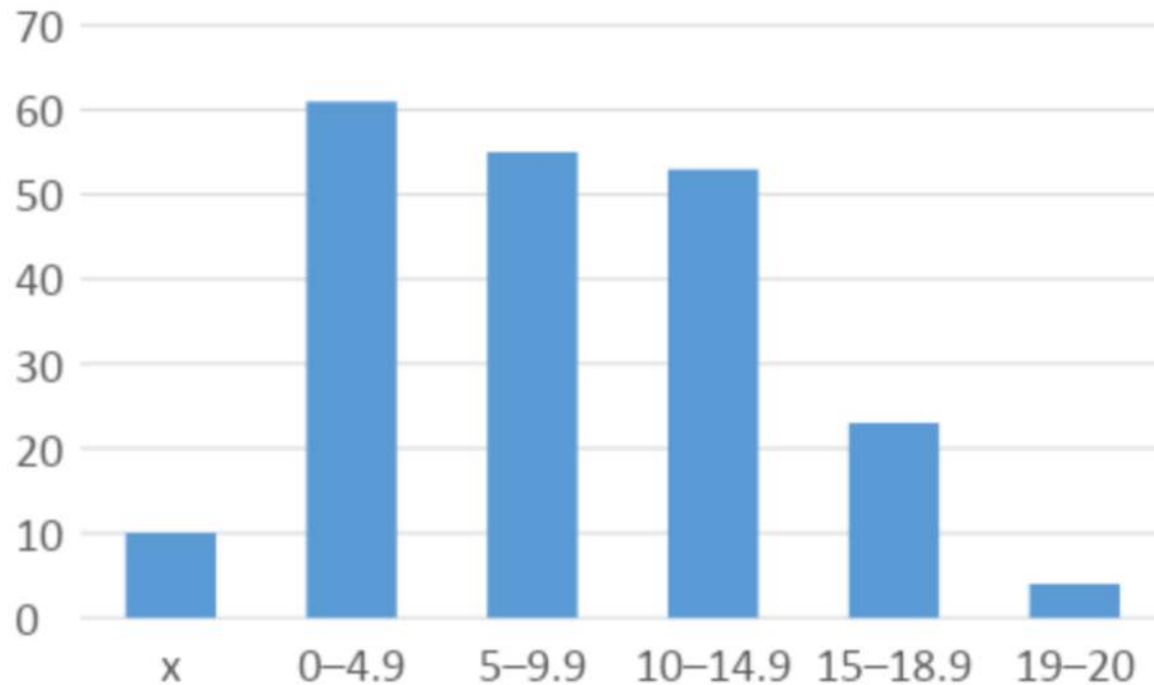
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... and your scores justified it:

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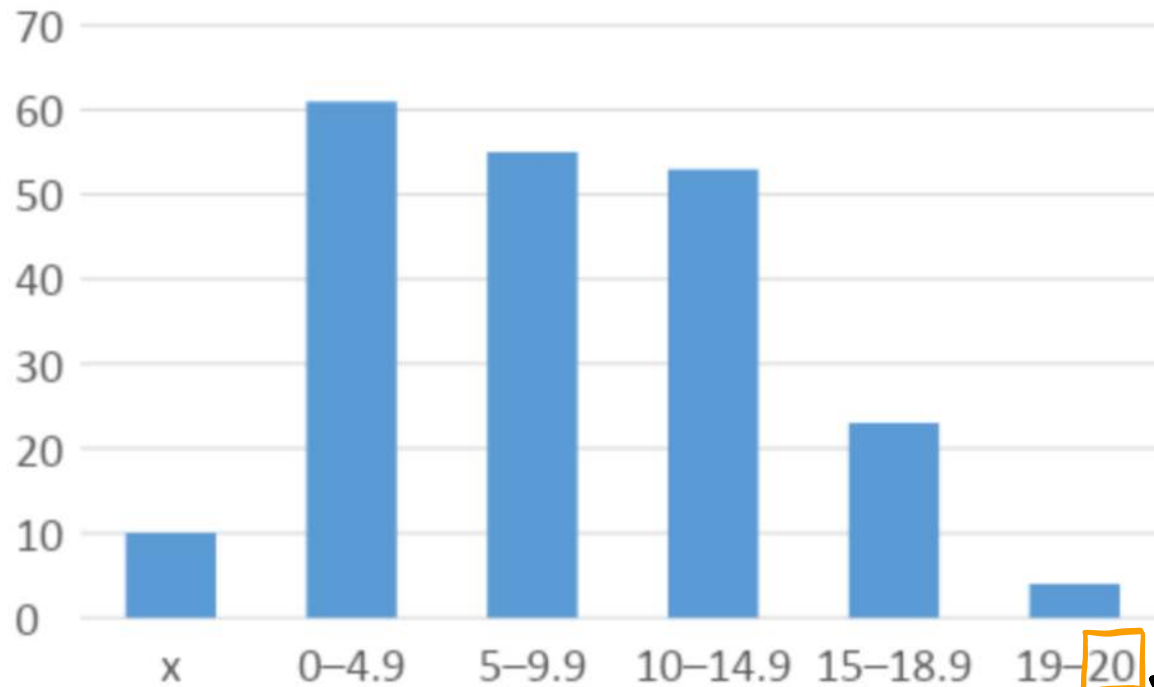


mean  $\approx 7.99$   
(the *highest* among  
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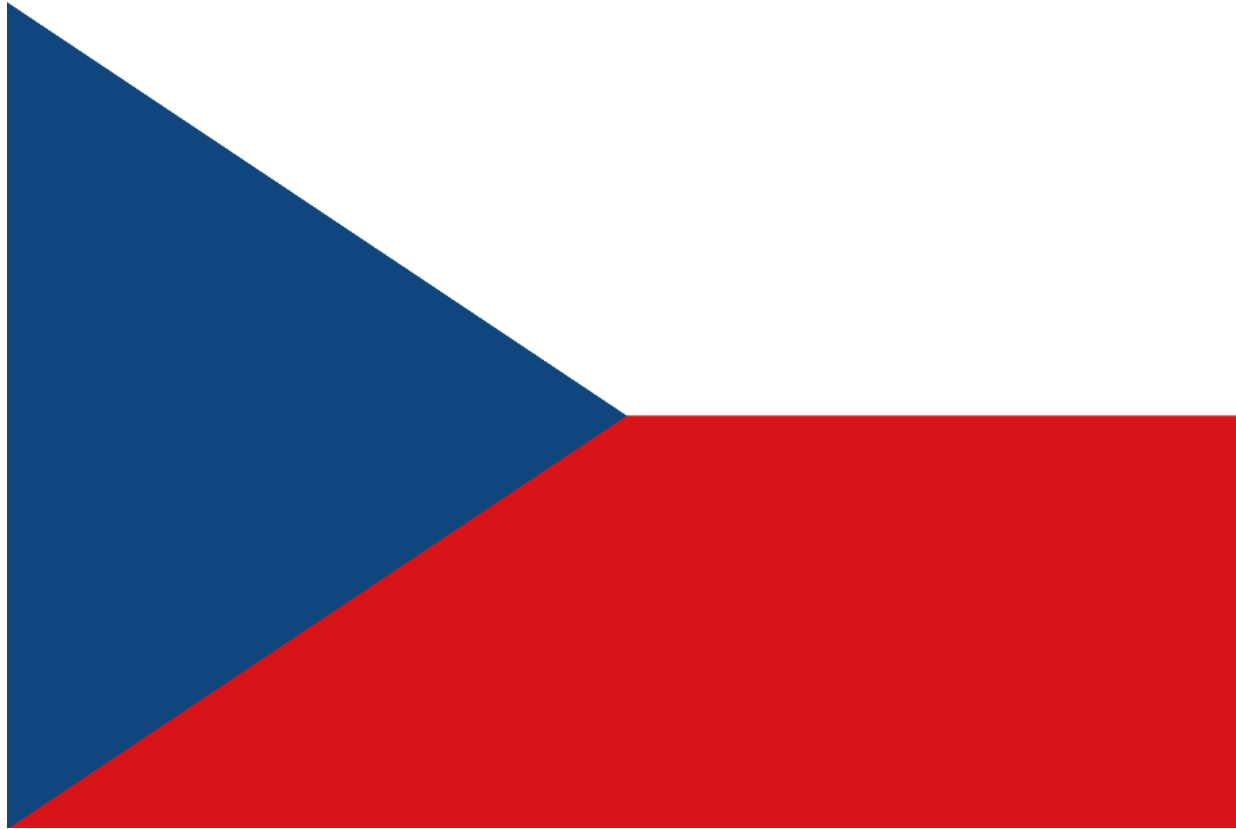


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- many of you did well, but only one of you got here

Best solution award for Problem 2

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Best solution award for Problem 2



Matěj Čapka

ČESKÁ REPUBLIKA