

200805

- (a) H_0 : The number of moose observed in each habitat type is proportional to the amount of acreage of that type of habitat.
 H_a : The number of moose observed in at least one habitat type is not proportional to the amount of acreage of that type of habitat.

Chi-squared Goodness-of-fit test

conditions: problem states "assume the conditions for inference are met"

computing expected counts:

<u>habitat type</u>	<u>moose observed</u>	<u>moose expected</u>	<u>proportion of total area</u>
1	25	$117(.340) = 39.78$.340
2	22	$117(.101) = 11.817$.101
3	30	$117(.104) = 12.168$.104
4	40	$117(.455) = 53.235$.455

perform a χ^2 -GOF Test in a TI-84
 with observed counts in L1 and expected counts in L2
 with $df = 4 - 1 = 3$

result: $\chi^2 = 43.6893$
 $p\text{-value} = 1.7569 \cdot 10^{-9}$
 $df = 3$

with $\alpha = .05$, $p\text{-value} = 1.7569 \cdot 10^{-9}$ is low so we reject H_0 .
 We do have sufficient statistical evidence to conclude that the number of moose observed in at least one habitat type is not proportional to the amount of acreage of that type of habitat.

(b) χ^2 -contributions (from the calculator - χ^2 -GOF test in part a)

<u>habitat type</u>	<u>χ^2 contribution</u>
1	5.4914
2	8.7749
3	26.1325
4	3.2904

Habitat type 3 seems most preferred by moose in this type had the largest χ^2 contribution (observed count most different than expected) and the observed count was higher than expected.