


LADDERS SUMMARY

REX GOOCH

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As the number of letters in a word decreases, the number of ladders increases sharply, despite there being only one-tenth the number of four-letter words as there are ten-letter words. The sharply increased number means that more and more restrictions may be applied but still ladders can be found. The following table summarises this effect. Looking down a column, it can be seen that decreasing the word length by one multiplies the number of ladders of a given type by hundreds of times. Looking across, virtually every time we decrease the word length, we find ladders fitting a more restrictive category. The numbers are rounded. To the left of the first number in each row, the numbers of ladders are extremely large; to the right of the last number in each row, no ladders were found.

Condition	0 bar 1	3 bar 3	3 bar 1	2	2, 3	2, 4	2, 3, 4	2, 3, 4 & P	2, 3, 4 & R
Word length									
10	35	10							
9			20	50					
8			6000	2000	85				
7					100K	700	20		
6							50K	1	
5							2M*	200	imposs
4								1100	300

IDEALLADDERS  CONNOISSEUR'S LADDERS

* Forward replacement only

The conditions are those set out originally. The first condition was that the number of steps should equal the number of letters: it is always true. There was an unstated condition that all words in a ladder should differ, and that is why there are no ladders between reversals for words with an odd number of letters. The other conditions were:

2 – Each letter in the first word should differ from the corresponding letter in the last word. The columns headed “bar” indicate exceptions at long word lengths, e.g., “all letters changed bar 3”

3 – Both terminal words should be heterograms

4 – The letters should be changed in sequence, either forwards or reverse. This forces condition 2

5 – All words should be recognizable, which is subjective

6 – The first and last words should bear a logological or semantic relationship to one another. The table indicates permutations (excluding reversals) with a P, and reversals with an R