Part 3: The Garden Behind the House in the Garden

Table:

PPs in a VP	Number of Trees
0	1
1	2
2	5
3	14
4	42

The sequence that relates the number of prepositional phrases to the number of trees is known as the catalan number. It can be described as a sequence of natural numbers that often involve recursion. An equation for obtaining a catalan number is: $C_n = \frac{(2n)!}{(n+1)!n!}$.

Part 4: Barking Up the Wrong Tree

PCFG:
S → np, vp 2/2 = 1
Np → np, pp 1/7 = .14
Np → det, n 6/7 = .86
Pp → p, np 2/2 = 1
Vp → vp, pp 1/3 = .33
Vp → v, np 2/3 = .67

The chosen meaning of the sentence is that the cats were chased from the house. I drew this conclusion from comparing the probability value for the most probable tree. My value for the meaning where the cats were from the house was (1)(3*.86)(.67)(.14)(1) = 0.24. My value for the cats being chased from the house was (1)(3*.86)(.33)(.67)(1) = 0.57. With the 0.57 being a higher probability, the meaning is more likely to be that the cats were chased from the house, and not that the cats were from the house.