

# 6.1 RAT

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1. With the following grammar, what are valid ways to label each word in "People people people people people" with a part of speech?

(**Warning:** the grammar has changed slightly from the video quiz.)

$S \rightarrow NP VP$	$NP \rightarrow NP NP$
$NP \rightarrow NP PP$	$NP \rightarrow N$
$VP \rightarrow V NP$	$VP \rightarrow V NP PP$
$PP \rightarrow P NP$	

$N \rightarrow \text{people}$	$V \rightarrow \text{people}$
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- a) V N N N N
- b) N V N N N
- c) N N V N N
- d) N N N V N
- e) N N N N V

2. Convert the following small grammar into Chomsky Normal Form:

$S \rightarrow NP VP$
$NP \rightarrow N$
$VP \rightarrow V NP$
$VP \rightarrow V NP PP$
$PP \rightarrow P NP$

3. Which of the following constituents (and with what maximum probability) can you make?

NNS	0.0023	??	??
IN	0.0014	??	??
VB	0.001	??	??
		PP	0.2
		NNS	0.0001

PP → IN: 0.002

NP → NNS NNS: 0.01

NP → NNS NP: 0.005

NP → NNS PP: 0.01

VP → VB PP: 0.015

VP → VB NP: 0.045

4. What is the labeled *recall* of the following guess parse?

**Guess:** S(0:14), NP(0:2), VP(2:13), NP(3:13), NP(3:4),  
ADJP(4:13), PP(5:13), NP(6:13), NP(6:10), PP(10:13),  
NP(11:13)

**Gold:** S(0:14), NP(0:2), VP(2:13), ADJP(3:13),  
PP(5:13), NP(6:13), NP(6:10), PP(10:13), NP(11:13)