

Lexical Relations Homework**Name:**

Chapter 20 of your textbook will help you!

1. (section 20.6) Compute the **Resnik similarity** score between two pairs of words using the hierarchy below. The numbers next to the concepts in the hierarchy are the probabilities of each concept. For example, $P(\text{mammal}) = 0.12$

animal 0.18

mammal 0.12

dog 0.07

cat 0.05

terrier 0.02

hound 0.03

tabby 0.01

resnik-sim(hound, cat) =**resnik-sim(hound, tabby) =**

2. Section 20.7 talks about representing words with context vectors. A word's meaning is simply a vector of other nearby words. Below are three vectors for three words containing only the verbs with which they occur.

Baggins: [fight 3, run 6, say 5, eat 8, flee 5]**Gamgee:** [fight 5, run 4, say 9, eat 8, flee 4]**Nazgul:** [fight 8, run 1, say 1, eat 0, flee 1]

- a. Compute cosine similarity. *Calculate fully, show work, but simplify answer to one final decimal number.*

simCosine(baggins, gamgee) =**simCosine(baggins, nazgul) =**

- b. Compute the Dice score. *Calculate fully, show work, but simplify answer to one final decimal number.*

simDice(baggins, gamgee) =**simDice(baggins, nazgul) =**