

## Problem set 10 (Assigned on November 14th)

The goal in Word Ladder puzzle is to move from the starting word to the ending word, changing 1 letter at a time. Each intermediate step must be a valid word, and no proper nouns are allowed.

Example: You can get from CAT to DOG in 3 steps:

CAT → COT → DOT → DOG.

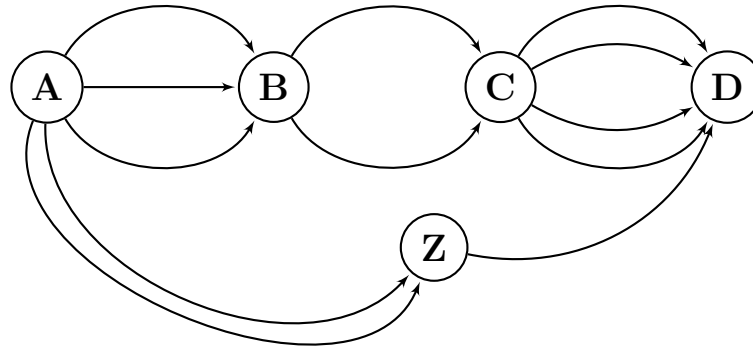
**1.** Can you change TEN to ONE.

*Hint.* One possible path use hints (not necessarily in this order): perform, a metal, cover, help, mineral, a card, summit, a form of 'to be', with (a conjunction), edge, perform

**2.** Can you flip HEAD to TAIL?

**3.** Moana has a big bag of black marbles and a big bag of white marbles. How many different black and white patterns can she make by placing four of these marbles in a row, such that black and white marbles in this order appear at least once in the pattern? (A pattern is a sequence of colors. If we denote a white marble 'W' and a black marble 'B' then, for example, 'BWWW', 'BWBW', and 'WBBW' would be different patterns.)

4. The following is the map of Wonderland:



The planners want to add one more road such that the number of paths from  $A$  to  $D$  is maximal. Which possibility should they choose:

1.  $A \rightarrow B$
2.  $A \rightarrow C$
3.  $B \rightarrow C$
4.  $B \rightarrow Z$
5.  $C \rightarrow Z$
6.  $Z \rightarrow C$