Problem 1: Graphs, degrees, edges
Explore the following. You only need to know what a graph is and the definition of the degree of a vertex (covered in class).

(a) Is it possible to come up with two graphs that have the same number of edges but different set of degrees? If yes, show an example, if no, explain why.

(b) Is it possible to come up with two graphs that have the same set of degrees but different number of edges? If yes, show an example, if no, explain why.

Problem 2: Snakes and Ladders
Use the approach we have seen in class to determine the following:

(a) In how many ways can we place one snake and one ladder on a grid with \( n \) squares?

(b) In how many ways can we place two snakes on a grid with \( n \) squares?

(c) Verify your answers (in terms of \( n \)) for the case of a \( 2 \times 2 \) grid, i.e. when \( n = 4 \), by enumerating all possibilities.