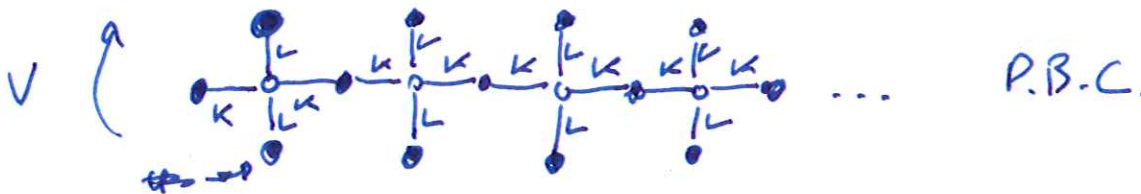


## PHYS566: Problem Set 1

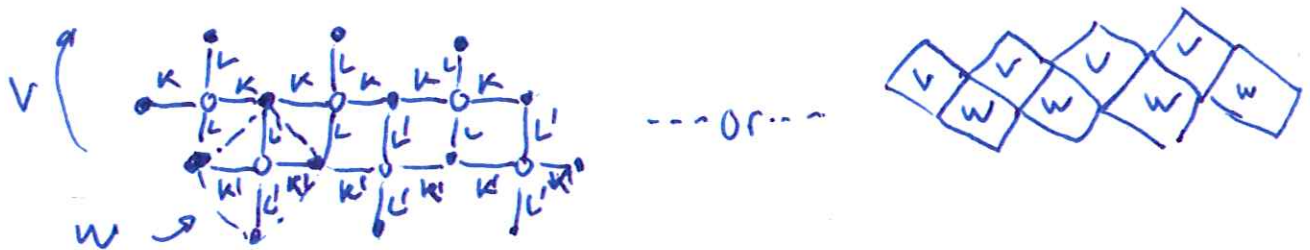
**Problem 1:** Show the start-triangle relation using the operator  $U_i(K,L)$  for both  $i$  odd and even.

**Problem 2:** Consider the following configuration of spins of which one can construct a 2D square lattice with coupling constants  $K$  and  $L$  in the horizontal and vertical directions, respectively.



Express the two relevant transfer matrices which can be used to construct the lattice.

**Problem 3:** Consider the following arrangement of transfer matrices.



Given  $K$  and  $L$ , is it possible to choose  $K'$  and  $L'$  such that  $V(K,L)W(K',L') = V(K',L')W(K,L)$  holds?