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Question 2

1.

There are $m * n - k$ tiles

2.

We need to place $m * n - k$ tiles in $m * n$ squares

so there are $(m * n)! / ((m * n) - (m * n - k))!$ possible states

3.

A, B, C represents the names of the nodes, and according to 2., we should have 24 possible states.

1) for each row, fix one node on the up left place.

2) then, fix another node

3) change the last node in 2 possible avaliable places.

3) After that, change the location of the fixed node in 2), then do 3) again untile all possible states are done.

Row 1:

A	B
C	

A	B
	C

A	C
B	

A	
B	C

A	C
	B

A	
C	B

Row 2:

B	A
C	

B	A
	C

B	C
A	

B	
A	C

B	C
	A

B	
C	A

Row 3:

C	A
B	

C	A
	B

C	B
A	

C	
A	B

C	B
	A

C	
B	A

Row 4:

	A
B	C

	A
C	B

	B
A	C

	C
A	B

	C
B	A

	B
C	A