

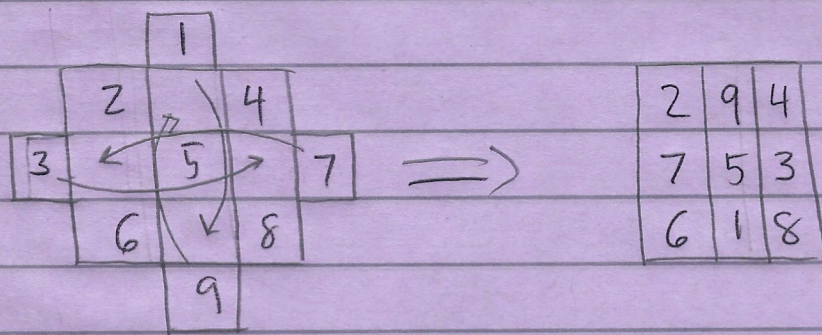
Quin Buob
HW#2

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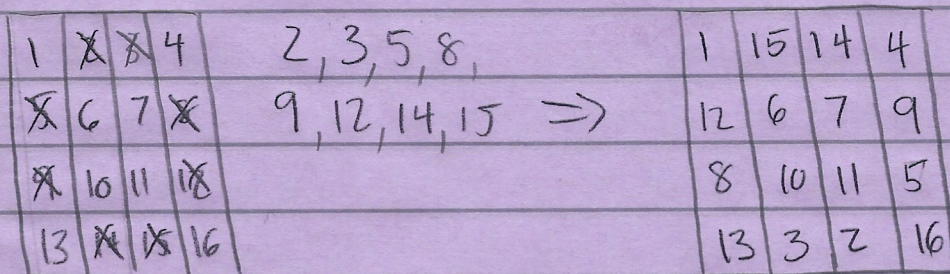
1) The amount that each row and column add up to in an $n \times n$ magic square is:

$$A = \frac{1}{n} \sum_{k=1}^{n^2} k = \frac{n^2(n^2+1)}{2n} = \boxed{\frac{n(n^2+1)}{2}}$$

2)



3)



4)

				1								
				2		8						
			3		9		15					
		4		10		16		22				
	5		11		17		23		29			
	6		12		18		24		30	36		
7		13		19		25		31		37		43
	14		20		26		32		38		44	
		21		27		33		39		45		
			28		34		40		46			
				35		41		47				
					42		48					
						49						

4	35	10	41	47	48	22
29	11	42	17	48	23	5
12	36	18	49	24	6	30
37	19	43	25	7	31	13
20	44	26	1	32	14	38
45	27	2	33	8	39	21
28	3	34	9	40	15	46

5) A: 1, 3, 5, 7
 B: 2, 4, 6

~~B~~^A 1, 3, 5, 7

2 B A A A A has a $\frac{1}{2}$ chance of winning
 4 B B A A B has a $\frac{1}{2}$ chance of winning
 6 B B B A Deck A = Deck B

6)

A	2	9	4
B	7	5	3
C	6	1	8

~~B~~^A 2, 9, 4

7 B A B B beats A
 5 B A B
 3 B A A

~~C~~^B 7, 5, 3

6 B C C C Beats B
 1 B B B
 8 C C C

~~C~~^A 2, 9, 4

6 C A C A beats C
 1 A A A
 8 C A C

This is a Suchers paradox because if Person 1 chooses Deck A then the Person 2 chooses B, If Person 1 chooses B then Person 2 chooses C and if Person A choose C then Person 2 chooses A