Nrich Challengen Pick's Theorem Harris Chan

When I = 0:

Shape A: P	I	A	Shape B: P	I	A	Shape C: P	I	A
8	0	3	7	0	$2\frac{1}{2}$	6	0	2

$P = 2A + 2$ ∵ $2\times3+2=8$, $2\times2\frac{1}{2}+2=7$, $2\times2+2=6$

When I = 1:

Shape D: P	I	A	Shape E: P	I	A	Shape F: P	I	A
6	1	3	4	1	2	7	1	$3\frac{1}{2}$

$P = 2A$ ∵ $2\times3=6$, $2\times2=4$, $2\times3\frac{1}{2}=7$

When I = 2:

Shape G: P	I	A	Shape H: P	I	A	Shape I: P	I	A
10	2	6	11	2	$6\frac{1}{2}$	4	2	3

$P = 2A - 2$ ∵ $2\times6-2=10$, $2\times6\frac{1}{2}-2=11$, $2\times3-2=4$

When I = 3:

Shape J: P	I	A	Shape K: P	I	A	Shape L: P	I	A
12	3	8	4	3	4	10	3	7

$P = 2A - 4$ ∵ $2\times8-4=12$, $2\times4-4=4$, $2\times7-4=10$

In conclusion, the relation-ship between PIA is $P = 2A - 2(I-1)$

∵ when I = 0, ~~$P = 2A - 2$~~ $P = 2A - 2(0-1)$

$P = 2A + 2$

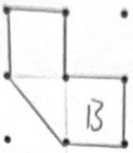
when I = 1, $P = 2A - 2(1-1)$

$P = 2A$

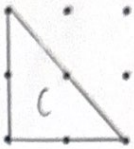
⋮

Square Dotty Grid (10mm)

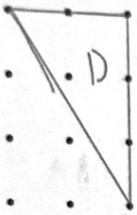
P	I	A
8	0	3



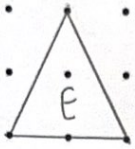
P	I	A
7	0	$2\frac{1}{2}$



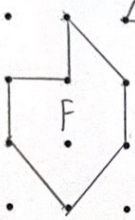
P	I	A
6	0	2



P	I	A
6	1	3



P	I	A
4	1	2



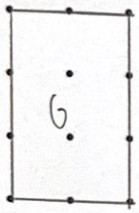
P	I	A
7	1	$3\frac{1}{2}$

when $I = 1$

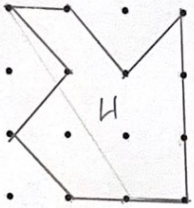
$P = 2A$

$A \times 2^{1} - 2(I-1)$

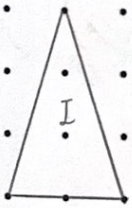
$P = 2A - 2(I-1)$



P	I	A
10	2	6

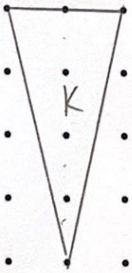


P	I	A
11	2	$6\frac{1}{2}$

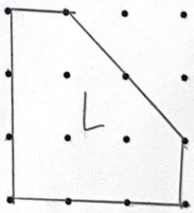


P	I	A
4	2	3

P	I	A
12	3	8



P	I	A
4	3	4



P	I	A
10	3	7