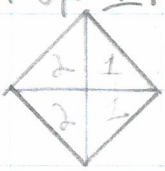
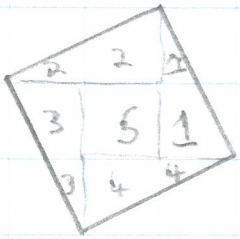
Tilted Squares 20/11/23

We will investigate the area of squares that have been tilted

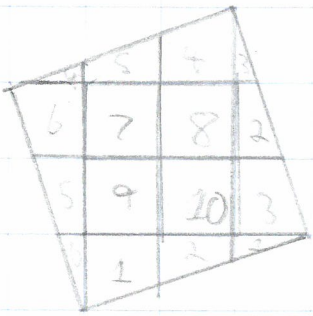
Tilted up 1:



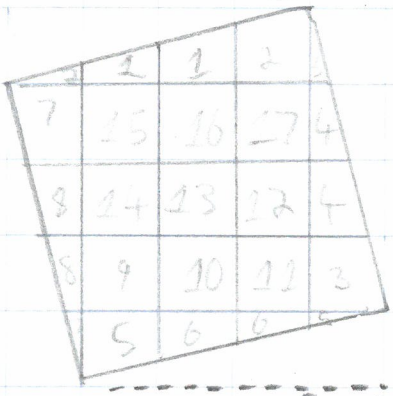
2



5



10



17

along=a

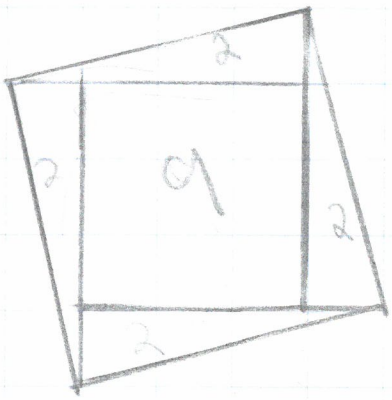
When it is tilted up it adds 1 to the original area.

Tilt		Area
along	up	
1	1	2
2	1	5
3	1	10
4	1	17
5	1	26
6	1	37
7	1	50
a	1	a^2+1

: along^2 + up = area

$a^2 + 1 = Ar$

Conclusion: The area of a square that has been tilted up one is the horizontal base squared add 1.



area triangle $= \frac{a}{2}$

area 4 triangles $= \frac{4a}{2}$

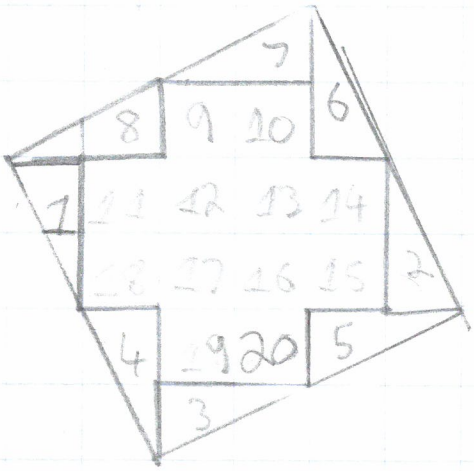
$= 2a$

Area of the whole square is $a^2 + 1^2$

area $\uparrow$ middle square $= (a-1)^2 + 2a$

$= a^2 - 2a + 1 + 2a$

$= a^2 + 1^2$



Tilt of 2

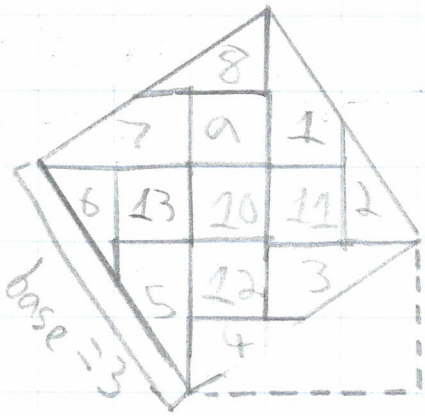
Tilt 2		Area
along	up	
1	2	5
2	2	8
3	2	13
4	2	20
5	2	29
6	2	40
7	2	53
a	2	$a^2 + 2^2$

Table of Tables

Tilt	formula
1	$a^2 + 1$
2	$a^2 + 4$
3	$a^2 + 9$
4	$a^2 + 16$
5	$a^2 + 25$
6	$a^2 + 36$
7	$a^2 + 49$
T	$a^2 + T^2$

Conclusion!

If Tilt = T then it would be base $(b)^2$ plus T squared which equals $b^2 + T^2$.



$b^2 + T^2$ = area

base $\times 3 = 9$

Tilt $\times 2 = 4$

$9 + 4 = 13$ ✓