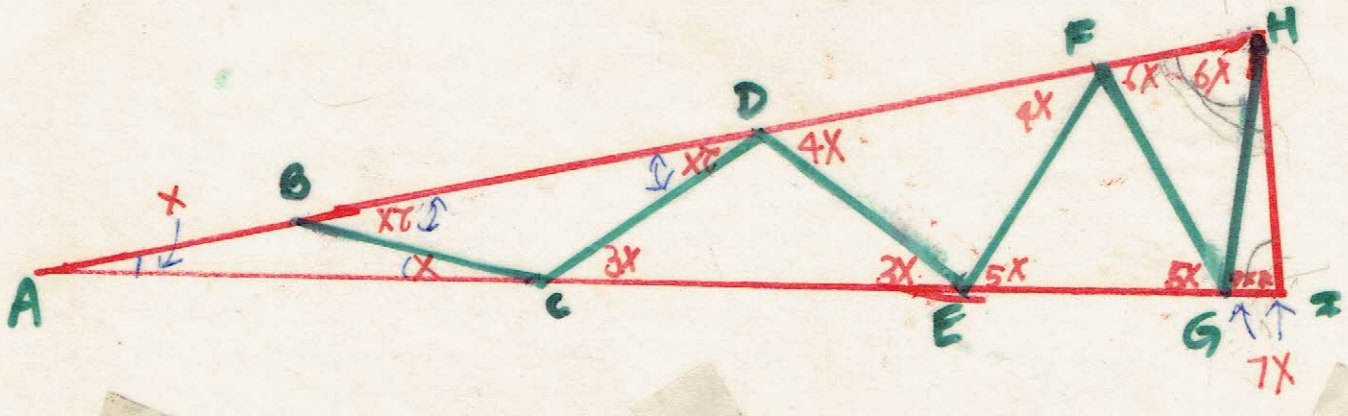
Ci Hui Minh Ngoc Ong P5 Kelvin Grove State College, Brisbane, Australia

Isosceles Triangles HAI, ABC, BCD, CDE, DEF, EFG, FGH, GHI



Isosceles Seven

(1) Calculate the three angles of the isosceles triangle HAI

Isosceles triangle $\triangle HAI$ $\therefore \angle IHA = \angle HIA$

$\therefore \angle HIA = 7X$ $\therefore \angle IHA = 7X$

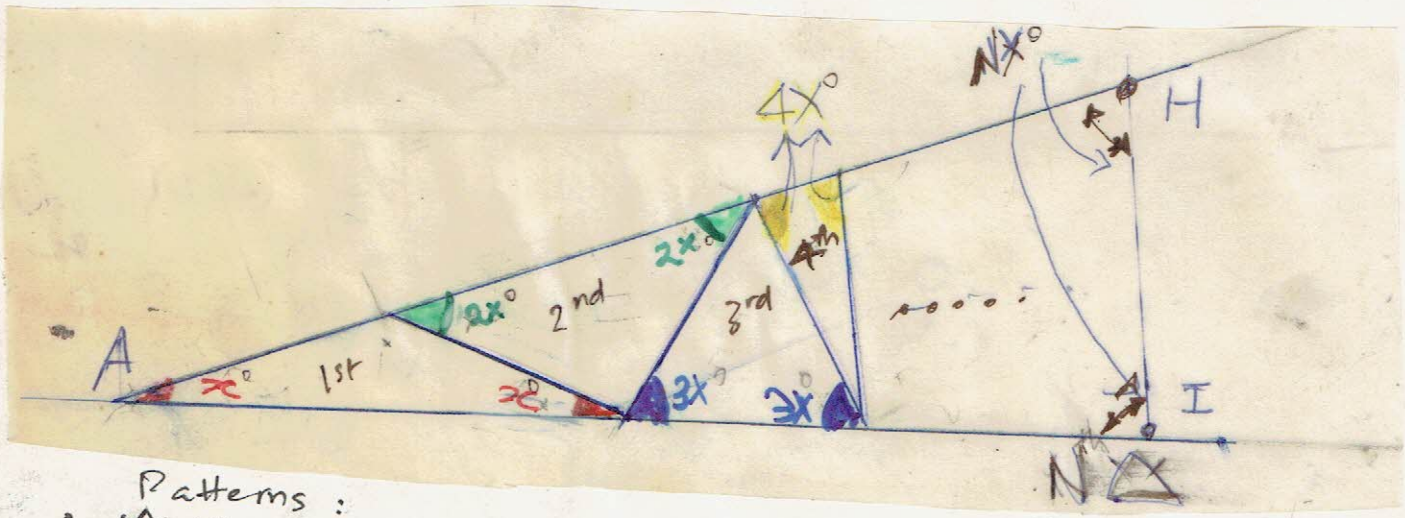
$\triangle HAI$ has 3 angles: $X, 7X, 7X$

$\therefore X + 7X + 7X = 180°$

$15X = 180$

$X = 12° \therefore 7X = 7 \times 12$

$= 84°$



Patterns:

∴ △ HAI angles: with Nth isosceles triangle: ∴ NX° (△ angle)

∴ $X + NX + NX = 180$

$X + 2NX = 180$

$X(1 + 2N) = 180$

$X = \frac{180}{2N+1}$

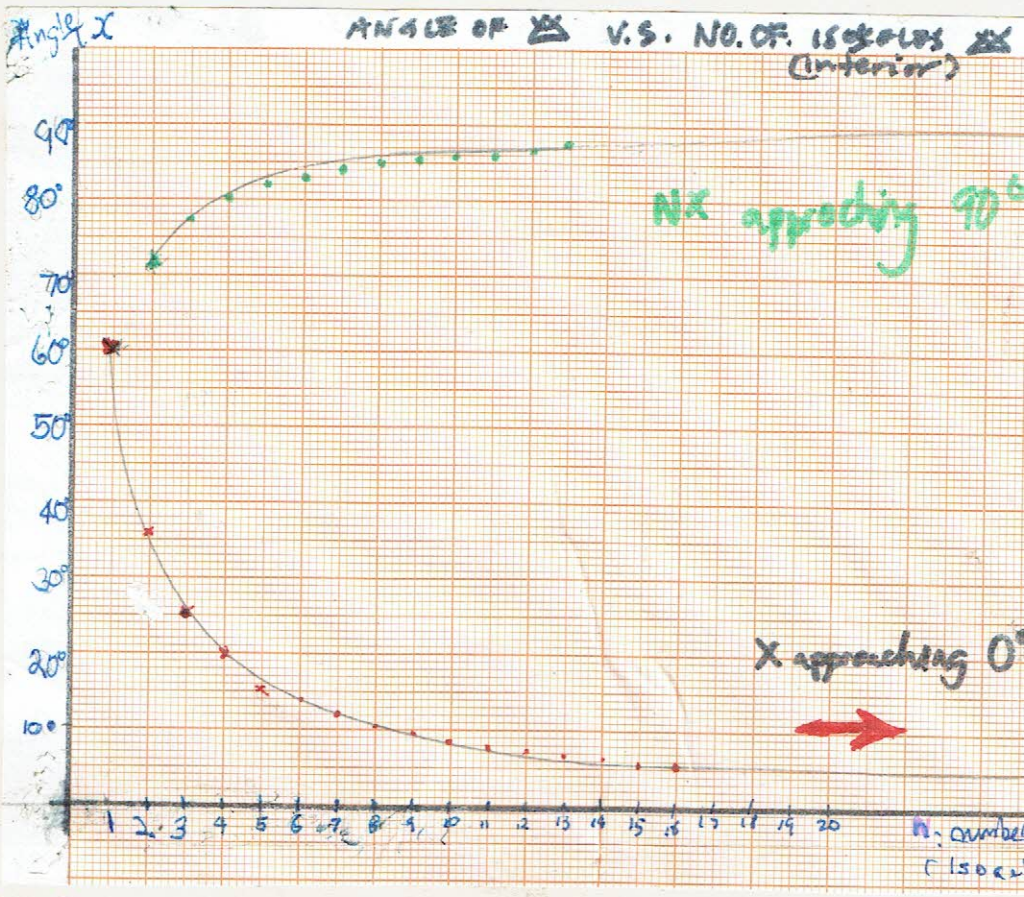
PS where $N \neq 0$, AND

N is a positive whole number (integer)

Cont to Pg 3

Explore further

N	2N+1	$X=\frac{180}{2N+1}$	NX
1	1x2+1 = 3	X = 180/3 = 60	1x60 = 60
2	2x2+1 = 5	X = 180/5 = 36	2x36 = 72
3	3x2+1 = 7	X = 180/7 = 22.857	3x22.8 = 68.4
4	9	20	80
5	11	16.36	81.81
6	13	13.85	83.07
7	15	12	84
8	17	10.59	84.71
9	19	9.74	85.26
10	21	8.57	85.71
11	23	7.83	86.08
12	25	7.2	86.4
13	27	6.66666	86.6866
14	29	6.21	86.95



Conclusion:

I can construct Isosceles triangles with X is a whole number angle:

N=1 X=60 NX=60,
N=2 X=36 NX=72
N=4 X=20 NX=80
N=7 X=12 NX=84

$\because X=\frac{180}{2N+1}$ 3, 5, 9, 15 are factor of 2N+1

When X is approaching 0°, NX approaches 90°

And I think you know that when an angle is 0, you can't make any!! Can't make a triangle.