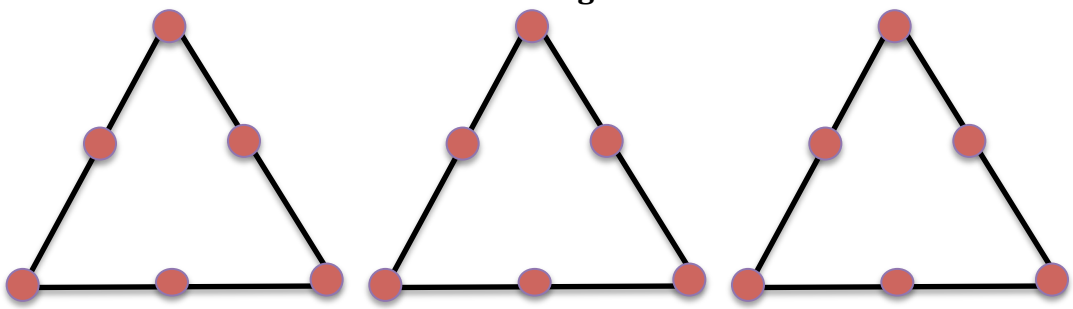
Presentation #78, Herrmann

Number, Shape and Symmetry: Ideas to Inspire Teachers and Students

(Handout available in Session #78 to accompany presentation)

The Triangle Game



Four Numbers Game Rules

Choose four numbers and place them at the corners of a square. At the midpoint of each edge, write the absolute value of the difference of the two adjacent numbers. This produces a new list of four numbers, written on a smaller square. What happens when this process is repeated?

Ones Digit Arithmetic Addition Table

+	0	1	2	3	4	5	6	7	8	9
0	0	1	2	3	4	5	6	7	8	9
1	1	2	3	4	5	6	7	8	9	0
2	2	3	4	5	6	7	8	9	0	1
3	3	4	5	6	7	8	9	0	1	2
4	4	5	6	7	8	9	0	1	2	3
5	5	6	7	8	9	0	1	2	3	4
6	6	7	8	9	0	1	2	3	4	5
7	7	8	9	0	1	2	3	4	5	6
8	8	9	0	1	2	3	4	5	6	7
9	9	0	1	2	3	4	5	6	7	8

One's Digit Arithmetic Multiplication Table

•	0	1	2	3	4	5	6	7	8	9
0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9
2	0	2	4	6	8	0	2	4	6	8
3	0	3	6	9	2	5	8	1	4	7
4	0	4	8	2	6	0	4	8	2	6
5	0	5	0	5	0	5	0	5	0	5
6	0	6	2	8	4	0	6	2	8	4
7	0	7	4	1	8	5	2	9	6	3
8	0	8	6	4	2	0	8	6	4	2
9	0	9	8	7	6	5	4	3	2	1

Symmetry Motions of the Equilateral Triangle

•	I	R_{120}	R_{240}	F_T	F_L	F_R
I	I	R_{120}	R_{240}	F_T	F_L	F_R
R_{120}	R_{120}	R_{240}	I	F_R	F_T	F_L
R_{240}	R_{240}	I	R_{120}	F_L	F_R	F_T
F_T	F_T	F_L	F_R	I	R_{120}	R_{240}
F_L	F_L	F_R	F_T	R_{240}	I	R_{120}
F_R	F_R	F_T	F_L	R_{120}	R_{240}	I