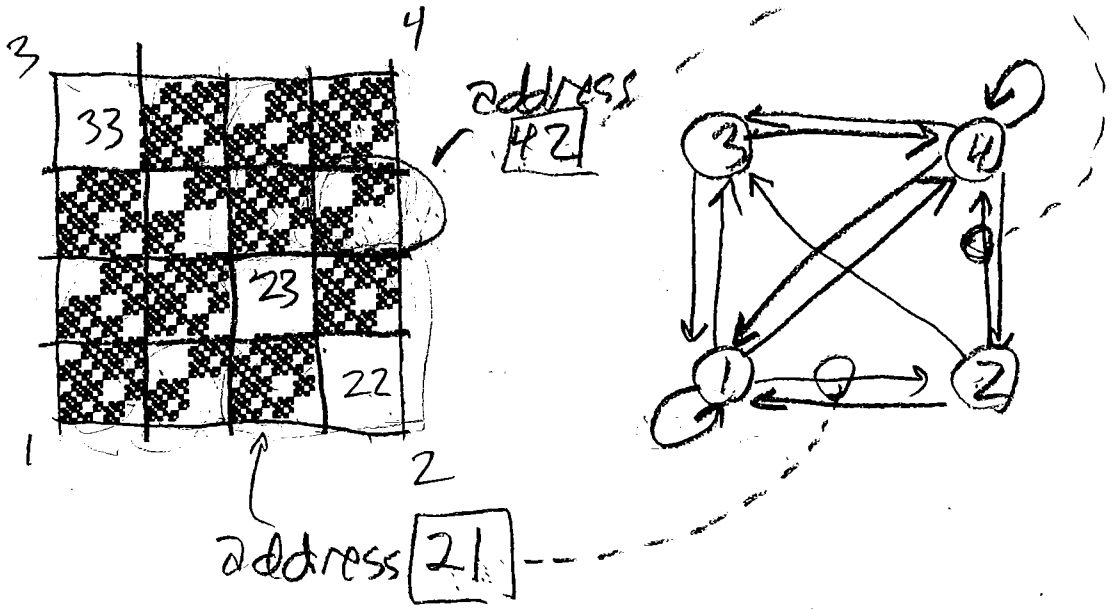
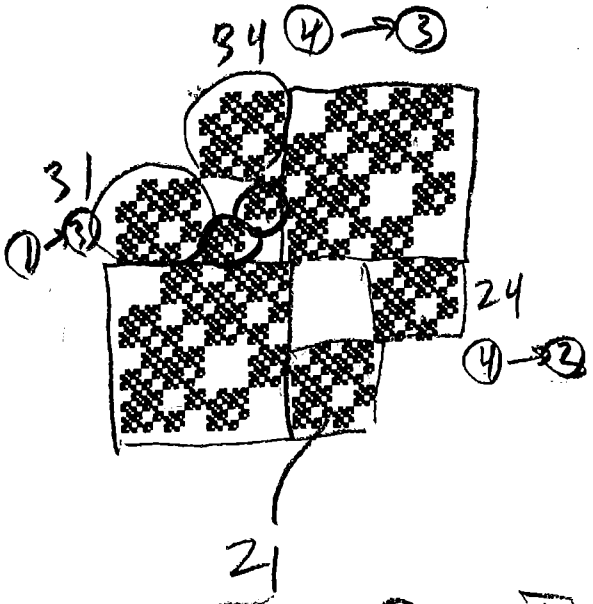


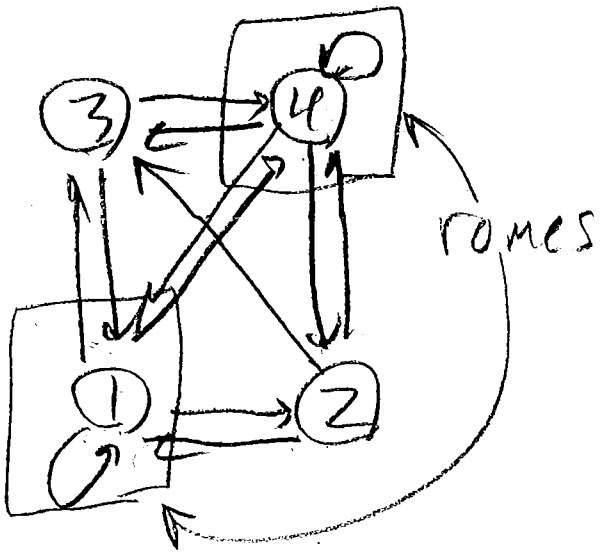
Transition graph

Address 1 is a complete scaled copy of the whole shape: In the transition graph, 4 arrows go to ①

Address 4 is a complete scaled copy of the whole shape: In the transition graph 4 arrows go to ④

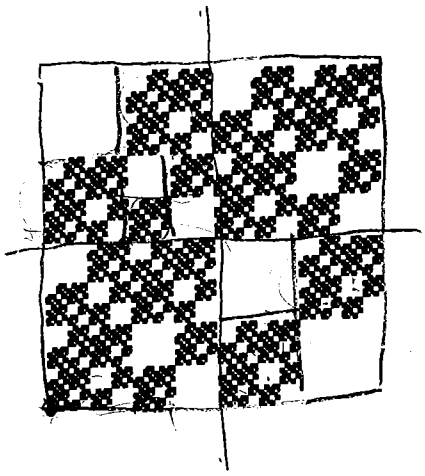
① and ④ are <u>romes</u> because "all roads lead to rome". In the transition graph, 4 arrows go to each rome.

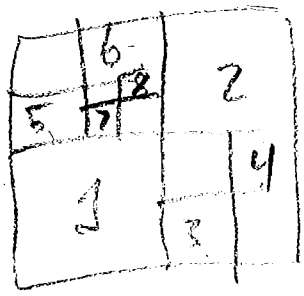




Two $\frac{1}{8} \times \frac{1}{8}$ pieces are given by ① → ② → ③ and ④ → ② → ③

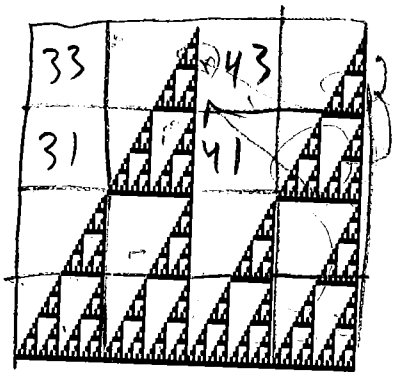
To generate an IFS with memory by an IFS without memory, we must
(i) have at least one rome (① & ④ here)
(ii) for every non-rome, there is a path in the transition graph from a rome to that non-rome. (here ② and ③ are the non-romes: ① → ② and ① → ③ (also ④ → ② and ④ → ③)

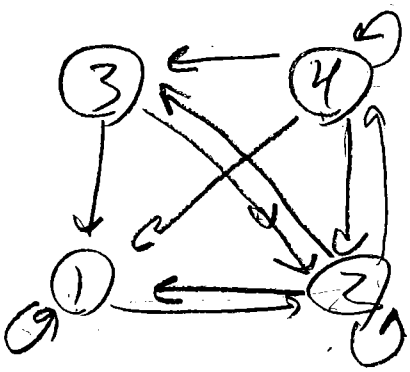




Find the IFS (without memory) ruler

	r	s	θ	φ	e	f
1	1/2	1/2	0	0	0	0
2	1/2	1/2	0	0	1/2	1/2
3	1/4	1/4	0	0	1/2	0
4	1/4	1/4	0	0	3/4	1/4
5	1/4	1/4	0	0	0	1/2
6	1/4	1/4	0	0	1/4	3/4
7	1/8	1/8	0	0	1/4	1/2
8	1/8	1/8	0	0	3/8	5/8





① and ② are roots

paths from roots to non-roots

② → ③ and ② → ④

IFS without memory

Loop among non-roots ④

Infinitely many IFS without memory rules are required.