

Islamic Geometric Pattern

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What is an Islamic Geometric Pattern (IGP)?

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**It is a geometric shape or pattern that
can be made using only compass and
straightedge.**

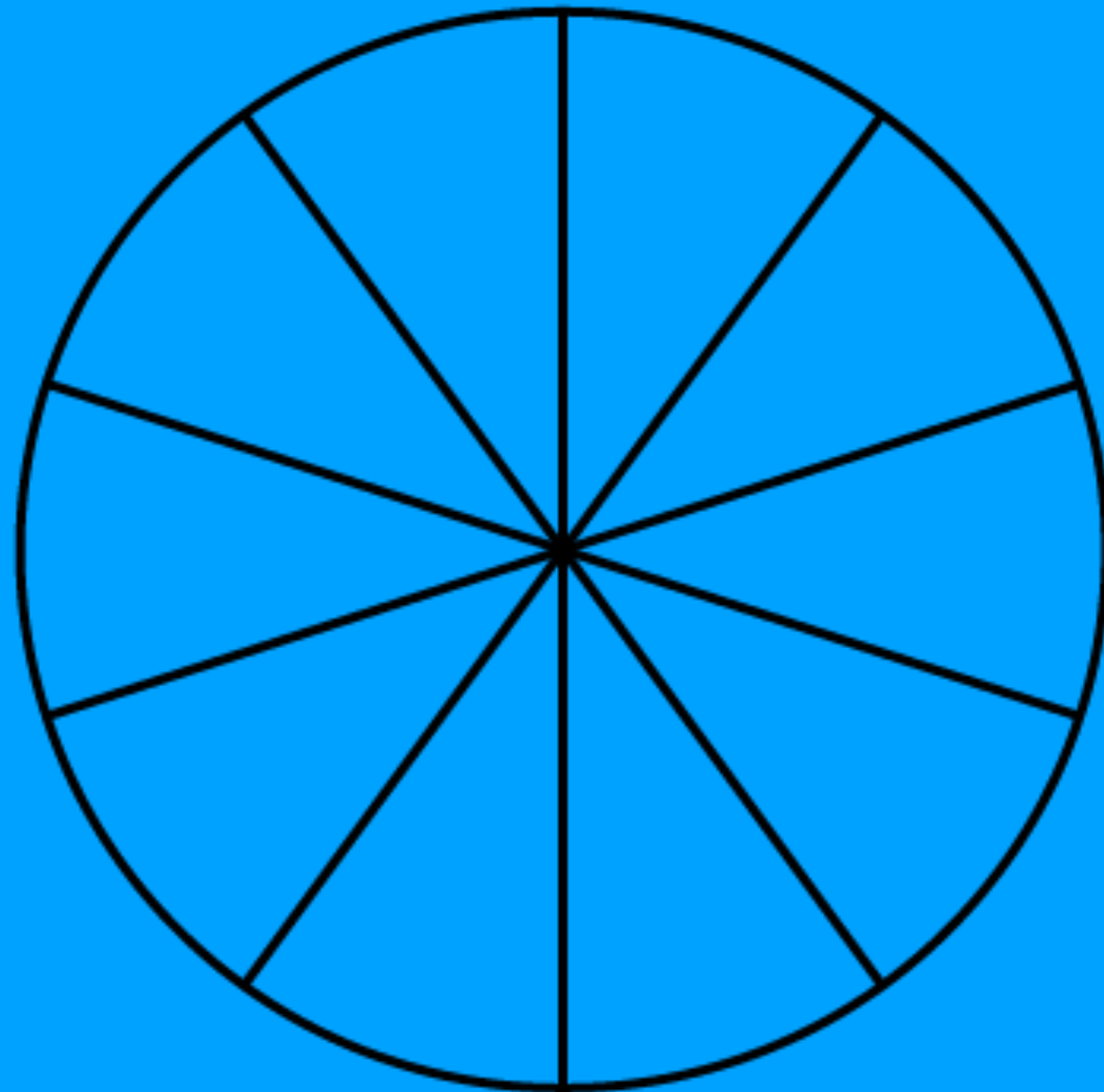
**What kind of questions
can we ask about IGP in
Math Circle?**

What kind of Question can
we ask about **following**
IGP in Math Circle?

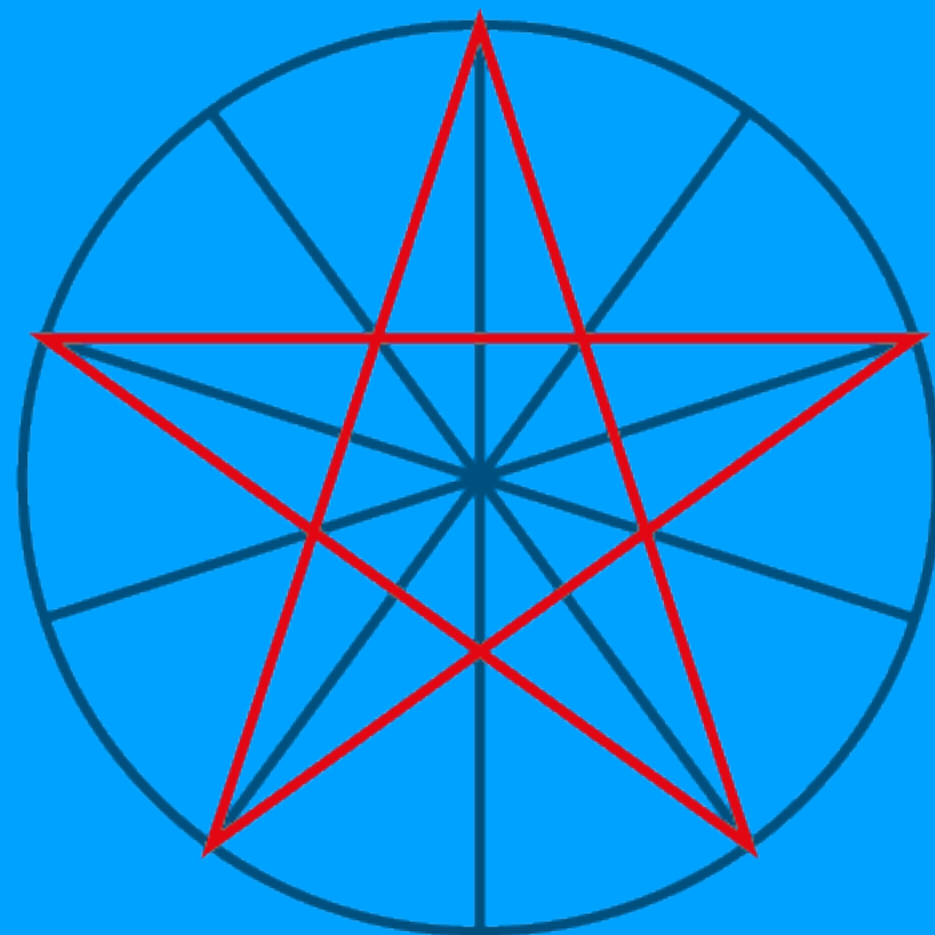


Pattern 1: 10 Loop-De-Loop Pattern

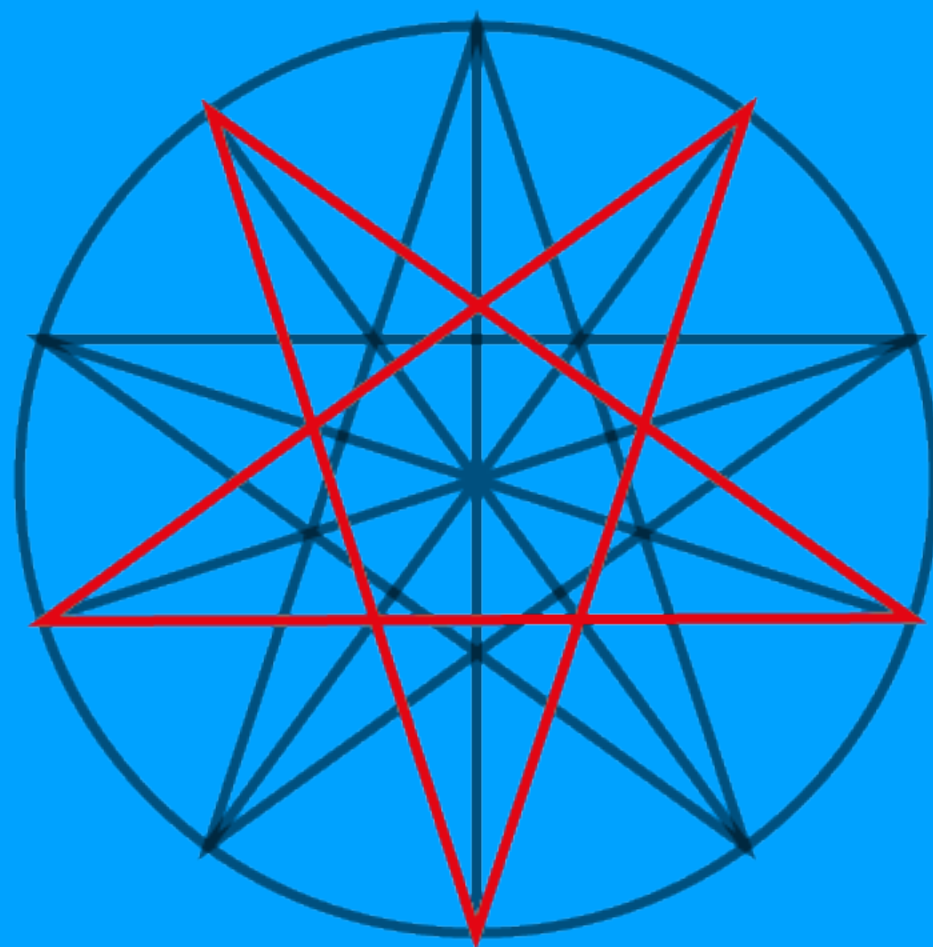
First method for step by steps construction:
(Only Construction Line)



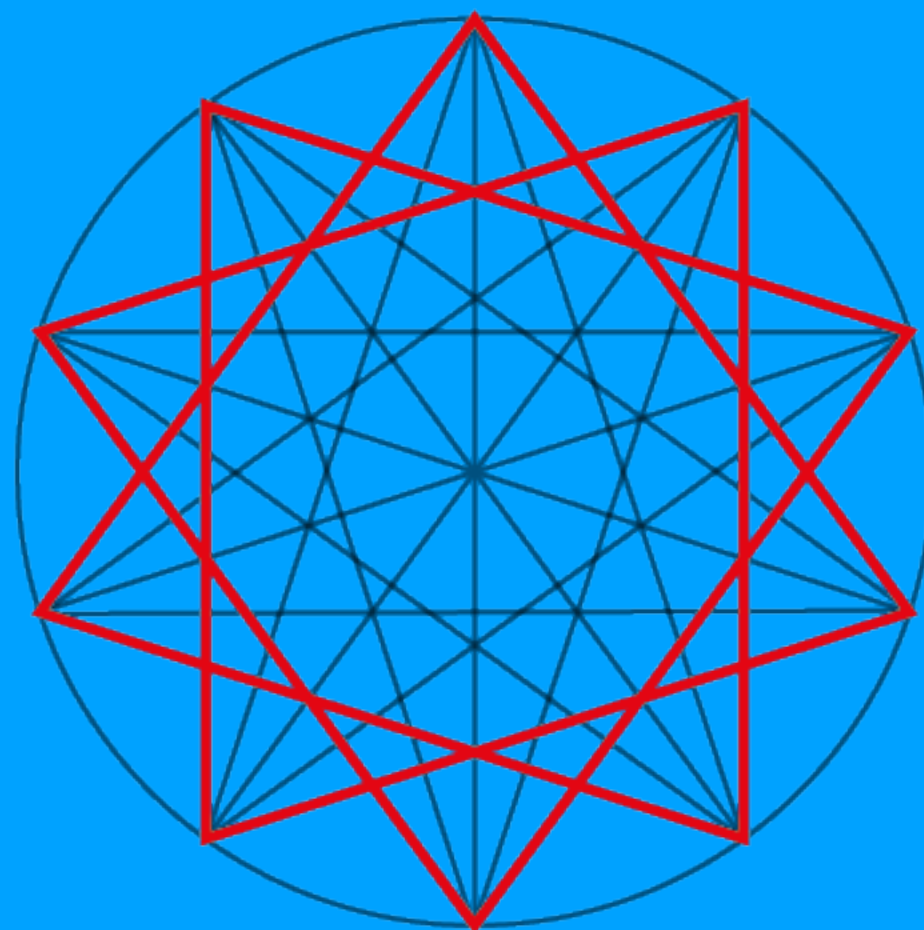
Step 1



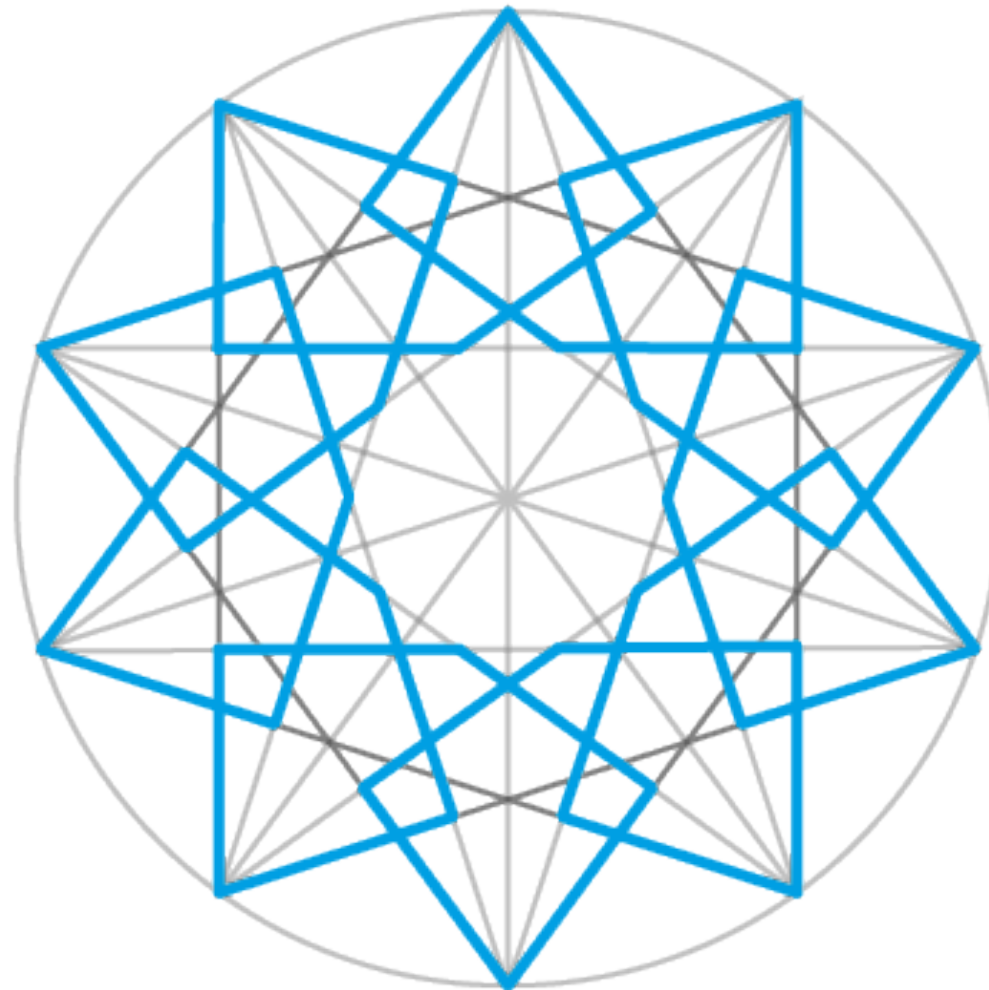
Step 2



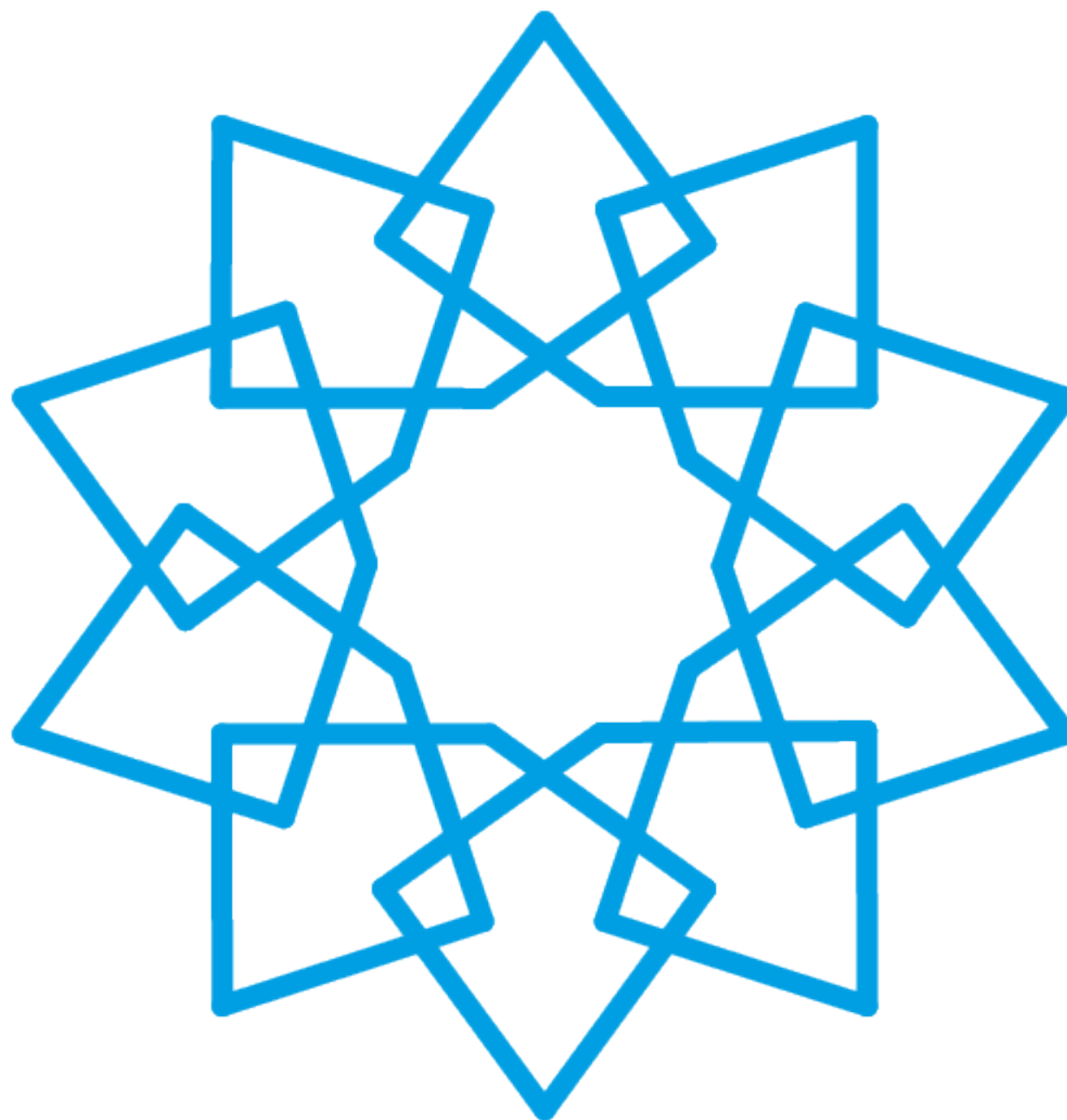
Step 3



Step 4

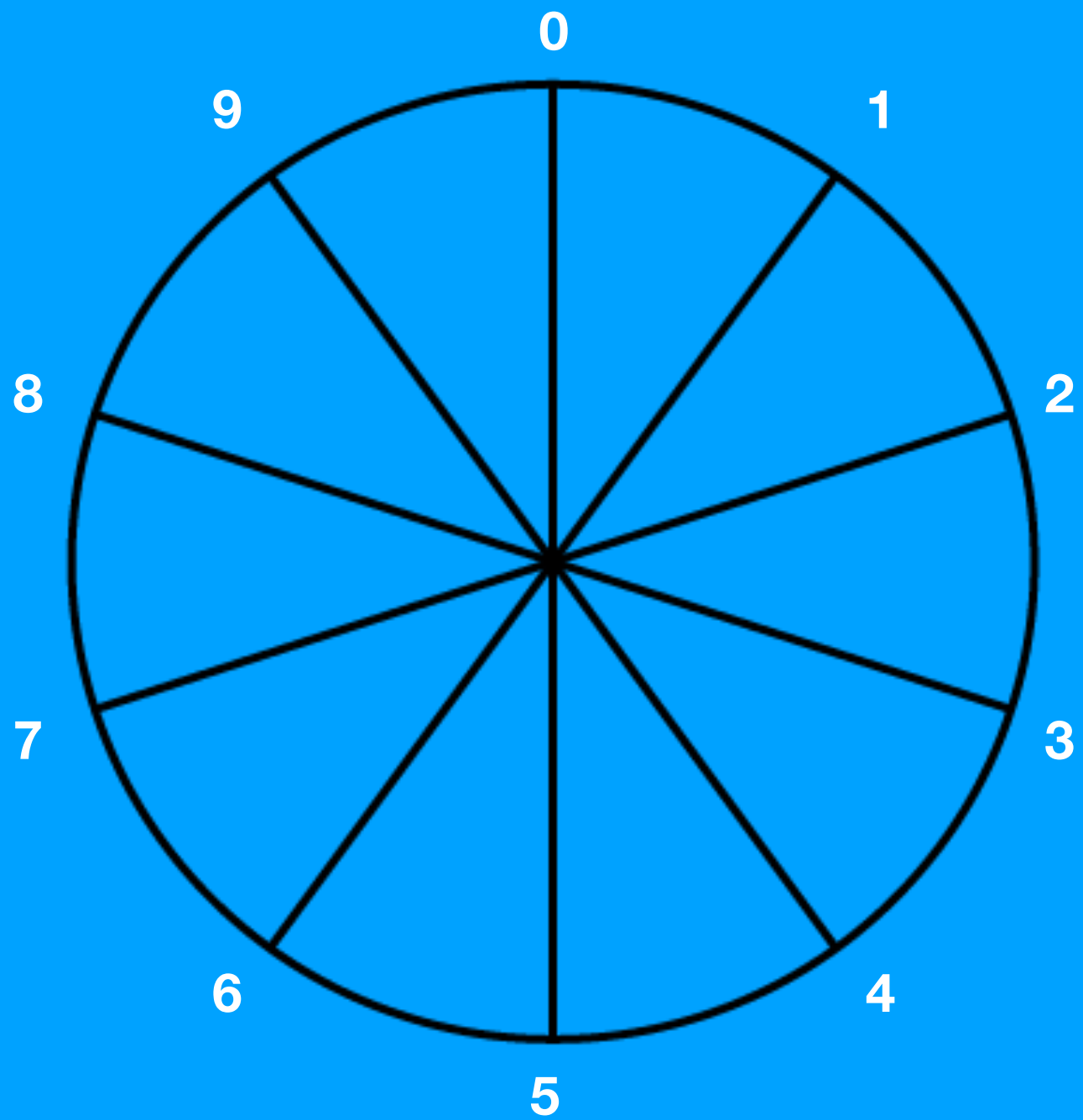


Step 5
(Construction line with pattern)



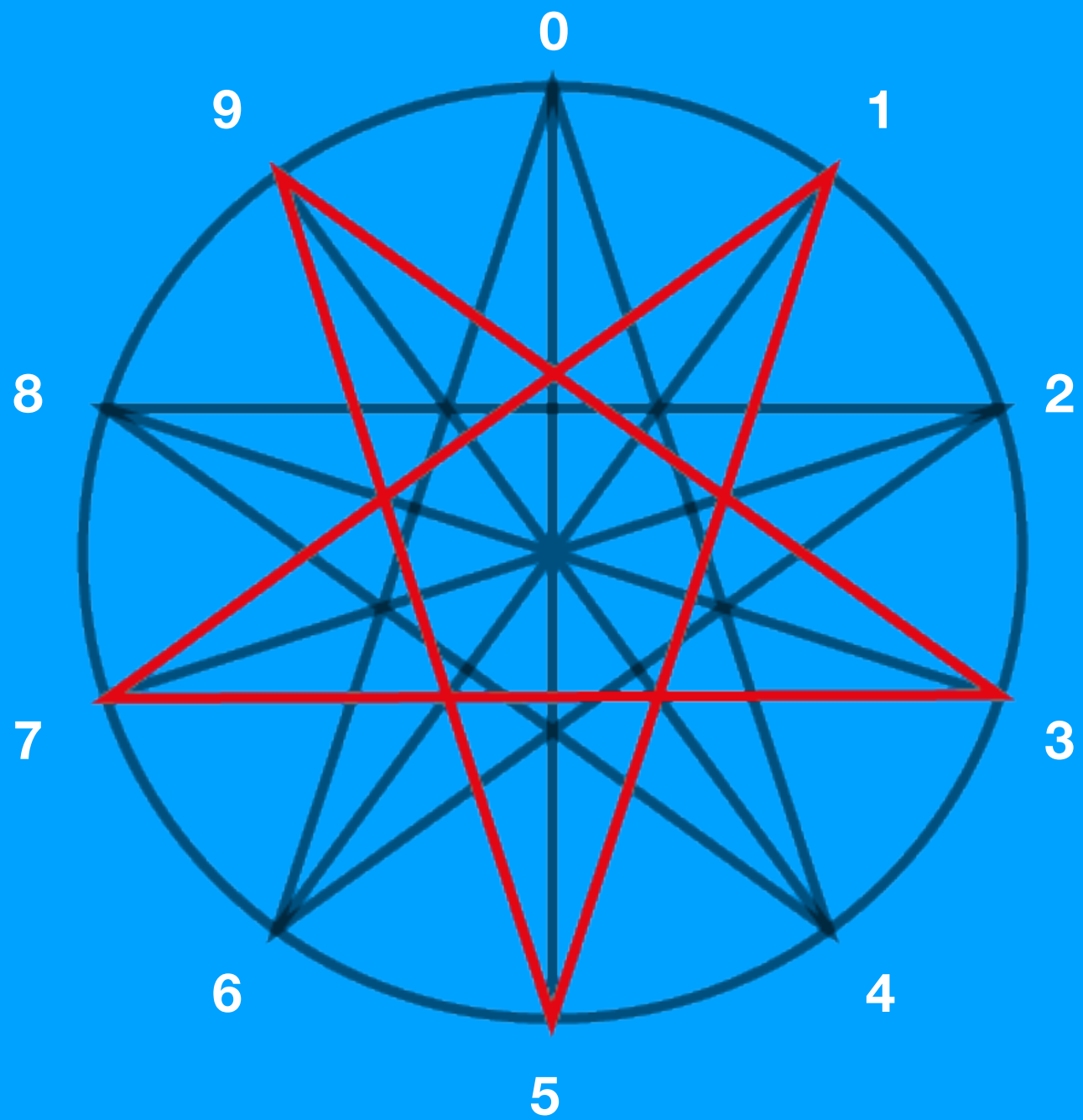
The pattern without the construction line

Second method for step by steps construction:
Construction Line and mathematical
guideline



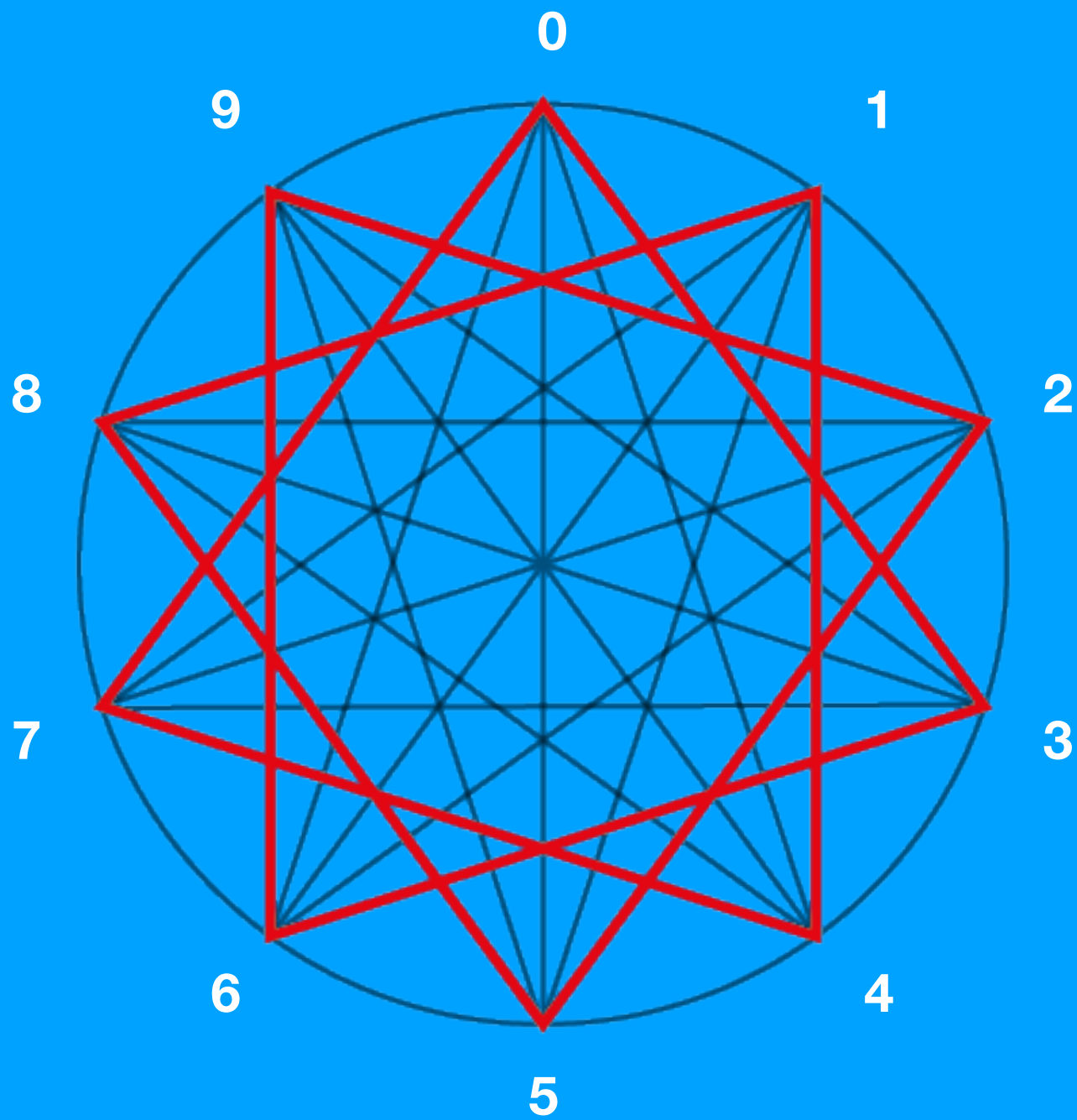
A	A+5
0	5
1	6
2	7
3	8
4	9

Step 1



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

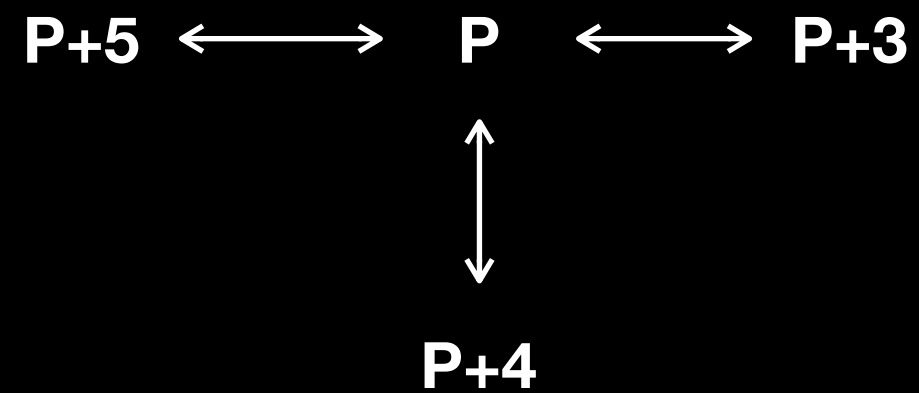
Steps 2,3



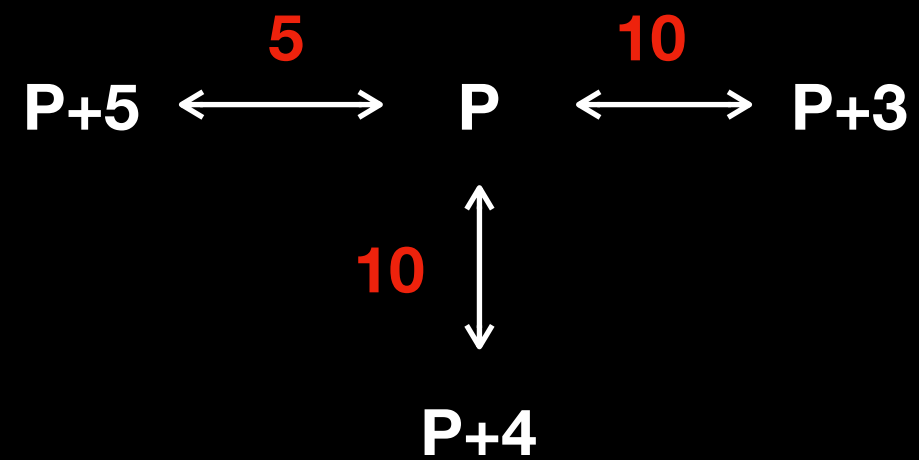
A	A+3
0	3
1	4
2	5
3	6
4	7
5	8
6	9
7	7+3=0
8	8+3=1
9	9+3=2

Steps 4

Line between Points...

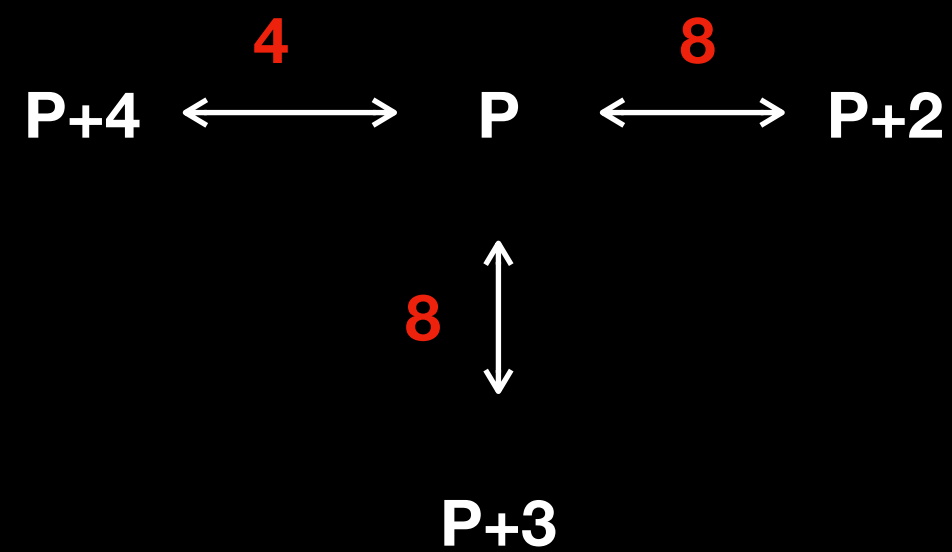
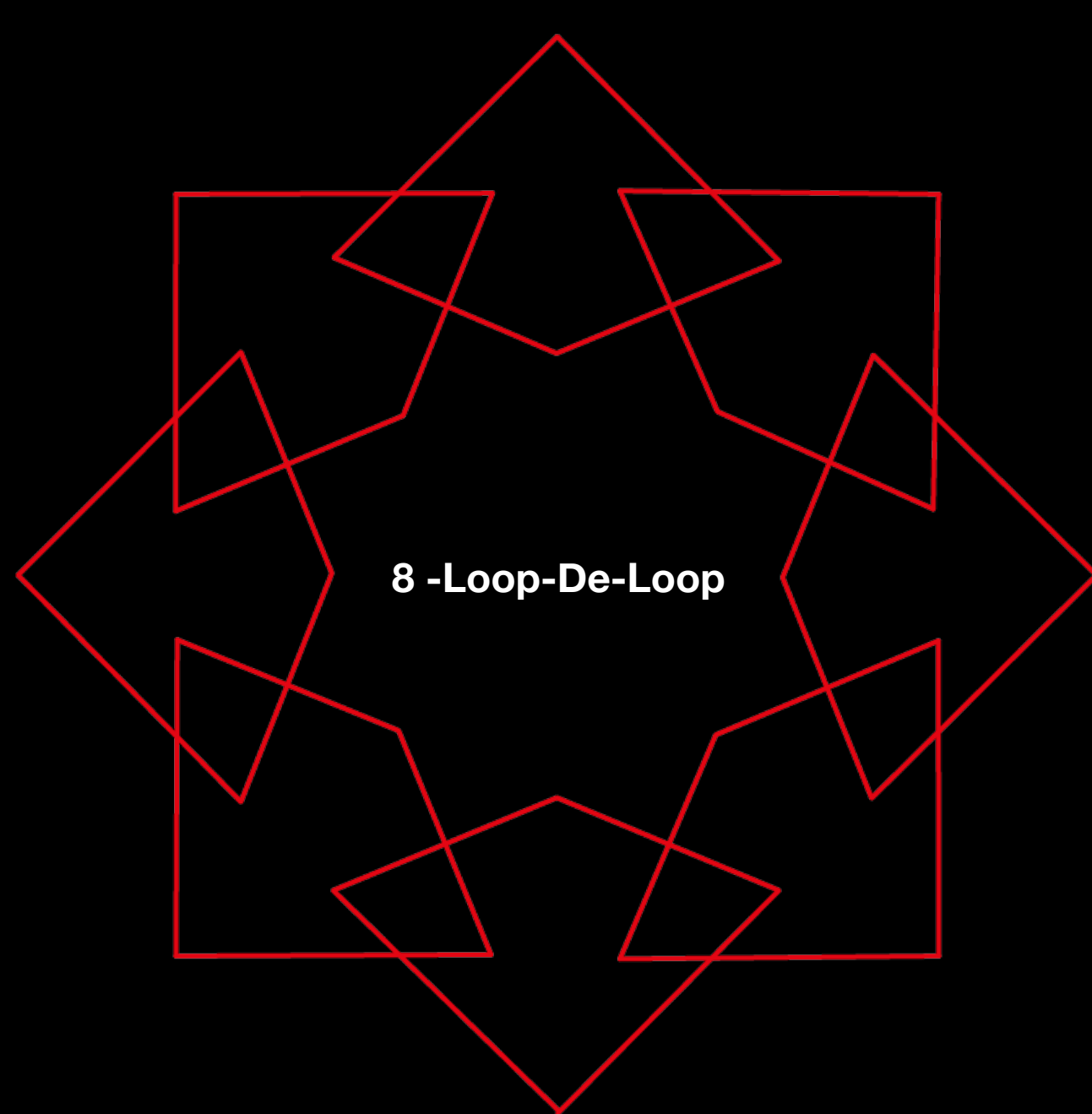
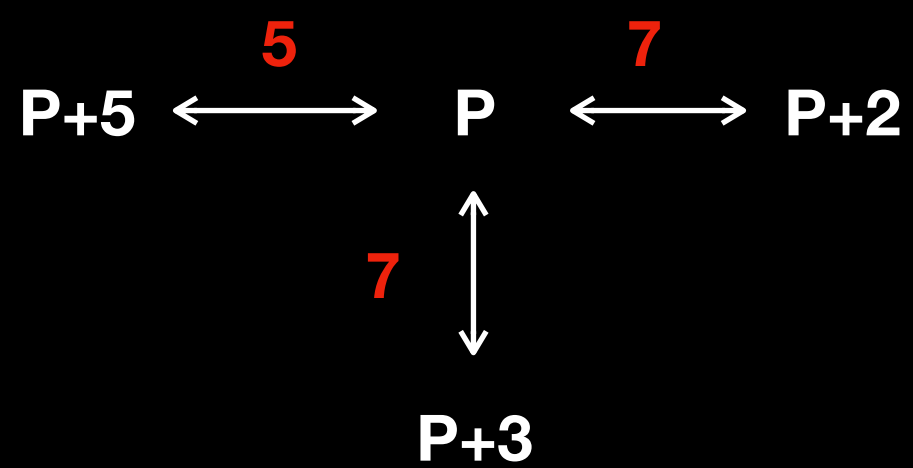


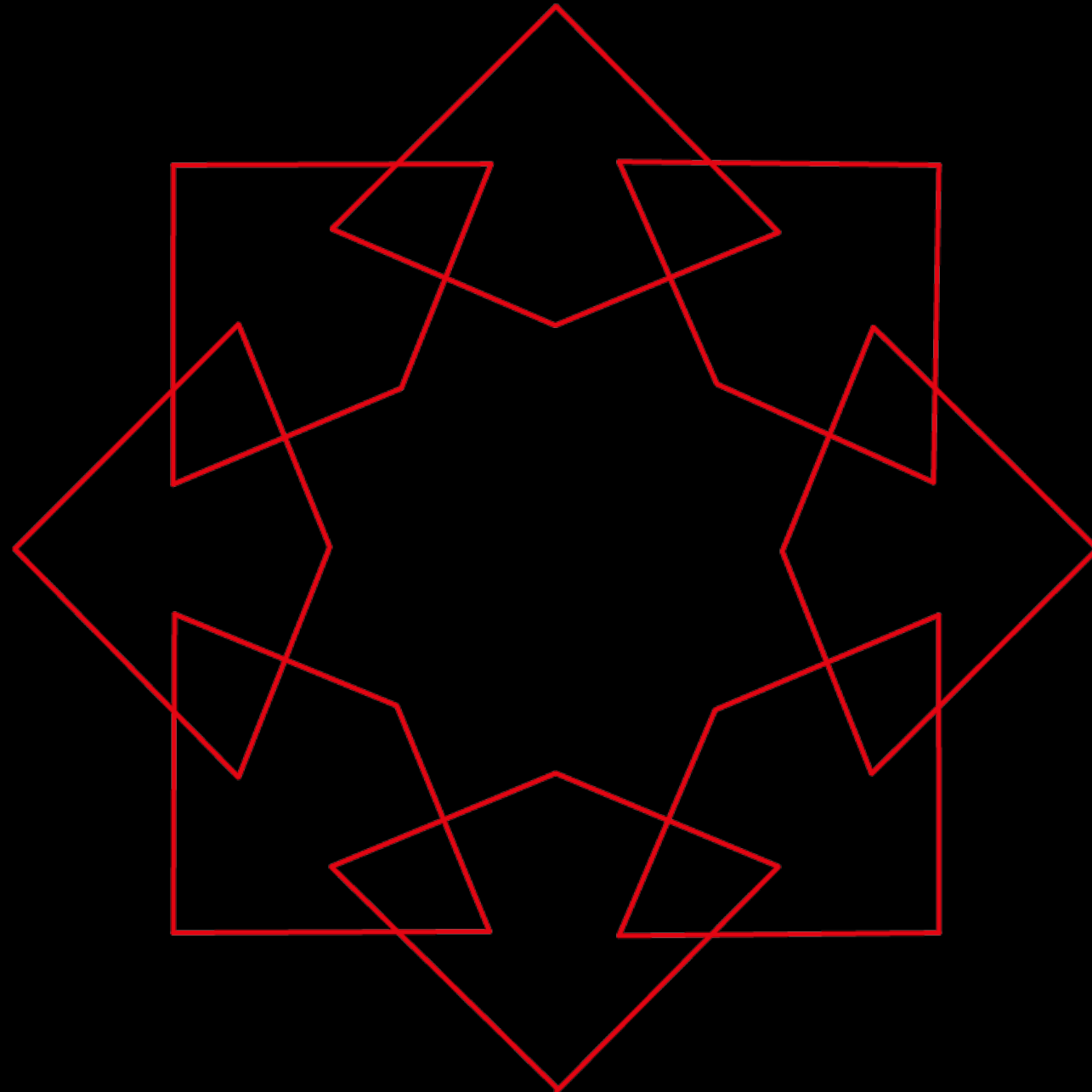
+ number of lines



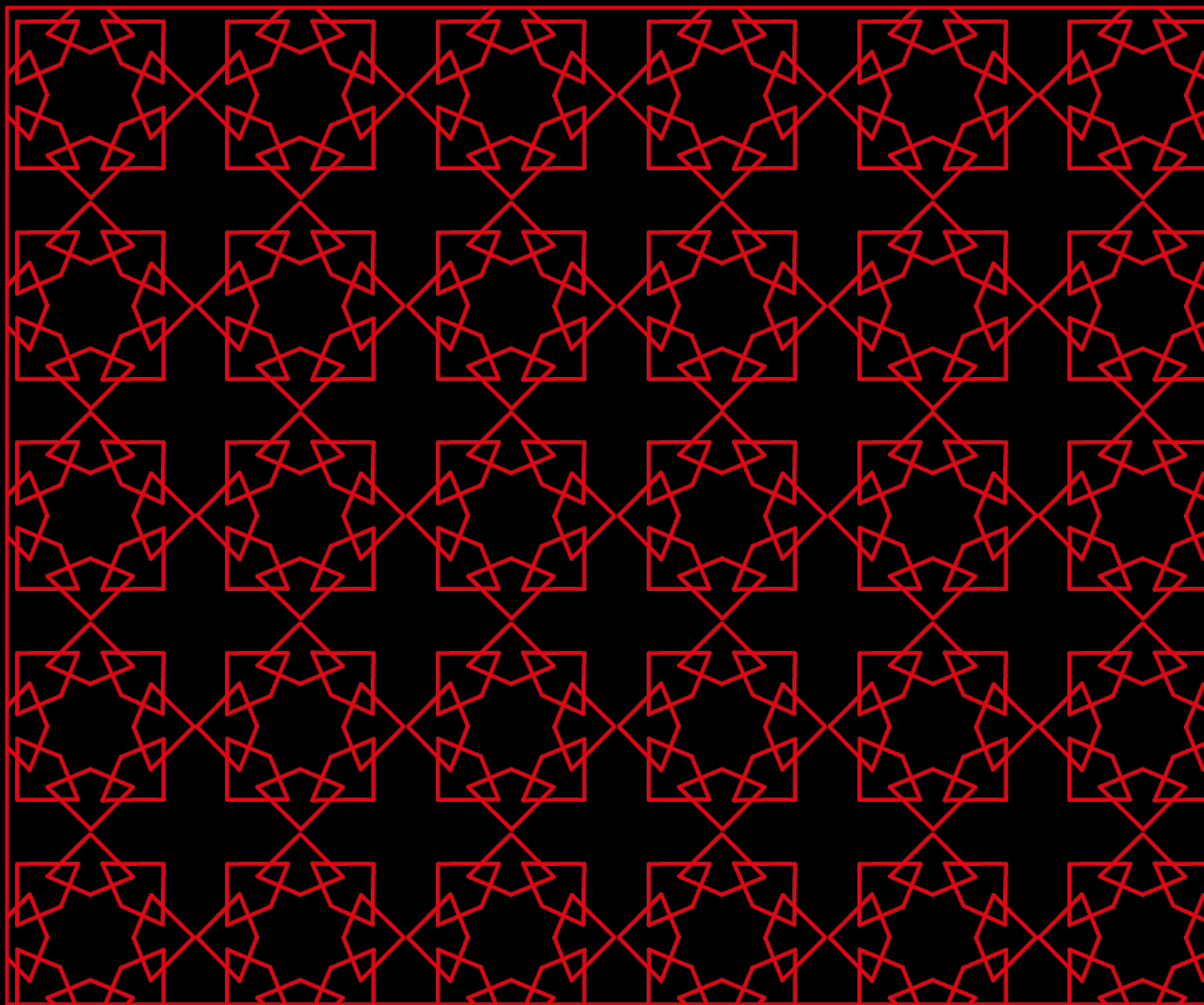
**Can you Generalize the
Loop-De-Loop Pattern ?**

**For which n are
 n -Loop-De-Loop is
constructible in the same
way?**

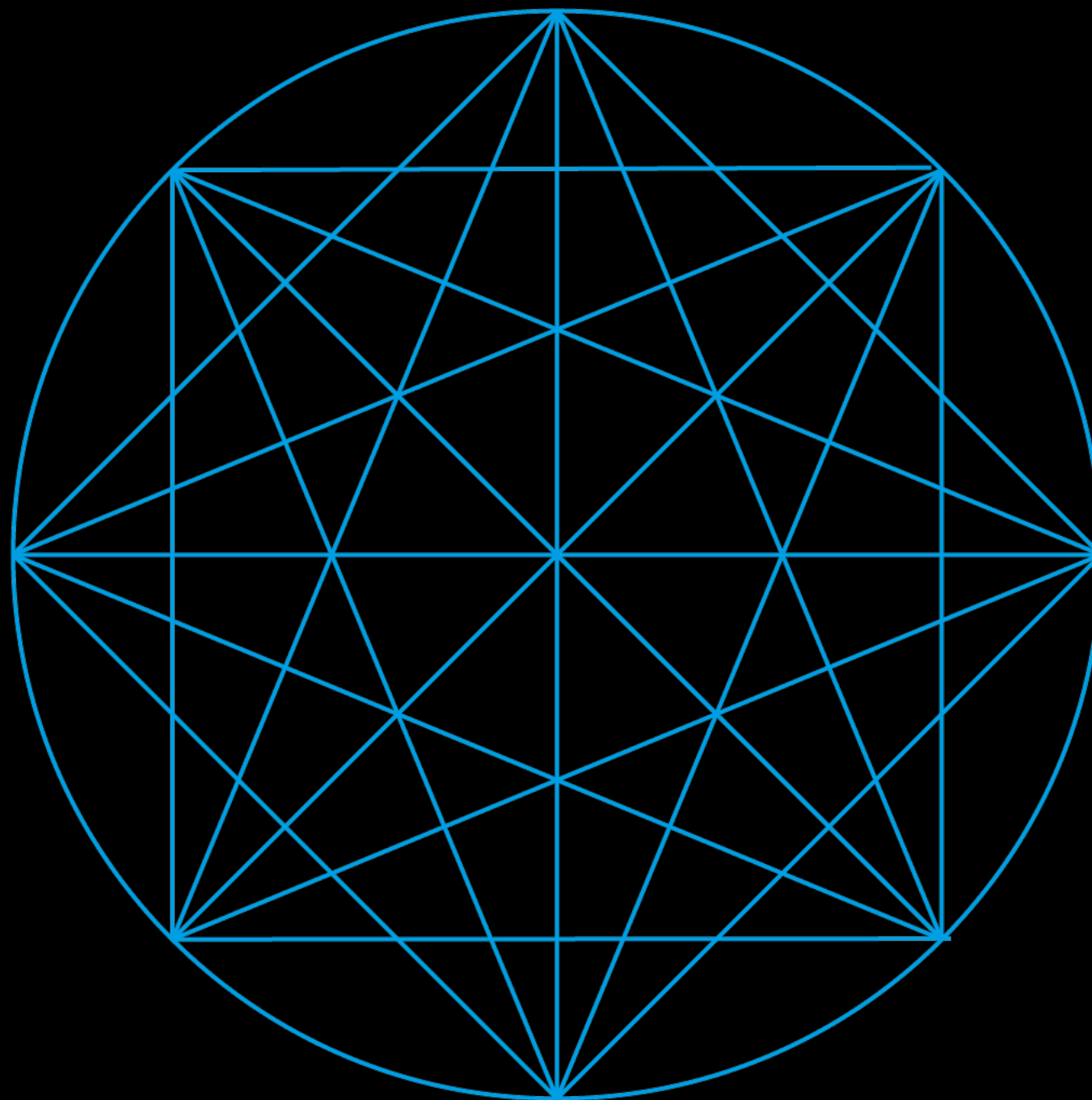




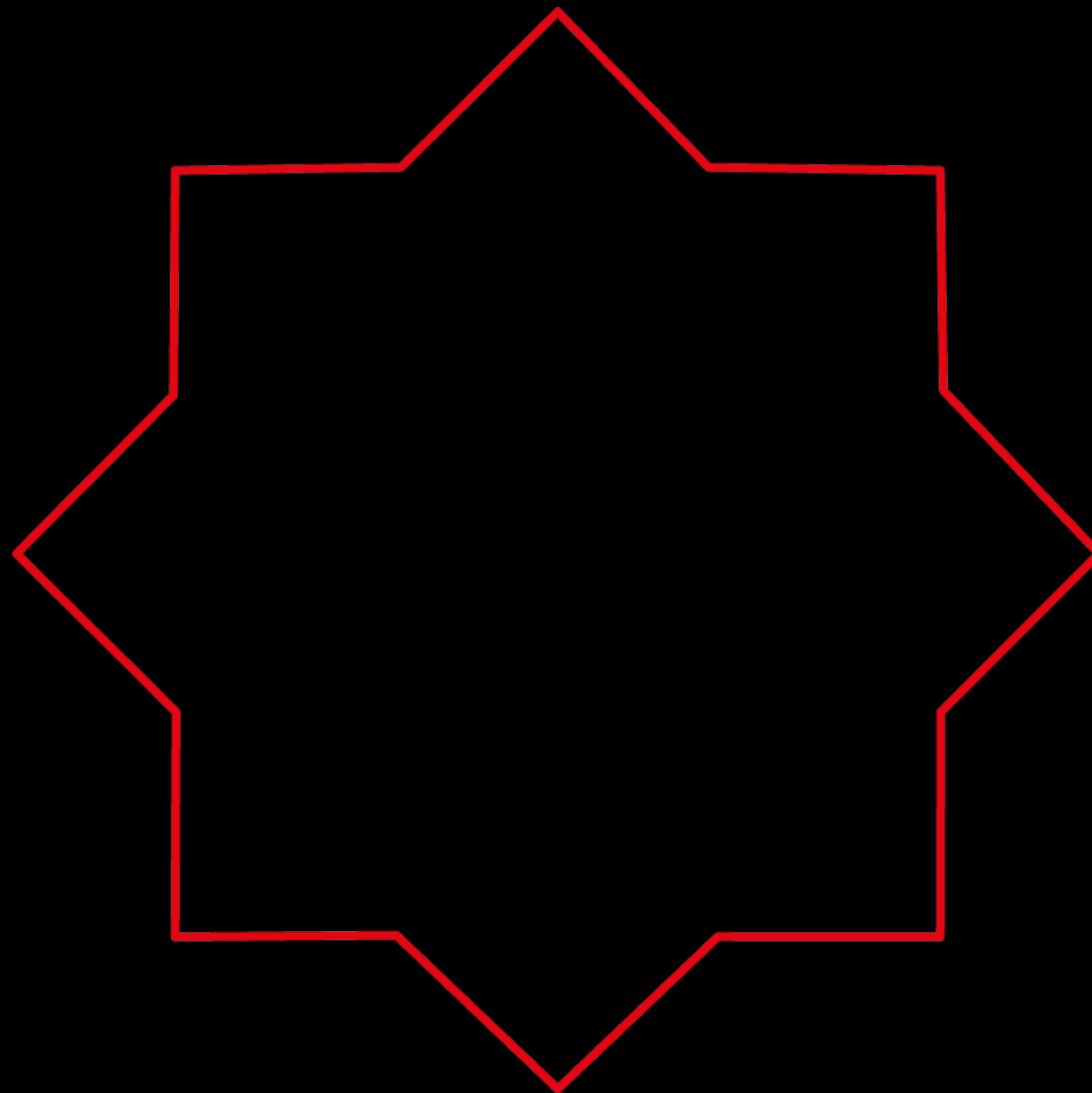
Pattern 2: 8 -Loop-De-Loop



Number of Different Shape:4

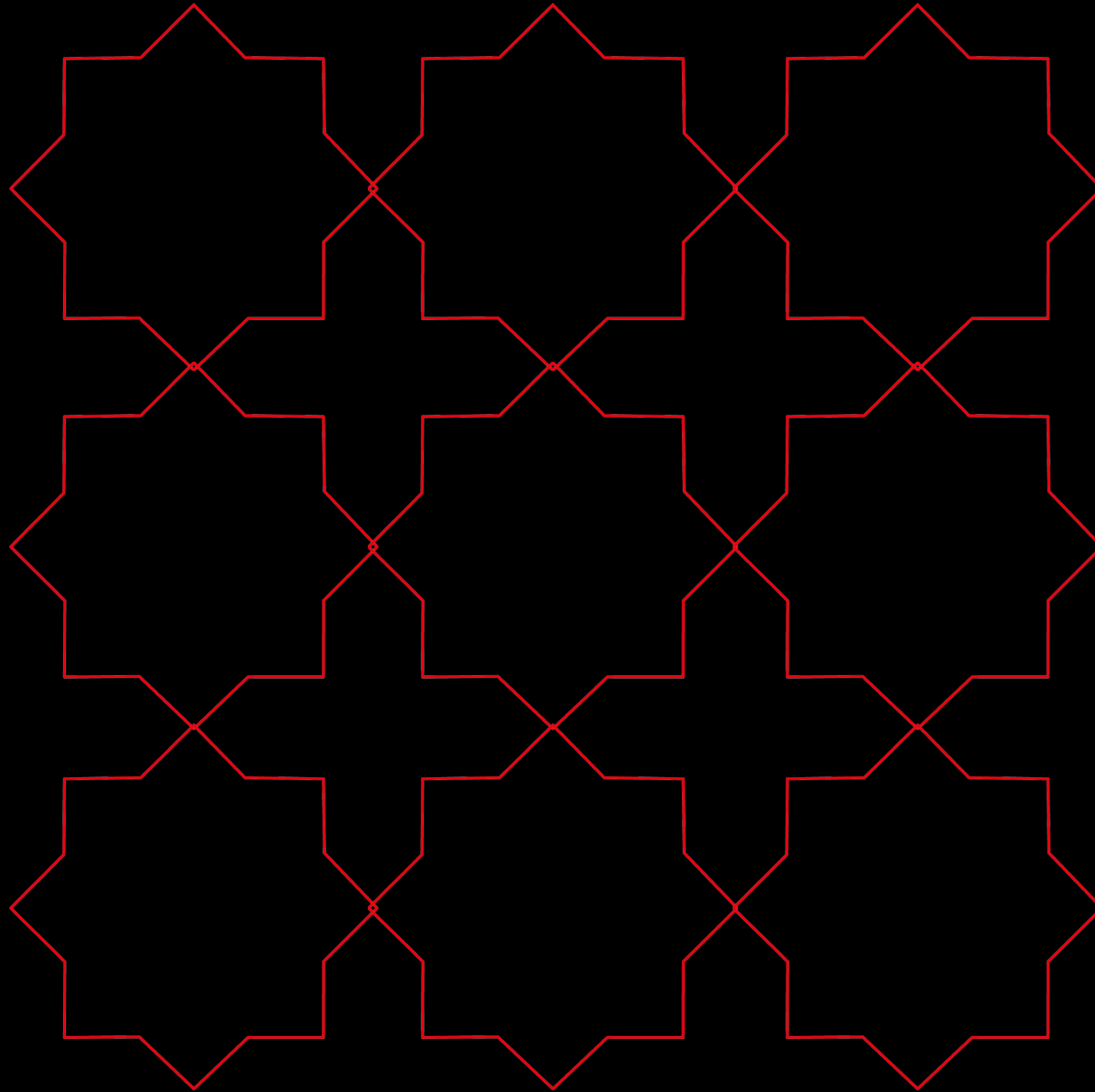


Construction line for Pattern 2

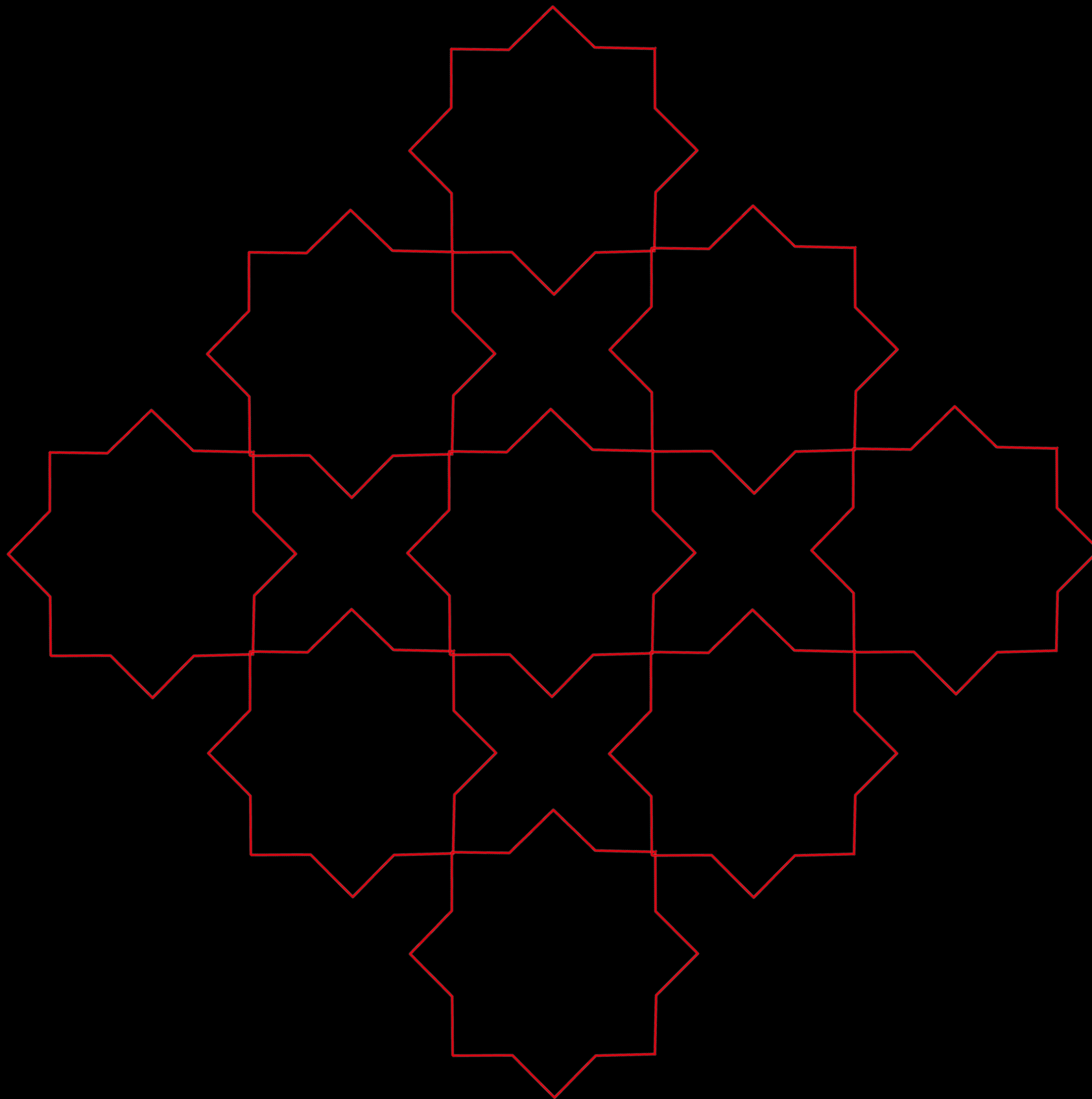


Pattern 3: Khatam of Sulaiman

Cappella Palatina: Palermo, Italy (AD 1132)



Number of Different Shape:2



The Koran of Rashid al-Din: Tabriz,Iran

A good Book to start doing IGP :

Islamic Geometric Patterns by Eric Broug

