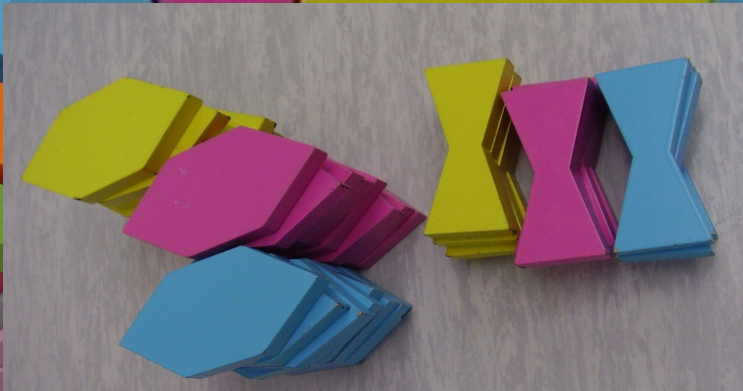
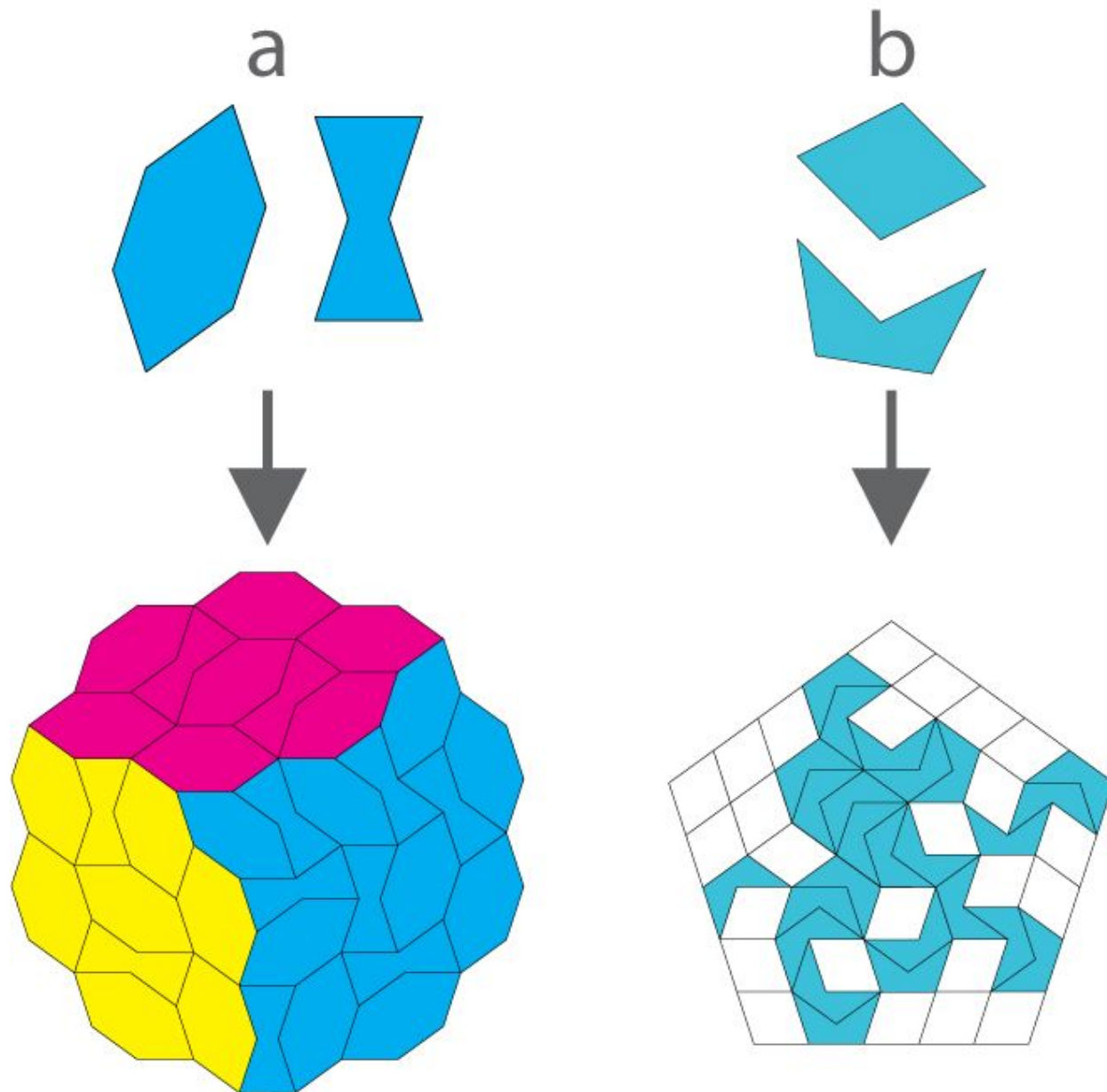


Jaksottomia laatoituksia

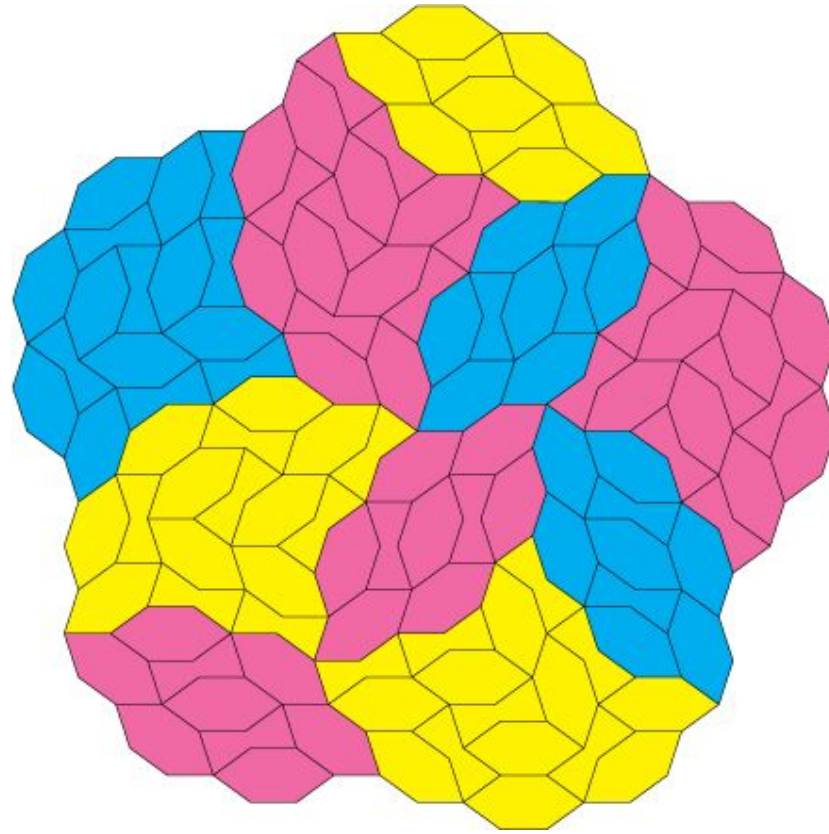
Kari Delcos

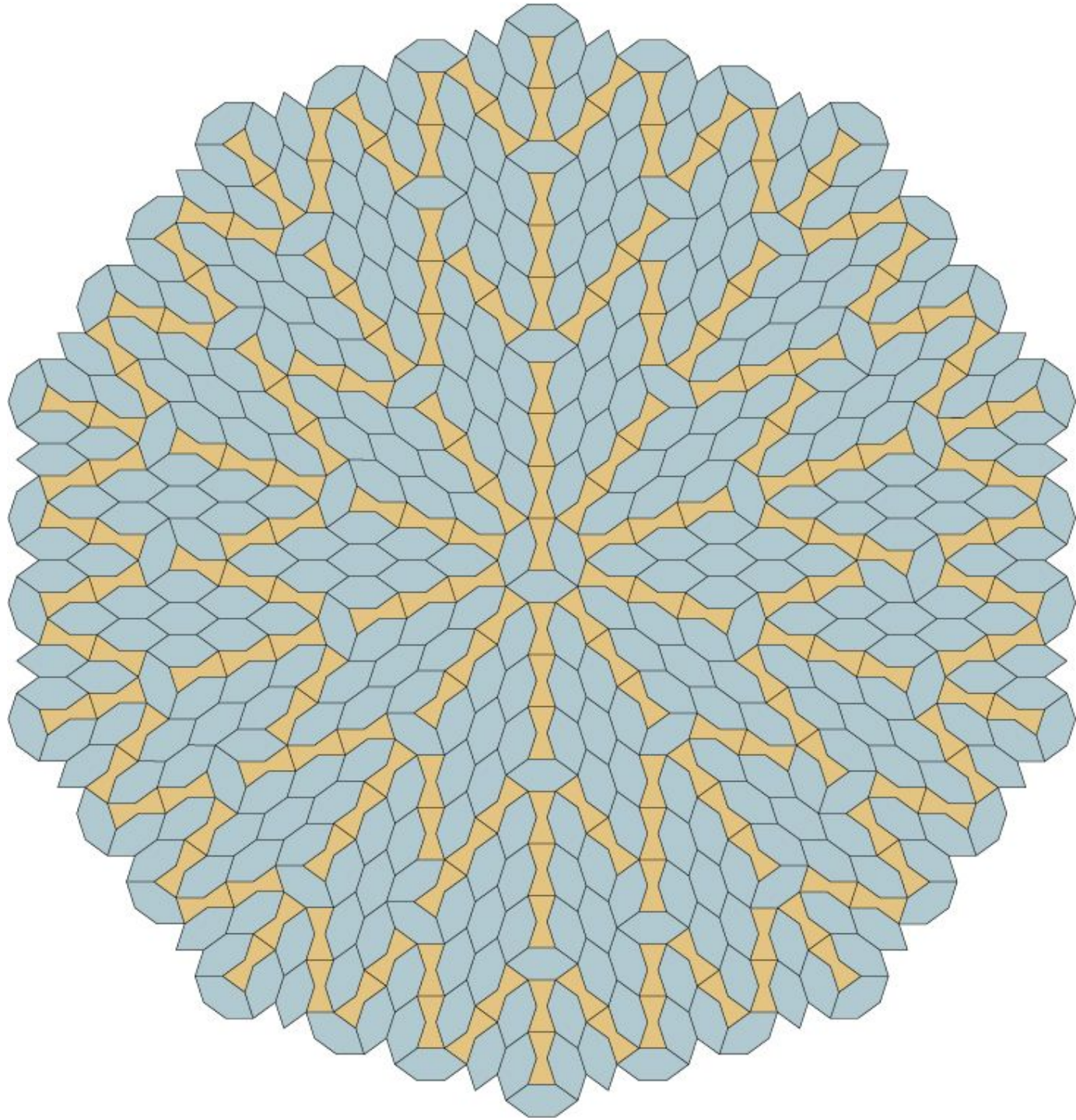


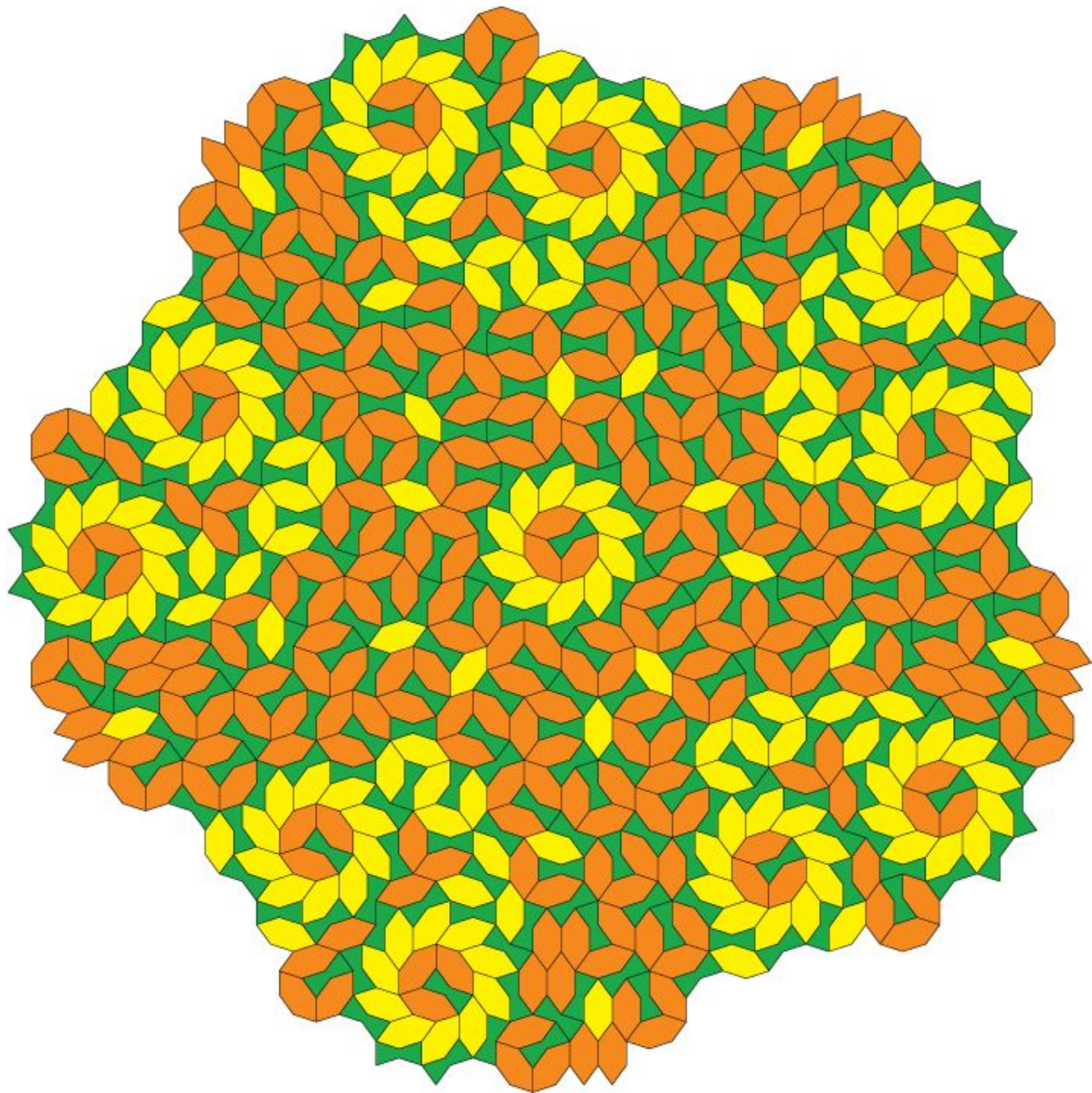
Kaksi sarja, jotka toimivat erikseen ja yhdessä.

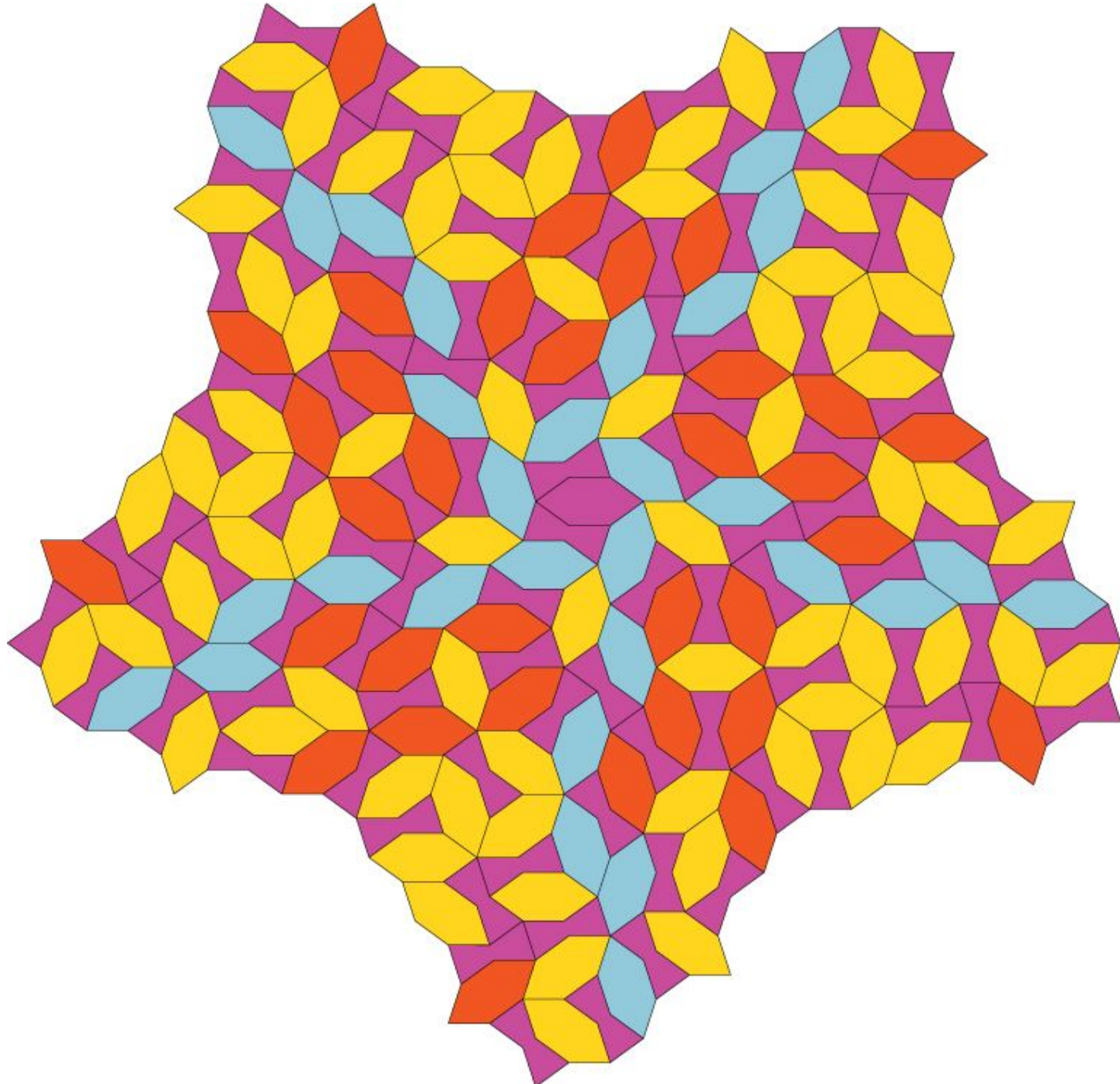


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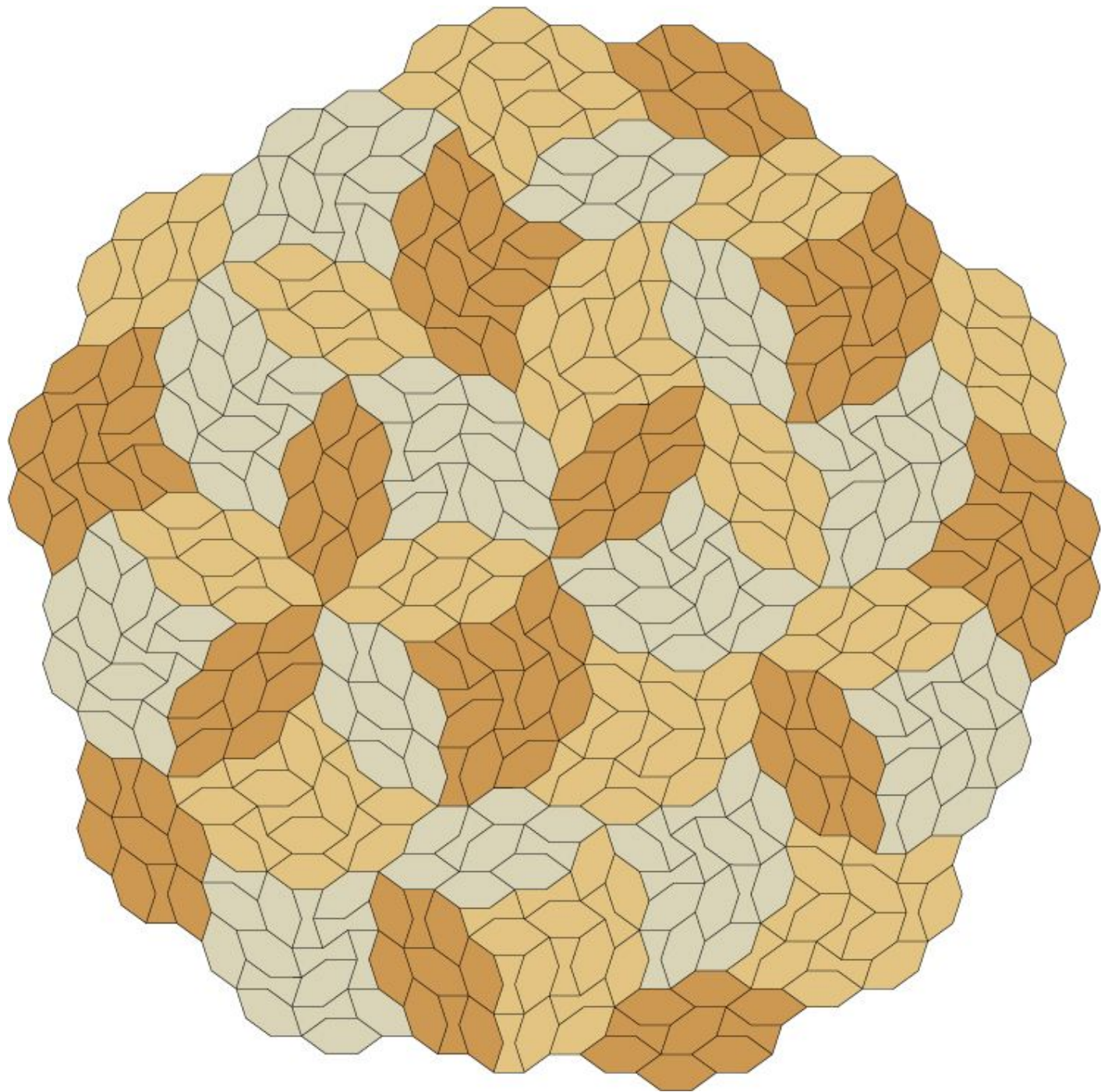


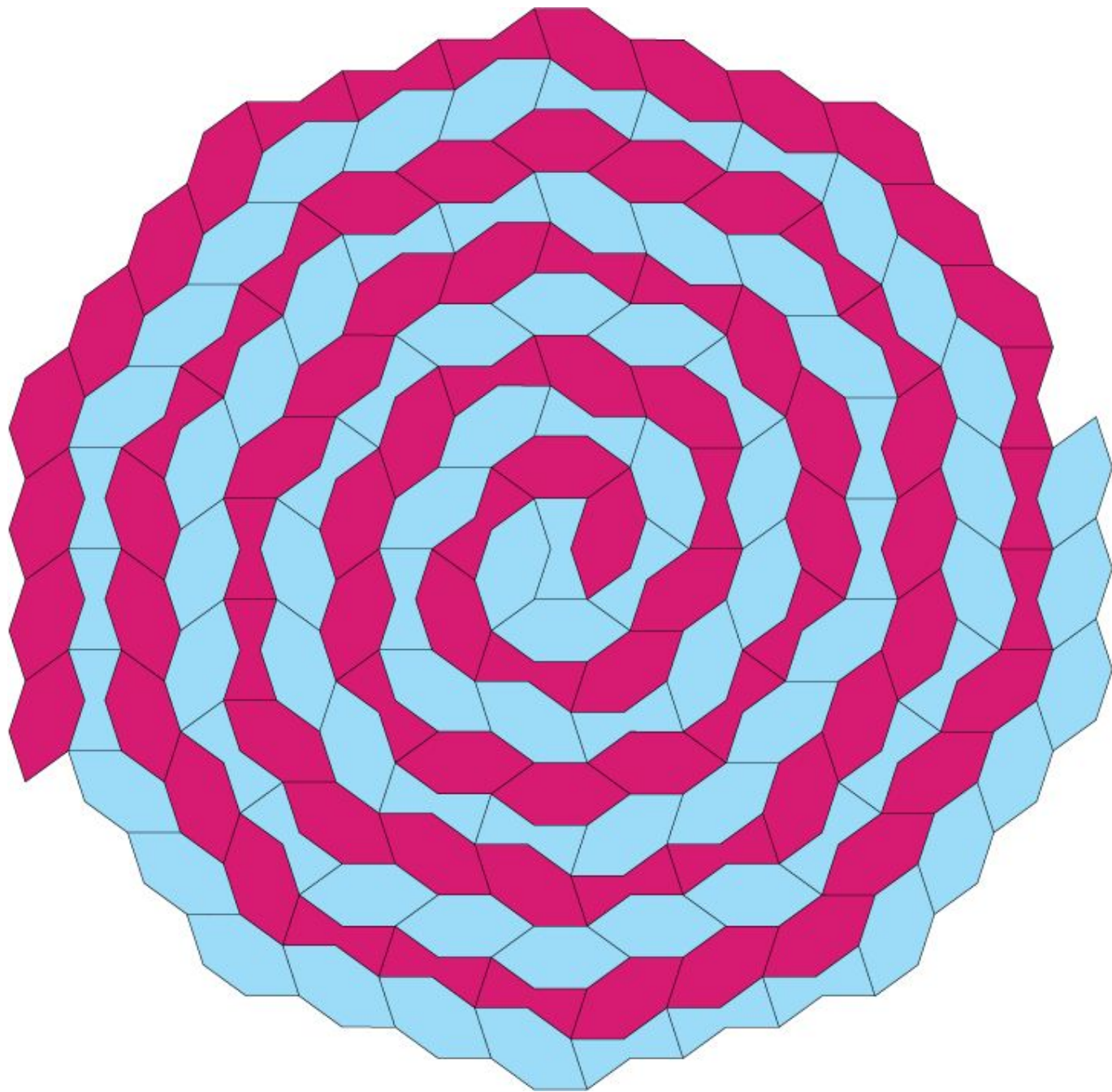


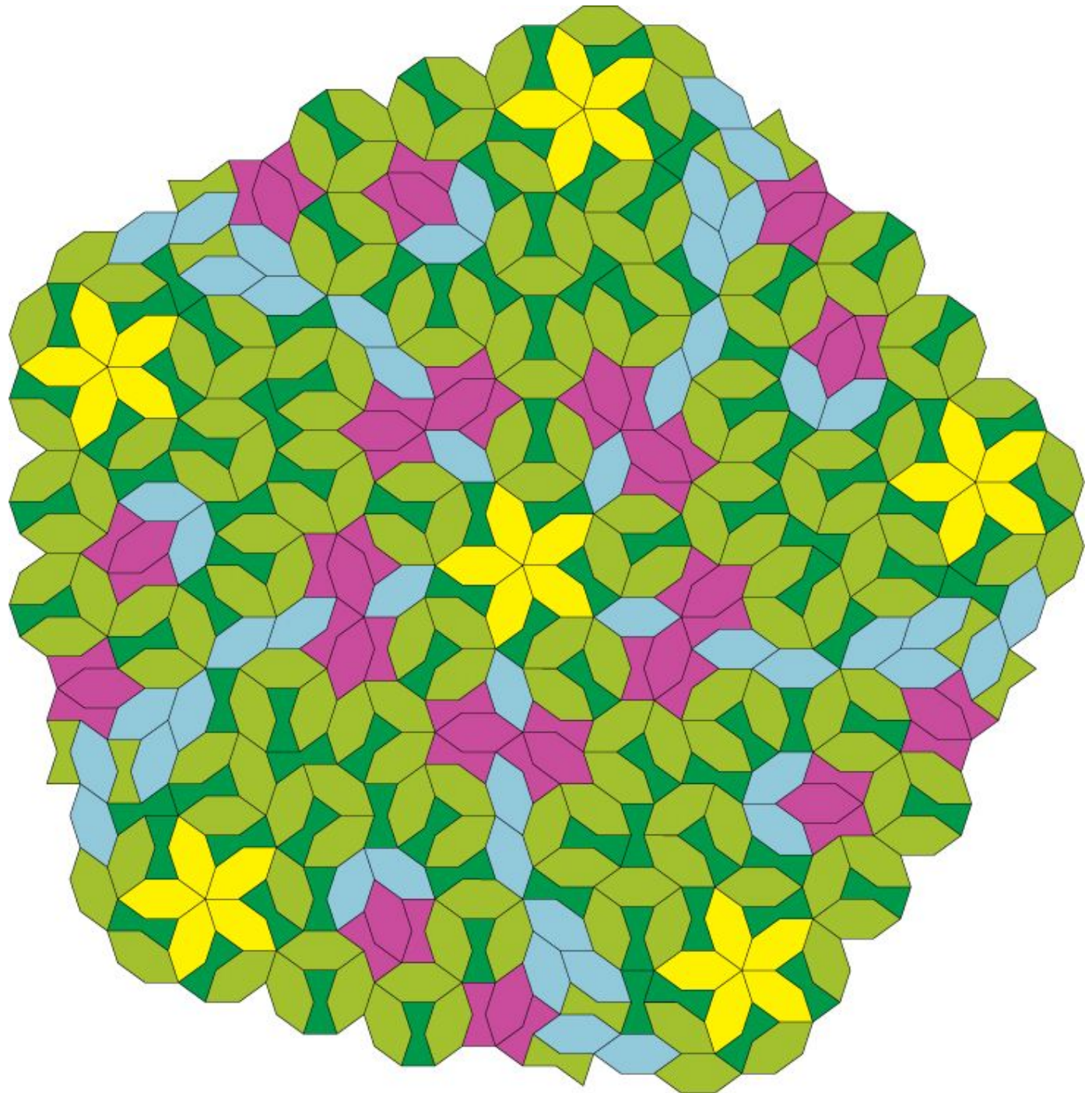


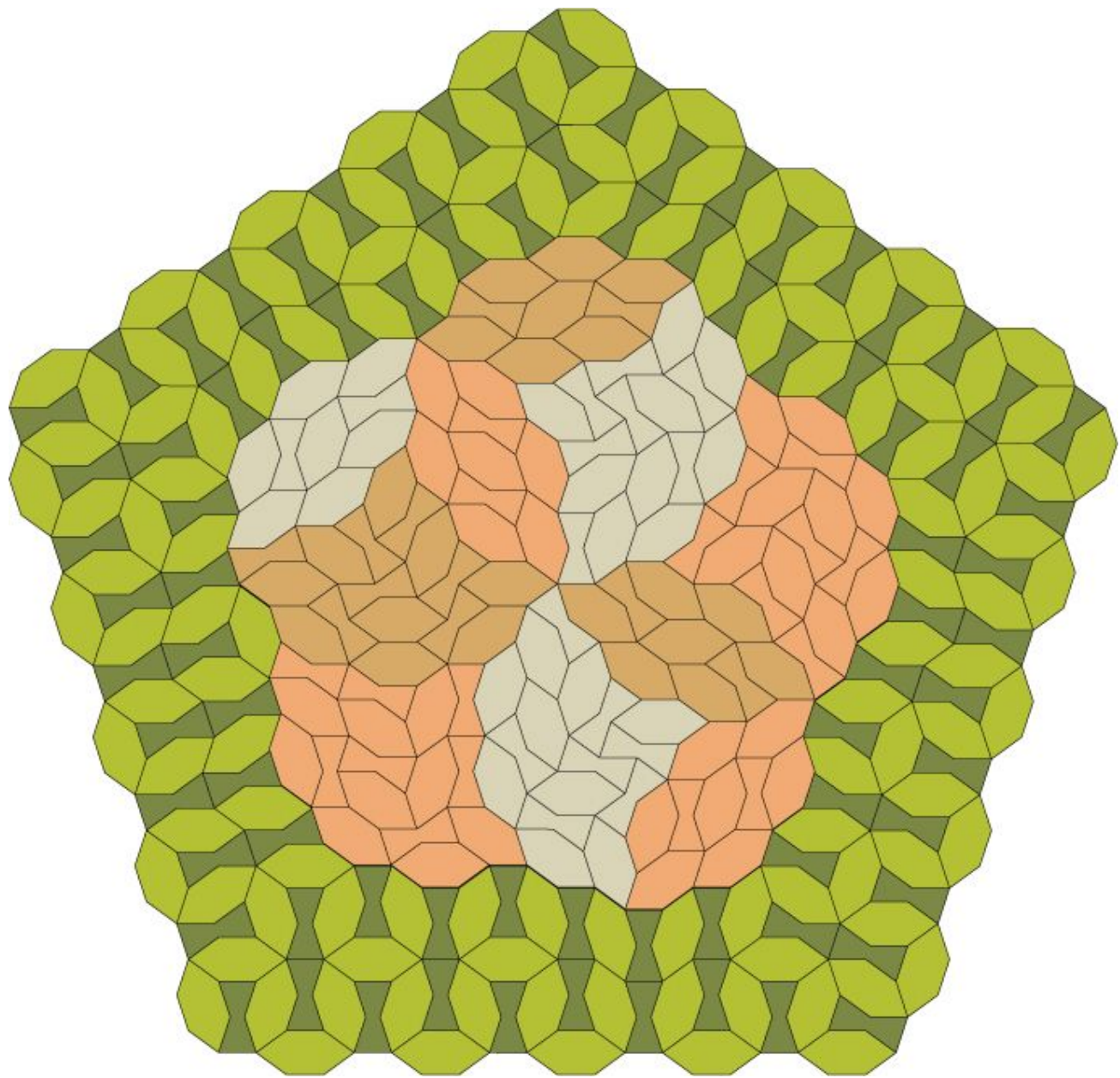


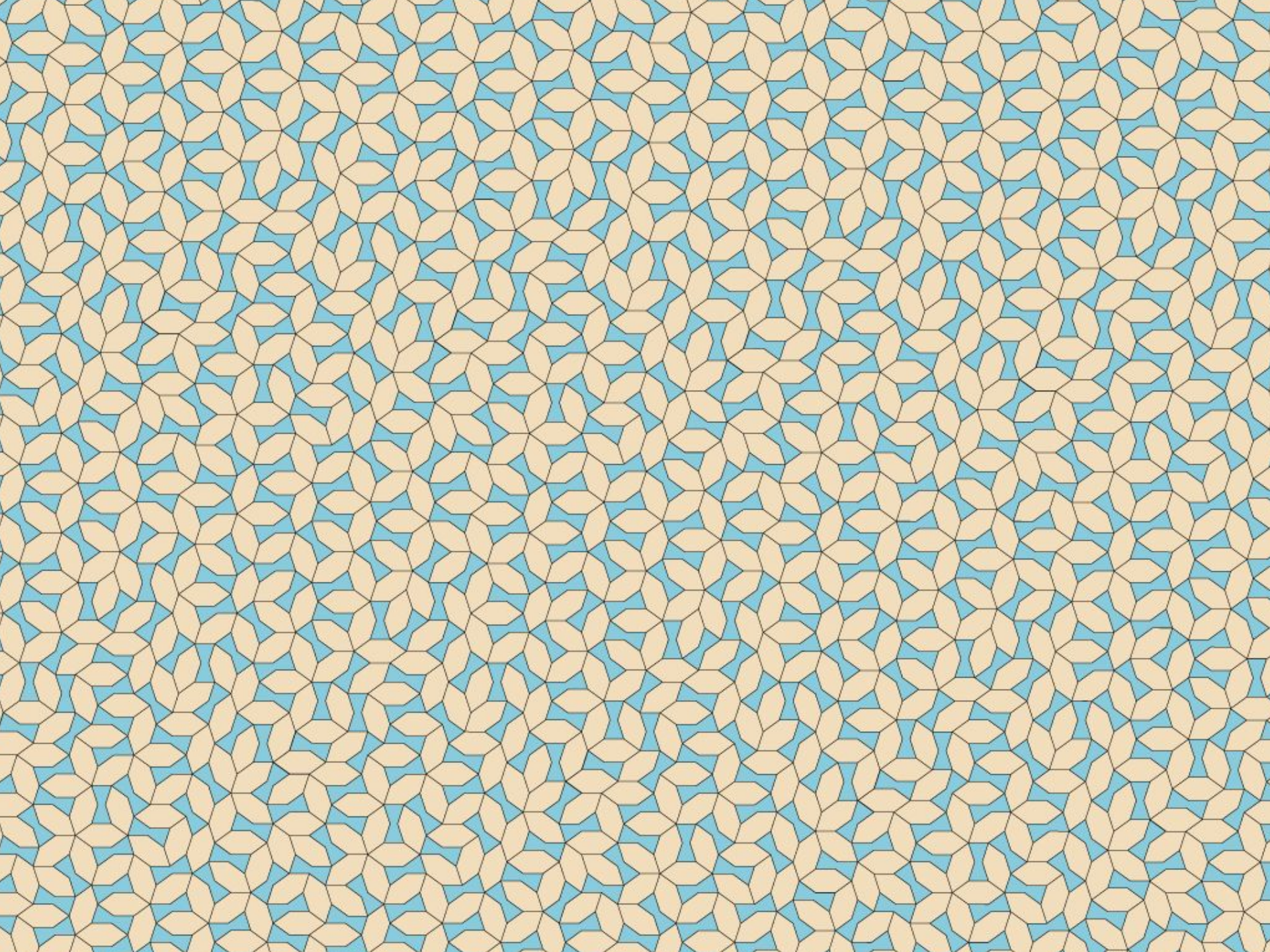




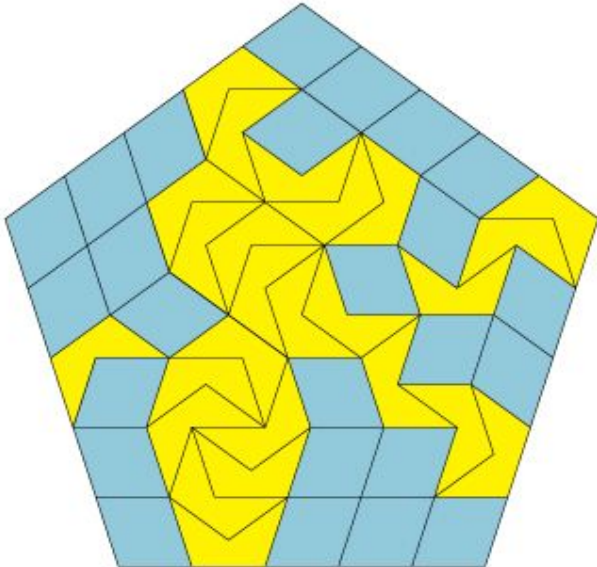
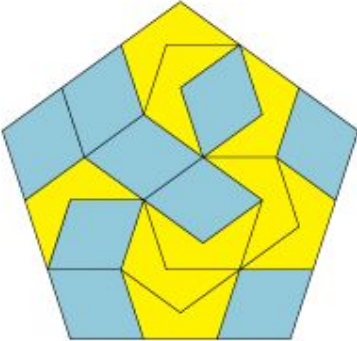
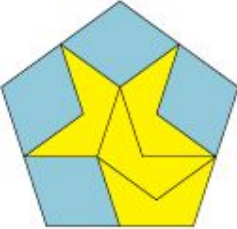


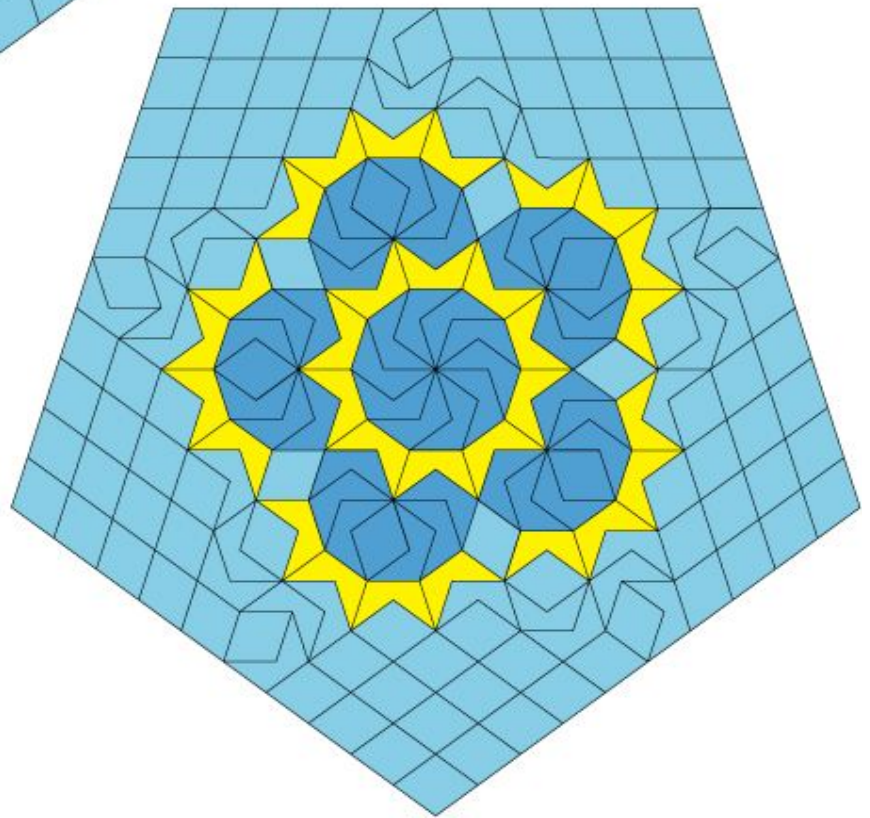
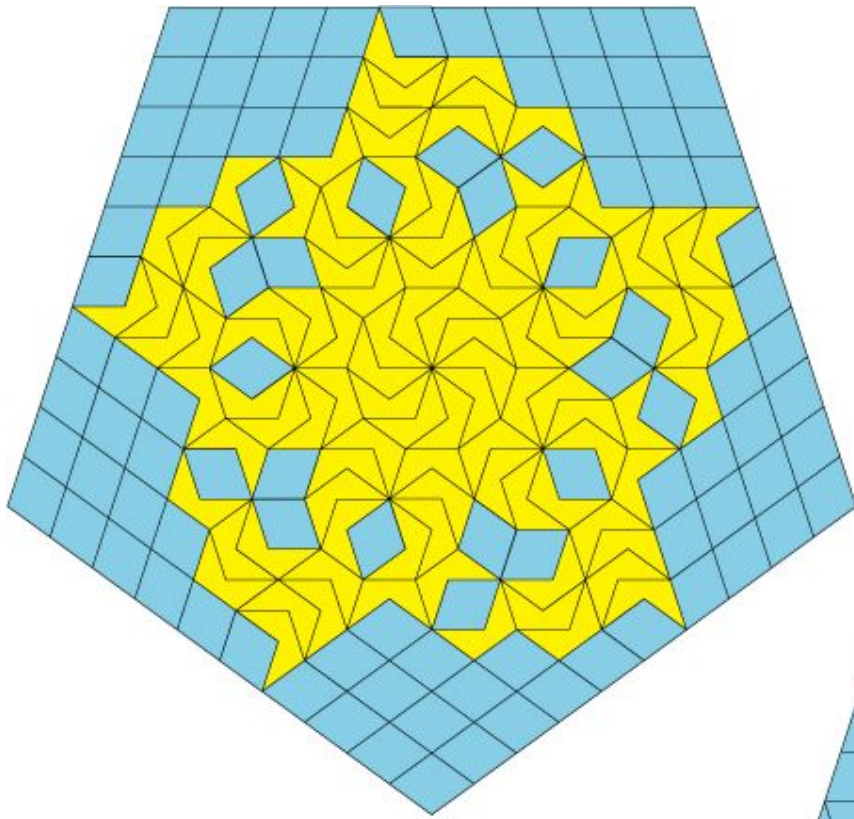


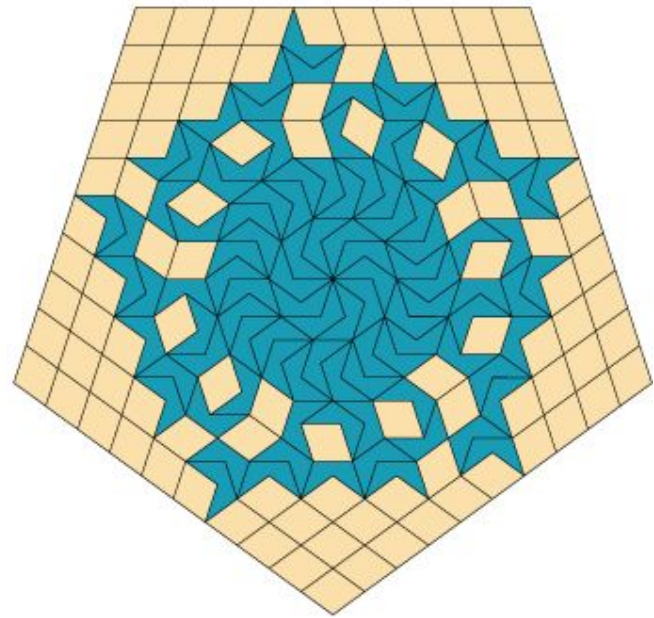
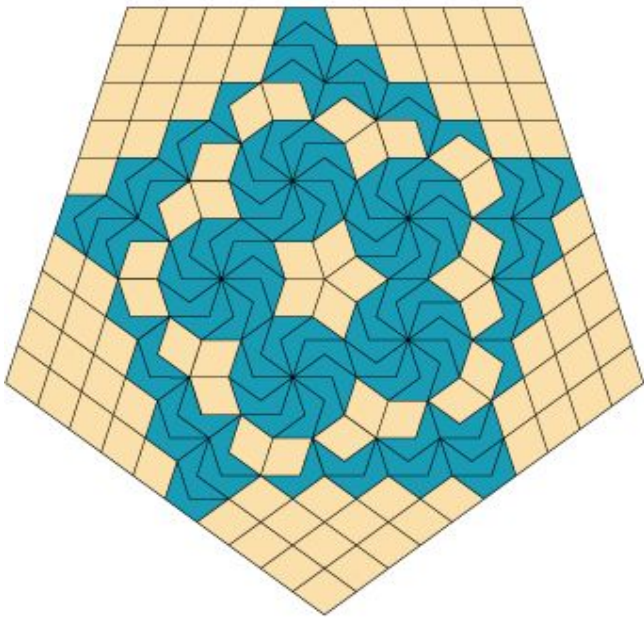
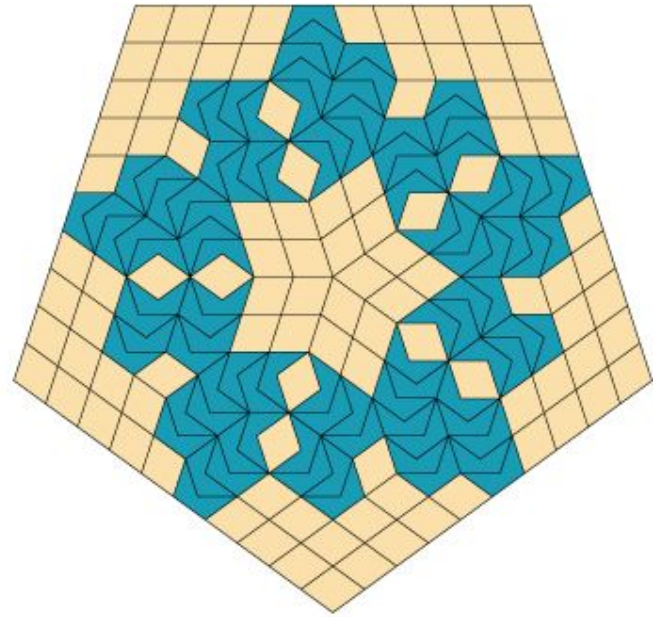
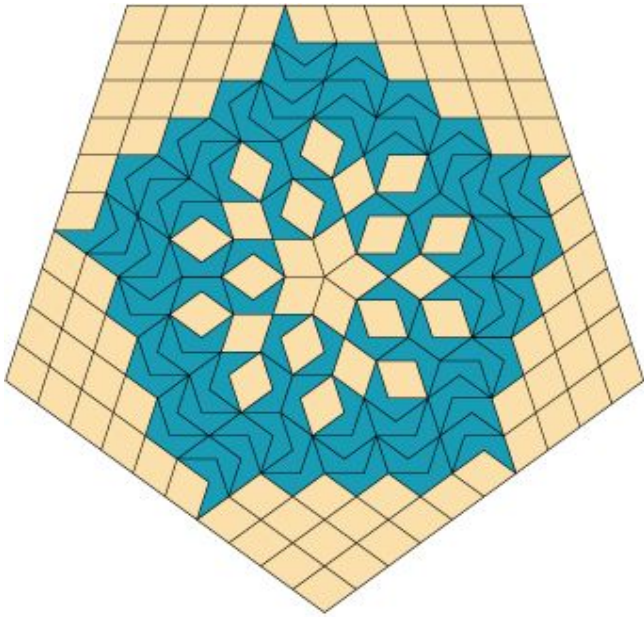


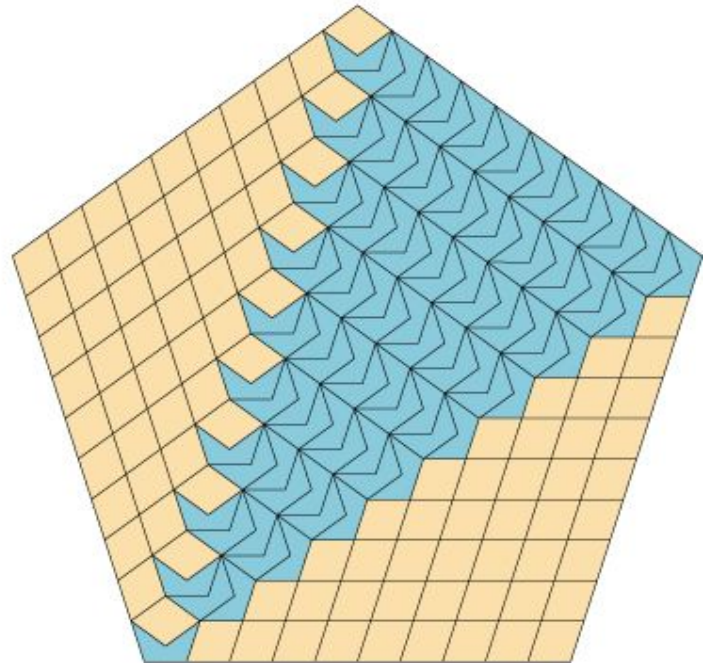
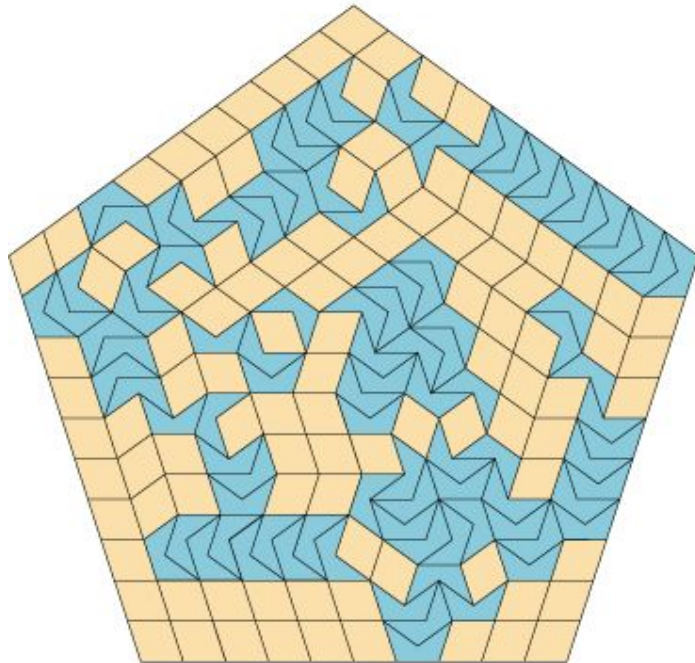
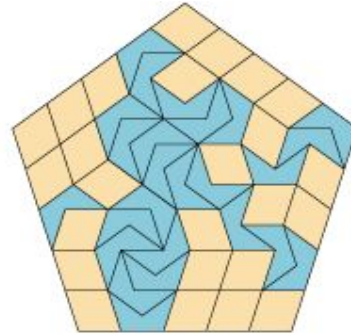
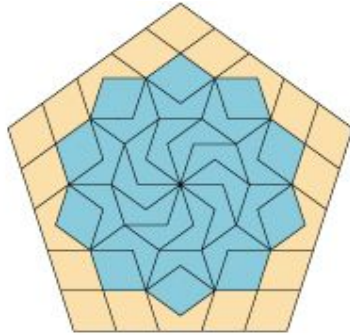


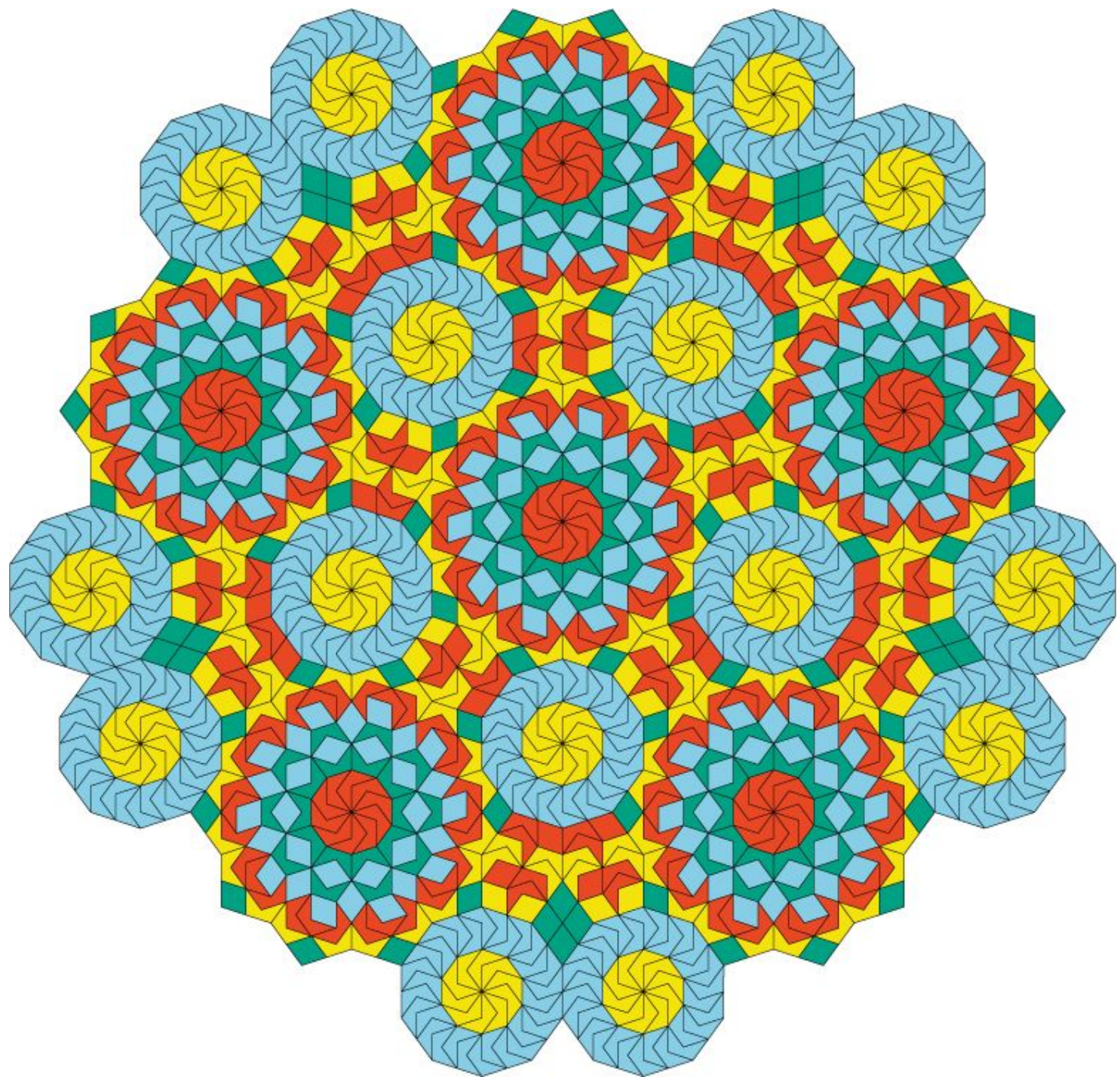
sarja b

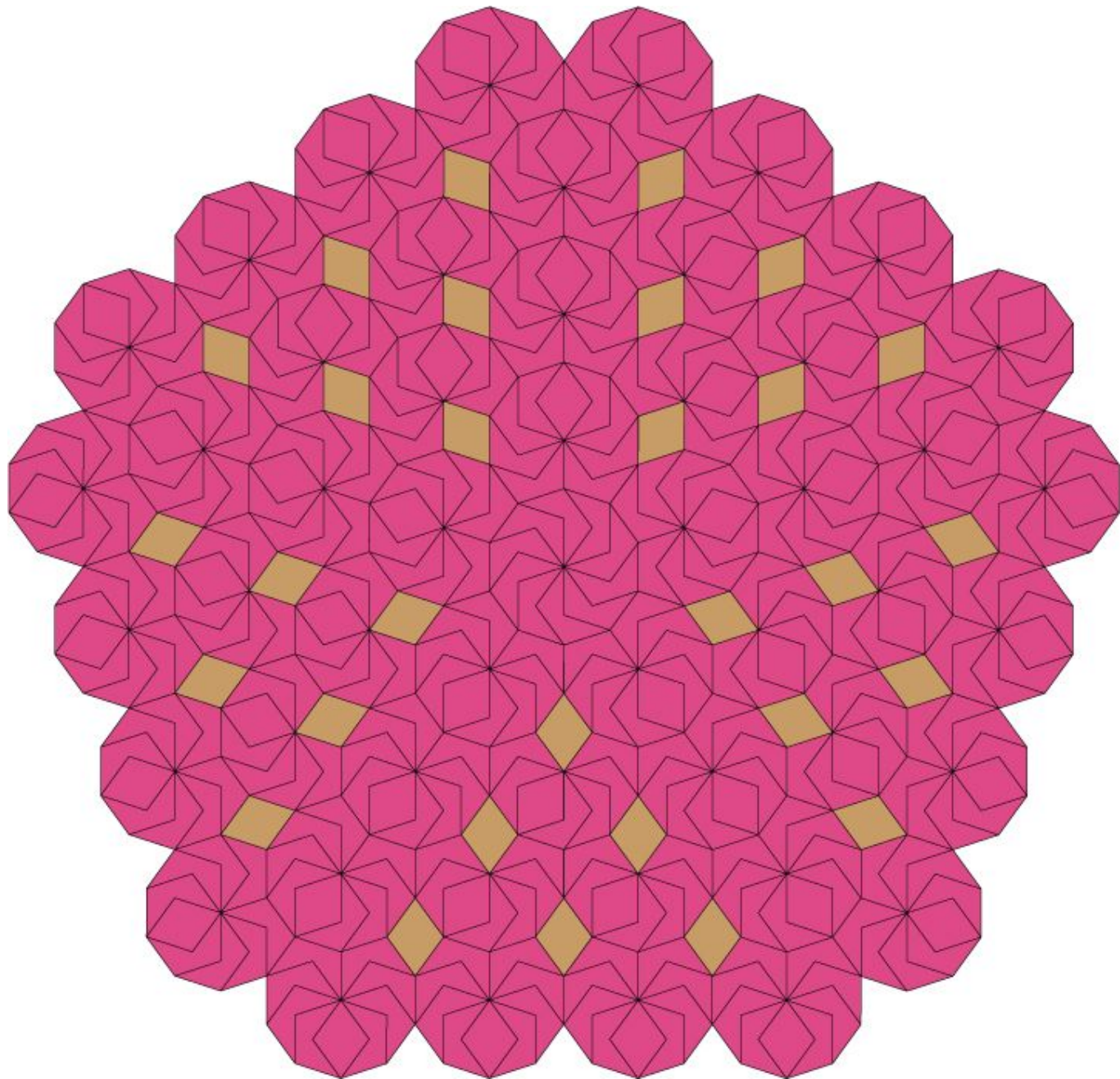


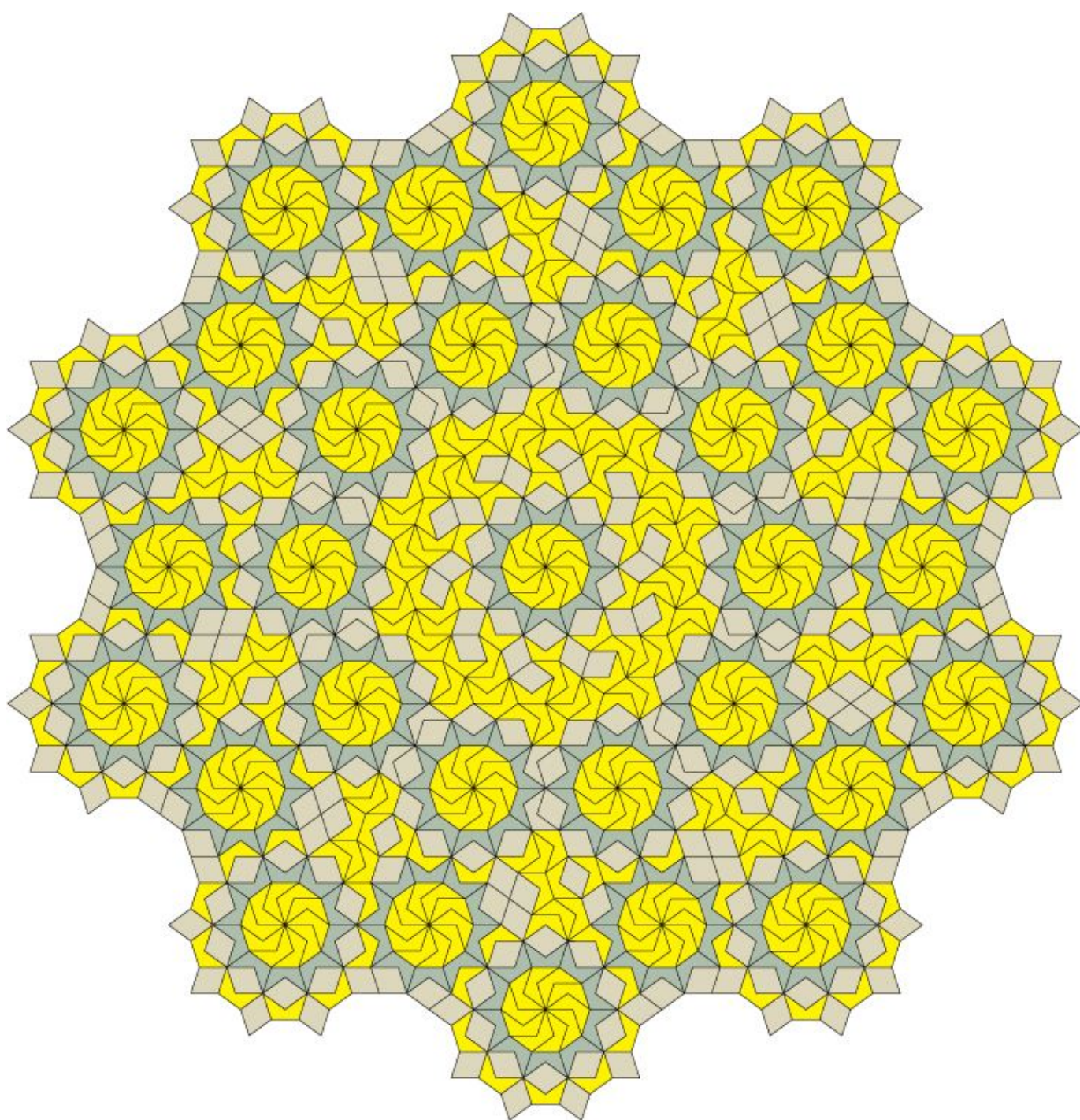


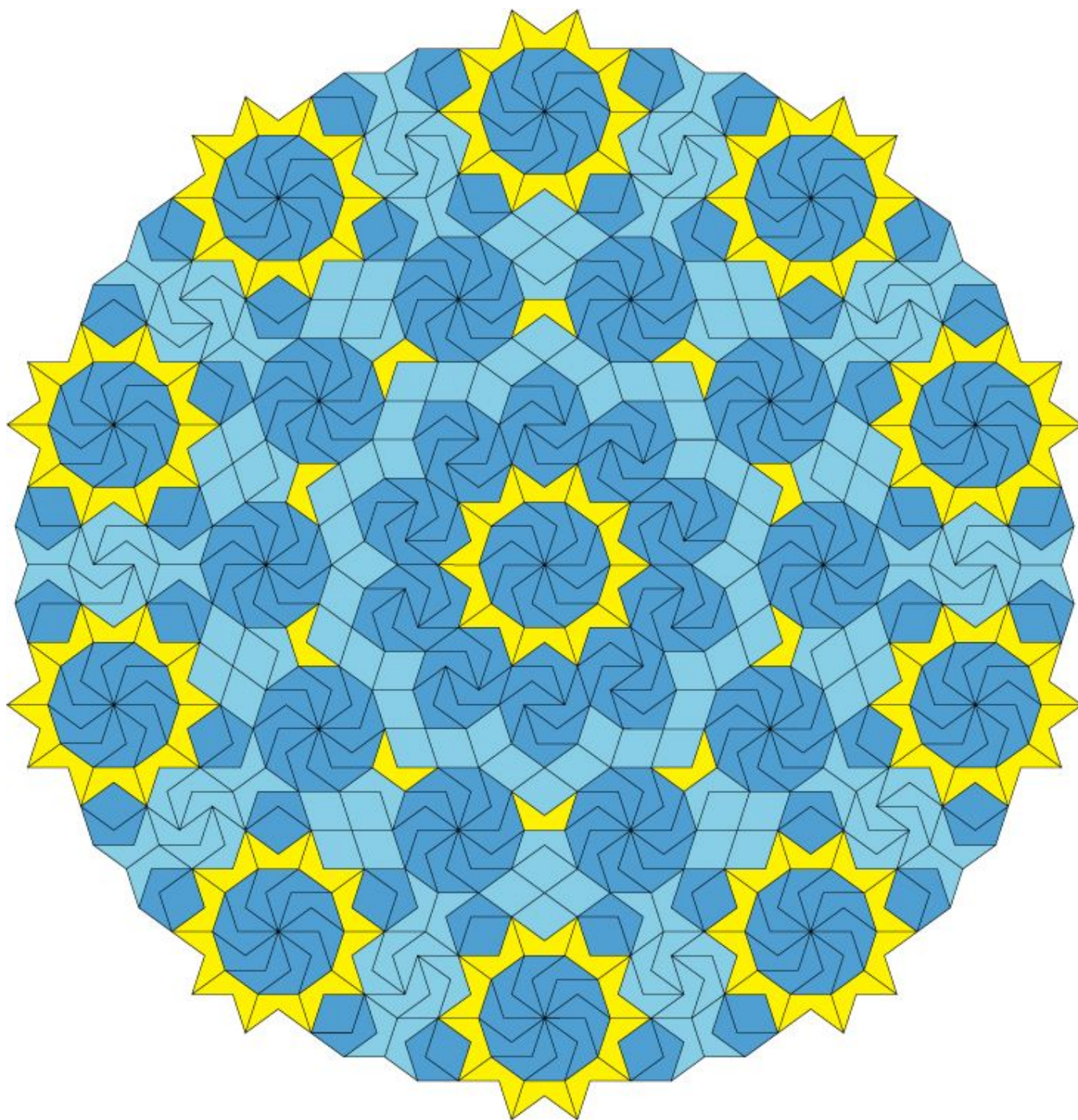


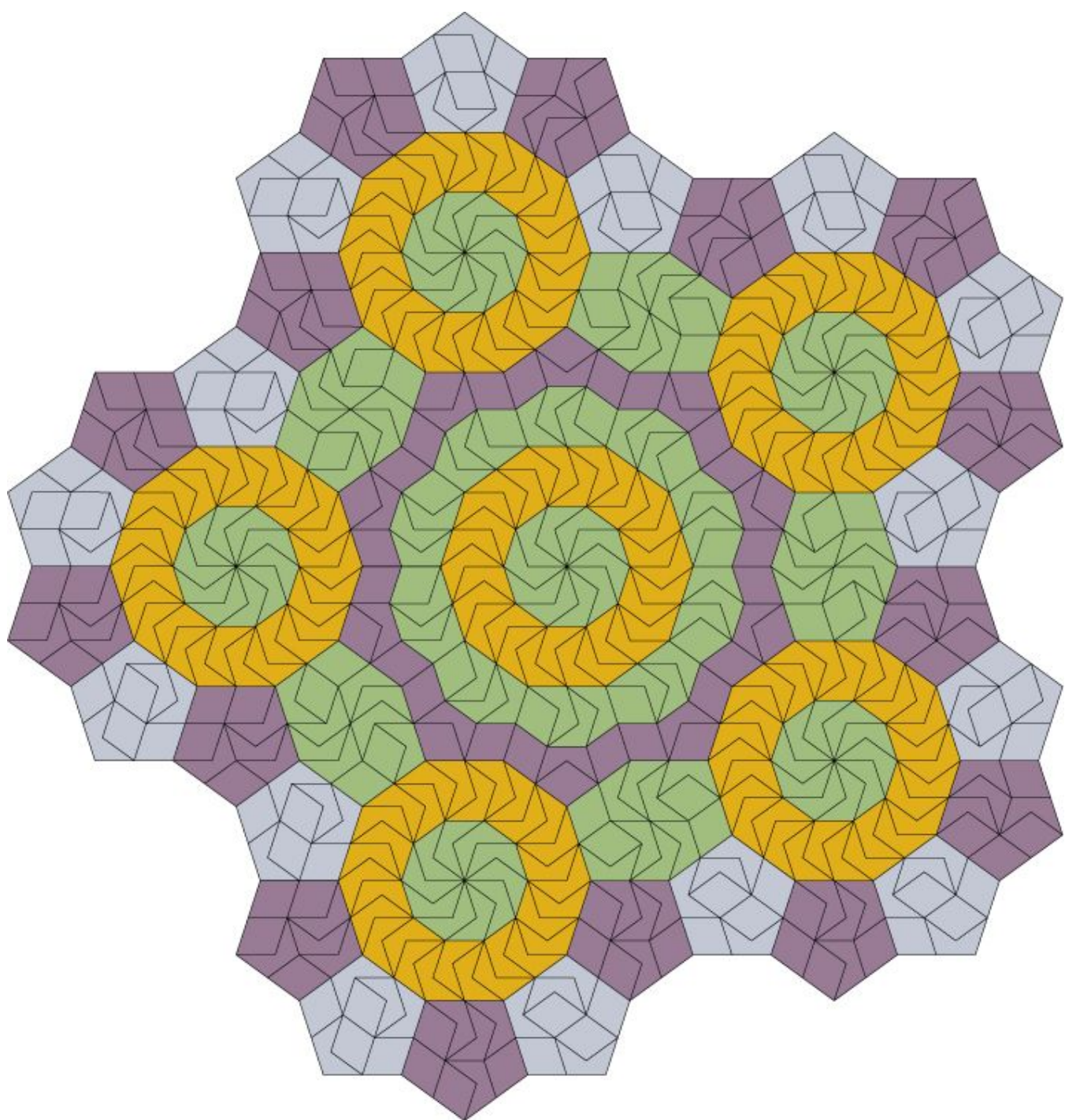


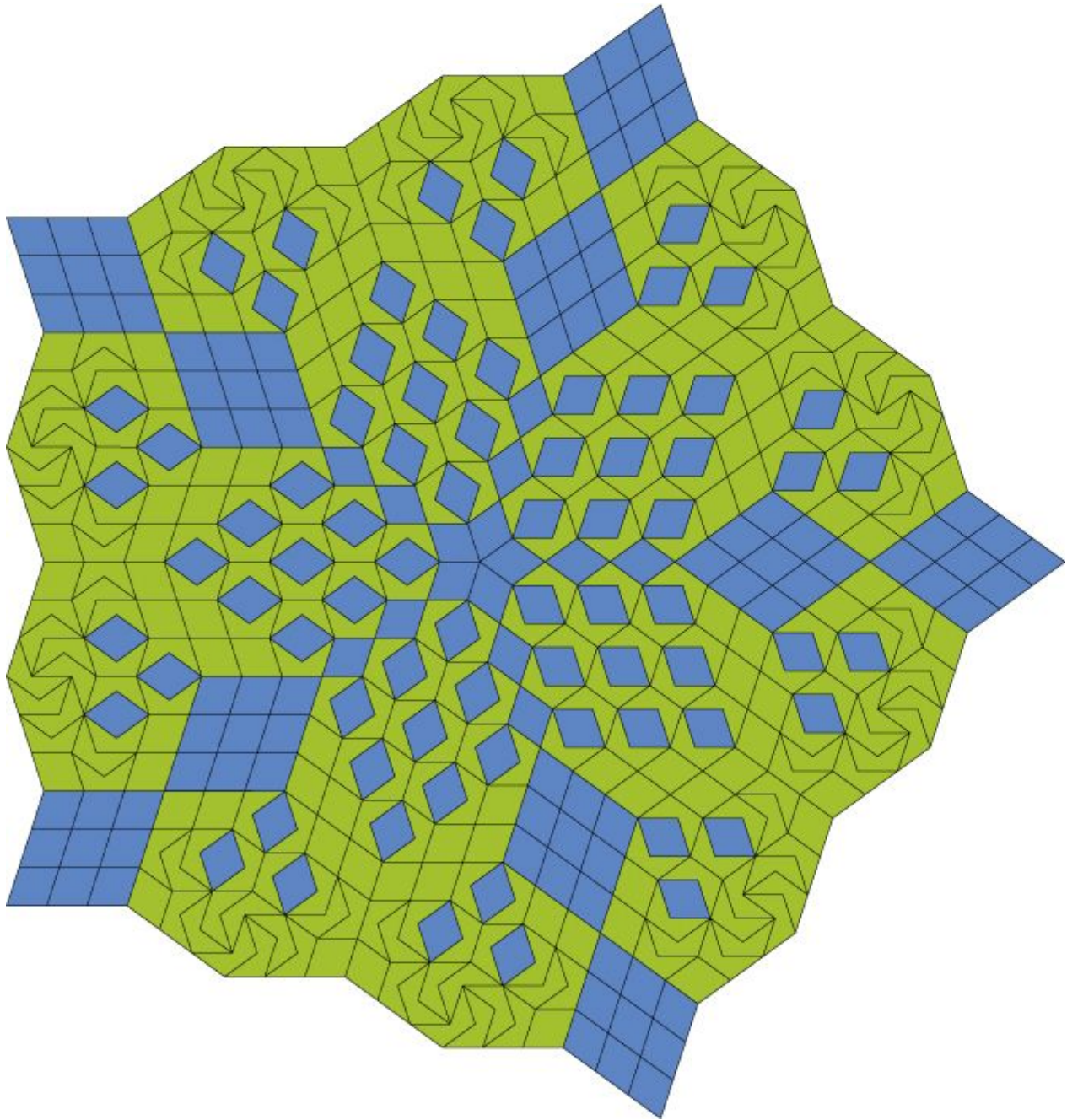




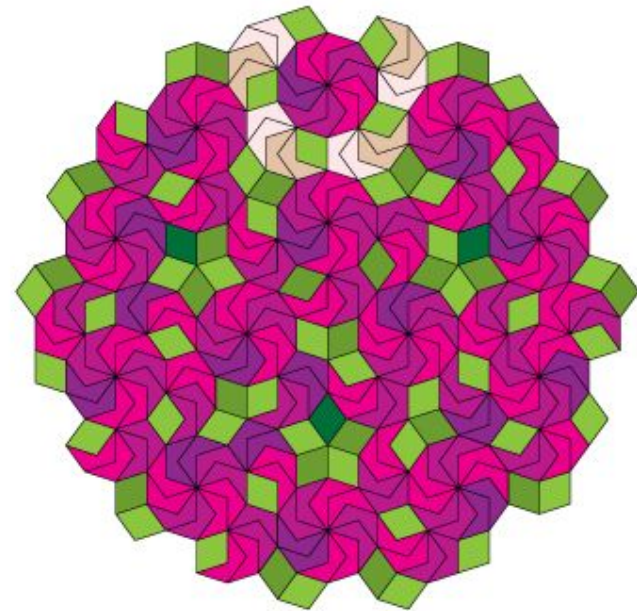
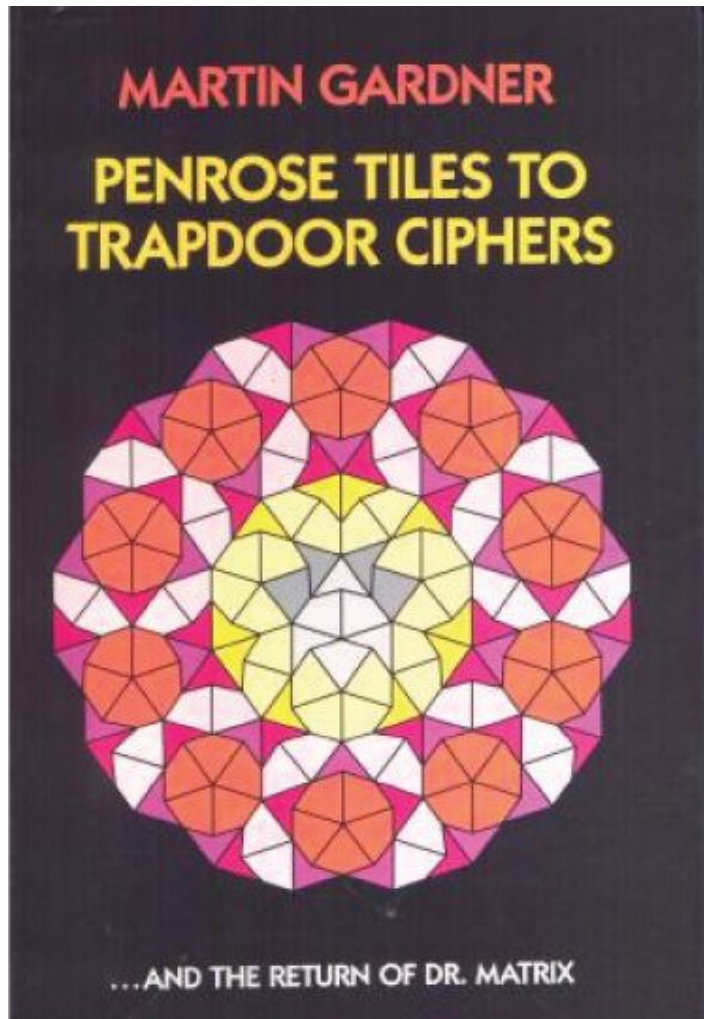








Visuaalinen yhteys Penrosen laatoituksiin (laatat kuuluvat samaan symmetriaryhmään kuin Penrosen laatat)

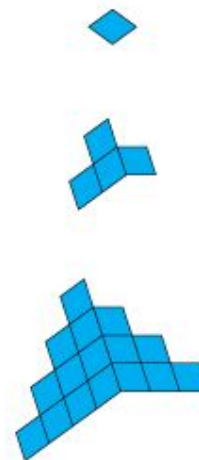
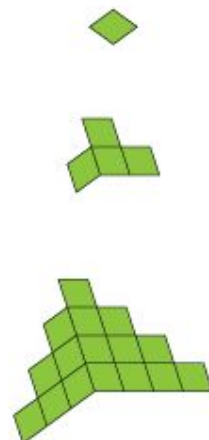
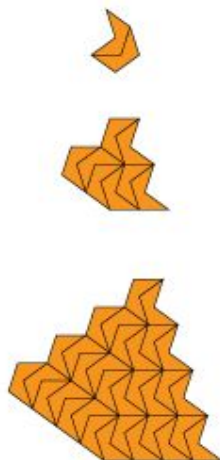
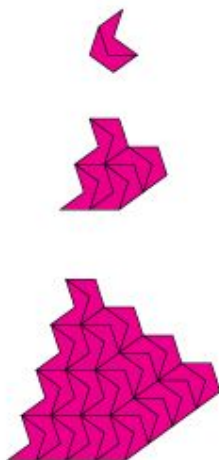


Vasen pala

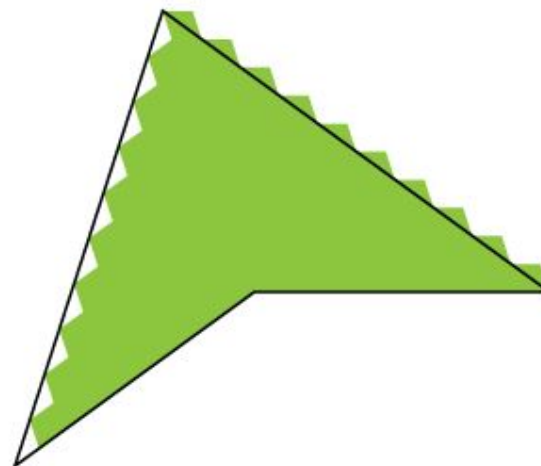
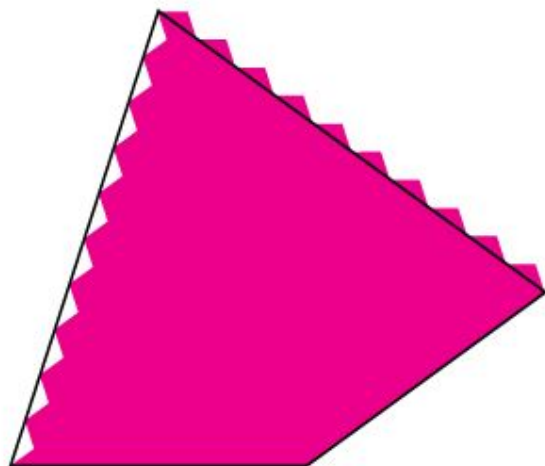
Oikea pala

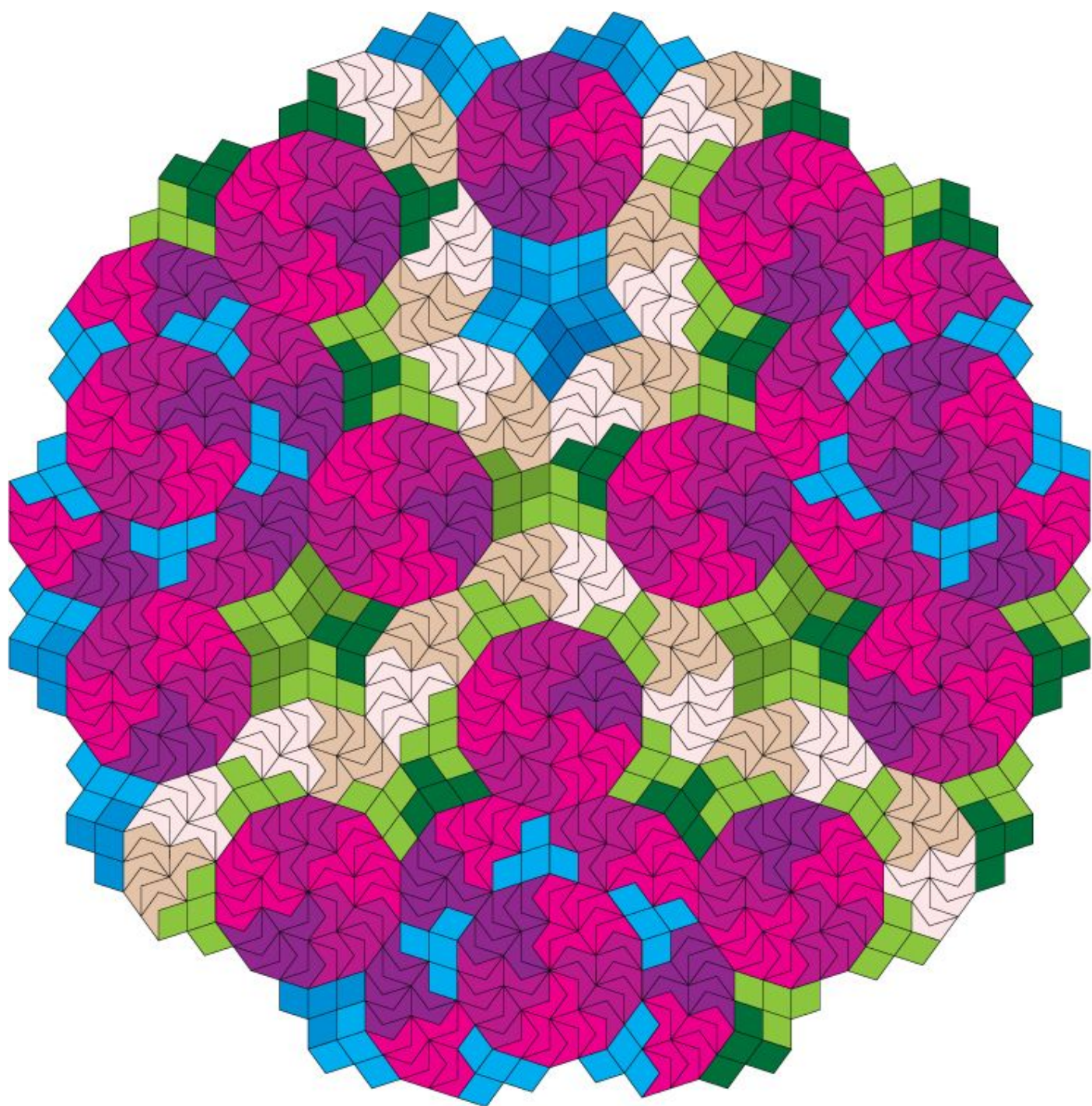
Vasen pala

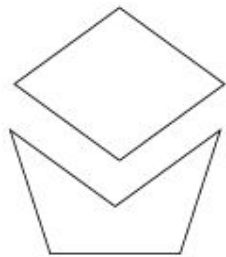
Oikea pala



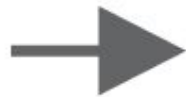
Penrosen palat viivapiirroksena ja aproksimaatiot väreissä



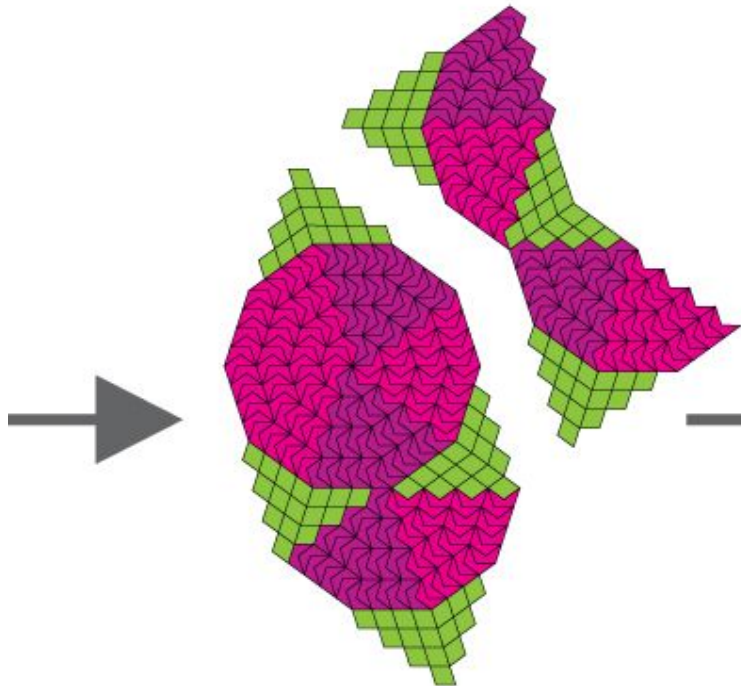




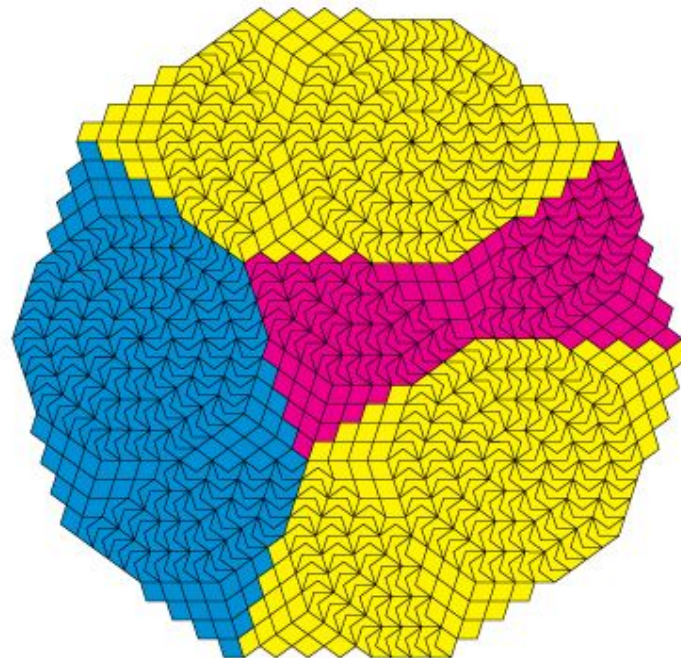
Lähtökohta:
timantti ja kruunu

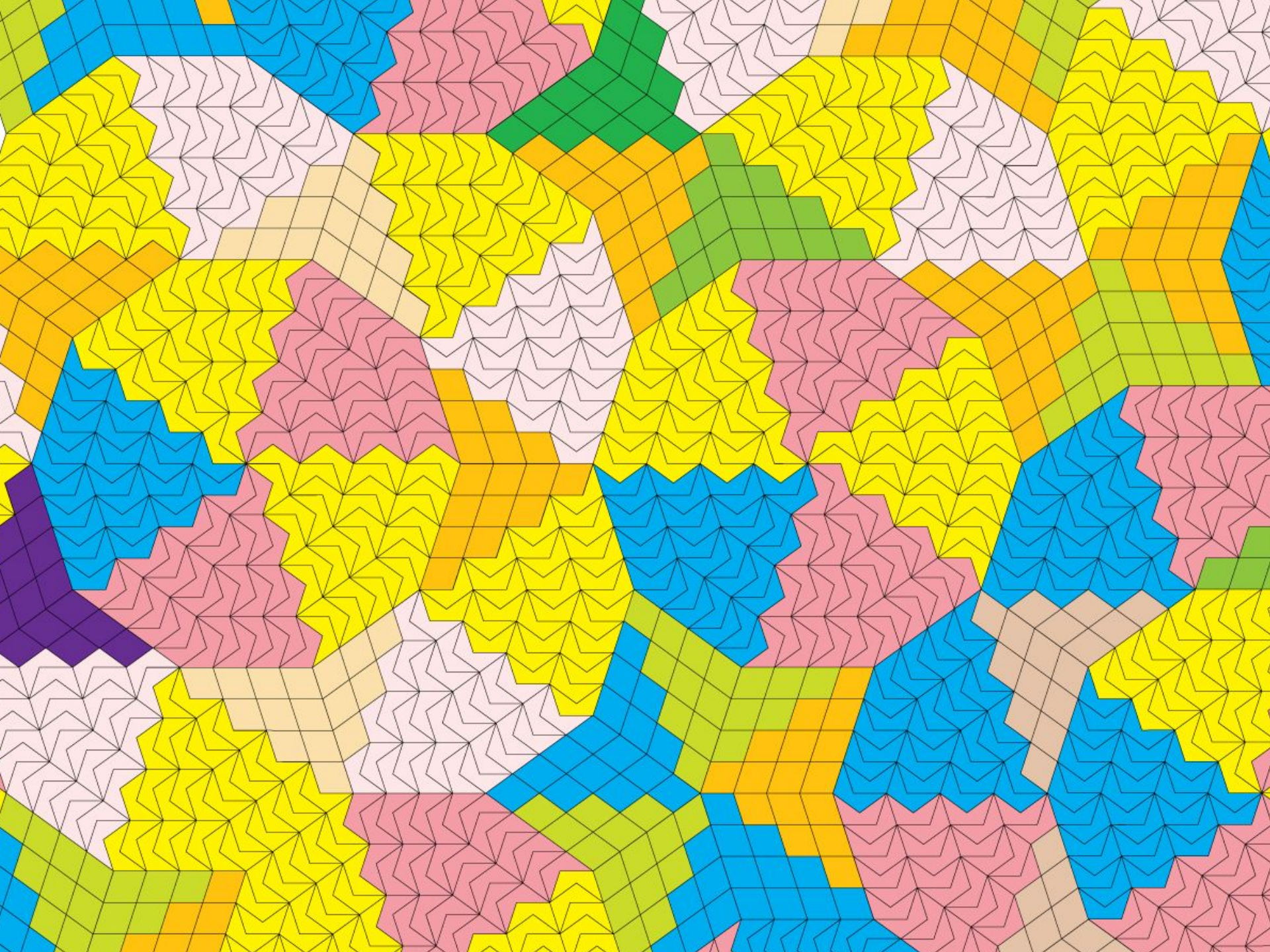


Penrosen palojen
(Kite & Dart)
approksimaatio

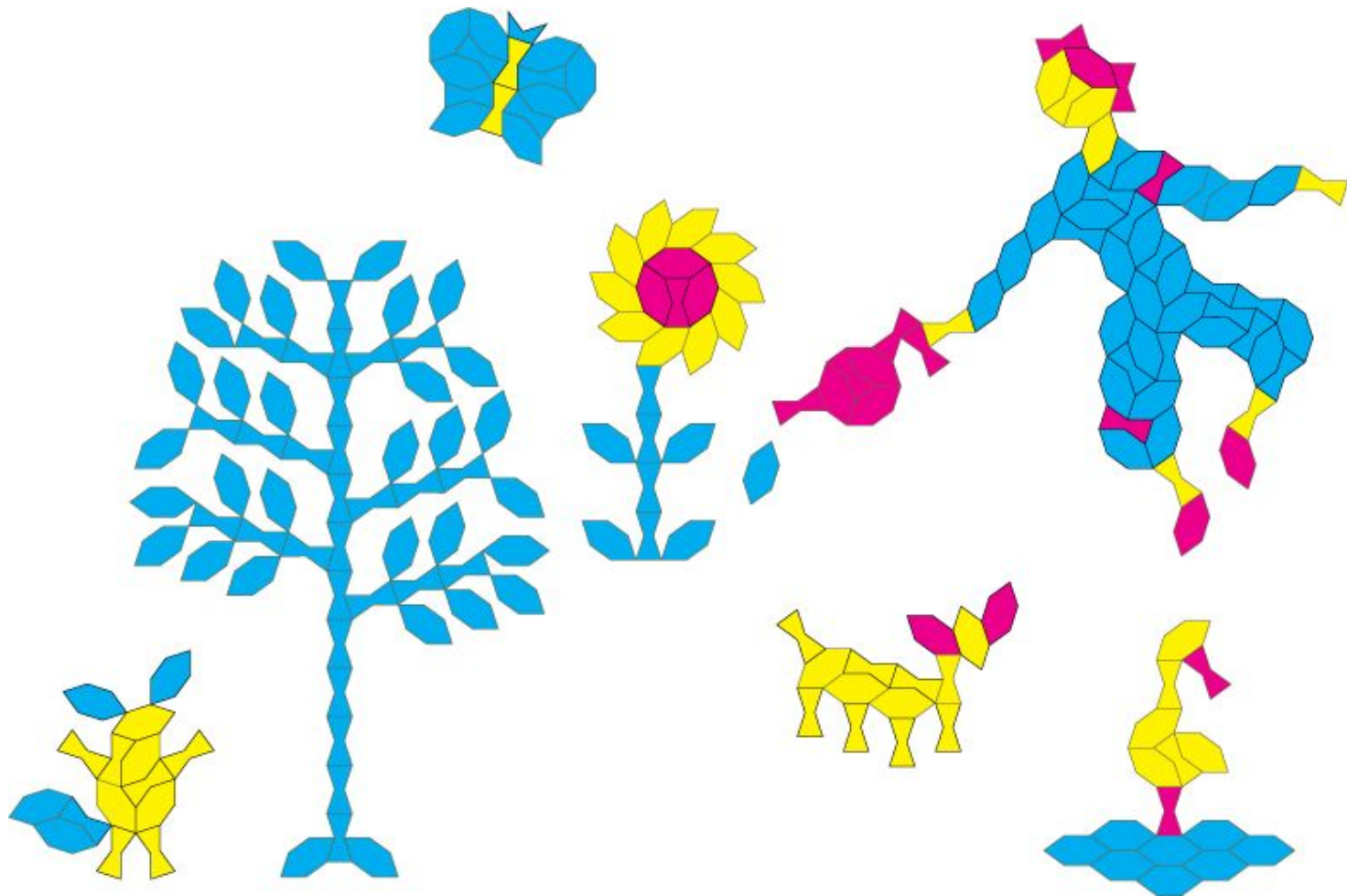


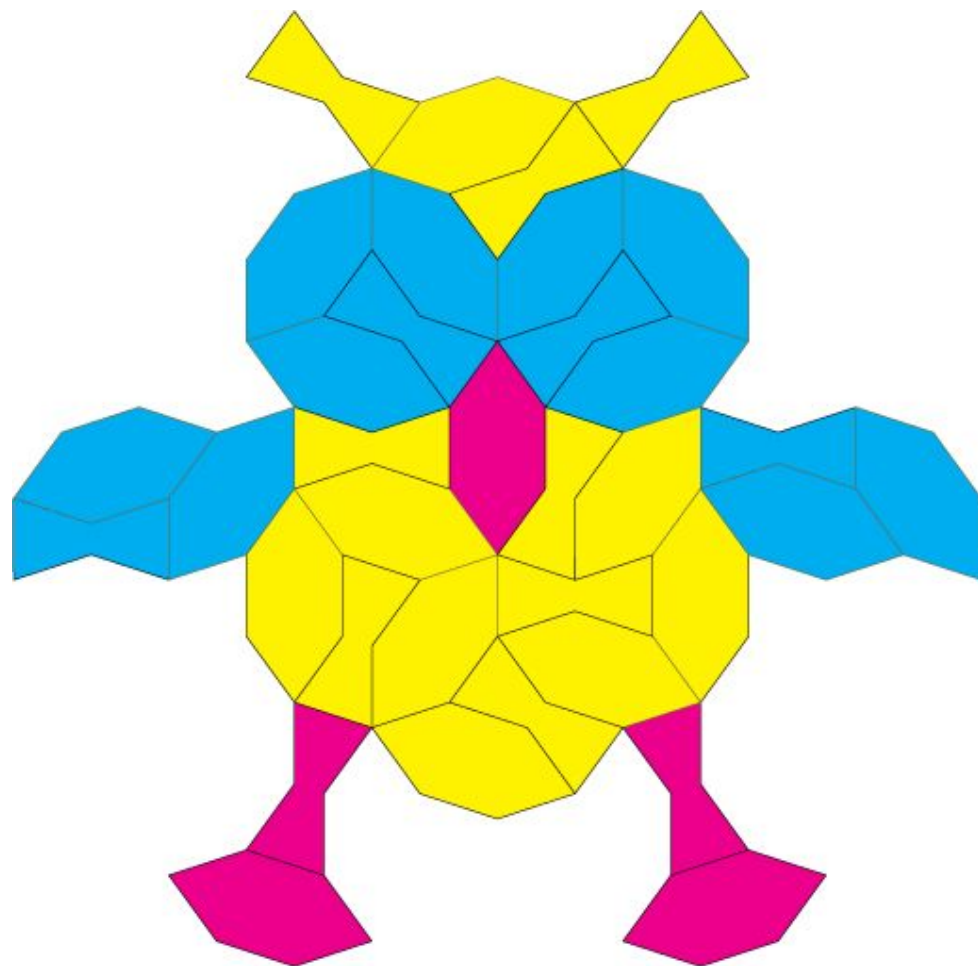
kilpikonnan
ja perhosen
approksimaatio





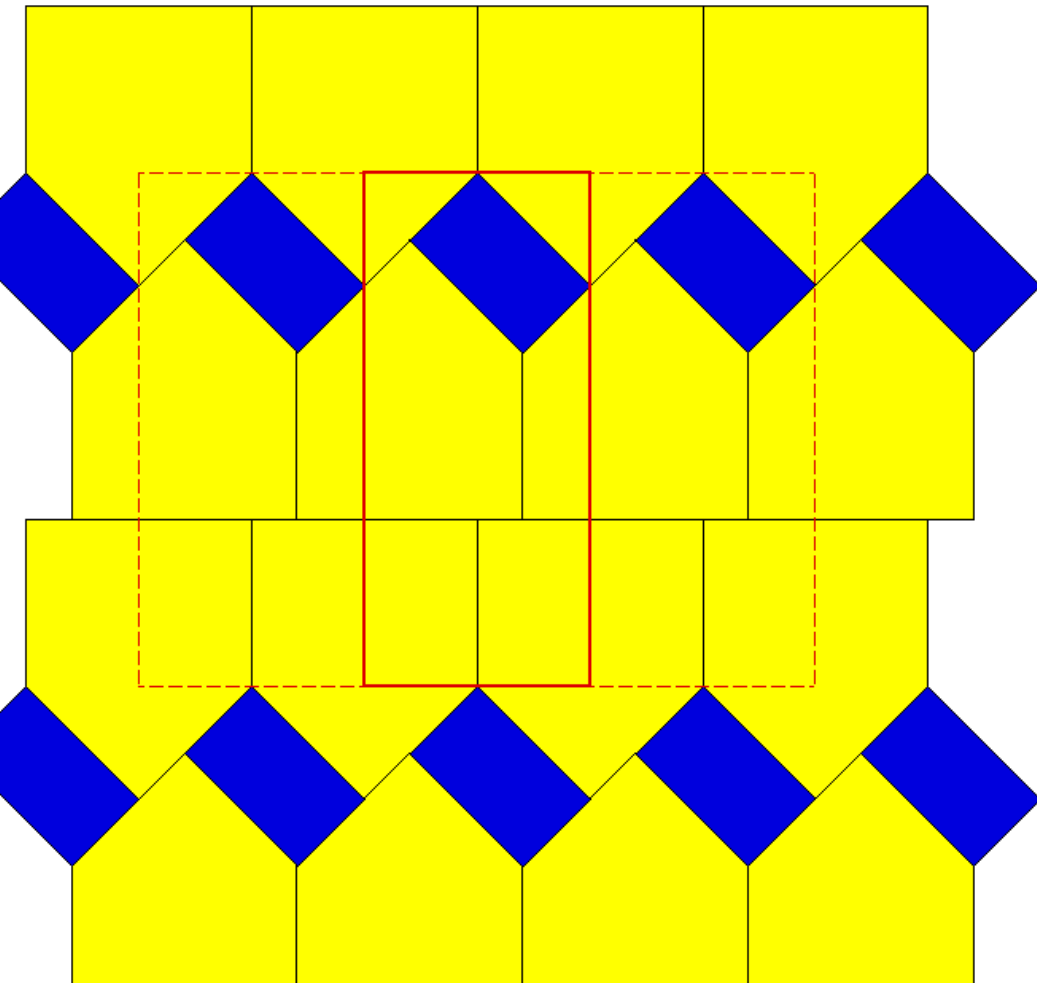
kuvalliseen ilmaisuun





Jaksollinen vs. jaksoton

- Jaksollinen laatoitus voidaan rakentaa noudattamalla siirtosymmetriaa.



Jaksollisesta laatoituksesta voidaan aina eristää suunnikas, jota siirtämällä (translaatio) ja monistamalla saadaan aikaan ko. laatoitus.

Esim. punainen nelikulmio, jolla saa aikaan koko laatoituksen.

Jaksollisuus (Wikipedia):

- (...) esimerkiksi tason jako neliöiksi tai tasa-sivuisiksi kolmioiksi, ovat jaksollisia, toisin sanoen on olemassa sellainen etäisyys, jonka verran tiettyyn suuntaan siirryttäessä laatoitus toistuu aina samanlaisena. Tätä etäisyyttä sanotaan laatoituksen jaksoksi. **Jos tällaista jaksoa ei ole, laatoitusta sanotaan jaksottomaksi.**

Palapeli vs. itse luodut laatoitukset

- A puzzle is a problem or enigma that tests the ingenuity of the solver. In a basic puzzle, one is intended to put together pieces in a logical way in order to come up with the desired solution. (wikipedia)
- Vs. omaehtoinen tekeminen
- Laatoitukset voivat toimia myös matemaattisina pulmapeleinä esim. matikkakerhoissa.

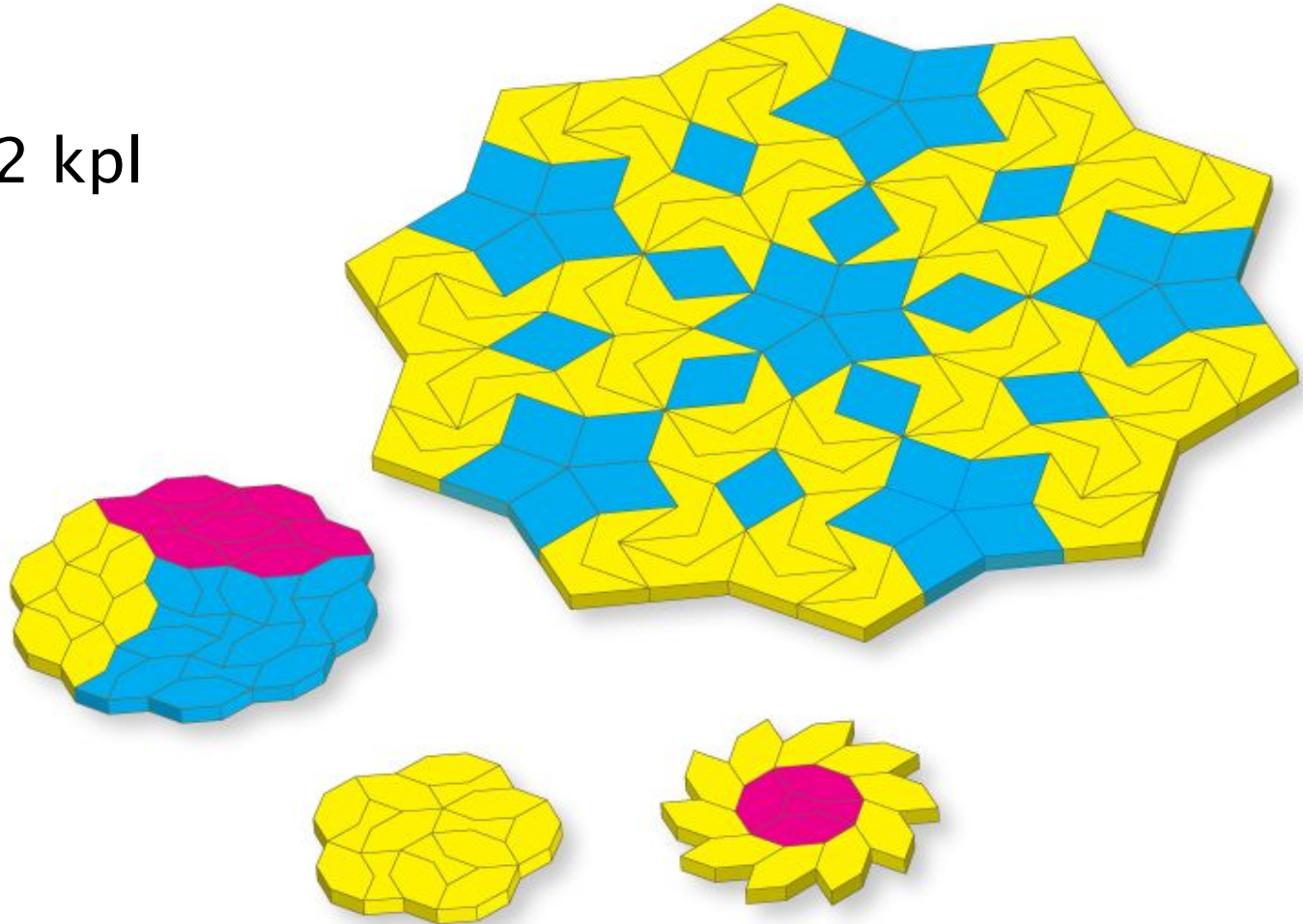


Laattojen määrä yhtä peliä kohden (arvio)

$$48 \text{ (pentagon)} + 33 \text{ (hexagon)} = 81 \text{ kpl}$$

$$26 \text{ (heptagon)} + 26 \text{ (diamond)} = 52 \text{ kpl}$$

38 kpl ->



Kolme väriä vähintään

Mitat:

- Kaikki sivut ovat saman pituisia
- 40-50 mm sivu olisi hyvä koko
- Paksuus 12 - 15 mm

