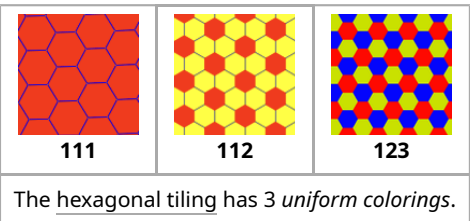WIKIPEDIA
The Free Encyclopedia

WIKIPEDIA

Uniform coloring

In geometry, a **uniform coloring** is a property of a uniform figure (uniform tiling or uniform polyhedron) that is colored to be vertex-transitive. Different symmetries can be expressed on the same geometric figure with the faces following different uniform color patterns.

A *uniform coloring* can be specified by listing the different colors with indices around a vertex figure.

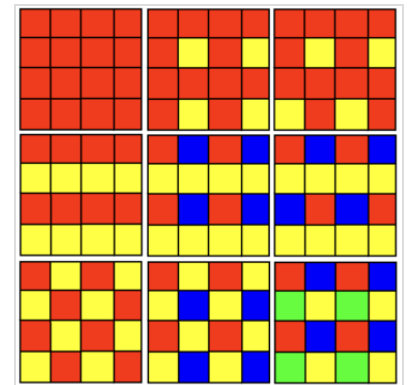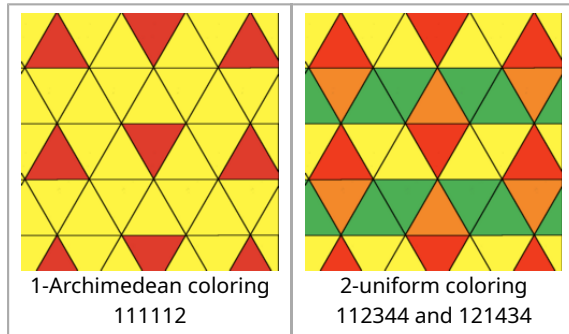| 111	112	123

The hexagonal tiling has 3 *uniform colorings*.

n-uniform figures

In addition, an *n*-uniform coloring is a property of a *uniform figure* which has *n* types vertex figure, that are collectively vertex transitive.

Archimedean coloring

A related term is *Archimedean color* requires one vertex figure coloring repeated in a periodic arrangement. A more general term are *k*-Archimedean colorings which count *k* distinctly colored vertex figures.

For example, this Archimedean coloring (left) of a triangular tiling has two colors, but requires 4 unique colors by symmetry positions and become a 2-uniform coloring (right):

The square tiling has 9 uniform colorings:
1111, 1112(a), 1112(b),
1122, 1123(a), 1123(b),
1212, 1213, 1234.

1-Archimedean coloring 111112	2-uniform coloring 112344 and 121434

References

- Grünbaum, Branko; Shephard, G. C. (1987). *Tilings and Patterns* (https://archive.org/details/isbn_0716711931). W. H. Freeman and Company. ISBN 0-7167-1193-1. Uniform and Archimedean colorings, pp. 102–107

External links

- Weisstein, Eric W. "Polyhedron coloring" (https://mathworld.wolfram.com/PolyhedronColoring.html). *MathWorld*.
- Uniform Tessellations on the Euclid plane (http://www2u.biglobe.ne.jp/~hsaka/mandara/ue2)
- Tessellations of the Plane (http://www.orchidpalms.com/polyhedra/tessellations/tessel.htm)
- David Bailey's World of Tessellations (https://web.archive.org/web/20080602030052/http://www.tess-elation.co.uk/index.htm)
- k-uniform tilings (https://web.archive.org/web/20060909053826/http://www.uwgb.edu/dutchs/SYMMETRY/uniftil.htm)

- n-uniform tilings (http://probabilitysports.com/tilings.html)

Retrieved from "https://en.wikipedia.org/w/index.php?title=Uniform_coloring&oldid=1249516027"