

# Tessellations

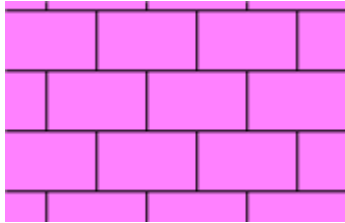
Math 8

# Tessellation Definition:

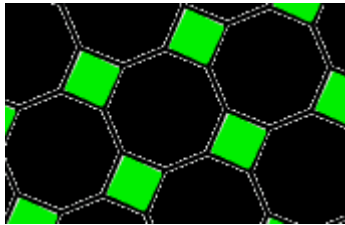
- *A pattern of shapes that fit perfectly together!*
- A **Tessellation** (or **Tiling**) is when we cover a surface with a pattern of flat shapes so that there are no overlaps or gaps.

# Examples

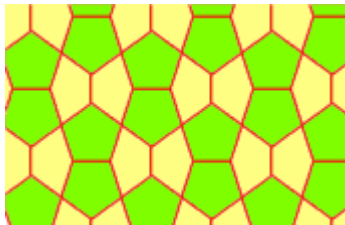
- Rectangles



- Octagons and Squares



- Different Pentagons



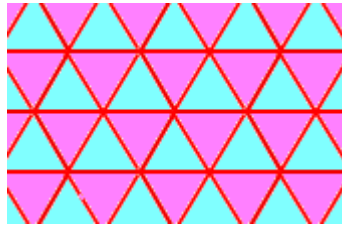
# Regular Tessellations

- A **regular** tessellation is a pattern made by repeating a regular polygon.
- *There are only 3 regular tessellations:*

# Regular Tessellations

- **Triangles**

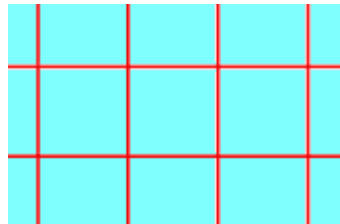
3.3.3.3.3.3



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- **Squares**

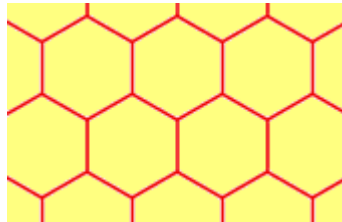
4.4.4.4



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- **Hexagons**

6.6.6

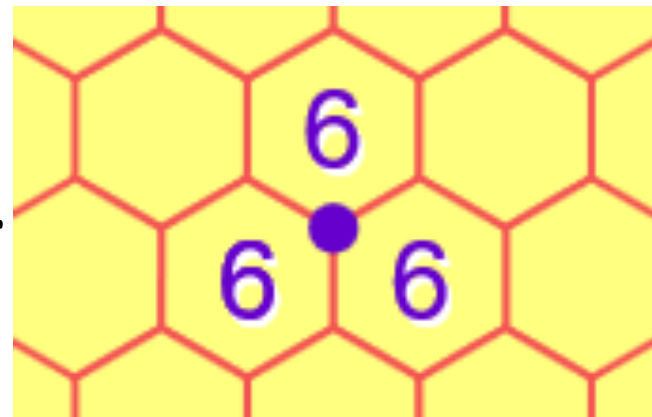


# Look at a Vertex...

- A vertex is just a "corner point".
- What shapes meet here?



- Three hexagons meet at this vertex, and a hexagon has 6 sides.
- So this is called a "**6.6.6**" tessellation



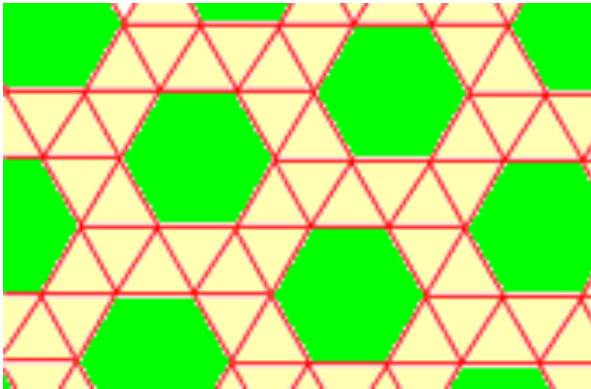
For a regular tessellation, the pattern is identical at each vertex!

# Semi-regular Tessellations

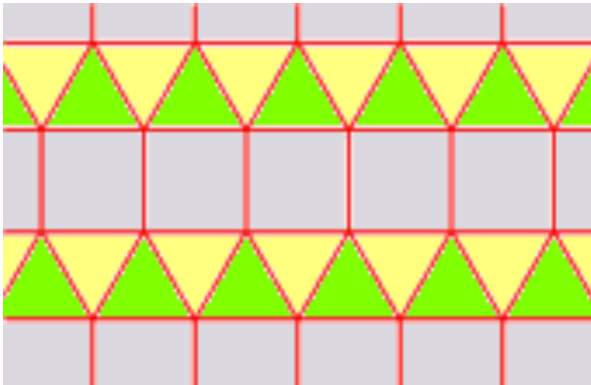
- A **semi-regular** tessellation is made of two or more regular polygons. **The pattern at each vertex must be the same!**

*There are only 8 semi-regular tessellations:*

- 3.3.3.3.6



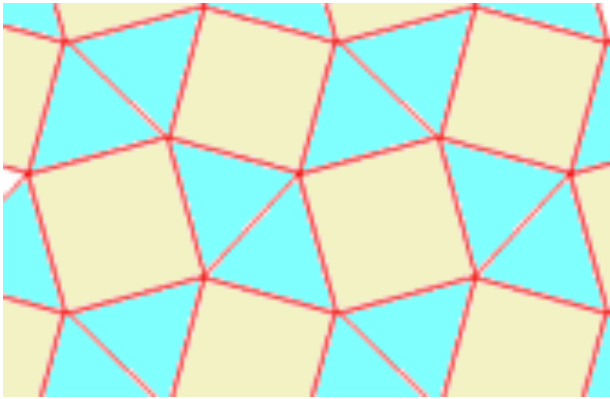
- 3.3.3.4.4



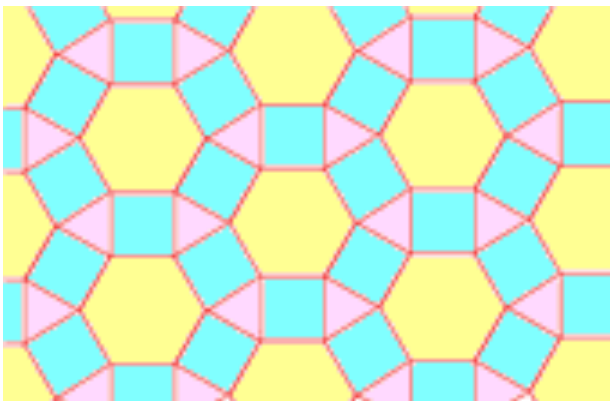


*There are only 8 semi-regular tessellations:*

- 3.3.4.3.4

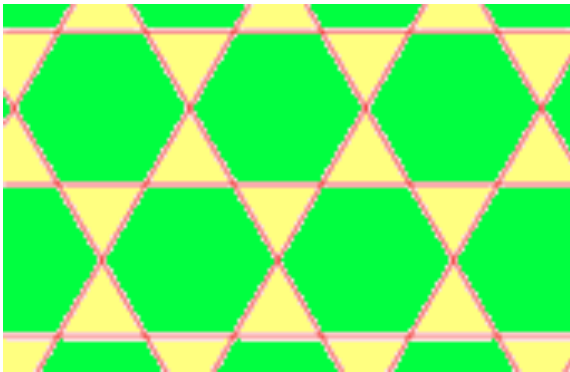


- 3.4.6.4

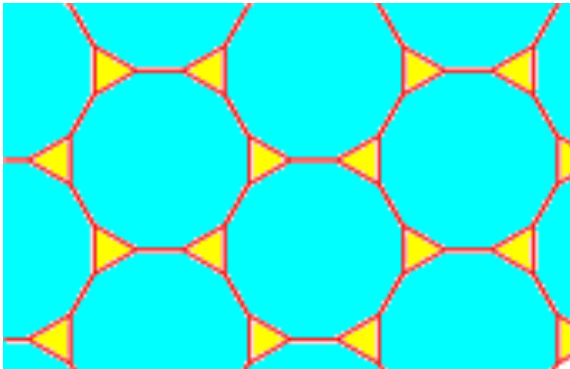


*There are only 8 semi-regular tessellations:*

- 3.6.3.6

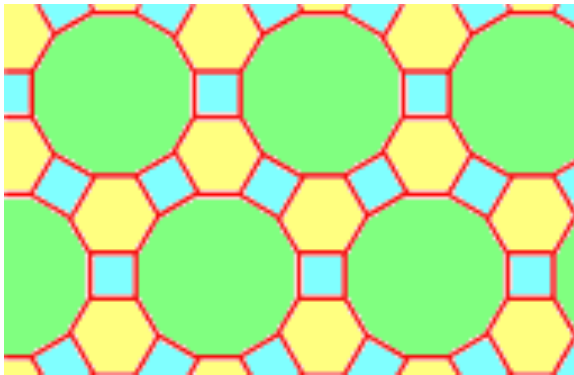


- 3.12.12

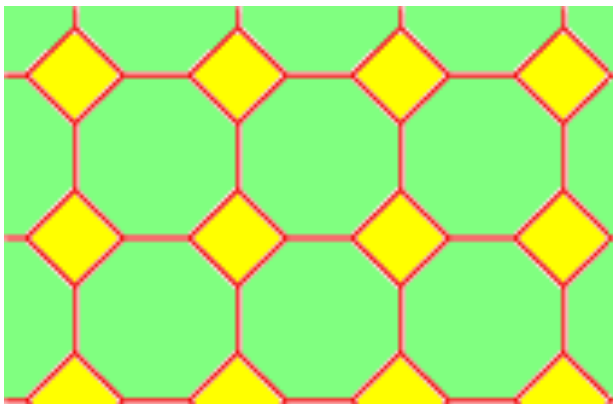


*There are only 8 semi-regular tessellations:*

- 4.6.12



- 4.8.8



# Naming Tessellations

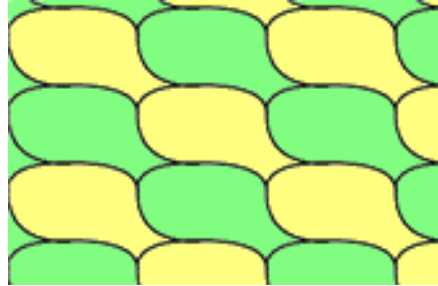
- To name a tessellation, go around a vertex and write down how many sides each polygon has, in order ... like "3.12.12".
- And always start at the polygon with the least number of sides, so "3.12.12", not "12.3.12"

# Other Tessellations

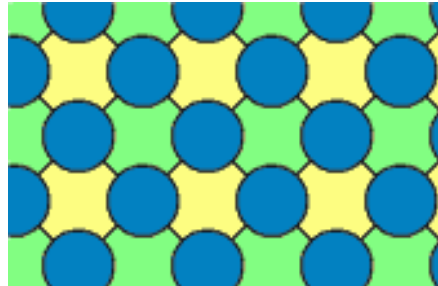
- There are also "demiregular" tessellations, but mathematicians disagree on what they actually are!
- And some people allow curved shapes (not just polygons) so we can have tessellations like these:

# Other Tessellations

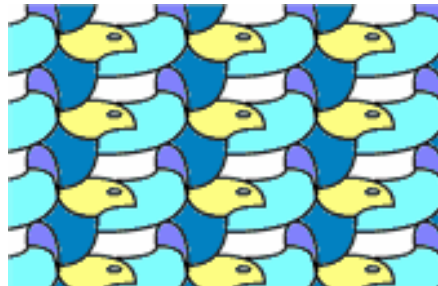
- Curvy Shapes



- Circles



- Eagles?



# References

- <https://www.mathsisfun.com/geometry/tessellation.html> (tessellation)