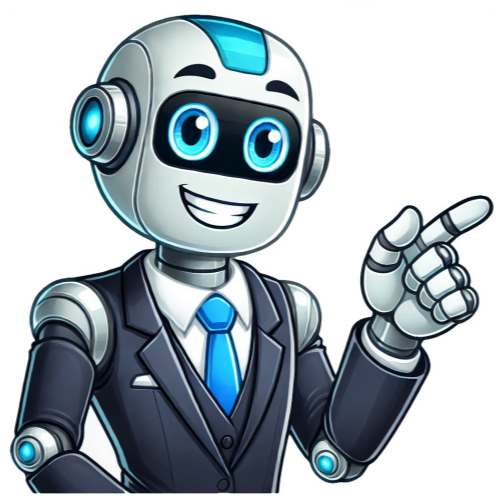


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Tessellate in math

Patterns have a way of captivating us, don't they? Whether it's their beauty or how easily we get lost in them, patterns can be mesmerizing. This week, we're diving into tessellations - tiled patterns of geometric shapes that fit together perfectly. A tessellation is essentially a pattern made up of simple and complex shapes that complement each other. These patterns can exist in various dimensions, from two-dimensional to four-dimensional. We've got some exciting examples for you! Check out Emily Grosvenor's children's math picture book, which features coloring pages, DIY instructions, and more. You can also try creating your own tessellating bird pattern or stamps. Tessellations aren't just man-made; they're also found in nature. Repeating patterns on snake skin and dragonfly wings are examples of how these shapes appear naturally. Even spiders use tessellation to create their webs. Let's take a look at some notable artists who have used tessellations in their work. M.C. Escher, often called the father of tessellations, created stunning graphic images with patterned geometric figures. His art is a perfect blend of order and chaos. We're always eager to see what you create! Share your own experiments on social media using @skokieilibrary, and we might feature them in our next post. Learn more about tessellations by reading up on Heesch numbers and tiling. Artist Toyin Ojih Odutola is also worth checking out - her work communicates through texture, exploring dialect and accent. Geometric patterns are an integral part of Islamic art, as evident in zillij, a style of mosaic tilework that originated from hand-chiseled pieces set into a plaster base. This intricate technique can still be observed in mosques, homes, and public spaces across Morocco and other predominantly Islamic nations. Beyond the realm of Islamic art, tessellations have also been employed by various artists to create visually striking works. Mathematical theories often intersect with artistic expression, as seen in the work of M.C. Escher, an artist renowned for his utilization of geometric grids in his woodcut prints and drawings. His focus on achieving balance and harmony is evident in quotes such as "Order is repetition of units. Chaos is multiplicity without rhythm." The Austrian artist Koloman Moser's elaborate designs also drew inspiration from tessellations, incorporating nature motifs and geometric shapes into textiles, wallpaper, and other decorative elements. In contemporary art, the concept of tessellations continues to inspire artists like Matthew Chilean, Tim Stokes, JeongSu, Ekaterina Lukasheva, who employ this technique in various mediums including paper sculptures, drawings, and hand-printed patterns. Three identical triangles can be placed along a straight line since the sum of their angles is 180° . This pattern can be repeated, leaving no gaps. The same applies to six identical triangles, which will fit together at a point, with no gaps or overlaps. Regular polygons will tessellate if the size of their angle is a factor of 360° . Equilateral triangles have angles of 60° , and six equilateral triangles can fit together at a point with no gaps. Squares have angles of 90° , and four squares can also fit together without any overlaps. However, regular pentagons do not tessellate because three of them would leave a gap. Regular hexagons, on the other hand, can be arranged to cover a surface perfectly, as they can fit together in threes. **What is a Tessellation?** A tessellation is a pattern made up of repeated shapes that fit perfectly together without any gaps or overlaps. There are two types of tessellations: regular and semi-regular. **Regular Tessellations** There are only three ways to create a regular tessellation using regular polygons: * Triangles (3.3.3.3.3) * Squares (4.4.4.4) * Hexagons (6.6.6) A semi-regular tessellation, on the other hand, is made up of two or more regular polygons. The pattern at each vertex must be the same. There are only eight possible semi-regular tessellations: * 3.3.3.3.6 * 3.3.3.4.4 * 3.3.4.3.4 * 3.4.6.4 * 3.6.3.6 * 3.12.12 * 4.6.12 * 4.8.8 **Naming a Tessellation** To name a tessellation, start at the vertex and write down the number of sides each polygon has, in order. For example, "3.12.12" means three triangles meet at that vertex, followed by two polygons with 12 sides. **Other Tessellations** There are also other types of tessellations, including demiregular tessellations (which mathematicians don't agree on) and tessellations made up of curved shapes, such as circles or even animals like eagles! **World Tessellation Day** June 17th is World Tessellation Day - a time to celebrate the beauty of tessellations and maybe even create some new ones! **New Mexico Leads the Way in Childcare Reform, While Global Coral Reefs Face Devastating Bleaching Event Families Worldwide Struggle with Affordability of Childcare Services Parkinson's Disease Affects Musician's Ability to Conduct Orchestra Actor Robert De Niro Shows Support for Transgender Son Gorilla Fight Debate Sparks Online Discussion New York Unveils Modernized Subway Map After 49 Years** tessellations are a way to fill a plane with repeating shapes without any gaps or overlaps, often seen in quilts, carpets, floors, and more. The shape that is repeated is called a motif. When it comes to polygons, the sum of angles at a vertex equals 360° , as seen in the example of squares and regular pentagons. There are three main types of tessellations: Regular, Semi-regular, and Irregular. A regular tessellation consists of only one type of polygon, while semi-regular tessellations have multiple polygons with identical patterns around each vertex. A tessellation is a pattern of flat shapes that cover a surface with no overlaps or gaps. There are three types: regular, semi-regular, and non-regular. Regular tessellations use only one type of polygon, while semi-regular ones combine two or more. Non-regular tessellations include other shapes like rectangles and octagons. To name a tessellation, you write down the number of sides each polygon has around a vertex, starting with the fewest sides. For example, "3.12.12" is one pattern. Some questions to consider are: Do all the patterns in semi-regular tessellations look the same at every corner? And which one changes when its mirror image is made?