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Mosaic Knots

Mosaic Tiles

Let $T^{(u)}$ denote the following set of 11 symbols, called mosaic (unoriented) tiles:

Please note that, up to rotation, there are exactly 5 tiles

Definition of an n-Mosaic

An **n-mosaic** is an $n \times n$ matrix of tiles, with rows and columns indexed $0, 1, \dots, n-1$

An example of a 4-mosaic

Tile Connection Points

A **connection point** of a tile is a midpoint of an edge which is also the endpoint of a curve drawn on a tile. For example,

0 Connection Points 2 Connection Points 4 Connection Points

Contiguous Tiles

Two tiles in a mosaic are said to be **contiguous** if they lie immediately next to each other in either the **same row** or the **same column**.

Contiguous Not Contiguous

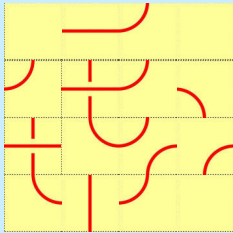
Suitably Connected Tiles

A tile in a mosaic is said to be **Suitably Connected** if all its connection points touch the connection points of contiguous tiles. For example,

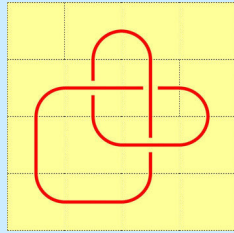
Suitably Connected Not Suitably Connected

Knot Mosaics

A **knot mosaic** is a mosaic with all tiles suitably connected. For example,

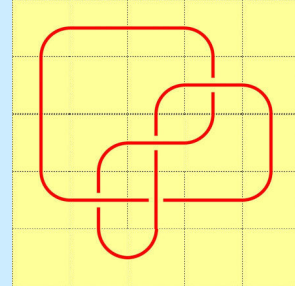


Non-Knot 4-Mosaic

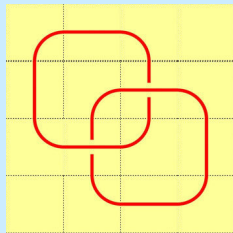


Knot 4-Mosaic

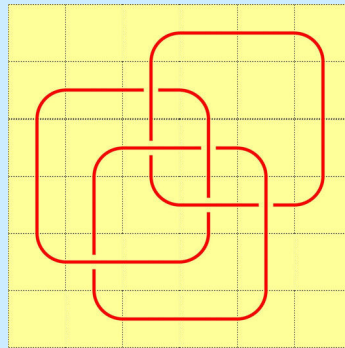
Figure Eight Knot 5-Mosaic



Hopf Link 4-Mosaic



Borromean Rings 6-Mosaic



Notation

$M^{(n)}$ = Set of n -mosaics

$K^{(n)}$ = Subset of knot n -mosaics

Planar Isotopy Moves