

Stained-Glass

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Stained-Glass is a logic puzzle in which the solver must colour certain regions within a pattern to reveal a hidden target image. It is a puzzle that produces a work of art as it is solved.

1 Introduction

STAINED-GLASS is a Japanese logic puzzle [6], invented by Japanese designer Mitsuyuki Okuyama, which first appeared in *Puzzle Communication Nikoli* Issue 102 in 2003. Stained-Glass involves deducing which regions of a design must be coloured to reveal a target image. As with *Tentai Show*, another Nikoli puzzle [2], its appeal lies in producing a work of art as well as the satisfaction of finding a solution for each challenge.

A characteristic of Stained-Glass is that each challenge is made from free-form regions that can be of any shape (even curves are allowed). This makes it an attractive alternative for players wanting something different to the regular grids of most other geometric logic puzzles. Stained-Glass is unusual in that challenges do not necessarily involve any form of symmetry, as is the case with all other Nikoli puzzles.

2 Rules

Each Stained-Glass challenge consists of a field marked with lines or curves that define *regions* of arbitrary shape. Some circles in three colours (black, white and grey) are placed at boundaries where regions meet. The rules are as follows.

Rules of Stained-Glass

1. Black circles touch more shaded regions than unshaded regions.
2. White circles touch more unshaded regions than shaded regions.
3. Grey circles touch an equal number of shaded and unshaded regions.

For example, Figure 1 shows a typical challenge and Figure 2 shows its solution. Note that it is the *number* of pieces rather than the *size* of pieces that is important here; large and small pieces count equally.

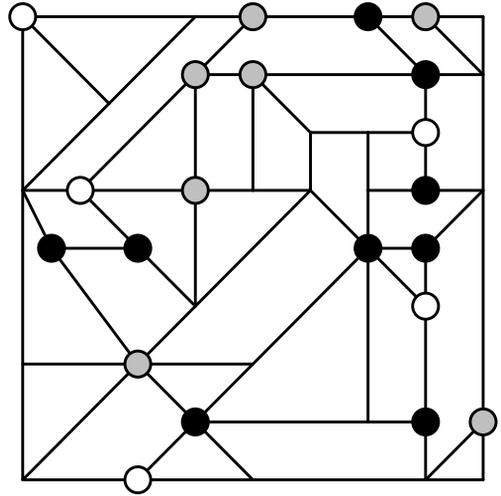


Figure 1. A Stained-Glass challenge.

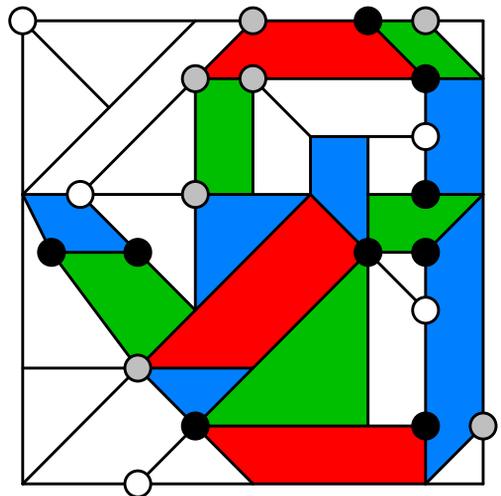


Figure 2. Solution of Figure 1 challenge.

Solutions are shown in multiple colours here, due to the artistic inspiration behind Stained-Glass. However, players will typically use a single colour in practice, as they solve each challenge with a pen or pencil.