



PUZZLING CARTOON

-STAINED GLASS-



Educational Goals

- ❖ Develop logic
- ❖ Highlight the playful potential of mathematics
- ❖ Construct relations allowing to calculate the area's ratio of triangles

Key Features of the Targeted Competency

- ❖ To define the elements of the mathematical situation
- ❖ To mobilize and apply concepts and processes appropriate to the given situation
- ❖ To justify actions or statements by referring to mathematical concepts and processes

Concepts Used

- ❖ Symmetry
- ❖ Ratio of similitude
- ❖ Ratio of areas
- ❖ Triangle properties
- ❖ Right triangle geometry
- ❖ Sine law, Cosine law, Heron's formula

Materials

- ❖ Video of the puzzle
- ❖ Sheets of paper
- ❖ Pencils
- ❖ Written copies of the puzzle (optional)

Targeted Academic Levels
Grades 10-11

Mathematical Field Concerned



Suggested Teaching Formula



Time Required
Approximately 20 minutes



SUGGESTED PROCESS



Step 1: Introduction (2 minutes)

Present the video of the puzzle a first time (www.amazingmaths.ulaval.ca).

A written version of the puzzle is available via the Explanation Sheet. If you believe it is necessary, you can project it or distribute copies to your students.

Present the video a second time to allow the students to thoroughly understand the information.

Step 2: Finding the solution (13 minutes)

Place the students in pairs so they can try to find the solution. To help the students, you may suggest to them to focus on a smaller part of the stained glass to simplify the problem. You can guide your students' reasoning by advising them to search for ratios and proportions between different triangles involved, or to search for triangles that will have the same area, particularly by symmetry. Once they found a solution, you can encourage them to find another one and to compare them in teams. There are many ways to get to the expected answer, try to find as much as possible and share the most original ones on the AmazingMath's Google Community!

Step 3: Reveal the solution (5 minutes)

Refer to the Explanation Sheet for the puzzle "Stained Glass".