

# Mosaics

*The relation of mathematics to history, art, religion and culture.*



<http://www.fisme.science.uu.nl/toepassingen/28801/>

*Throughout history the combination of mathematics and arts has led to the development of remarkable masterpieces. These masterpieces often serve as important ceremonial and religious artefacts, which reflect the uniqueness of the civilisation of origin. This activity focusses on mosaics and the role of geometry in art. Students are often unaware of the relation of mathematics to history, art, religion and culture. By studying and designing mosaics students get a more interdisciplinary view of mathematics which transcends the typical subjects taught in schools. Furthermore, mosaics provide a visual and tangible context for students to study transformation geometry, including translation, rotation, and reflection.*

## Lesson activities:

- Using examples of mosaics provided by your teacher identify the unit-shape of each pattern (this is the unit that is repeated in the pattern).
- Explore which types of transformations can be identified. Try to describe them using accurate mathematical terminology.
- Design your own mosaic by starting with a unit shape and applying multiple transformations. Use colours to emphasize the geometrical properties and to improve its aesthetics.
- Describe the geometry in your mosaic in a poster. Make sure to describe the unit-shape, the relevant transformations and the process you went through. Walk around and view each other's posters.
- Group the day's mosaics according to types and combinations of geometrical transformations that are used. Make sure to represent both the mosaics provided by the teacher and the mosaics designed by your classmates.

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