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Unit Description

Title	Colouring a map
Age of students/grade	12 and more
Length of the unit	45 minutes
Mathematical topic	Data comparison, four colours theorem
Prerequisite knowledge	• Any
Materials needed	• Blank maps of countries or some shapes to color • Colouring pencils
Objectives	• to explore rules of colouring a map • to learn about Four colours theorem (history of maths)
Notes on work with migrant students	• Work in pairs (mixed migrant and non-migrant student)

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Lesson plan:

Part 1. Coloring some pictures

Students are given some “pictures to color” inspired by the maps on this website and they have to color the pictures with 2, 3 and 4 colors. Neighbor areas cannot be colored with the same color. Students can work in pairs (home and migrant student).

When students finish the work, they can compare their results with other students.

A question is posed by the teacher at the end of the activity:
If we have an administrative map of a country, how many colors do we need to color it?

A short discussion may follow with some examples of colored administrative maps of countries.

Part 2. Coloring administrative maps

The teacher gives blank administrative maps of the home country and of the country of migrant students to the students. The maps can also contain some basic facts about the countries.

The teacher can ask some questions, for example

- *How is our country/migrant country divided into areas?*
- *How do you call them?*
- *How do you call the representatives of these areas? What are their powers or responsibilities?*
- *Compare the administrative division of given countries…*

The students exchange in this discussion some basic facts about the countries.

Then, the students have to color the maps with at most four colors. They work in mixed groups. If the groups are ready with 4 colors, the teacher asks them to make with less colors or show that it is not possible.
At the end of the activity, students mix in different groups and exchange their results and ways to solve the problems.

Part 3. Four colors theorem - sharing ideas

The teacher makes the students search for the Four color theorem on the Internet. The class exchanges interesting information about the history and the proof.