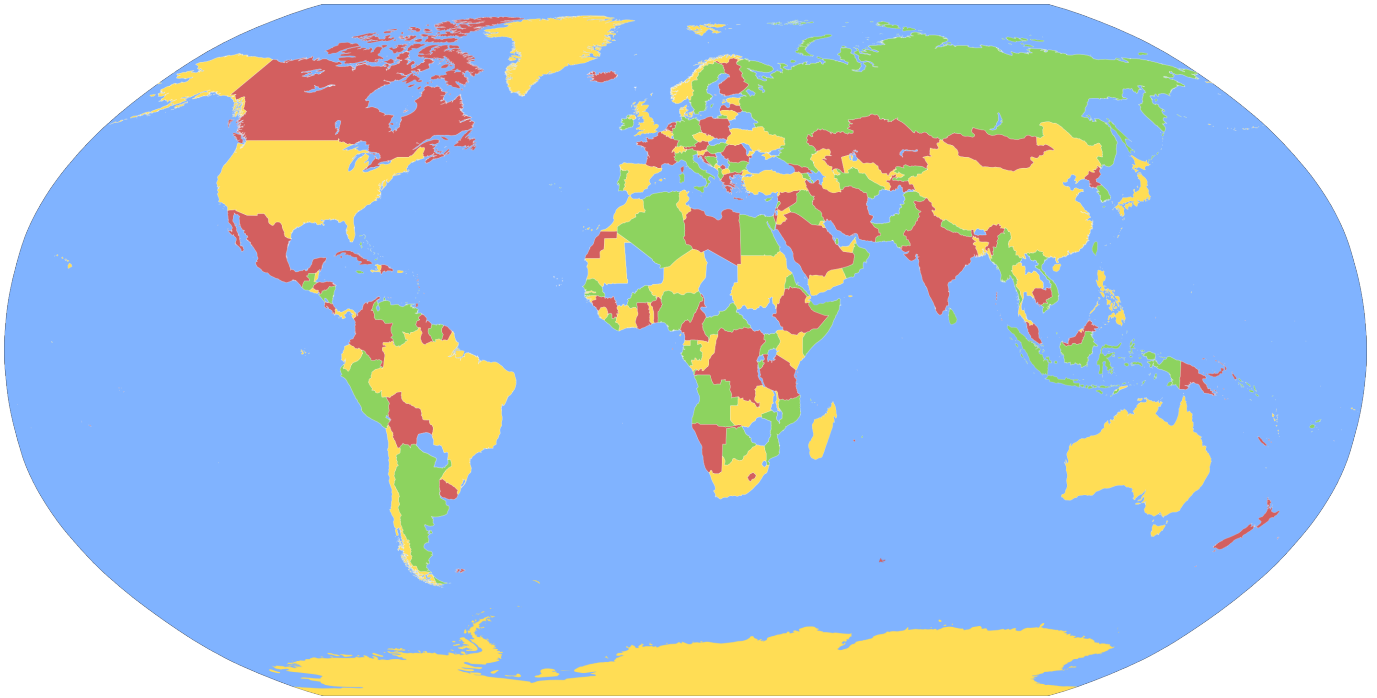
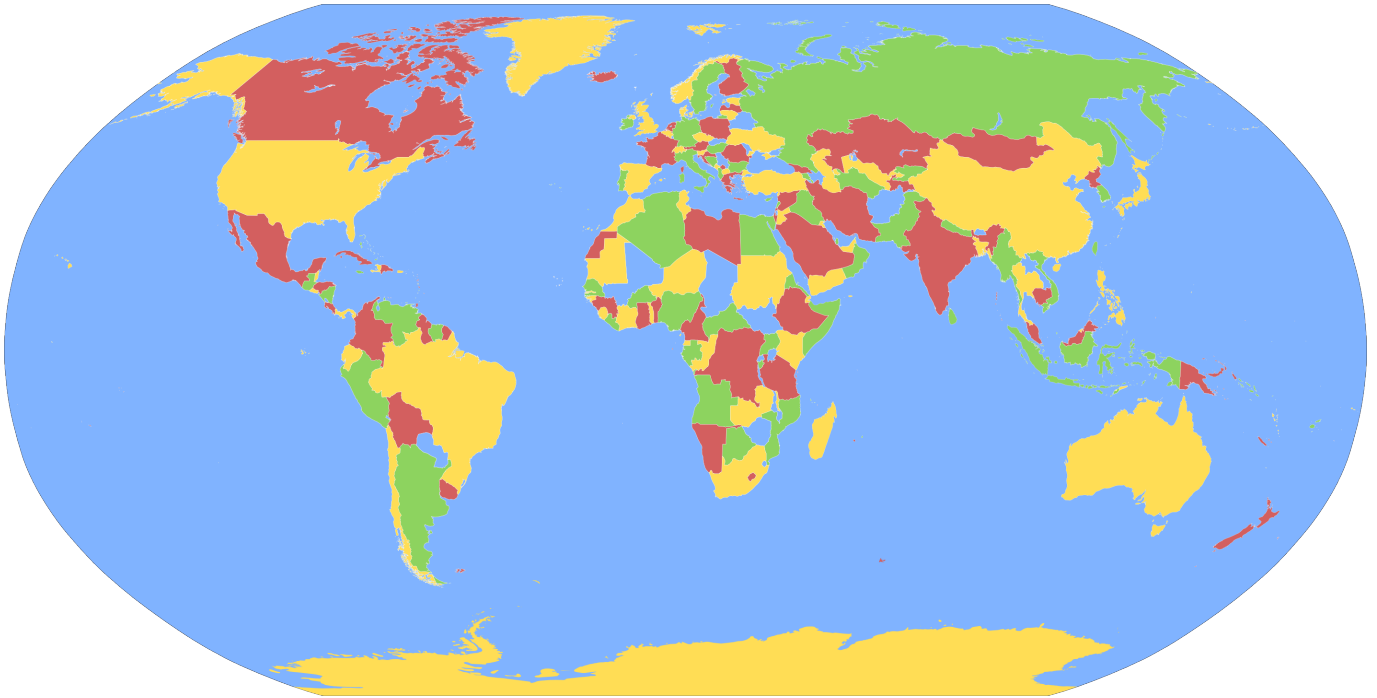


Map of the World



How many colors does it use?

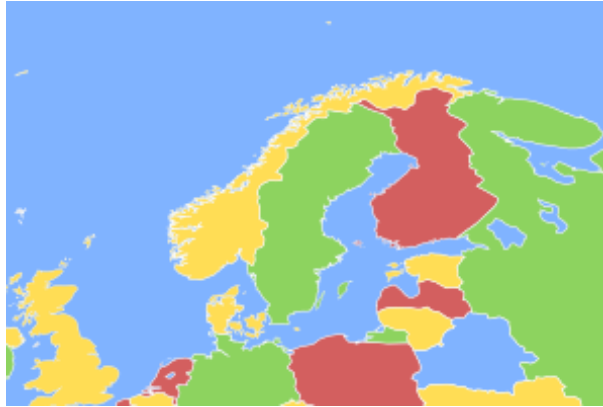
Map of the World



How many colors does it use?

Why Four?

Consider Sweden

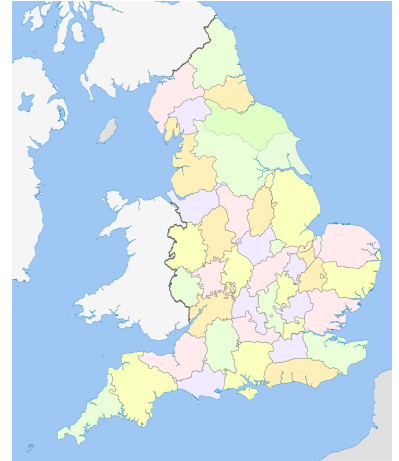


Sweden borders three regions, each of which meets the others. This forces us to use four colors.

Why **Only** Four?

Francis Guthrie, 1852

While coloring a map of the counties of England, Francis Guthrie noted that he only needed four colors. He was led to conjecture that any map may be properly colored with only four colors. He brought this to the attention of his former teacher, Augustus de Morgan, who advertised the problem to the Royal Society. The first printed reference is due to Arthur Cayley in 1878.



Many tried and failed to prove this obvious fact, which was only solved in 1976 in the first significant proof that used a computer.

This story involves many mathematicians. It was important to the development of graph theory, and will be the topic for you for next year.

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