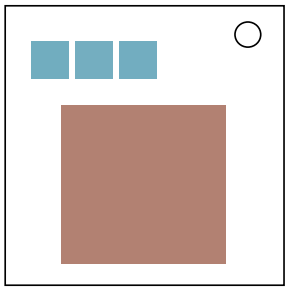
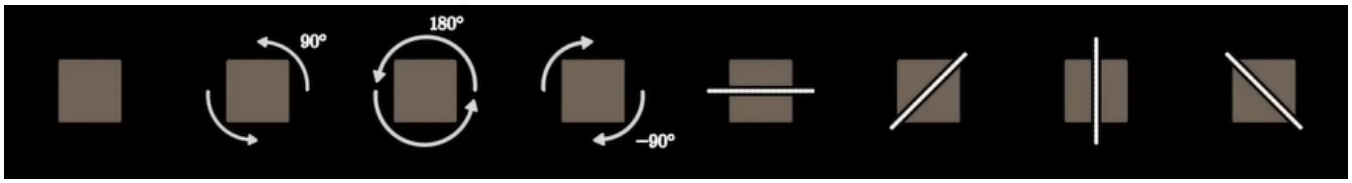
On the Subject of Symmetries Of A Square



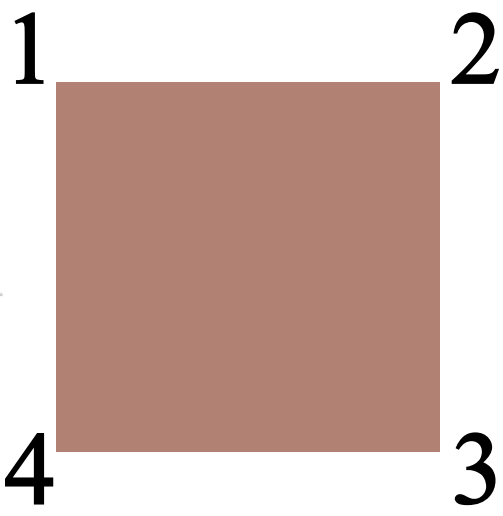
Who lives in a module under the sea?

A square has eight symmetries – actions that leave the shape of the square unchanged, including doing nothing.

The symmetries are notated on the module as follows; an arrow outside the square represents a rotation, and a line through the square represents a reflection.



To identify the different symmetries, the vertices of the square are numbered like so.



To solve the module, press the vertices in numerical order, starting from the final position of 1 after applying the three symmetries.

Useful note: The composition of any number of symmetries is always one of the eight symmetries above. A set of symmetries like this is a type of mathematical object called a group. Practice the module to get a feel for the underlying structure behind it. Also be sure to check out 3BluelBrown's videos on the topic, which make for interesting viewing if you want to learn more.