Symmetries of a square

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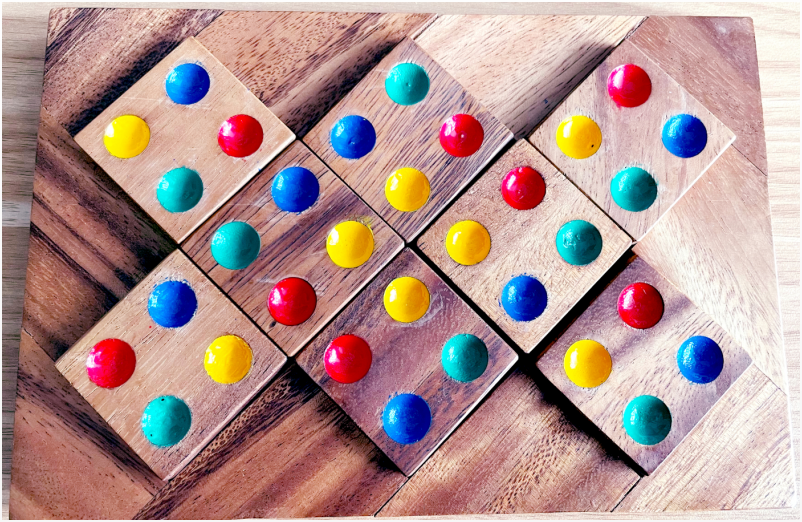
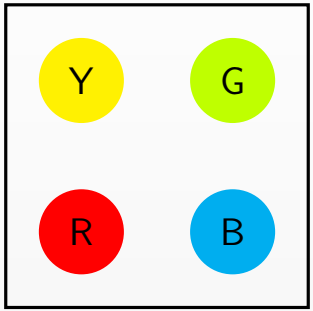
Colour match puzzle

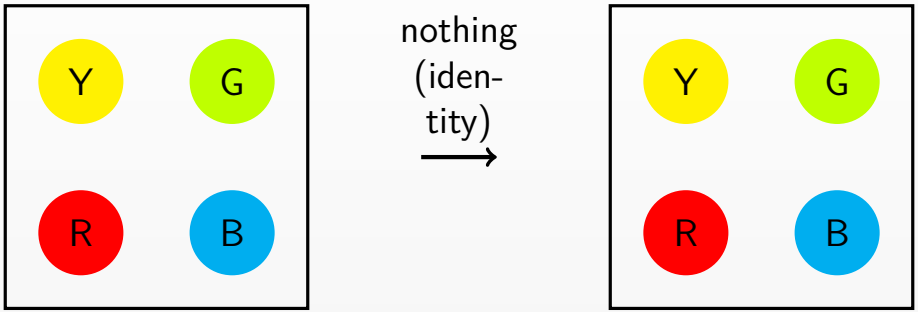


Symmetries of a square tile

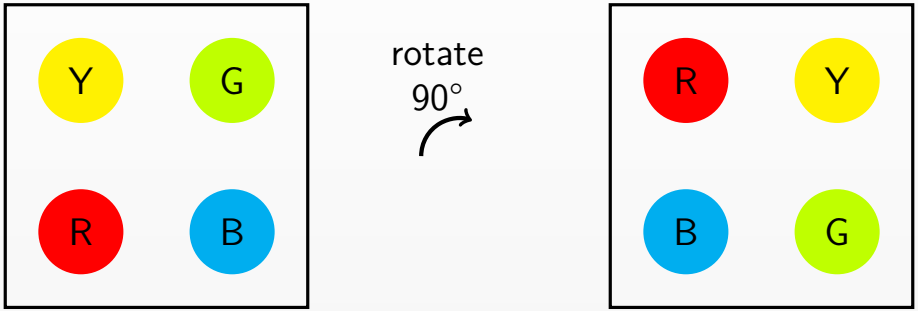
How many symmetries does a square tile like this have?



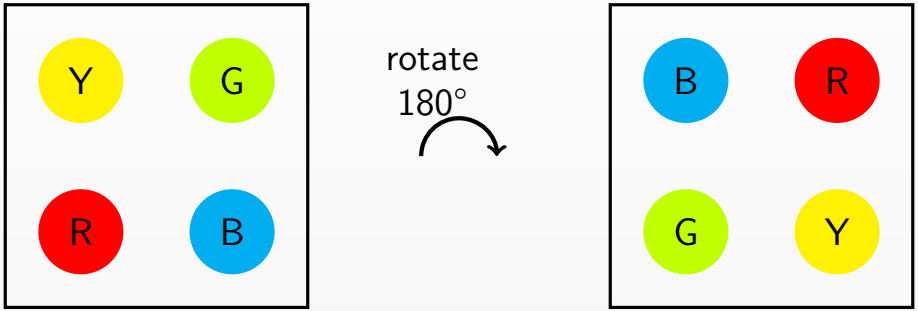
Symmetries of a square tile



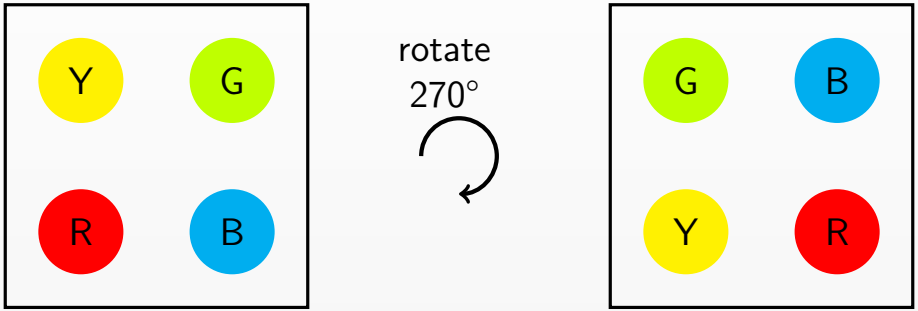
Symmetries of a square tile



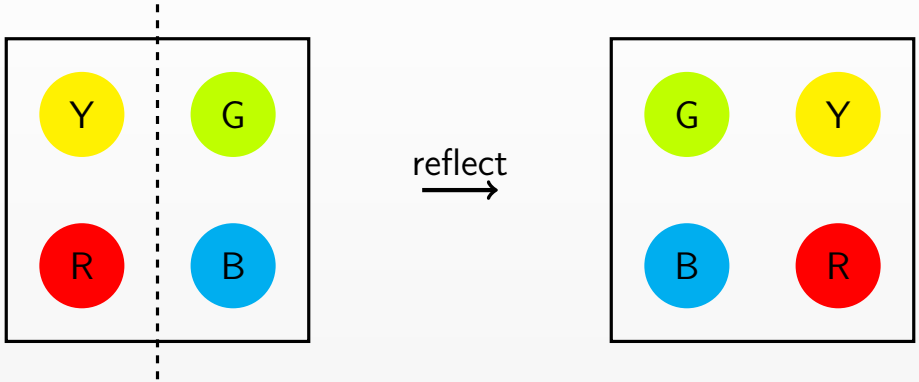
Symmetries of a square tile



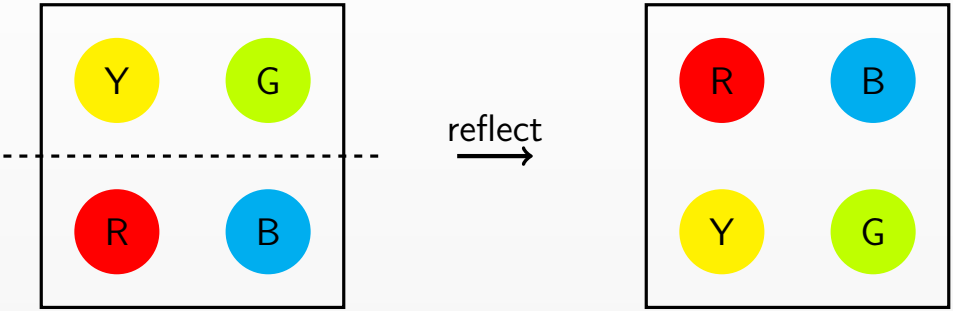
Symmetries of a square tile



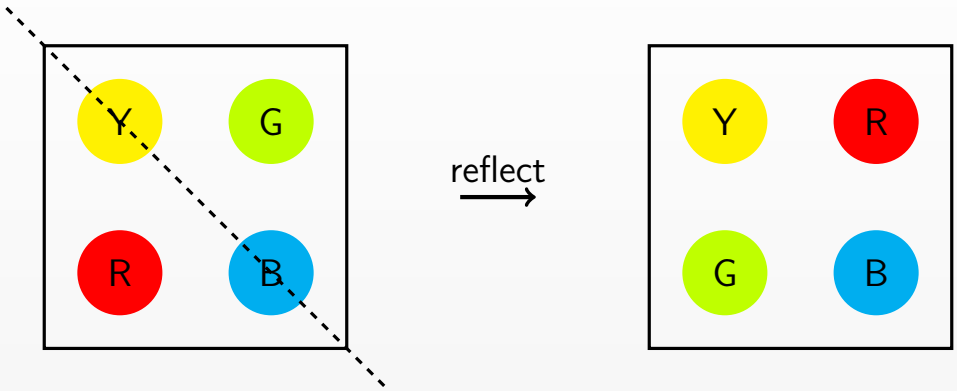
Symmetries of a square tile



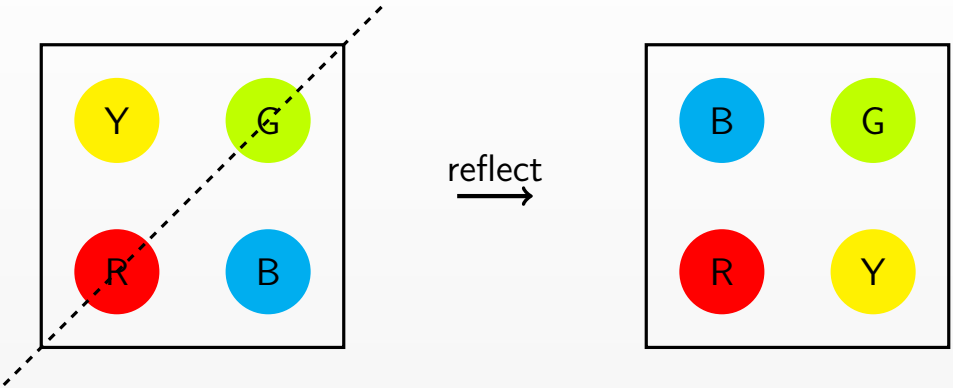
Symmetries of a square tile



Symmetries of a square tile

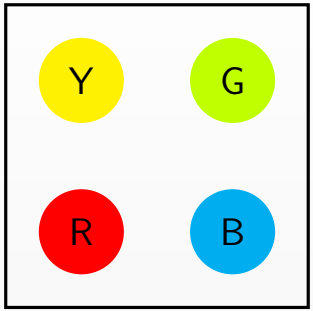


Symmetries of a square tile



How many different tiles are there?

- There are 4 colours for each dot and 4 dots, so $4^4 = 256$?
- But each colour is used only once each, so $4! = 24$?
- But are they all different?



Different tiles